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Electric Railway Journal

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Instructions for Use of Index

This index is essentially a subject index, not an index of titles, and articles treating a number of different subjects are indexed under each of them. In addition, a geographical reference is published wherever the article relates to any particular railway company, or to the state matters of any particular state. The geographical method of grouping serves to locate in the index any article descriptive of practices, conditions, events, etc., when the searcher knows the electric railway, city or state to which the article applies. Groupings are made under the name of the city in which the main office of the company is located, but an exception is made in the case of electrified sections of steam railroads, such entries being made direct under the name of the railroad. City or state affairs appear under the names of the city or state involved.

In the subject index, the alphabetical method is followed, and if there is a choice of two or three keywords the one most generally used has been selected, cross references being supplied. Below will be found a list of the common keywords used in the index to this volume. This list has been subdivided for convenience into thirteen general subjects, but the general subject headings, shown in capital letters, do not appear in the body of the index unless, like "employees," they appear also in small type. As an example of how to use the index, if a reader wishes to locate an article on special trackwork he would obviously look in the list under the general subject Track and under this caption, only special trackwork could apply to the article in question. The reader would therefore refer to this keyword under S in the body of the index.

In addition to the groups of articles covered by these headings the papers and reports from railway associations are grouped under the names of the various organizations. Proceedings of other associations and societies are indexed in general only in accordance with the subject discussed. Short descriptions of machine tools appear only under the heading "Repair shop equipment" and are not indexed alphabetically, because of the fact that there is a wide choice in most cases of the proper keyword to be used.

CLASSIFIED LIST OF KEYWORDS

ACCIDENTS AND ACCIDENT PREVENTION

Accident claim department
Accidents (including wrecks)
Safety first

CARS AND OTHER VEHICLES

Automobiles
Cars (including car design)
Locomotives
Motor buses
Motor cars, Gasoline
Motor trucks
Service and tower wagons
Trackless trolley
Work and wrecking cars

CAR EQUIPMENT

Bearings
Brakes and compressors
Current collection
Electrical equipment
Fixtures
Gears and pinions
Motors
Trucks
Wheels and axles

EMPLOYEES

Employees
Labor
Strikes and arbitrations
Wage decreases
Wages and working agreements

FARES

Fare collection (including apparatus)
Fare decreases
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Fares
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Abandoning of lines
Accounting
Appraisal of railway property
Financial
Franchises
Insurance
Legal
Legislation for railways
Market conditions
Operating records and costs
Public service and regulative commissions
Service at cost
Statistics
Taxes

HEAVY ELECTRIC TRACTION

Heavy electric traction (general)
Locomotives

MAINTENANCE OF EQUIPMENT

Insulating materials
Lubrication
Maintenance practice
Metals
Purchases
Repair shop practice
Repair shops and equipment
Stores
Tests of materials and equipment
Welding

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Energy consumption
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Power generation
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Substations and equipment
Switchboards and equipment

STRUCTURES

Carhouses and storage yards
Power stations and equipment
Repair shops and equipment
Substations and equipment
Terminals
Waiting stations

TRACK

Pavements
Rail joints and bonds
Rails
Special trackwork
Ties
Track construction
Track maintenance

TRAFFIC AND TRANSPORTATION

Freight and express
Interurban railways
Merchandising transportation
Publicity
Public, Relations with
Schedules and timetables
Signals
Stopping of cars
Traffic investigations
Traffic regulation
Traffic stimulation
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Corrosion
Electrolysis
Engineers
Highways
Living costs
Management
Municipal ownership
Railways (general)
Snow removal
Standardization
Subways

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Why the Helical Gear Interests Master Mechanics

EQUIPMENT men and others who attended the recent Harrisburg meeting of the Pennsylvania Street Railway Association were the recipients of much information regarding helical gear design and operation in the paper by Messrs. Phillips and Holy. Unfortunately the paper came near the end of a busy session, and there was no time available for discussion. Further, the paper was of a technical character and only those who were conversant with the subject would have been capable of discussing it even if there had been a chance. The paper is, therefore, printed in extended abstract in this issue of the ELECTRIC RAILWAY JOURNAL and the points which were raised in it can very properly be discussed in these columns so that equipment men generally may benefit.

The helical gear is attracting attention for three or perhaps four reasons: The chief one is that operating men expect to obtain longer life from their gearing. Helical gearing promises quieter running as compared with the spur gear now most generally used, hence will be better for the public; the reduction in tooth vibration which its use insures will lower maintenance cost, which will please the railway management, and it is a technical development in equipment design and construction, thus affording stimulating engineering problems to the alert superintendent of equipment.

The gearing is a part of the propelling machinery of the electric railway car that has been difficult to change to meet advances in technical information. Interchangeability, regardless of age, is a practically essential feature here. The present contours of spur gear teeth were laid out many years ago in the light of the best information then available, and they have proved reasonably satisfactory. Once fixed, however, practically no change has taken place. However, the material in both gears and pinions has been wonderfully improved, so that the spur gear can now be considered well nigh perfect except for defects inherent first in even a perfect tooth, if such is possible, and, second, in the actual present standard tooth, which is a compromise among conflicting conditions complicated by impracticability of making radical changes.

As the authors pointed out in the paper, the advent of the helical tooth in electric railway gearing permits gear manufacturers to cut loose from existing contours and to introduce improvements which they will be glad to apply on spur gears if they have the opportunity. In the helical gear they are not hampered by the necessity for interchangeability with existing equipment, and they can, therefore, while gaining the advantages of the helical form of tooth, add to them the virtues of a new design of contour. This design aims to give increased strength and better wearing qualities, with greater rolling and less sliding action.

The alacrity with which master mechanics have undertaken experiments with helical gears shows that they appreciate the defects of the spur gear. The principal defect is that it produces vibration as the teeth are stressed in succession. Each tooth is of course deflected as it comes into action, returning to normal position with respect to its anchorage as it goes out of action, its maximum deflection occurring when it is carrying the load alone. That this vibration causes losses was explained in an article by G. W. Remington in the issue of this paper for Aug. 17, 1918, page 288. A flexible mounting of the gear was proposed to overcome the difficulty following the same general line as that in some designs for electric locomotives. The helical drive accomplishes much the same purpose, in a cheaper and simpler manner and in addition assures a more nearly uniform transfer of load from tooth to tooth. These gears are used in some other machinery besides that of electric traction drive and the experience thus gained outside of this field will be useful within it.

It would be helpful to have some instructive facts as to helical gears brought out at the meeting of the Engineering Association at Atlantic City next October. That will furnish an excellent occasion for asking questions of manufacturers and users, as to recent experience with the large number of helical gears which have been in use during the past few years.

What Characterizes a Good Convention Paper?

ELECTRIC railway men spend in the aggregate a large number of man-hours at conventions annually. They naturally want to get something for their effort, and as their employers are the ones who largely "foot the bills" the latter expect a reasonable return on their investment. These facts ought to be weighed carefully by committees responsible for the programs of meetings. A look forward to the fall and later conventions and one backward in review over those of the past year or so may well be taken, so that the lessons of the past may be helpful in the plans of the future. This is the more important because some convention programs have been somewhat disappointing when the actual results have been compared with the ideal. This remark naturally raises the question: "What is an ideal program and an ideal paper for a convention?" Here are some suggestions along this line:

Obviously a program as a whole and the units composing it must be adapted to the needs of the audience. There are at least three such needs, aside from that for good fellowship and general inspiration. First, the association which is in conference needs a general view of the outstanding questions of its industry. This is necessary so that intelligent interest in managerial questions should be possessed by the staff generally. Second, the men in convention can profit by nontechnical accounts of the outstanding things that are being done by the specialists. Third, the specialists themselves ought to have their own respective questions discussed in ways to make them better specialists. This means sectional or group meetings.

As to the first point mentioned, any man who has attended conventions at all has heard enough good addresses which were full of "perspective" to know when a speaker is generalizing too much, beating around the bush, or rambling from the subject altogether. He is therefore apt to be critical when he feels that his time is being wasted. It is up to a program committee so to co-operate with an invited speaker that the latter will know what he is expected to cover. This is only fair both to the speaker and to the audience. A little tact will accomplish much here.

The second suggestion above is prompted by the fact that valuable papers on highly technical subjects often lack some degree of perfect success in delivery because presented, in the prepared form, before the wrong audience. Before a selected group, such as the specialists mentioned, a paper of this kind would produce exactly the result desired.

Convention programs in the electric railway field are good, many are excellent. These suggestions are made in the belief that they can be made even better by still more careful planning.

Bus or Bust— A Possible Contingency

IN LAST week's issue the Connecticut Company was reported as another electric railway about to operate motor buses. This company, which recently received the necessary legislative authority, announced that motor bus service will be established on some long-needed extensions and for cross-route connections, that is, as supplementary and complementary service to the trolley system. In some communities there exists a feeling that the trolley has had its day and that, because this is a motor age, transportation should be by that agency alone. But it can easily be proved that for routes of fair traffic density, on an equal basis of seat-miles furnished, the trolley car is the more economical in operating costs including fixed charges, as well as taking less space in the streets. With lower density of traffic, the bus will often prove the more economical.

Of course, economy per mile operated is not the only standard on which to judge service. Transportation has its commercial as well as its financial characteristics. If the rider demands a particular service and is willing to pay for it on a basis which will provide a fair return on the investment and an allowance for maintaining at all times the integrity of the investment, it is but reasonable to expect that such a form of service will be provided. If buses are demanded, their service in some cases may have to overlap, at least in part, existing rail service, but in the interest of economical operation this duplication should be kept to a minimum by a co-ordination of both operations under one management. Obviously this unified operation should be under the direction of the railway management as the most experienced and capable agency for this work. In other words, if the bus is demanded to supply a real transportation need and the community is prepared to support it, the railway company should be prepared to furnish the service. Otherwise it may become a case of "Bus or Bust."

Abandoned Lines Result from Faulty Diagnosis

A DECREASE of 623 miles of track in operation as against 167 miles of new extensions during 1920 is one of the indications that many electric railways were built in territories whose growth in traffic and revenue have been insufficient to keep pace with the rising cost of operation. There are probably many other miles of track being operated at great loss in similar localities. Whatever the reason for this—increased private automobile travel, failure to obtain increased fares, or whatnot—this well known condition exists. But while the financial condition of the individual railways which have discontinued service may be improved, what of the welfare of the communities served? In many of them the whole development was based on the transportation service, now defunct.

In order to maintain transportation service to such communities subsidies from the general fund of municipalities have been suggested and sometimes tried, but this seems questionable, at least until the operating company has properly studied, prescribed and tried all possible cures in the way of suitable operating economies. Among other things, these economies mean that lighter weight cars with lighter equipment may be substituted, that speed be increased, that one-man operation be tried, and that service be confined to less than eighteen hours per day.

Even then, the railway, having done everything within its power to demonstrate that the route has not an earning capacity sufficient to maintain rail service, can logically resort to the same means of transportation services that will be taken up by individual operators the moment cars are withdrawn. This means that rail-less traction can often be substituted where the highways are built so that they will stand such traffic.

Certainly, any company prior to the actual discontinuance of service should give careful consideration to the possibilities of this form of transportation and should not give up a franchise on a given route until it has been proved conclusively that the territory cannot support any regular means of transportation at all. The advantages of such action on the part of the company are almost too self-evident to require repetition—maintenance of the integrity of one universal transportation system, retention of public confidence and good will, prevention of jeopardizing other parts of the system, etc. It is good business to make a careful business diagnosis and to seek every remedy available to cure the apparent ills.

A Model for Operating Men's Meetings

A GOOD example of the value of conventions among electric railway men is afforded in the gatherings of the mechanical men of Pennsylvania, Ohio and West Virginia, one of their meetings being covered in this issue. Their sessions begin promptly; they get right down to business, and they stick strictly to it throughout the meeting. Their procedure is largely informal as is also their organization, but the information brought out in answering questions raised and in exchanging experience is invaluable. There is a noticeable absence of lost motion and waste of time. A manager makes no mistake in sending his master mechanic to them. The success of these meetings has demonstrated that similar meetings could very profitably be provided in other sections of the country.

Developing a Freight Business

Extensive Improvements of Indianapolis-Louisville Line Include New Freight Equipment and Overnight Freight Service—Interesting Layout of New Shops Under Construction Is Treated—Method of Financing Betterments Is Explained

AN ACCOUNT of the passenger equipment of the Interstate Public Service Company, operating a high-speed interurban electric railway between Indianapolis & Louisville, was published in the issue of this paper for June 4. The company also does a considerable freight business and during the last year has increased its facilities for handling freight by the purchase of twenty new box cars and two electric locomotives.

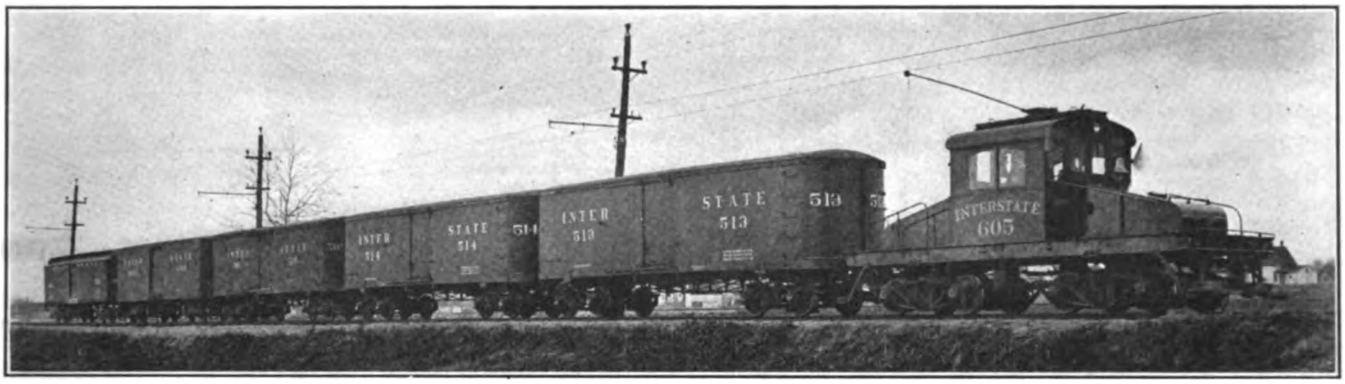
In the main, these box cars are a copy of the standard Pennsylvania Railroad box car with a few alterations to meet the operating conditions of the electric line and to conform to certain standards adopted in the Central Electric Railway Association territory. They are 37 ft. 2½ in. long over the end sills, but the square end used by the steam railways was replaced by a round end, built on a 5-ft. radius to meet the standard C. E. R. A. drawbar requirements, so that the length of the car over bumpers is 42 ft. 4¾ in. These rounding ends increase the capacity of the standard Pennsylvania car by about 140 cu.ft. They are 39 ft. 4 in. long inside and 7 ft. 9 in. wide and 7 ft. 4 in. high. The roof is of plain arch construction, built with ⅞-in. tongue and grooved pine, a layer of 7-in. felt paper and covered with No. 8 duck, instead of the wood roof used by the steam roads. The standard MCB arch-bar freight truck is used, but it is stiffened by tying the ends of the side frames together at both ends of the truck with a bar bolted on the pedestal bolts of the arch bars. The hand-brake wheels are installed on the ends of the cars instead of on top, so that a brakeman will not need to get on top of the car where he might come in contact with the overhead.

These cars weigh 33,400 lb. and have a capacity of 50,000 lb. The Interstate company has standardized on this design of box car.

One of the two locomotives purchased by the company is a 37½-ton machine equipped with four Westinghouse 75-hp. 318 motors and St. Louis trucks. The other locomotive is a new 25-ton engine equipped with four 50-hp. GE-57 motors and St. Louis trucks.

With these new purchases of freight equipment, the total facilities for handling freight business now include six motor merchandise cars, two locomotives, thirty box cars and twelve flat cars. Three of the motor merchandise cars have been rebuilt so that they are capable of pulling as many as twelve box cars. At the present time it is unnecessary to run trains of more than five or six cars, and a four-car train is the limit that may be hauled through the streets of Louisville or Indianapolis, according to ordinance in the latter and an order of the Board of Works in the former. The locomotives, of course, are capable of handling longer trains. They are used very largely in hauling gravel and cement.

Having prepared itself with these facilities, the company, on Feb. 17, inaugurated an overnight freight service between any two points on the system. This resulted almost immediately in a pronounced increase in the tonnage offered to the company. Prior to this time all freight had been handled by local trains, making about forty-eight-hour deliveries. The regular freight schedule now includes the following:



INTERSTATE FREIGHT TRAIN SHOWING LOCOMOTIVE HAULING FOUR OF THE NEW STANDARD BOX CARS. THE OVERHEAD AND TRANSMISSION LINE CONSTRUCTION IS ALSO SHOWN

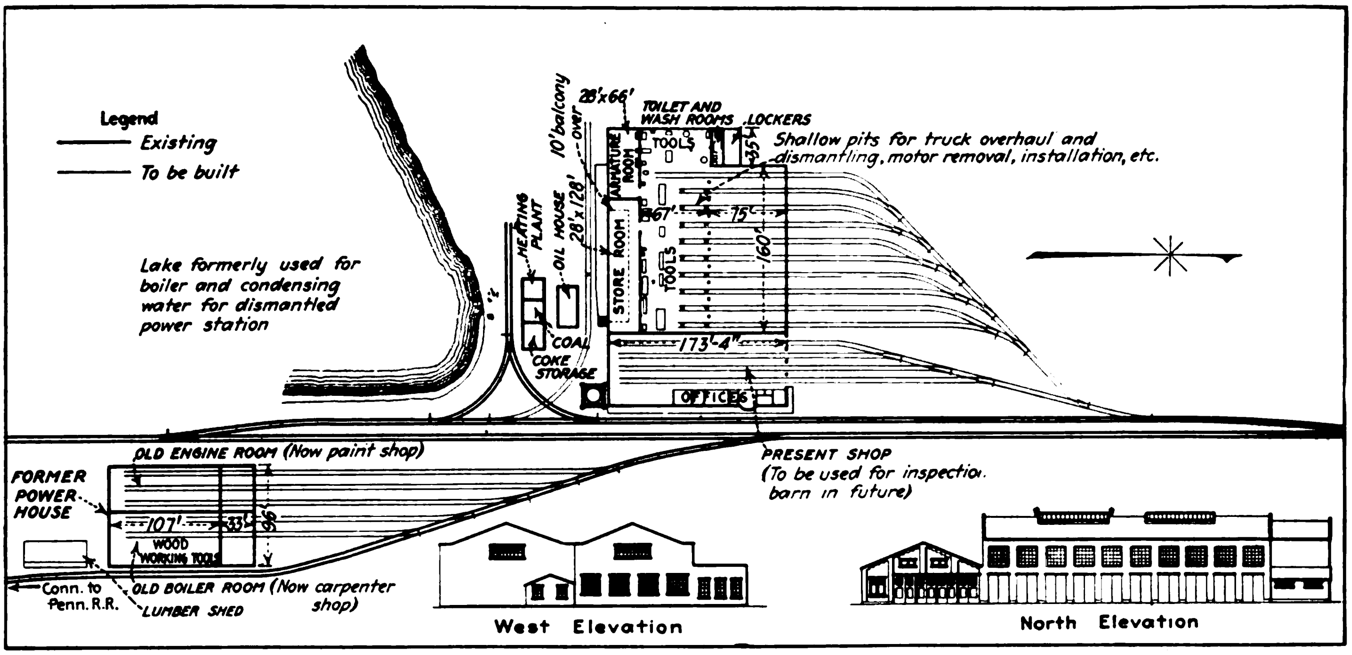
A through freight train from Louisville to Indianapolis leaves Louisville daily at 5 p.m. This runs local as far north as Columbus, Ind., and picks up freight at all stations for points north of Columbus. At Columbus a car is set off and the remainder of the train proceeds without stopping, except for making delivery, and arrives at Indianapolis about 8 a.m. The car set off at Columbus leaves there at 10:30 a.m. and runs to Indianapolis, serving local points intervening, in picking up northbound shipments. Southbound a local train leaves Indianapolis at 11:30 a.m. and runs as far south as Columbus, serving Greenwood, Edinburgh and other local stations, and pulling one trail car for Columbus and one for Seymour. A through train which leaves Indianapolis at 5 p.m. then picks up the Seymour car at Columbus, and usually a car from Columbus for Louisville, and frequently a third trail car for Louisville from either Indianapolis or some way station, and goes on through. A daily milk train is also run, leaving Columbus at 12:30 a.m. and proceeding to Indianapolis. On the return trip this train handles empty cans and local freight. In addition there are two local freight trains which operate between some of the smaller cities and way stations.

In 1920 the Interstate company handled more than 100 carloads of canned goods from one canning factory. It earned more than $60,000 gross revenue in hauling cement into Louisville from a plant about 15 miles out, one of the locomotives being kept busy on this work. A revenue of $6,000 was earned in hauling logs from Charleston and Scottsburg to Caruthersville. The Union Starch & Refining Company, at Edinburgh and the Bush Milling Company at Seymour were also heavy shippers over the electric line. Nearly $20,000 of revenue was earned from hauling milk. Arrangements have been completed with the small fruit growers for handling a very considerable quantity of strawberries and other berries from New Albany to Indianapolis, for which a rate of 70 cents a hundred is earned. Approximately 50 per cent of the freight business handled by the Interstate is made up of carload shipments.

Under the direction of Bert Weedon, general freight and passenger agent, a thorough canvass is continually made of the territory served in order to keep advised of any business available, to place the services of the company before the shipper and also to enable the company to plan in advance to handle it. Every local agent is expected to keep in touch with his territory, including the condition of crops from time to time, so that the transportation requirements may be estimated. In planning to handle the shipment of fruit, every farmer in the berry and melon territory was solicited and information secured as to the size of his crop and where he intended to ship, so that the company could plan to meet his requirements. At all times the closest cooperation between the transportation department and the traffic department is maintained and this has been a very important factor in the expansion of the freight business handled by the company. This applies equally well to the passenger business, for the company has been enjoying a very considerable revenue from special trains. The traffic department is not the only sales organization for the services of the company, for it is a frequent occurrence for the superintendent of transportation, L. M. Brown, to go out and contract for some special service, or send one of his assistants located at various points along the line to do so, when the representatives of the traffic department are engaged at other points on the 117-mile road.

For interstate business, the freight tariff of the Interstate company follows the same classifications and the same scale of rates as used by the competing steam lines. For intrastate traffic the rates are the same except that the electric line did not apply for the last 7 per cent increase in freight rates awarded to the steam roads. The competition which the Interstate company must meet is the Louisville Division of the Pennsylvania Railroad, which has a direct line running between Indianapolis and Louisville.

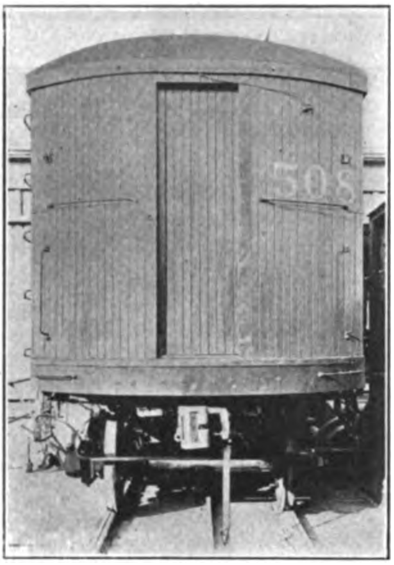
With increasing traffic and additional equipment to be maintained, the mechanical department has been somewhat handicapped in its work for lack of shop facilities. It has been unable to do any rebuilding of old equipment or much work other than strictly maintenance. In view of this, plans have been completed and work recently begun on a new shop at Scottsburg, Ind., a town of 1,200 population located 83 miles from Indianapolis and 34 miles from Louisville. At the present time small shops at Scottsburg, Columbus and Greenwood are in use, but the plan contemplates the centralization of all shop work at the new Scottsburg shop and utilization of the other shops for light inspection work and car storage, and likewise the present Scottsburg shop.


Legend
Existing
To be built
Lake formerly used for boiler and condensing water for dismantled power station
HEATING PLANT
OIL HOUSE
28'x128'
10' balcony over
28'x66'
TOILET AND WASH ROOMS
LOCKERS
TOOLS
ARMATURE ROOM
STORE ROOM
TOOLS
35'
67'
75'
160'
173'-4"
COAL
COKE STORAGE
OFFICES
Shallow pits for truck overhaul and dismantling, motor removal, installation, etc.
OLD ENGINE ROOM (Now paint shop)
FORMER POWER HOUSE
107'
33'
96'
WOOD WORKING TOOLS
Conn. to Penn. R.R.
OLD BOILER ROOM (Now carpenter shop)
LUMBER SHED
PRESENT SHOP (To be used for inspection barn in future)
West Elevation
North Elevation

LAYOUT OF NEW SHOP TO BE BUILT BY THE INTERSTATE PUBLIC SERVICE COMPANY AT SCOTTSBURG, IND.

In an accompanying drawing the complete layout of the shop and track facilities at Scottsburg as planned by H. H. Buckman, master mechanic, may be seen. It will be noted that the main overhaul shop, machine shop, armature room, forge shop, store room, etc., are to be located in a building which is to be built as an extension to the present shop building. The offices of the master mechanic will remain where they are now in the present shop, although there will be a balcony office for the general foreman in the new building. The main overhauling shop will be served by ten tracks, whereby ten large cars may be simultaneously shopped. A row of pillars extending across the center of this space divides it into two portions which will be served by a 30-ton 75-ft. span cab-operated traveling crane and a 20-ton 67-ft. span floor-operated traveling crane.

None of the tracks will have pits except for shallow ones at the inner ends of the tracks to aid the truck overhaul work. The scheme of handling overhaul will be to pick up the entire car body with the large crane, roll the trucks forward from underneath it, and lower the body onto horses or shop trucks. Any portion of the truck can then be picked up with the smaller crane and delivered to any machine in the entire shop, the runway of this crane extending from the wall of the present shop to the opposite end of the new building, 195 ft. The efficiency of this layout can be readily appreciated by a study of the accompanying floor plan showing the various machine locations. It was originally planned to build a new carpenter and paint shop to the south of and adjacent to the machine and overhaul shop already described. More recently, however, the Scottsburg power house belonging to the company was dismantled, and it was decided that with some remodeling this building, which is only a few hundred feet away from the present shop building, could be utilized for this purpose. A 33-ft. addition will be built on the front end and three tracks built in what was formerly the engine room and two in the old boiler room. The wall separating these two rooms will be left in place and will serve to separate the paint shop from the carpenter shop, permitting the maintenance of higher temperatures in the paint shop and keeping it free from the dust of the wood shop. The old boiler room will be filled in to bring the floor level of the carpenter shop up even with that in the engine room or paint shop. Various wood-working machines will be located in the carpenter shop as shown. A basement will be built under a portion of the carpenter shop and the heating plant for the building installed therein. The present coal bunkers used for receiving coal for the power plant will be used for storage of coal for shop uses. The track extending along the east side of the power plant runs over these bunkers on a trestle, so that coal may be unloaded from bottom dump cars, and connects to the south with the Pennsylvania Railroad, so that coal may be received direct in carload lots.


STANDARD INTERSTATE BOX CAR
View showing rounded end and tie bar connecting the side frames of the trucks.

The use of the old power house for a portion of the shop will involve a slight increase in the amount of shifting of equipment required in the various shop operations, but it will make a material saving in building construction costs, as well as obtain further use of the investment in the power-house building.

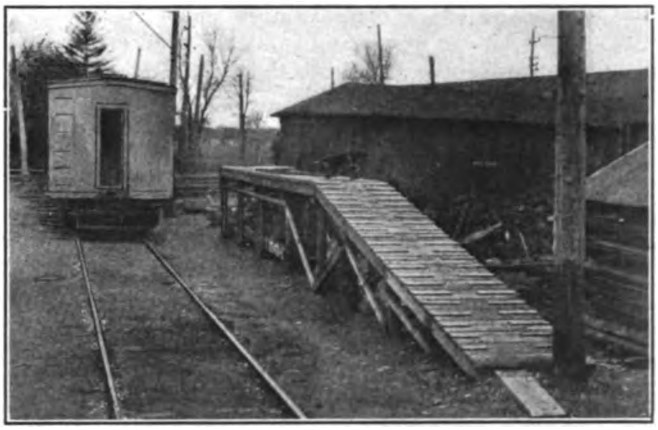
In maintaining the 108 passenger cars, fifty freight cars and nine service cars owned by the company the regular routine work calls for the shopping of 124 cars annually. As it is planned to do considerable rebuilding work in addition to this, the construction work on the new shop is being pushed to completion, the contract having been let about April 1.

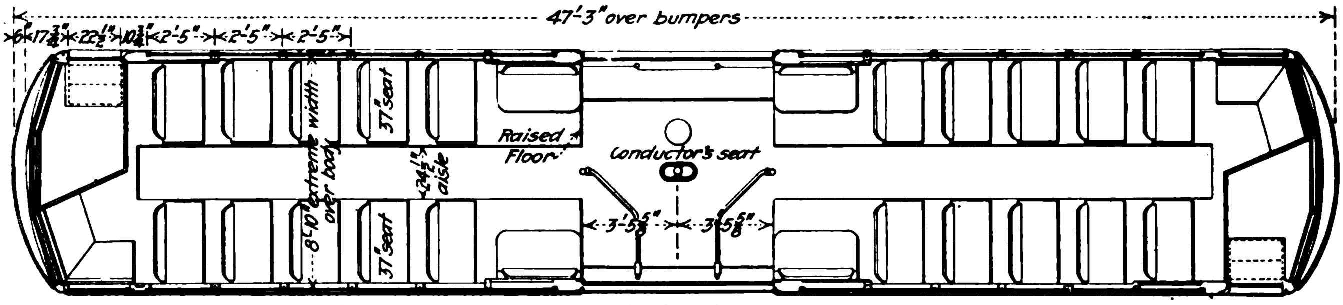
Coincident with the improvements already mentioned, the company made important changes in its power system including the shutting down of two stations, the building of 54.6 miles of new 33,000-volt transmission lines and the rebuilding of 58.25 miles of existing transmission lines for higher voltage, the erection of six new substations and the re-equipment of others, etc. An account of this work was published in the issue of this paper for June 25.

Question will quite naturally arise in the mind of any interurban operator as to how this extensive improvement program of the Interstate company was financed. This may be answered briefly by stating that it was done in good part through the activity of the company in selling its stock to its own customers. In order to purchase the new rolling stock, a subsidiary company known as the Interstate Car Trust Equipment Company was organized. Except for $50,000, the new cars were purchased entirely through the sale of the 6 per cent preferred stock of this company. This $50,000 represented the income from the sale of the common stock of the equipment company to the Interstate Public Service Company, for which the latter obtained the money through the sale of Interstate Public Service Company's 7 per cent prior lien preferred stock. The latter was sold along with about $200,000 more of the same stock to the public of Indiana. There was also a bond issue during 1920 of $400,000, which was backed up by additions to the plant account during the year amounting to over $800,000.

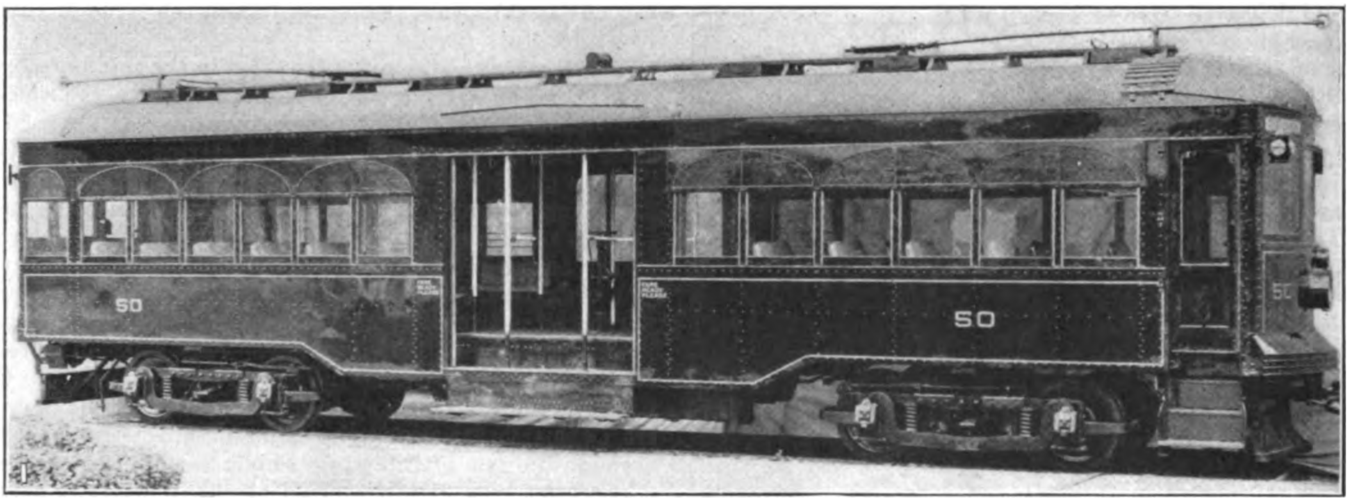
Refuse Loading Platform Saves Labor

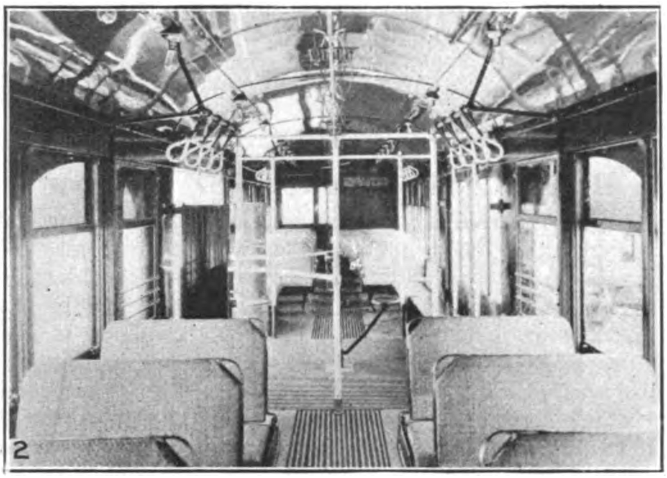
BY BUILDING a platform with an incline at one end and high enough so that a wheelbarrow may be dumped over the side of a gondola car considerable saving in labor has been made in connection with the disposal of refuse at the Wheaton, Ill., shops of the Aurora, Elgin & Chicago Railroad. Formerly the refuse was wheeled in a barrow and placed on the ground in the shop yard. It was then necessary to rehandle it to put it in the refuse car for disposal. By means of this platform this second handling is entirely dispensed with. The refuse car, which is a small single-truck car used entirely for this purpose, is spotted beside the platform and the refuse dumped in it as it accumulates. The gondola was away being dumped when the accompanying picture was taken.

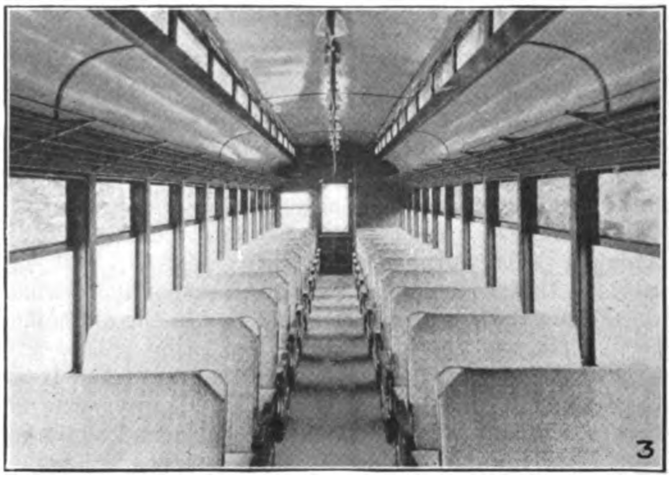

PLATFORM BUILT TO AVOID REHANDLING OF REFUSE

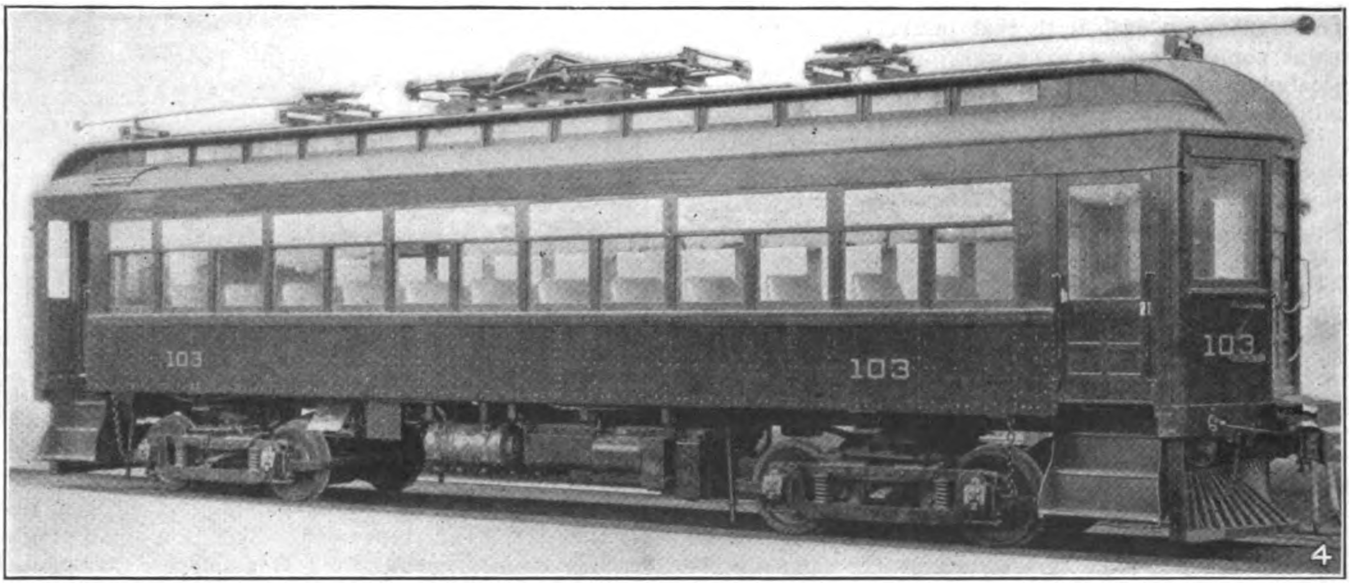

47'-3" over bumpers
6"
17 3/4"
22 1/2"
10 3/4"
2'-5"
2'-5"
2'-5"
8'-10" extreme width over body
37" seat
37" seat
24 1/2" aisle
Raised Floor
Conductor's seat
3'-5 5/8"
3'-5 5/8"

Floor Plan of the Philadelphia & West Chester Traction Company's Car





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No. 1—New Car for the Philadelphia & West Chester Traction Company.

No. 2—Interior View of the Philadelphia & West Chester Traction Company's New Car.

No. 3—Interior View of the Hershey Cuban Railway's New Passenger Car.

No. 4—Latest Addition of the Passenger Equipment of the Hershey Cuban Railway.

Some Recent Interurban Car Designs

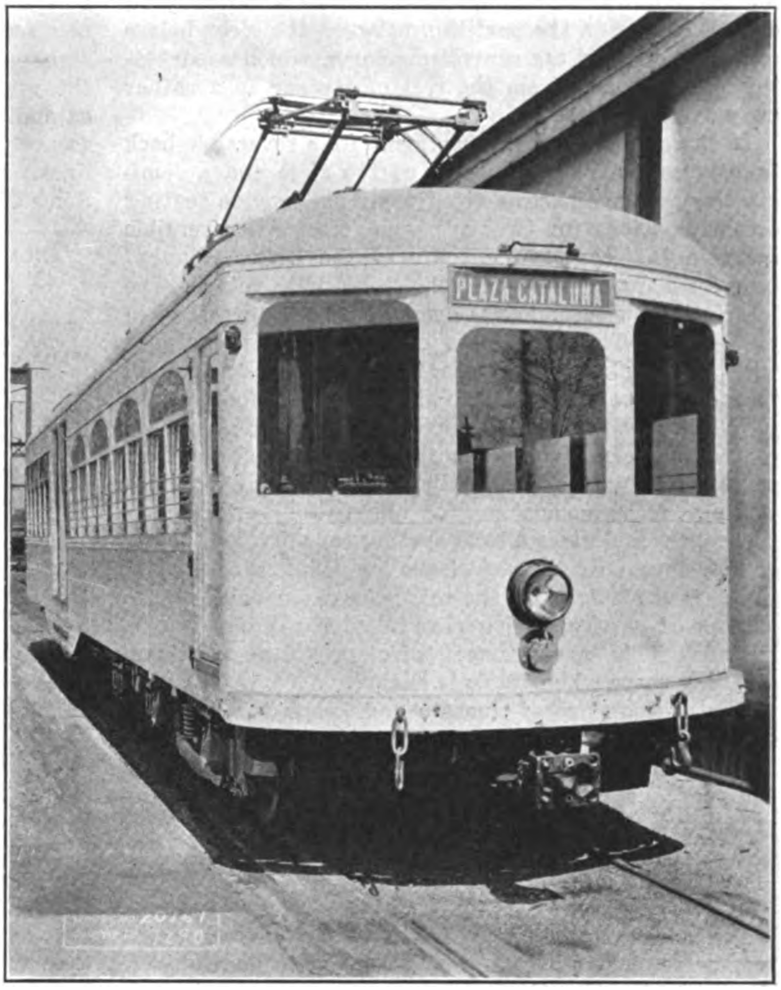
While Very Few Interurban Cars Are Being Constructed at This Time, the Accompanying Information Regarding Four Types Recently Ordered Will Indicate the Trend of Practice in This Field

THE following facts regarding recent interurban cars relate to several types which have been built by the J. G. Brill Company. The data will be of interest in connection with the descriptions of the rapid-transit urban cars contained in articles in the June 11 issue.

Twelve all-steel, center-entrance motor cars were delivered to the Cataluna Tramways of Barcelona, Spain, last year. These have a central platform, which divides the car into two compartments, one for second-class and the other for third-class passengers. Partitions separate the second-class compartment from the central platform and from the other part of the car. There is no partition between the third-class compartment and the platform, but an arrangement of vertical and horizontal pipe railings is used to direct the incoming and outgoing passengers.

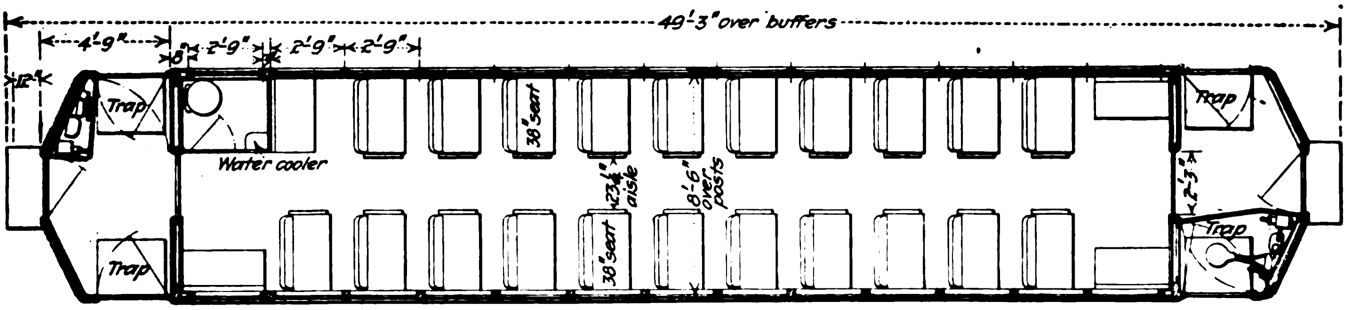
These cars are mounted on Brill 27-M. C. B. high-speed interurban trucks and the bodies are substantial. The underframing is of steel, with side sill angles 5 in. x 4 in. x ⅜ in., extending the full length of the car body without interruption at the central platform. Sub-side sills of 3½-in. x 3-in. x ⅜-in. angles extend from each side of the central platform to the end. There are two 5-in., 11½-lb. channel center sills and also crossings of 4-in., 5¼-lb. channels securely riveted and gusseted to the side-sill angles and channel center sills.

In the upper framing the main side posts between windows are of two 1½-in. x 2-in. x 3/16-in. tees, with inside and outside steel cover plates, while the intermediate posts between the two lower sash of each window are of 1½-in. x 2-in. x 3/16-in. strips encased in wood. The corner posts and the posts of the central platform are a combination of 1½-in. x 2-in. x 3/16-in. tees and an angle 2 in. x 1½ x ¼ in., with suitable steel cover plates. The sides are covered below the windows with 3/16-in. steel sheathing riveted to the underside of the angle side sill and also to the belt rail, side and corner posts. Attached to the top of each side post and supporting the plain arched type of roof are pressed steel U-shaped carlines, fitted with a wooden strip for the attachment of the roof boards.



BARCELONA CAR—THREE SINGLE SASH IN THE VESTIBULES DROP INTO POCKETS

The single upper sash of each double window is stationary and fitted with opalescent glass. The lower two sash are arranged to raise. In the end vestibule the sash drop into pockets behind the dasher. A motorman's cab is partitioned off at diagonal right corners of the car. These have swinging doors to the motorman's right, for entrance and exit, and another at his back, making the cab accessible from inside the car. As the side door is glazed in the upper panel, it is provided with a pantasote curtain. A stirrup-type step is installed below for the use of the motorman.



PLAN AND SEATING ARRANGEMENT OF THE HERSHEY CUBAN RAILWAY CAR

The side doors at the central platform for entrance and exit are manually operated by levers located at the conductor's position. Each door slides into a pocket next to the central platform post and is separately operated in conjunction with a sliding step. A feature of the door and step mechanism is that the doors cannot be opened until the sliding step is fully out, thus eliminating the possibility of step accidents. A single sliding door is located in the partition between the second-class compartment and the central platform, which separates this compartment from the rest of the car in a rather exclusive manner.

In the second-class compartment four reversible-back transverse seats on each side of the aisle and a semicircular seat against the front vestibule provide seating accommodations for twenty passengers. All reversible seats in this compartment are of the Brill "Winner" type, with spring cushions upholstered with rattan. The interior of the second-class compartment is furnished in mahogany. The third-class compartment is equipped with slat seats. There are five reversible-back Brill "Winner" type seats on each side of the aisle and a longitudinal seat for five passengers on each side next the central platform, together with a circular seat for four passengers against the vestibule. In all, this provides seating accommodations for thirty-four third-class passengers and gives a total seating capacity for the car of fifty-four. By the use of the longitudinal seats next the central platform in the third-class compartment the placing of vertical and horizontal pipe railings is permitted. This arrangement also provides additional standing space when traffic is heavy.

The ceilings are of agasote and below the windows hardwood sheathing is used painted to conform to the interior finish of each compartment. These cars are equipped for multiple-unit operation and have pantograph-type trolleys.

Motor Cars for the Philadelphia & West Chester Traction Company

Ten cars of another center-entrance all-steel motor type were put into commission by the Philadelphia & West Chester Traction Company. The roofs of these cars are of the plain arch type, of ½-in. poplar roof boards covered with No. 8 canvas. The center entrance is provided with sliding doors of two sections, each sliding back into the body of the car. The doors, together with the single folding step, are operated by pneumatic mechanism controlled from the conductor's position on the center platform. The National Pneumatic Company's equipment is used for this purpose.

On each side of the center platform and on each side of the car there is a stationary longitudinal seat for two passengers. There is also a stationary seat for two persons against the vestibule window to the left of the motorman. A hinged longitudinal folding seat of cherry slats, when in use, extends across the doors on the closed side of the center platform. The reversible seats in the car body are also of the "Winner" type, upholstered in twill-woven rattan.

The side windows are fitted with double sash, the lower portions of which raise, and the upper sash, each extending across the width of two lower sash, are stationary. The three vestibule windows at each end drop into pockets and those in the center and at the right are provided with suitable sash racks which permit the sash to be held at various heights. The interior finish of the car is cherry, and the ceilings are of agasote, painted and decorated in accordance with the standard of the railway.

At diagonally opposite right-hand corners of the car body a motorman's cab is installed, entrance to which is made through a single swinging door to the motorman's left or the one to his right.

The underframe construction consists of angle side sills, 5 in. x 3½ in. x 5/16 in.; crossings of 4-in., 5¼-lb. channels securely gusseted to the side-sill angles and center stringers of 6-in., 10½-lb. channels. The side posts of the upper framing are of 1½-in. x 2-in. x 3/16-in. tees, extending from the side sill angles to the top rail and securely riveted to No. 14 pressed steel U-shaped carlines. Side sheathing and letterboards are 3/16-in. steel. Some of the principal dimensions are given in Table I.

TABLE I—DIMENSIONS AND WEIGHTS OF MOTOR CARS FOR PHILADELPHIA & WEST CHESTER TRACTION COMPANY

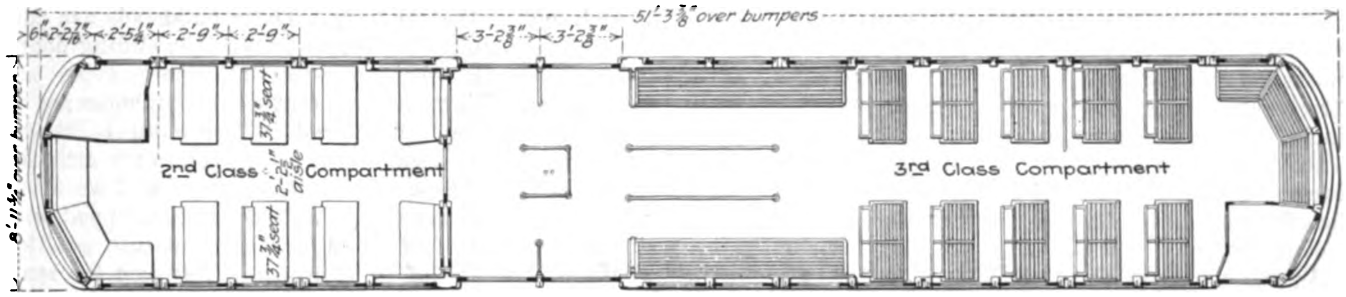
Length of car body over vestibule	46 ft. 3 in.
Length of center platform	6 ft. 9 in.
Width of car body over post	8 ft. 7 in.
Height from rail to top of floor	3 ft. 8 in.
Height from top of floor over trolley pole	8 ft. 9½ in.
Seating capacity	57
Weight complete	57,160 lb.
Type of truck	Brill 27-M.C.B.-2X
Wheelbase	6 ft.
Track gage	5 ft. 2½ in.
Diameter of wheels	33 in.
Journals	4¼ in. x 8 in., M.C.B.

Equipment for Electrified Hershey Cuban Railway

Hershey Central, where the vast plantation of the well-known Hershey chocolate and cocoa interests is located, is situated in Havana Province, midway between Havana and Matanzas on the north coast of Cuba. For several years the surrounding district has been served by the Hershey Cuban Railway, a 35-mile steam line which is now in the process of electrification and extension. With the completion of the electrification of this line, it is intended to maintain the service between Havana and Matanzas, a distance of 56 miles, for the transportation of sugar, local freight and express, as well as a multiple-unit train service on an hourly headway schedule. Including all spurs, sidings and extensions this railway will have some 80 miles of track when the proposed extensions are completed.

Accompanying illustrations show the type of car to be used, ten of which were ordered from this company. The cars have steel underframes consisting of side sills with 4-in. x 4-in. x 5/16-in. angles the full length of the body, to which 3/16-in. steel side sheathing is fastened, extending from the under side of the side-sill angle to the belt rail. The center stringers consist of two 6-in., 10½-lb. channels extending from buffer to buffer. Crossings are of 4-in., 5¼-lb. channels which are securely gusseted to the side sill angles and the channel center stringers. The upper structure is principally of wood with body and vestibule posts of oak. Ash and yellow pine are used for the other members.

The closed vestibule on each end is constructed with two windows and a swing-type train door. The windows have double sash, the top sash being stationary and the lower sash arranged to drop. Sash racks are included to permit holding the drop vestibule sash at any desired distance. The upper sash of the swing train door is fitted with double sash, the top one of which is stationary and the lower arranged to drop. There is also a swing door on each side of the platform. A hinged trap door folds up against the end of the car body when this door is open. Triple steps are provided on each side of

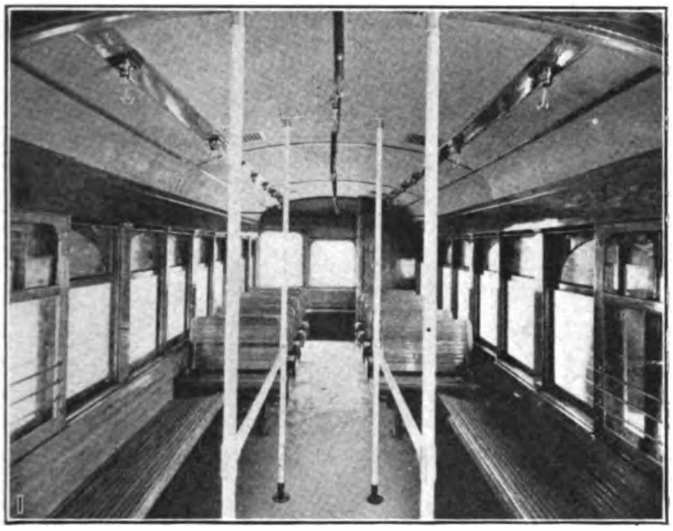


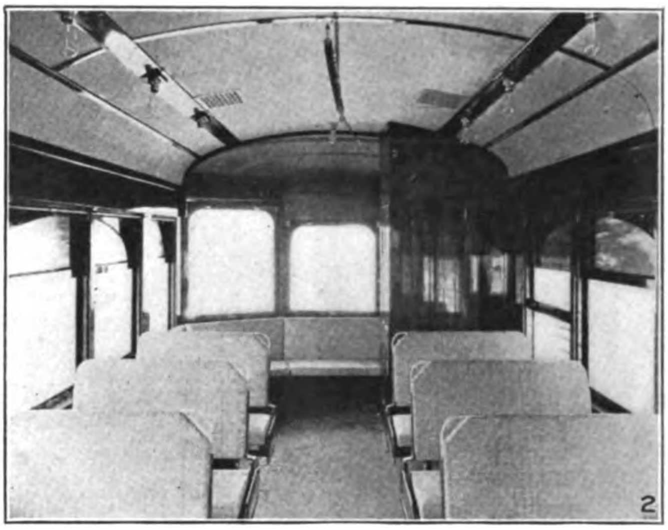
PLAN OF CAR FOR BARCELONA, SPAIN

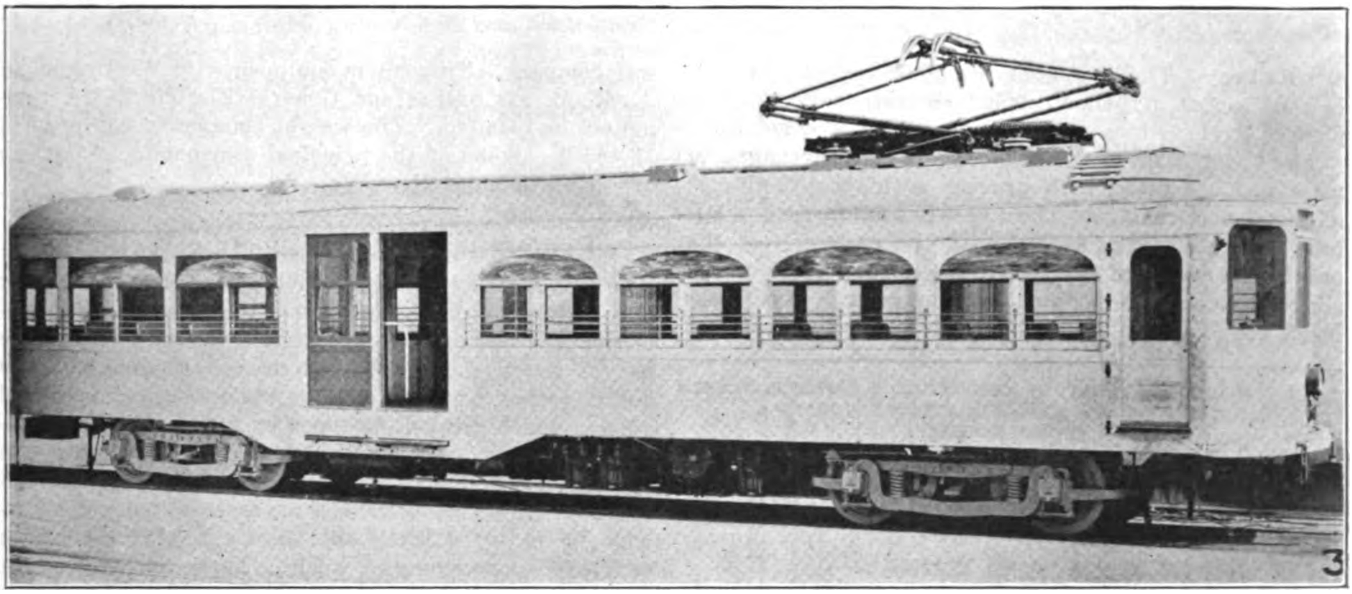
the platform. The height from the rail to the top of the first step is 14 in. and each of the other steps is 12 in. high. All vestibule sash and door channels are of mahogany. The top sash in the side windows are stationary and extend across the space of the two lower sash, which are arranged to raise. The upper side sash and ventilator sash are glazed with green opalescent glass.

The roof is of the monitor deck type extending over the hoods in steam coach style. The roof boards are of poplar and after being given a thick coat of paint, its entire length is covered with No. 8 canvas.

As will be noticed from the illustration, in addition to the two trolley poles and bases there is also mounted on the roof a pantograph type of trolley, and in order that the roof may properly support this equipment, it is strengthened with concealed steel rafters, which are so placed that they will relieve the strain of the trolley equipment. Inside the car body the floor is of the chan-arched type, filled in with flexolith painted in red to conform to the appearance of the inside finish. Below the belt rail on each side, the car is sheathed with agasote. The ceilings are also of agasote. Mahogany is also used for the inside finish, which is quite plain, conforming to what is known as "sanitary finish." No advertising moldings are used in the construction.







NO. 1—THIRD-CLASS COMPARTMENT IN A BARCELONA CAR. NO. 2—SECOND-CLASS COMPARTMENT OF CENTER-ENTRANCE CAR FOR BARCELONA. NO. 3—ALL-STEEL CENTER-ENTRANCE MOTOR CAR FOR BARCELONA

A continuous iron basket rack is placed above the windows on each side of the car for the storage of miscellaneous packages which the passengers may have. The seats are of the reversible-back "Winner" type, including pressed steel pedestals, wall and aisle plates. The aisle plate is capped with mahogany arm rests. In each of the four corners of the car body there is a small longitudinal seat. All seats are upholstered with twill-woven rattan.

In one corner of the body is a saloon, next to which is an alcove for a water cooler. At diagonal corners on each platform a motorman's cab is partitioned off.

The trucks are of the Brill 27-M.C.B.-2X type with 6-ft. wheelbase and 6-ft. 3-in. side-frame centers. The trucks are constructed for standard-gage track. They are constructed with solid-forged side frames and are equipped with 4¼-in. x 8-in. journals of the M. C. B. type. The weight of the car and trucks complete is 64,280 lb.

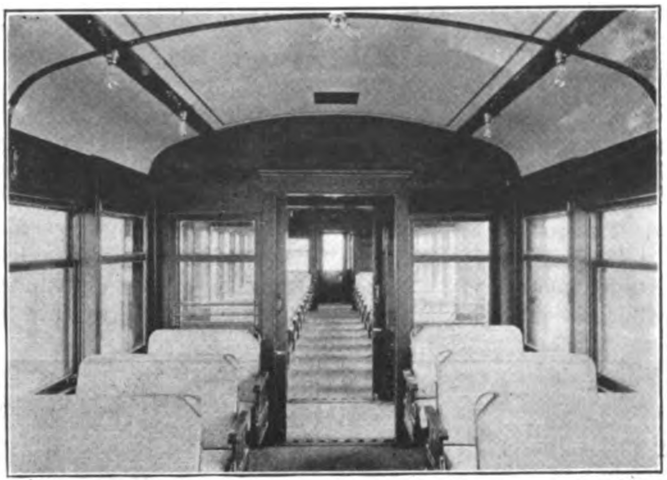
PHILADELPHIA & WESTERN CAR

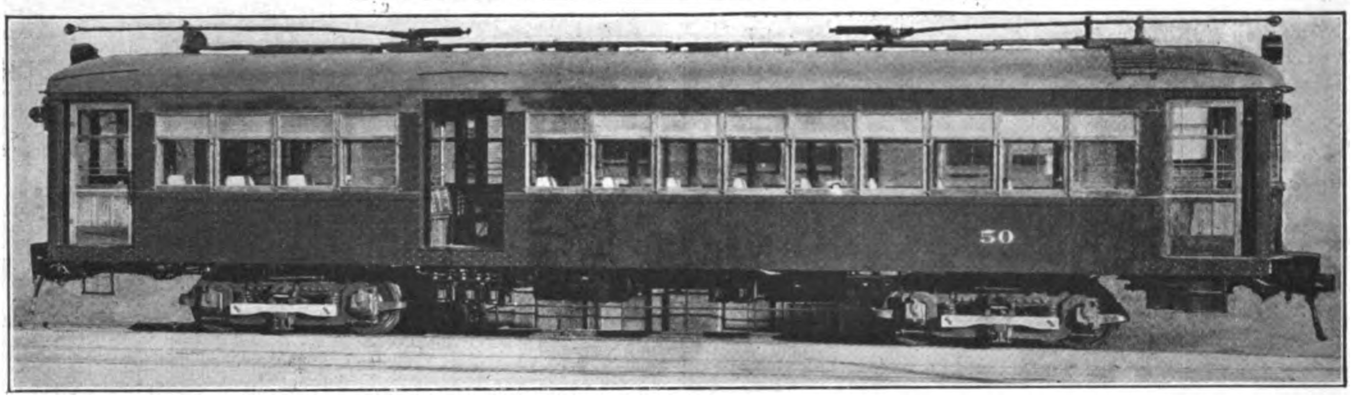
A 56-ft. all-steel passenger car has been purchased by the Philadelphia & Western Railway. The roof is of the plain arched type and is constructed of yellow poplar securely bolted to the pressed steel carlines and covered with No. 8 cotton duck.

The lower sash of the side windows are arranged to raise and are fitted with grooves with the "Renitent" all-metal post casings. The two windows in each vestibule have stationary sash. With the exception of the one in the center of each vestibule all doors are of the sliding type and are pneumatically operated. Steel bulkheads are placed on each side of the center platform and at each end of the car body. These bulkheads are constructed with suitable pockets to take the sliding doors.

The seats, of the reversible "Winner" type, are 40 in. long. Eighteen transverse seats upholstered in twill-woven rattan are placed in the main passenger compartment and eight of the same type in the smoking compartment. These seats have arm rests of an interurban and steam car design and are also equipped with single automatic foot rests which move into position with the reversing of the seat-back. Between the seats the aisle is 26¼ in. wide. On the center platform back against the partition are four folding wood slat seats, providing additional accommodations for eight persons. The seating capacity of the passenger compartment is thirty-six, the smoking compartment sixteen, making a total of sixty persons.

The interior finish, including doors, moldings, etc., is of mahogany, and agasote is used for the inside lining below the window sills and also for the ceilings. At the center-entrance door no steps are provided as the car is constructed so that the floor will come flush with the station platforms of the railway company. This car is equipped with Westinghouse A. M. M. air brakes and General Electric 263-A type motors and control. The weight completely equipped is 78,480 lb. Some of the principal dimensions of the car are given in Table II.





AT TOP, INTERIOR OF THE PHILADELPHIA & WESTERN RAILWAY'S NEW CAR. AT BOTTOM, PASSENGER AND SMOKING CAR OF THE PHILADELPHIA & WESTERN RAILWAY

TABLE II—DIMENSIONS OF ALL-STEEL PASSENGER AND SMOKING MOTOR CAR FOR PHILADELPHIA & WESTERN RAILWAY

Length of body over bumpers	56 ft.
Length over corner posts	44 ft. 8½ in.
Width of car body over posts	10 ft. 8 in.
Height from rail to top of roof	12 ft. 9¼ in.
Height from rail to top of floor	4 ft. 9½ in.
Truck centers	31 ft. 3 in.
Post centers	2 ft. 10 in.
Center door opening	3 ft. 6½ in.
Type of truck	Brill 27-M.C.B.-3
Wheelbase of truck	6 ft. 6 in.
Diameter of rolled steel wheels	34 in.
Journals	5 x 9 in. M.C.B.

Protecting Eyes of Electric Welders

A DEVICE developed by an employee of the Market Street Railway of San Francisco affords protection for the eyes of an electric welder without the use of the usual metal head dress. It consists of a board slotted near one end for the insertion of colored glasses which are held in place by a clamp. The operator holds the board in the proper position with his left hand, while his right hand manipulates the welding tool. In locations where an assistant would otherwise be required, with this device a single operator can safely carry on the welding operation because he has an unobstructed view in all directions. The board hangs from a strap around the operator's neck.

Introducing Economies in the Paint Shop

Cost of Painting Freight Cars Cut in Two by Use of a Painting Machine and a Saving of 40 per Cent Obtained in Cost of Painting Passenger Cars Through Simplifying the Method and Reducing the Labor Necessary

By W. G. Murrin
Assistant General Manager British Columbia Electric Railway, Vancouver

THE use of efficient methods in the paint shop speeds up work and yields economies that are most essential in these times of high prices. The experience of the British Columbia Electric Railway and the methods by which the costs of painting equipment were cut in half should prove interesting to those responsible for this work on other systems.

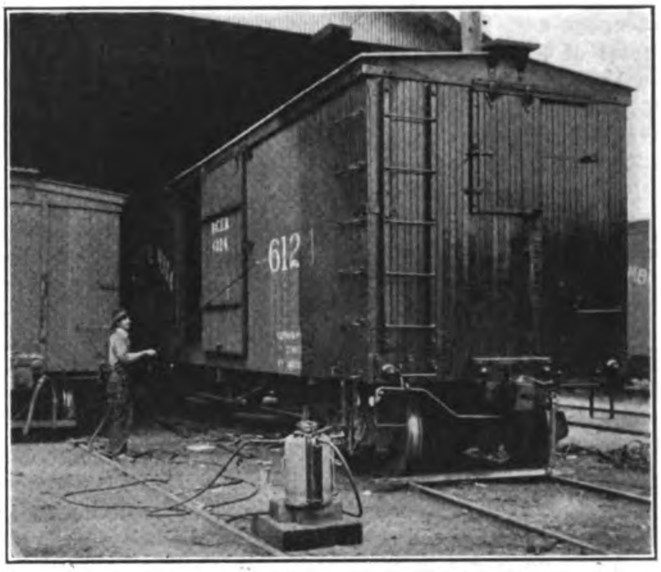
On the mainland division of the property, comprising 144 miles of city and 158 miles of interurban tracks, the mechanical department has the care of 250 city cars, seventy-three interurban passenger and express cars, thirteen locomotives, more than 400 standard freight cars and a number of service and construction units, making altogether 805 cars. These cars are maintained in four carhouses and one freight repair yard, with the general shops located in the carhouse at Prior Street, Vancouver. Painting is done to freight equipment at the "rep. track," in New Westminster, which is the center of the interurban systems, and to all other equipment in the paint shops at Vancouver, which have a capacity of six cars.

COST OF PAINTING PASSENGER EQUIPMENT DECREASED 50 PER CENT

Up to the middle of 1915, when the effects of the great war, combined with the peak of the jitney craze, brought the railway revenue down to the lowest point in the last ten years, passenger cars were painted about every two years, the whole car being repainted, as outlined in the schedule below. The need for stringent economy led the master mechanic and paint shop force to study the work more closely, as a result of which they developed a method of treating the cars which practically cut the cost of ordinary periodical painting in two. It was found that while cars require revarnishing comparatively often, the groundwork remains in good condition for about ten years, and so, until the varnish begins to show signs of peeling off, it can be used as a ground and need not be entirely removed at each time of painting.

Since the method was changed, six consecutive wage increases have brought the cost back to what it was under the old method, but in view of this the actual saving is the more noticeable. The old method used for passenger cars with city equipment was as follows: (1) Washing; (2) varnish removed where necessary; (3) sandpapering, puttying up nail holes, joints, etc., where repairs had been made and priming over new work; (4) two coats of body color; (5) lettering and striping put on; (6) two coats of varnish; (7) painting trucks, ironwork, etc. The average cost of this work per city car was about $28 for material and $46 for labor, making a total of $74. In some cases the cost reached $85 or more. Interurban cars were proportionately higher.

The method was simplified in the revision as follows: After washing, the body is sandpapered where necessary, such as around repairs, over scratches or where the varnish shows cracks; new work is primed. The light color is given one coat and the dark color touched up where necessary to an even base for the next coat, with one coat over new work. Then, after retouching of the gold-leaf work where required, one full coat of dark color is applied, with "cutting in" around the lettering and striping with a fine brush. Then follow the usual coats of rubbing and finishing varnish. The cost of this method averaged at first about $16 for material and $28 for labor, a total of $44. The interior painting was not materially altered, except to substitute paint for varnish in some places, particularly where the original natural finish was becoming discolored from age or the action of the weather.



SPRAY MACHINE USED FOR PAINTING CARS AT VANCOUVER

The color standards for city equipment are: Red roof; dark green on fascia, corner posts, dash, sides below belt rail and vestibule ceilings; light corn color for window posts; light red on sash, doors, vestibule wainscots, trussplanks, etc., and seat frames; drop black on moldings, and black asphaltum for trucks and ironwork.

For interurban cars, the corn color is replaced with dark green, with a little striping of vermilion on moldings. Locomotives have Pullman green, with yellow lettering instead of gold leaf.

To show the effect of rising labor rates, the following comparison is interesting:

AVERAGE COST OF PAINTING CITY CARS

Year	Material	Labor	Total
1915-16	$16.65	$26.10	$42.75
1916-17	14.70	30.75	45.45
1917-18	15.00	32.60	47.60
1918-19	15.65	35.25	50.90
1919-20	20.00	42.25	62.25
1920-21	20.30	53.60	73.90

Had the old method been still in use the last figure would have been about $125 per car. The saving, therefore, has been more than 40 per cent.

As most of the freight equipment was purchased in 1912 and 1913, repainting on an extensive scale was not begun till early in 1919. In July of that year a Dunn type-AA painting machine was purchased, with a capacity of 10 gal. The saving effected by this machine was such that it was paid for before twelve box cars had been completed.

FREIGHT EQUIPMENT PAINTED WITH MACHINE AT LESS THAN HALF THE COST

To paint and letter a 40-ft. box car by ordinary means required eight to twelve hours for lettering and about thirty-six hours for painting, practically all of this work being done by a first-class freight-car painter. The average cost for material was $18.50 and labor $27, a total of $45.50 per car. The standard color is green, with lettering in white lead put on with stencils. About 6 gal. of mixed green, 1 gal. of red roof paint and one-half pint of white lead were used to a car.

After a few cars had been done with the machine and the men had acquired experience in operating it, it was found that better work was being done with a gallon and a half less paint per car. The average time for applying the green paint on all four sides was about two hours; one hour was plenty for the roof, and the time for lettering was about eight hours. The machine does not require a regular painter and can be operated by a brush hand. The actual cost of the first twenty-four box cars done with the machine was $14.55 for material and $6.80 for labor, a total of $21.35 per car. The saving is therefore about 51 per cent.

The accompanying photograph shows the machine in operation, and an idea of the rapidity with which the work is done can be obtained from the fact that while the photographer was changing plates and taking three exposures the end and portion of the side shown was sprayed. The paint is laid on in two coats, the amount to a coat being determined by the distance from the surface at which the nozzle is held. Rough spots, cracks, nail holes, etc., are penetrated more thoroughly than can be done with the brush, and the finish is all that could be desired. At first some difficulty was found from the spray being carried by air currents, till all the surrounding "scenery" was being painted, as well as the operator, but experience has enabled the reduction of this trouble to a negligible amount. As already stated, the actual amount of paint used is less than with the brush. A flat car will require about ½ gal. of paint and a quarter of a pint of lead. One hour is required with the machine and four and a half hours for stenciling, the total cost being about $8.

The machine is operated by compressed air at 60 lb. pressure, supplied from a pipe line through a feed valve, with outlets convenient to the painting track. In order to avoid clogging of valves and atomizer it is better to clean out the machine after using, so the work is arranged so as to keep the machine in operation all day, a sufficient number of cars being done at a time, thus reducing the extra labor for cleaning the machine to a minimum per car.

The success attained in painting cars has suggested the use of the machine for painting shelters and other structures along the right-of-way, such as telephone booths. This will probably be tried during the present summer.

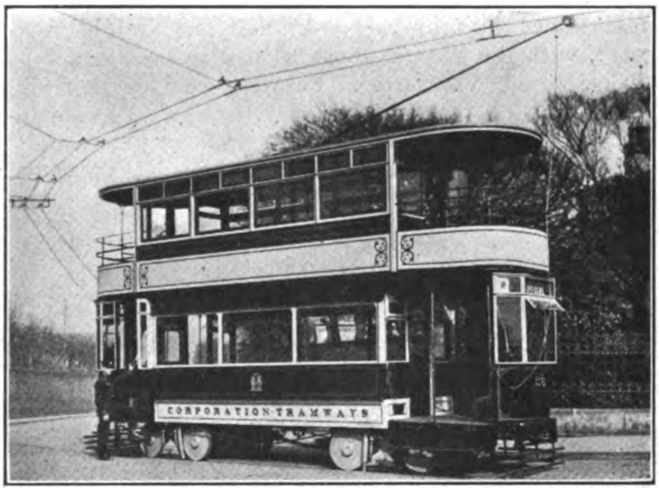
Electrification at Edinburgh

Gasoline Motor Buses and Electric Railway Cars Replace Cable Operation—The Choice Was Determined by Traffic, Power and Price Conditions

THE ELECTRIC RAILWAY JOURNAL of Oct. 2, 1920, contained some interesting comparisons of electric car and gasoline motor bus costs presented by R. S. Pilcher, tramways manager Edinburgh Corporation Tramways. The Edinburgh problem is that of superseding the cable system by a combination of electric railway and motor bus routes which will give the city the most effective transportation at lowest over-all cost. The installation of buses was begun in 1919 on some of the northern cable routes, where the track was in the worst condition. In a report made to the Municipal Council on April 2, 1921, Mr. Pilcher goes into detail concerning future work. This report is abstracted herewith.

CARHOUSE, SHOP, LINE AND TRACK ESTIMATES

Mr. Pilcher first explains what has been done in the way of installing electric cars and buses, and to care for the electric cars he recommends a forty-car addition to the Leith carhouse at a cost of £23,953 (about $96,000 at $4 to the pound) and alterations at the Shrubhill shops for the pit accommodation, etc., of thirty cars at a cost of £9,466 (about $37,900).



SAMPLE REBUILT DOUBLE-DECK CAR, SHOWING VESTIBULING AND OPEN PORTIONS OF UPPER DECK

For all of the first section, except Leith Walk, span construction, including the use of rosettes, is recommended. The width, 69 ft., of Leith Walk, however, suggests the use of center-pole construction in harmony with the construction already in use on the absorbed Leith Tramways. These poles would be used also for lighting fixtures, the existing lighting standards being replaced. The estimated cost of 4.3 miles overhead line, including section boxes, is placed at £19,989 ($80,000).

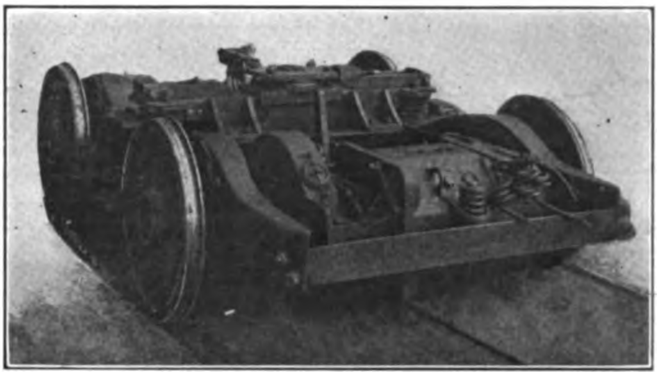
Although the rails on this section weigh only 83 lb. per yard, while the latest British practice calls for 105 lb. and more, Mr. Pilcher recommends their retention, provided the rail joints are in good condition, and that these joints be bonded and welded. The cost of this work for 3.4 miles of route is placed at £1,600 ($6,400) a mile. It is noted that the use of the Dicker electric weld on 1,550 yd. of track on this route was very successful, despite the worn condition of the rails, and that the cost of entirely renewing the track would be £27,000 ($108,000) per mile of route.

In view of the fact that the penny or short-haul riders of Edinburgh constitute 25 per cent of the traffic, it is not desirable, says Mr. Pilcher, to have a double-deck car seating more than sixty passengers and over 31 ft. long, as a larger car would have too many stops to permit a satisfactory rate of speed. For suburban traffic, a larger car can be considered when the time comes. Because of the climatic conditions, the upper decks of all cars should be covered, but open seats for four passengers could be left at each end. The ventilator windows should be arranged to open horizontally instead of vertically to insure better ventilation. Not only would Mr. Pilcher finish the lower saloon in teak but he also suggests the rather novel (in Great Britain) installation of upholstered cushions and back rests of leather or leather substitute, the usual practice being along less comfortable lines.

Another departure from current practice would be the spacious platforms—these being 6 ft. 1 in. long—inclosed vestibules and front exits with folding gates and steps operated by the motorman. These front exits are intended only for use at terminals and busy stopping places.

The bodies would be mounted on single trucks of long wheelbase, the journal boxes being fitted with links to give a certain amount of play to the axle when rounding curves. Two trucks of this type and with a 7 ft. 6 in. wheelbase are already in use on the Leith electric lines. Two distinct brakes are suggested: (1) Ordinary hand wheelbrake with Ackley attachment; (2) magnetic track brake operated from car motors acting as generators. An additional power track brake would be used in later operation of steeper lines.

REBUILT DOUBLE-DECK, DOUBLE-TRUCK CARS WILL ALSO BE USED



PRESSED STEEL WELDED MOTOR TRUCK WITH INTERPOLE MOTORS FOR EDINBURGH CARS

Where possible, Mr. Pilcher recommends the reconstruction of top-cover cable cars at a cost of about £300 ($1,200) each to the style illustrated. These cars also happen to be exceptionally light. A trial has already been made of refitting the existing cable trucks for electric traction. The wheels have been increased from 22 in. to 24 in. diameter, stronger axles have been installed, the spring suspension has been altered and the journals have been equipped with roller bearings. The cars have been equipped with two 27-hp. interpole, self-ventilated motors. The illustration on page 12 shows this car.

The electrical and mechanical equipment of this sample car weighs only 7,668 lb. compared with 13,492 lb. for that of the like equipment on an electric car of the Slateford route. The sample car complete weighs 18,928 lb., which is 5,216 lb. less than the single-truck electric cars on the Leith Lines. The motors used are stated to be of the safety car type. Tests of the sample car show a maximum running speed of 17.5 m.p.h. when operating on the level and 11.5 m.p.h. on a 5 per cent grade.

To operate the first section forty-seven cars will be required. Mr. Pilcher suggests that bids be asked for

CORPORATION MOTORS

EDINBURGH CORPORATION MOTOR BUS CLIMBING THE MOUND, THE FIRST CABLE ROUTE IN EDINBURGH TO BE ABANDONED. SCOTT MONUMENT AND PRINCESS STREET IN THE BACKGROUND sixteen new cars and that thirty-one of the existing cable cars be converted. The cost is estimated as follows:

16 car bodies at £1,500 each	£24,000 ($96,000)
31 cable cars with new top covers, to be converted, £300 each	9,300 ($ 37,200)
45 electrical and mechanical equipments at £1,400 each	63,000 ($252,000)
	£96,300 ($385,200)

The third item includes new trucks for sixteen cars and altered trucks for thirty-one cars.

On certain other routes the motor bus is considered more suitable so long as the present prohibitive prices of track continue. In conclusion, Mr. Pilcher summarizes the chief reasons why electrification should be proceeded with as soon as sufficient power is available, namely, greater reliability of service, through running to the neighboring city of Leith and lower over-all cost than the cable system, despite additional capital requirements.

Germany Sticks to Single Phase

Federal Railway Administration Has Never, Even Temporarily, Considered Any Other System—Sweden Is Extending Its Single Phase Lines

ACCORDING to the *Deutsche Allgemeine Zeitung* for May 14, the German Federal Railway Administration has denied that it is considering any system other than the single-phase for its railway electrification. Commenting on a contributed article in the issue of this paper for March 5 in a statement which is reported to be official, the *Zeitung* says, in part:- "The German Federal Railway Administration has always considered the single-phase system as the only one possible for its main lines and has never, not even temporarily, considered any other. A similar stand was taken previously by the individual state administrations. All existing federal main lines are a.-c. operated, and only this system will be used for any new lines. Hence, any international congress is not necessary. Last February there was a meeting of representatives of the federal lines and those of private lines, but its only purpose was to solve the question of current supply."

Sweden is also extending its single-phase lines. According to F. Overholm, chief electrical engineer, Swedish State Railways, there were in Sweden in May of this year 260 miles of electrified railroads, of which 240 were single phase and 20 were direct current, and the extensions during the remainder of this year, all single phase, will amount to 140 miles.

New High-Voltage Line in Arkansas

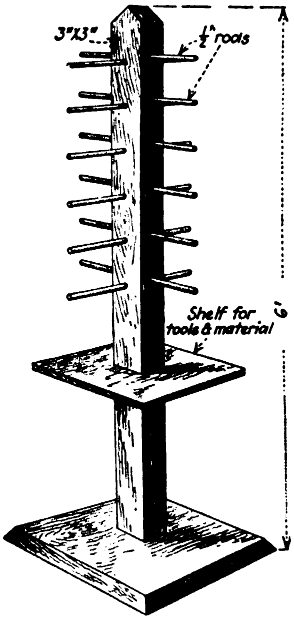
THE Arkansas Light & Power Company of Pine Bluff has started work on the construction of a 33,000-volt line from its substation at Stuttgart to the substation of the Arkansas Utility Company at Clarendon, a distance of 20 miles. The line will cost $60,000 and is being built by William Crooks, engineer and contractor. No. 0000 steel aluminum strand will be used with R. Thomas & Sons No. 3,058 insulators and Moloney transformers. White cedar poles are to be used, except where the line crosses the White River. The 1,000-ft. span across this stream will be suspended from two 90-ft. steel towers. It is expected that the work will be completed by July 15. The Arkansas Utility Company will distribute the electricity at Clarendon, Brinkley and Cotton Plant. The Arkansas Light & Power Company will generate the electricity at its plants at Pine Bluff and Picron, from which lines extend to other communities. The Arkansas Light & Power Company also operates stations at Russellville.

Using Lye to Remove Old Insulation

In Reinsulating and Repairing Old-Type Field Coils an Indiana Railway Facilitates the Removal of Old Insulation and Tearing Down Coils By Use of Lye

BY J. E. HESTER
Master Mechanic Union Traction Company of Indiana, Anderson, Ind.

THE Union Traction Company of Indiana has twenty quadruple equipments of Westinghouse No. 85 motors in service. This type of motor has wire-wound field coils and, due to insulation breakdowns, it has been found necessary to tear them down and reinsulate them a number of times during the twenty years of their active service. In this work soaking the field coils in a strong solution of lye for several days has been found to loosen the old baked insulation, which can then be readily removed. After the insulation has been taken off the wires, the coils are allowed to dry and are again reinsulated by hand, with the aid of a type of rack shown in the accompanying illustration. The work of reinsulating the coils is necessarily done by hand and a laborer can insulate two of these coils a day.

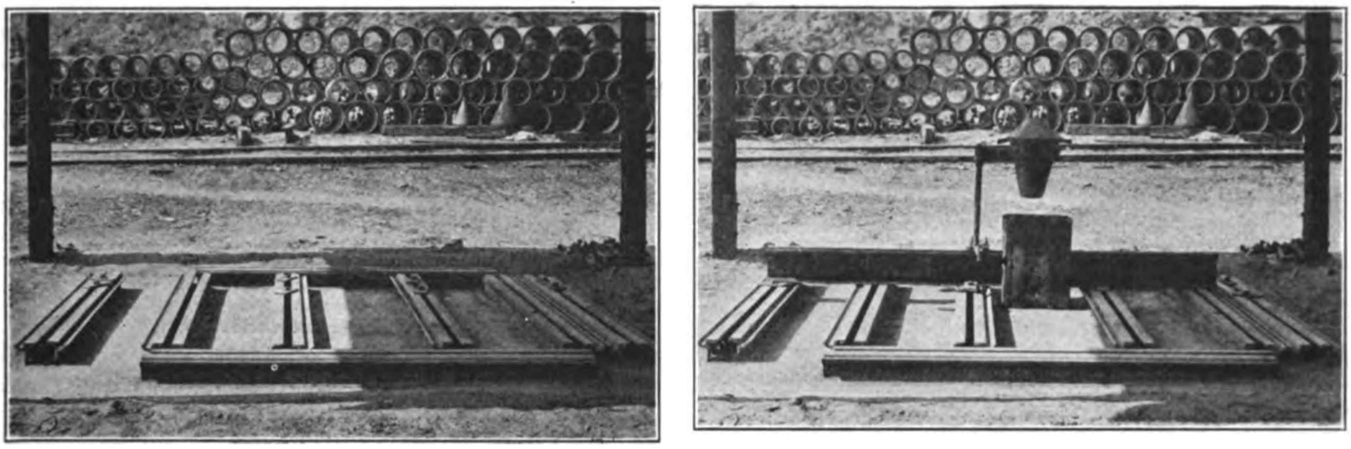


VERTICAL RACK FOR USE IN REINSULATING FIELD COILS

In re-forming the coils the wire is first given a coat of linen tape and the wires are then reassembled by hand in as nearly their original shape as possible, after which a coat of cotton tape is applied. The coils are then dipped and baked, after which they are put into a forming press to restore them to their original shape.

The forming press is a homemade affair, constructed of second-hand material found on the property. The base consists of a 20-in., 70-lb. steel I-beam, to one end of which an air cylinder is fastened. To operate this press it was necessary to have a piston travel of 23½ in., and in order to obtain this long travel two 12-in. air-brake cylinders were welded together. The form used for reshaping the coils is made of cast iron and bolted to the opposite end of the I-beam. It is connected to the air cylinder by the 1-in. x 6-in. pressure bar with a ratio of 2 to 1. Air for operating the mechanism is secured from a convenient air-testing bench, and a pressure of 100 lb. per square inch is used.

After the coils have been properly formed they are again put in the baking oven and given another baking, as the previous baking was only preliminary and the coils were but partly baked. After this final baking, additional insulation is applied and the leads are soldered in place. By this method it is found that the coils are restored to their original condition for a very small cost as compared with that of new coils.



TWO VIEWS SHOWING ACTUAL APPEARANCE OF ATLANTA'S THERMIT WELD PLATFORM

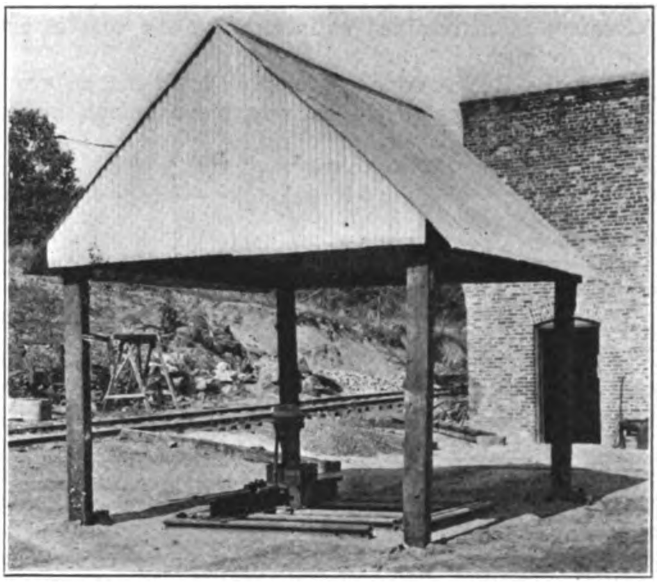
Building Frogs in Atlanta

Experience Shows that a Good Welding Platform Is Most Essential to Insure the Careful Alignment of Parts

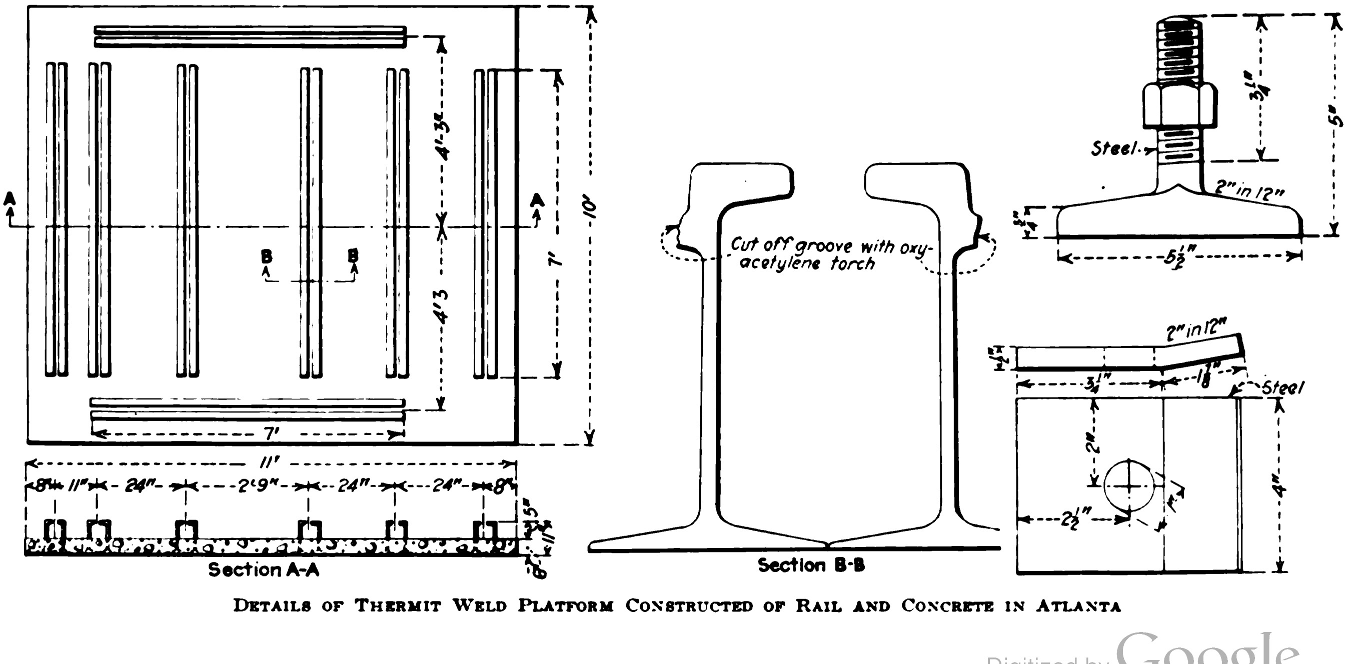
FOR more than a year now the Georgia Railway & Power Company, Atlanta, Ga., has been building crossovers and frogs by the Thermit process in cases where one or two frogs have gone to pieces in a crossing the rest of which is apparently good for several years. The company reports that there has been uniform satisfaction in this work. Records indicate that, in the case of the welding of frogs, the cost has been about one-third of the cost of a new frog ordered especially to take the place of the one which had given out.

The first requirement, however, to make good frogs is that there shall be a good platform upon which to build them, so that the various parts which are to be welded together will be aligned accurately and held in place rigidly while the welding is being done. Accordingly, the ways and structures department, under the direction of C. A. Smith, superintendent of roadway, has constructed a special platform, housed under a roof, for this purpose. An accompanying drawing indicates the details of this platform, with the type of clamp used also shown. It is seen that this is constructed by the use of old rails imbedded in concrete and the platform gives excellent satisfaction. Accompanying photographs show the platform installed and a rail on it ready for welding.

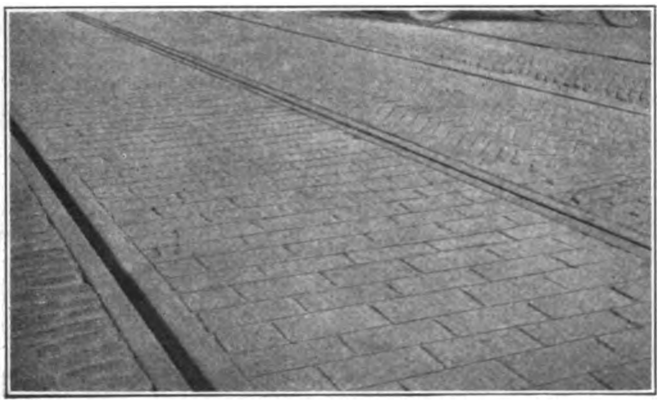
Another illustration shows the entire installation with the roofing for protection against weather.



ENTIRE WELDING INSTALLATION WITH ROOFING FOR PROTECTION AGAINST WEATHER



DETAILS OF THERMIT WELD PLATFORM CONSTRUCTED OF RAIL AND CONCRETE IN ATLANTA

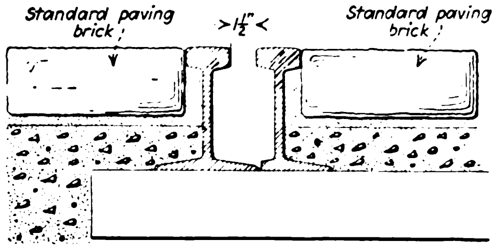


New Brick Crossing in Little Rock

Maintaining Brick Crossings

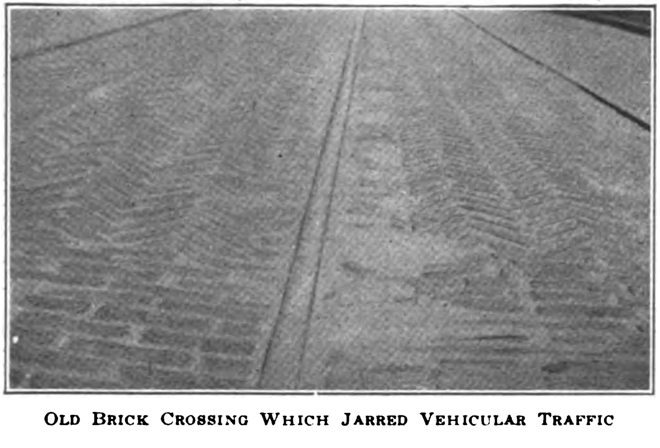
IN MANY cities brick paving is used between the car tracks, and where this kind of paving is used with T-rails and the track is crossed by heavy vehicular traffic the usual result is a wearing away of the bricks next to the rail until such a state is reached that automobilists swear at the street railway company. If the pavement is maintained satisfactorily, the cost is exceedingly high.

In Little Rock, Ark., this trouble has been an ever-present annoyance to the railway management, but a satisfactory scheme has now been devised so that in the future such crossings, when once repaired, will stay that way.



Old T-Rail with One Flange Cut Off, Installed as Protection on Brick Crossing

Old lengths of T-rail have had one flange cut off by an oxyacetylene torch, so that they may be set in the pavement on the ties with a 1½-in. spacing between the edges of the wheel rail and the guard rail thus installed, leaving this 1½ in. as a flangeway. An accompanying sketch shows the relative arrangement of the two rails. Standard brick is then laid directly against this inside guard rail as well as the outside rail, so that the finished crossing is absolutely level and smooth except for the 1½-in. flangeway space which remains. This provides a very satisfactory crossing for vehicular traffic, and the one installation which has so far been made in Little Rock indicates no tendency toward deterioration at all.



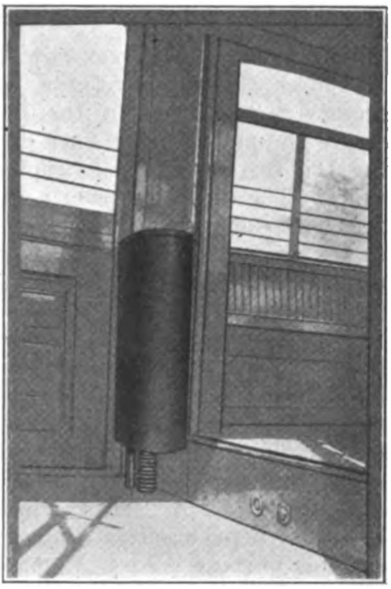
Old Brick Crossing Which Jarred Vehicular Traffic

The change has been so noticeable that there have been many freely offered commendations of the railway company for its efforts in this direction.

Accompanying photographs show the typical crossing before treatment and the crossing which has been built as described herewith.

Effective Air Sander

PARTLY, at least, as a result of the recommendations of its safety committee, the Chattanooga Railway & Light Company has been equipping its cars with air sanders. In arriving at a decision as to the type of sanders to use the company paid particular attention to a study of how to keep the sand always dry. Previous experience had indicated that sand boxes under the car or under the front seat and resting on the floor were very apt to have the sand in them made wet by water thrown off by the wheels. The accompanying illustration shows the sand box finally decided upon and now being installed upon the cars of this company. This sand box is metal, shaped very much like a controller box, and is mounted about 5 in. or 6 in. above the floor of the platform. The usual air pipe leads to the box at the bottom and a flexible coiled wire sand pipe about 2 in. in diameter carries the sand to the point in front of one wheel where it is desired. Experience so far with this installation has proved that the sand is always dry, and the company is satisfied with this installation. In some cases there has not been enough room to place the sand box on the rear or bulkhead side of the platform and it has been necessary to mount it at the left of the controller. This necessitates, of course, a much longer sand pipe from the box to the discharge point above the rail, in some cases making a pipe as long as 4 ft. or 5 ft., but this apparently has not diminished the effectiveness of sand delivery as needed.



New Type Sand Box Installed at Chattanooga

The May issue of the *Monthly Labor Review*, published by the United States Department of Labor, is devoted very largely to the publication of statistics of wages and hours of labor in the different industries, among them the steam railroad industry and the electric railway industry. The steam railroad statistics are based on figures compiled by the Interstate Commerce Commission and the Bureau of Railway Economics. The electric railway figures show wages paid on a number of properties on Dec. 31, 1920, and are from the *Motorman and Conductor*.

Pennsylvania Association at the State Capital

Pertinent Addresses Were Presented by Philip H. Gadsden; W. D. B. Ainey, Chairman, and Dr. F. H. Snow, Engineering Department of the State Commission; T. L. Montgomery, State Librarian, and D. N. Casey, Field Director State Chamber of Commerce — President T. B. Donnelly Re-elected

THE Pennsylvania Street Railway Association held its annual meeting on June 16 and 17 at the Penn-Harris Hotel, Harrisburg. The topics considered included an address by Philip H. Gadsden, president American Electric Railway Association, and papers covering personnel work, public relations, one-man cars, street railway history, helical gearing, automobile hazards and snow removal.

In his opening remarks President T. B. Donnelly, claim agent West Penn Railways, pointed out the complication of electric railway operation imposed by the automobile from the standpoints both of competition and accident hazard. He also paid a tribute to the association for the service rendered to its members in assisting them in solving their common problems.

PHILIP H. GADSDEN SPEAKS

Mr. Donnelly then introduced P. H. Gadsden, president American Electric Railway Association, who outlined the electric railway situation and suggested four remedies for present ills. First, he said, the real trouble is not inadequacy of rates, but lies deeper than that, although that is a factor. The "heavy hand of regulation" has been laid on the transportation and other utility business as on no other. Prices in other lines ran riot, and while high prices were secured in other industries the utilities languished financially. During the war electric railways, at a loss, carried highly paid workers to plants operating at a high profit. They should not be expected to sell their goods below cost.

The financial plight of the electric railways is due, in part, to the devotion of managers to giving good service to the neglect of the commercial and financial sides of the business, whereas in other activities executives give large attention to the selling end. Thus the 5-cent fare, inaugurated largely for historical reasons, was allowed to stand because the economics of transportation production did not receive proper attention. It was assumed that an unlimited quantity of the product could be sold at a fixed price, in defiance of economic laws. Obviously some kind of "metered service" must be furnished, such as is supplied under a zone-fare system.

From now on the commercial instinct and class consciousness must be developed, we must "go to some school of salesmanship." The industry has "arrived," it has become stabilized; the war taught that electric railway transportation is essential and lies at the basis of industry. Now electric railway credit must be re-established, not by individual properties but as a whole, because the investing public has lost confidence in this field for investment. This is made more difficult by the ease with which municipalities can issue tax-exempt securities, which to persons of large income are more attractive than any securities which can be put out by electric railways at much higher rates of interest.

The result of all this is that railways cannot make needed repairs. The public then becomes irritated with the resulting unsatisfactory service and is inclined to consider municipal ownership as the way out. Thus while political policies of government are opposed to such ownership, the fiscal policies favor it. As much municipal expenditure is for unproductive enterprises, if municipalities can borrow money for public use with tax-exempt securities, much of the country's capital will be deflected from utility as well as industrial enterprises.

Among things that can be done to restore electric railway credit the following may be mentioned:

1. The real value of the properties should be definitely and officially established.
2. A system of rate regulation should be established under which the rates shall be flexible and quickly responsive to changing conditions; presumably some kind of a service-at-cost system.
3. Closer fundamental relations between the railway management and the public and employees must be fostered.
4. Publicity, in the large sense, must be persistently used to cultivate a personal touch with the car rider. This will be assisted by the campaign to be launched on July 8 by the Committee of One Hundred of the American Electric Railway Association.

PAPERS BY MESSRS. CASEY AND BOYCE READ

Daniel N. Casey, field director Pennsylvania State Chamber of Commerce, followed Mr. Gadsden with a paper on "The Street Railway and the Community." A paper prepared by W. H. Boyce on "Personnel Work" was then read by Secretary Henry M. Stine, in the author's absence. Both of these papers are abstracted elsewhere in this issue.

The reading of the above listed papers was followed by a brief general discussion, during which such points as the following were brought out: There is no one solution for all electric railway problems. For instance, the mere raising of rates of fare may defeat its own purpose by decreasing patronage. Obviously the purpose is to choose a rate commensurate with the service and with due regard to the convenience of the passenger in paying his fare. Improvement will be the reward of thorough analysis. Again, valuation procedure has yet to be put on a permanent basis to prevent a continual reappearance of the question. In the practical determination of value an element always considered is earning power, and this is inevitable. Great emphasis was laid on the fundamental necessity for getting capital from those to be benefited by the facilities for which it is to be spent. The future financing of extensions in particular should take this form. In many cases the assistance of municipal credit, which attracts money at lower interest rates, will have to be sought. This does not, however, involve municipal ownership. In addition a portion of the future financing of the railways must be drawn from earnings.

It was also suggested that many properties might benefit by a campaign of "cleaning your own house." For example, some railways may have cut service too far in their desire to meet expenses, and cases were mentioned where an increase in car-miles had brought more patronage.

JITNEY PROBLEM TO BE STUDIED

At the close of the discussion on the morning session papers C. L. S. Tingley, vice-president American Railways, called attention to the importance of studying the jitney problem for the purpose of insuring operating conditions which are equitable to all concerned. He applied the well-known phrase "Eventually, why not now" to the burdens which the buses must ultimately carry and he pointed out that their situation is similar to that of the electric railways during their development period. People were then so glad to get street railway service that they imposed few burdens on this promising transportation system. Later, however, the burdens became increasingly serious. Such burdens the jitney business cannot continue to sidestep indefinitely.

On Mr. Tingley's motion a committee to study and report on this subject was authorized. President Donnelly, in due course, announced the following appointments: Mr. Tingley, Douglas Ford, superintendent North Branch Transit Company, and Thomas Newhall, president Philadelphia & Western Railway.

FRIDAY MORNING SESSION

The first paper read at the morning session on June 17 had for its topic the one-man car. It was read by the author, C. D. Smith, superintendent Pennsylvania-Ohio Electric Company. The paper is abstracted elsewhere. This was followed by a talk by Dr. Thomas L. Montgomery, State Librarian of Pennsylvania, who, with the aid of lantern slides, traced the development of transportation from primitive times to the early days of the electric railway. His purpose was to furnish a historical background for an appreciation of modern transportation facilities.

The next speaker was C. K. McGunnegle, who read a paper entitled "Changes Necessitated in Operation Owing to the Automobile Hazard," written by M. T. Montgomery and himself, both of whom are assistants to the general manager of the Pittsburgh Railways. This paper is abstracted on another page.

The discussion on the above papers brought out the difficulty of comparing the maintenance costs of cars of different types and ages and the importance of standardizing on the parts of car equipment, track details, etc., especially those requiring frequent renewal. A digest of the discussion on the one-man cars, which was a feature of the Lake George convention of the New York Electric Railway Convention, held during the preceding week, was also given.

The final paper read was by W. H. Phillips, manager engineering department, R. D. Nuttall Company, on helical gearing. This was of a technical character and special lantern slides were shown to illustrate the characteristics and action of different types of gear teeth. An abstract of this paper also appears in this issue.

On motion of the nominating committee the following were re-elected to serve for the coming year: President, T. B. Donnelly, West Penn Railways; vice-president, C. B. Fairchild, Jr., Philadelphia Rapid Transit Company; secretary and treasurer, Henry M. Stine, Harrisburg, Pa.; members of executive committee, C. L. S. Tingley, American Railways; Gordon Campbell, York Railways; F. B. Musser, Harrisburg Railways; Thomas Cooper, Westinghouse Electric & Manufacturing Company.

A committee of manufacturer members was also appointed to enlarge the membership among supply men. The secretary was also instructed to send the greetings of the association to F. B. Musser, president Harrisburg Railways, who was in Edinburgh, Scotland, at the time of the meeting.

NOTABLE SPEAKERS AT BANQUET

The annual dinner of the association was held at the Penn-Harris on Thursday evening, with Mr. Tingley as toastmaster. He first called upon C. B. McCahill, president Pittsburgh, Harmony, Butler & New Castle Railway, to tell of the profit-sharing plan in operation on the latter's two properties operating in the Pittsburgh region. Mr. McCahill explained that a fourth of the companies' common stock is lodged with a trust company in a trust fund, the dividends being divided among the employees who have been a year or more in the railway service. Three out of seven of the directors of each of the companies are elected annually by the employees, and they have proved helpful in suggestions and in spreading the facts regarding operation among the men. A group insurance plan is also in operation, supplementing the required "Workmen's Compensation," and old-age pensions are in contemplation. The men like the scheme, they receive a substantial return, they are reasonable regarding wage adjustments and they endeavor to keep down the payroll and other expenses.

Dr. F. Herbert Snow, chief of the department of engineering, Public Service Commission of Pennsylvania, was the next speaker. He emphasized the principles of democracy, applying them to the regulation of public service, and deplored the efforts which had been made to abolish the public service commissions. These, he urged, are doing an essential work, and, while the legislation behind them may need some revision from time to time, the basis of their functioning is sound.

Mr. Gadsden then spoke, supplementing his address of the afternoon. He said that he had not intended to paint a gloomy picture in depicting the difficulties of public utility financing, for the industry is now seeing better days. The average fare has been increased by 50 per cent, and while this is much less than increases in materials and labor it is something. Expenses are decreasing, so that, with the co-operation of the commissions and the public, the long-deferred return to utility owners and bondholders ought to materialize. Electric railways have now "rounded the turn" and their condition is far different from that disclosed in the hearings of 1919 before the Federal Electric Railways Commission.

Hon. W. D. B. Ainey, chairman of the Pennsylvania commission, followed Mr. Gadsden. He expressed on behalf of his colleagues and himself a sympathetic interest in the solution of public utility problems. The commission has desired that equitable rates be provided for, but has been handicapped by contracts entered into by the electric railways when the eventual inadequacy of a 5-cent fare was not realized. Moreover, the commission has to operate within the provisions of the public service company law, which gives no jurisdiction over securities unless requested by the utilities.

Mr. Ainey credited the railway men with the exercise of initiative, which led to the solution of their problems. He felt confident now, as he had before, that the difficult problems ahead will be solved. The commission will co-operate with them and, as was indicated by the "Wilkinsburg decision," the legal rights of the utilities will be recognized. However, the commission will be embarrassed in its work in placing values upon utility property until some legal definition of "valuation" is agreed upon. All interests involved should strive to this end. Furthermore, too much dependence must not be placed upon law, for after all the appeal must eventually be made to enlightened public opinion, to the "heart basis" of constitutional rights. The local problems, also, are interwoven with national ones, necessitating a general public interest in their solution.

In closing, Mr. Ainey impressed on his hearers the fallacy of thinking of laws and political majorities in terms of the mass. After all, the operation of a law affects the individual primarily. While enacted by the majority, it lays its hand on the minority, whose rights are just as sacred as those of the majority.

The Electric Railway and the Community*

By Daniel N. Casey
Director Field Service Bureau Pennsylvania State Chamber of Commerce, Harrisburg, Pa.

The electric railway has been maligned and misrepresented, but it has persisted because it is a public necessity. Not long ago it was quite popular to condemn transportation systems, and there was a time when many deserved censure. Those days are done. Most street railway men now realize that they owe something to the communities in which they operate and to the men who aid them in functioning, as well as to the investors.

The community must have the street car and the street car must have the community. Their interests are mutual. The street railway, like the school and the church, serves the entire community. The banker who drives to his office in an automobile is able to serve a public ten times as large as he could serve otherwise because of the street railway. The clerks can work in the city, where wages are high, and live in the suburbs, where rents are comparatively low. Real estate values in the business districts are much higher because the cars bring to town thousands of people who could not do business there otherwise. Suburban property is more valuable because the cars make it accessible to the city. Residential property is increased in value because it is located near a car line. Even if a man always walks or always drives in his motor he derives a dollars-and-cents benefit from the street railway. The community has a big stake in the success of the traction company. It must see that there is an orderly development of this as well as its other democratic institutions.

ELECTRIC RAILWAY SERVICE IS FUNDAMENTAL

The street railway industry is the most important in any community because it makes all other industries possible. Take away the means of transporting the workman to and from the factories and the factories cease to function. So the manufacturer and his employees have an interest in the trolley lines.

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*Abstract of paper read before Pennsylvania Street Railway Association, Harrisburg, Pa., June 16, 1921.

Moreover, there is a social side of the local transportation, not only in that it produces a commingling of the various community factors, so essential to co-operative development and success, but if the transportation be not reasonably comfortable and adequate the impression upon the minds of the workmen may be the reverse of that which is highly to be desired in this period of stress. Although the treatment of the problem is primarily local, its scope is national because it is essential to the highly efficient industrial productivity through which the nation must carry out its program of reconstruction.

HOW THE CITIZENS CAN HELP

Both the store and the street car company must sell service; each is essential to the other and both are institutions integral to our community fabric. To promote the interests of the street car company, which in the end will help his business and aid in the constructive development of his community, the merchant can protest when drastic ordinances are proposed, when vehicular traffic is unjustly favored, when undue regulation of trolley companies is considered and when unfair advantage is taken of the street railway.

The citizen's work is most effective when it is united with that of others. Nearly every chamber of commerce has a transportation committee, which might well give heed to the street railway problem in general and to special problems as they arise. This committee should be advised of those points by the individual citizen as he learns of them and he should be prepared to assist the committee in its investigation and reports.

Last winter the Pennsylvania State Chamber of Commerce took a referendum among its membership as to whether the Public Service Commission should be granted increased authority to suspend rates pending a hearing. It was the opinion of the majority of the membership who answered this referendum that such authority should not be granted, and therefore our legislative bureau protested against the proposal. The bill was subsequently defeated. The voice of the State had spoken. It said that the utilities should not be further hampered.

The Chamber of Commerce of the United States appointed a committee on public utilities with regard to local transportation. The recommendations of this committee, submitted to the membership of the national chamber for referendum, were approved almost unanimously. The approval indicates that the broad-minded business man realizes the imperative necessity of retaining the vitalization and private ownership of street railway companies. These referendum results and the enthusiastic co-operation of many communities with the transportation companies show that the keen business man appreciates the problem and realizes that prosperity for one institution in the community aids toward prosperity for all. Very seldom now is there a disposition on the part of the public to cavil at the trolley company merely because it is a corporation. There is a better spirit and a heartier desire to help.

In nearly every instance the street railway has laid its cards on the table. It is here, a definite institution in our communities. It may have erred in the past, but let us not forget the pioneers who stretched the rods of steel into country formerly untapped and brought conveniences and comforts to the doors of those who seldom knew them and who forged communities together into a closer relationship. They have made us more American. Our work is with the railway of today in the constant developing of the twentieth century American city, and their work is with us for this common purpose.

Practical Personnel Work*

By W. H. Boyce

General Manager Beaver Valley Traction Company, New Brighton, Pa.

A DOZEN men engaged in personnel work would give as many definitions of this work. Tead and Metcalf define personnel administration as "the direction and co-ordination of the human relations of any organization with a view to getting the maximum necessary production with a minimum of effort and friction and with proper regard for the general well being of the workers."

Until recently no attention was given to the personnel of an organization. A foreman, superintendent or other official in charge was held to be the "whole works." If there was success, it was due to the foreman; if there was failure, it was his fault, as his superior held him responsible. The loss to industry through incompetence of foremen has been great. Later, the idea developed that employees have a share in success or failure and that all are necessary. That, in embryo, is "personnel." Personnel is a science, the fundamentals of which are possessed in some degree by all.

In this paper I shall deal with personnel along its applied lines, with frequent reference to methods tried and proved in a small organization, but applicable in part to a property of any size. The administration of personnel work on a small property is the general manager's responsibility. On properties large enough to warrant the organization of a personnel department, the head of that department should be a member of the president's staff.

WHAT PERSONNEL WORK IS

To me personnel work has meant: (1) Realization of the needs, a well-charted purpose and definite plans for progress; (2) selection of employees and fitting them into proper positions; (3) keeping the employees satisfied; (4) determination, from results, of correctness of purpose, plans and selection; (5) weeding out, changing about, building up; (6) analysis of everything having to do with the previously determined needs, plans and purposes.

While on a small property the personnel is the general manager's responsibility, it does not follow that he is personally to do all the work. He must gather about him a group of trained assistants to carry out the details.

The general manager must realize that it is not he who is in daily touch with the public but rather the trainmen; that trainmen, barnmen and shopmen have more to do with the actual selling of transportation than he has.

GETTING THE EMPLOYEE STARTED RIGHT

Personnel work begins with the visit of the applicant for employment. The man in charge of that department must have had a wide experience; must know that even in declining employment to the applicant he has an opportunity to make a good impression for the company. He should proceed to select his men on the basis of physical qualifications, intelligence, education, temperamental requisites, appearance, character, common sense, practicality and general personality.

It is the duty of the man in charge of employment to explain to the applicant the character of work to which he will be assigned, the hours of work, the rate of pay, the chances for advancement, the policy of the company toward the public and its employees, and the methods used in keeping a check upon and record of the actions of employees.

He "sells the job" to the applicant by creating an interest in it. An extreme case where this was not done was the following: On a certain railroad the president sent for an employee who had been in the service and engaged on one job for thirty-five years, to award him a cash prize and to compliment him on his continuous service. In answer to a question as to his duties, the workmen said that when a train came into the station he went along each side and tapped the wheels with a hammer. Asked by the president why he did this, he replied: "I'm darned if I know." The man had been drawing wages for thirty-five years without knowing what he was really paid for.

After the applicant has been accepted he is placed under the direction of a foreman or instructor, who has been properly trained as to his attitude toward the new employee. Instructors, especially those for trainmen, should realize that the greenhorn is in the same position as they were in when they entered the company's employ.

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*Abstract of paper read before Pennsylvania Street Railway Association, Harrisburg, Pa., June 16, 1921.

DEVELOPING MORALE IN THE ORGANIZATION

Personnel work develops an organization whose members have more than the wage-drawing habit. Its essentials are: (1) Careful selection; (2) proper instruction; (3) continual satisfaction; (4) consideration; (5) absolute justice to all; (6) placed responsibility; (7) supervision, continual instruction and job education; (8) supervisory and managerial vision.

On our property we have an employees' service code, which has been freely distributed publicly, and has produced good results. Our rate of labor turnover is small, and our list of applicants for trainmen positions exceeds 50 per cent of the number employed. Every employee planning to leave our service is first interviewed by the employment supervisor. If he is dissatisfied, an effort is made to remove the cause and to retain him in our employ. Our promotions are from within the organization, according to a charted promotion plan. Employees are additionally trained in their promotion lines. Since December, 1920, we have had but one trainman resign and were compelled to discharge but one, and that for discourtesy.

Through bulletins, letters to the homes of the men and talks we show them that their welfare and the company's welfare are so closely allied that they cannot afford not to be on the alert for the company's interest. We trust our employees and they trust us. We know them; they know us. Finally, it may be said that success is assured through applied personnel only when the proper attitude toward the employee is maintained from the head of the organization down.

Experience with the One-Man Car*

By CLINTON D. SMITH

General Superintendent Pennsylvania-Ohio Electric Company, Youngstown, Ohio

THE purposes of this paper are to point out the economies that have resulted from the operation of thirty-two Birney one-man cars upon the property of the Pennsylvania-Ohio Electric Company and to indicate the potential savings which are being realized from time to time. This type of car is being operated upon the New Castle and Sharon, Pa., lines of the property, and in addition twelve cars are in service on one of the lines of the Youngstown (Ohio) Municipal Railway, a subsidiary of the company. These cities, from the industrial standpoint, are chiefly notable for their steel mills. They have populations respectively of 50,000, 20,000 and 135,000.

INTRODUCING THE ONE-MAN CARS

The larger number of Birney cars used by this company are operated in New Castle, the car-mileage of the line using the cars being 71 per cent of the total New Castle District mileage. In New Castle there are some extraordinary features in connection with the use of the one-man car which do not exist in Youngstown and Sharon. Attention is directed to the fact that on practically every street upon which the Birney cars operate the clearance is approximately 6 in. between the car and an automobile parked along the curb line. This fact is worth consideration in connection with the reduction in the number of accidents which has resulted from the use of the one-man car.

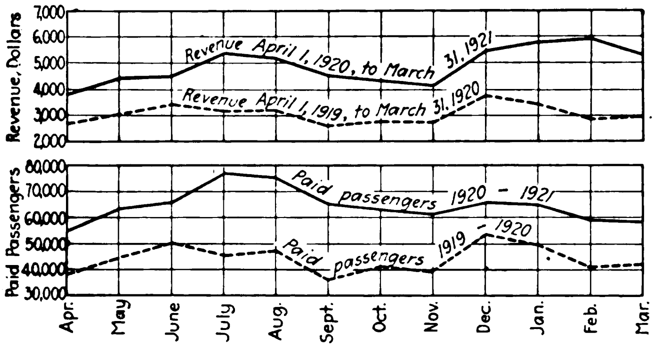

FIG. 1—DATA FOR EAST HILL LINE, SHARON, PA., EQUIPPED WITH SAFETY CARS

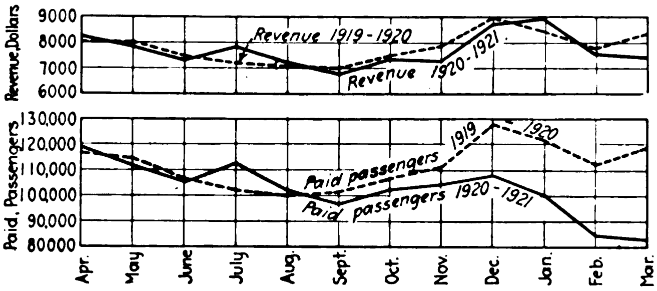

FIG. 2—DATA FOR VALLEY LINE, SHARON, PA., OPERATED WITH TWO-MAN CARS

In introducing the Birney cars in New Castle the company had to recognize: (1) that schedules were in effect that provided beyond question adequate service and that gave employment to seventy-six men on regular runs; (2) that the average length of ride was less than 1¼ miles and the maximum continuous ride was approximately 2 miles; (3) that there were severe grades on all lines, with a maximum of 9 per cent.

The first five cars were placed in operation in September, 1919, and provided a six-minute service where formerly a ten-minute service had been furnished, increasing the seating capacity by 84 per cent. Twenty-five additional cars were ordered and their use was gradually brought about in New Castle and Sharon. Some of the results secured, in the way of passengers carried and revenue received, are shown in the accompanying charts. In Fig. 1 data are given for the East Hill line, Sharon, from April 1, 1919, to March 31, 1921. A 7-cent fare was in effect in 1919 and up to Dec. 12, 1920. A 10-cent cash fare, with six tickets for 50 cents, became effective Dec. 12, 1920. Twenty cars were placed in operation on this line on April 21, 1920. For comparison, the results with the Valley line, Sharon, operated with two-man cars, are given in Fig. 2. This shows passengers and revenue from April 1, 1919, to March 31, 1921. The conditions in respect to fare are the same as those pertaining to Fig. 1.

The results of the safety-car operation show that in every instance during the first five months of 1921 a period of industrial depression, there has been an increase in paid passengers upon lines operated with one-man cars, whereas on the line in which the headway has remained unchanged and has continued to be operated with two-man cars there has been a decrease.

Relative to equipment expense, a special investigation showed that for the safety cars this is approximately 2¼ cents per car-mile, including inspection. As to power consumption, special tests showed that the one-man safety cars on one of the lines were consuming 1.26 kw.-hr. per car-mile for propulsion or 1.54 kw.-hr., including heating. These figures include all overhead losses.

In regard to the one-man car as a means of selling transportation, it is obvious that every manufacturer of or dealer in a marketable product must study and apply the principles of salesmanship if he is to have large sales. This applies not only to the sale of commodities in general, but also to the sale of transportation.

Although there are many factors involved in merchandising transportation, frequency of service is a fundamental one inasmuch as it has the greatest effect on increasing the riding habit.

As to advertising transportation, our company has, since the initial newspaper campaign to introduce the safety cars, used the backs of the transfers for advertising. For example, in New Castle the following is printed: "New Castle—50,000 population—served by Birney safety cars—frequent riding permits better service." In the Shenango Valley district we use the following: "Birney safety cars provide frequent service—frequent use permits better service."

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*Abstract of paper read before Pennsylvania Street Railway Association, Harrisburg, Pa., June 17, 1921.

The persistent use of the term "safety" in connection with the Birney cars has had much to do with the increase in the riding habit. The use of this term places an obligation upon the railways operating the cars and upon the manufacturers of the cars to adopt any improved equipment which will add to their general safety, making them as far as possible accident proof.

MAKING THE SAFETY CAR SAFER

We have made three improvements of the cars used by our company with the idea of increased safety and economy. As some severe grades have to be encountered on the property, we are now installing Peacock brake drums on the staffs of the hand brakes on all safety cars. This will permit the hand brakes to be used not only for emergency purposes but also will make them serviceable. The second improvement has been the installation of safety features on the brake rigging to prevent accidents due to failure at that point. The third is the installation upon all cars of the Lintern mechanical foot sander. This replaces at each end of the car one of the sand boxes formerly operated by air. It is operated by a pedal and guarantees the supply of sand whenever the supply in the box controlled by air has been exhausted.

A CAR THAT ATTRACTS RIDERS

Summarizing the features of the one-man car in respect to the sale of transportation, the following appeal to us is important: (1) The economical operation of the car permits more frequent headway; (2) the car, being the last word in modern mechanical electrical equipment, appeals to the people in the same manner as the modern department store and encourages the frequent use of the car; (3) appreciation of the fact that the car is fully equipped with safety devices tends to increase the number of rides per capita.

Finally as to accidents with the safety cars as compared with two-man cars our analysis indicates conclusively that there are fewer accidents with the safety cars. There has been a practical elimination of boarding and alighting accidents.

What Automobile Traffic Means to Pittsburgh*

BY C. K. MCGUNNEGLE AND M. T. MONTGOMERY

Assistants to the General Manager Pittsburgh (Pa.) Railways

PITTSBURGH'S narrow streets, steep grades and sharp turns are but the result of normal community growth without any conception of a definite plan. The result today is that the automobile traffic on these streets seriously interferes with the operation of street cars and presents a difficult problem for solution.

The central business district, known as "The Point," is extremely small, for, including street and alley space and wharves on the two rivers, it covers but 218 acres. Of this area the streets and alleys take up 63 acres and the railroad terminals 30 acres, leaving but 125 acres for commercial use. This area is but 30 per cent of the total as against an average for other cities of about 40 per cent. Traffic congestion is invited by the very arrangement of the streets, for practically none of them is continuous across the central business district. Many are on steep grades. Only one street is wide enough to permit two lines of vehicles between the car tracks and the curb.

Freight houses of the steam roads are so located on the North and South Sides and in the city itself that all trucking from one to the other must pass over the most congested city streets or take the long way round two sides of the triangle. As far back as 1910 vehicular congestion became so serious on the two main north and south streets, Wood and Smithfield, that the Pittsburgh Railways and the city of Pittsburgh entered into an agreement whereby the space occupied by one track on each of these streets was given over entirely to vehicular traffic. In 1918 the one-way traffic movement was extended to take in Penn and Liberty Avenues between the city and Thirty-second Street. However, the increase in the number of automotive vehicles is fast overcoming the relief at first experienced.

In 1915 there were 131,000 automobiles registered in Pennsylvania. In 1920 there were 600,000, of which number 50,000 came from Pittsburgh. In July, 1917, a count, made between 7 a.m. and 6 p.m., of the number of vehicles entering and leaving the central business district, showed approximately 47,500. A similar count made in October, 1920, indicated the total had increased to 60,519. Into this mass of vehicular traffic sixty-one routes of trolley cars are run by the Pittsburgh Railways system.

The cars vary in size from those of the single-truck type, taking up 216 sq.ft. of street space, to the double-truck type which take up 428 sq.ft. A street car rider occupies about 4.5 sq.ft. of street space. Ford automobiles occupy 60.5 sq.ft. and Packards and the larger types of touring cars occupy 94 sq.ft., while trucks occupy from 132 to 190 sq.ft. Actual counts have established the fact that but 2.5 people, including the driver, form the average passenger load in Pittsburgh for pleasure cars. It follows, therefore, that an automobile passenger takes up considerably more street room than the car rider.

The difficulty in enforcing traffic and parking regulations has been a most serious drawback. Pittsburgh streets are so narrow that any form of vehicle stopped at the curb throws all moving vehicles onto the car tracks. The resulting congestion recently became so serious that City Council passed new parking regulations whereby machines are permitted to stand for thirty-minute periods only and then only in certain districts. Parking is not permitted on any business street between 4:30 and 6 p.m. Enforcement of these regulations has been of material benefit, although a broken-down automobile, until it can be removed, will still cause the old-time congestion.

TOPOGRAPHY INVITES CONGESTION

The topography of the country limits the number of highways interconnecting the surrounding towns. Almost all of these carry car tracks and for years the railway has maintained many of the miles of paved roads in this district. Naturally, all kinds of vehicular traffic is attracted to these roads and the cars, though miles outside the city limits, are subject to more or less interference. Road improvement goes on from year to year by state and county authorities and some relief will eventually be had, but it will not be noticeable until drivers are educated away from the old routes and until more and better roads are completed.

Prior to 1918 cars on this system were operated on the pay-as-you-enter system for both inbound and outbound trips. During 1918 general congestion became so serious that something had to be done to get cars through the terminal district with less delay. It was decided to retain the pay-as-you-enter collection on inbound trips and change to the pay-as-you-leave system for the outbound trips. Checks show that the loading time had been reduced to about one-third. This manner of fare collection has some disadvantages, but delays incidental to fare collection occur at outlying points where congestion is slight and delays incidental thereto are reduced to a minimum.

LOADING PLATFORMS AND MID-BLOCK STOPS SAVE TIME

During the last year or two safety zones have been established at many points in the city and six loading platforms have been erected. The city should build additional platforms throughout the congested area, since their worth on the narrow streets has been proved.

Mid-block stops have also been used to facilitate getting cars through the congested area. At other points where the near side stop is retained there are "First Car," "Second Car," "Third Car" signs marking stopping places. Multiple loading and unloading have been found to save much time, particularly during the rush hours or in the handling of large gatherings at other times.

The automobile, from the traffic point of view, has done the street railway much injury. However, there is one point in its favor and that is, it is a fast moving unit and will not cause delays if there is enough street room for it to keep moving.

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*Abstract of paper read before Pennsylvania Street Railway Association, Harrisburg, Pa., June 17, 1921.

The Helical Gear*

By W. H. Phillips
R. D. Nuttall Company,
Pittsburgh, Pa.
and
G. H. F. Holy
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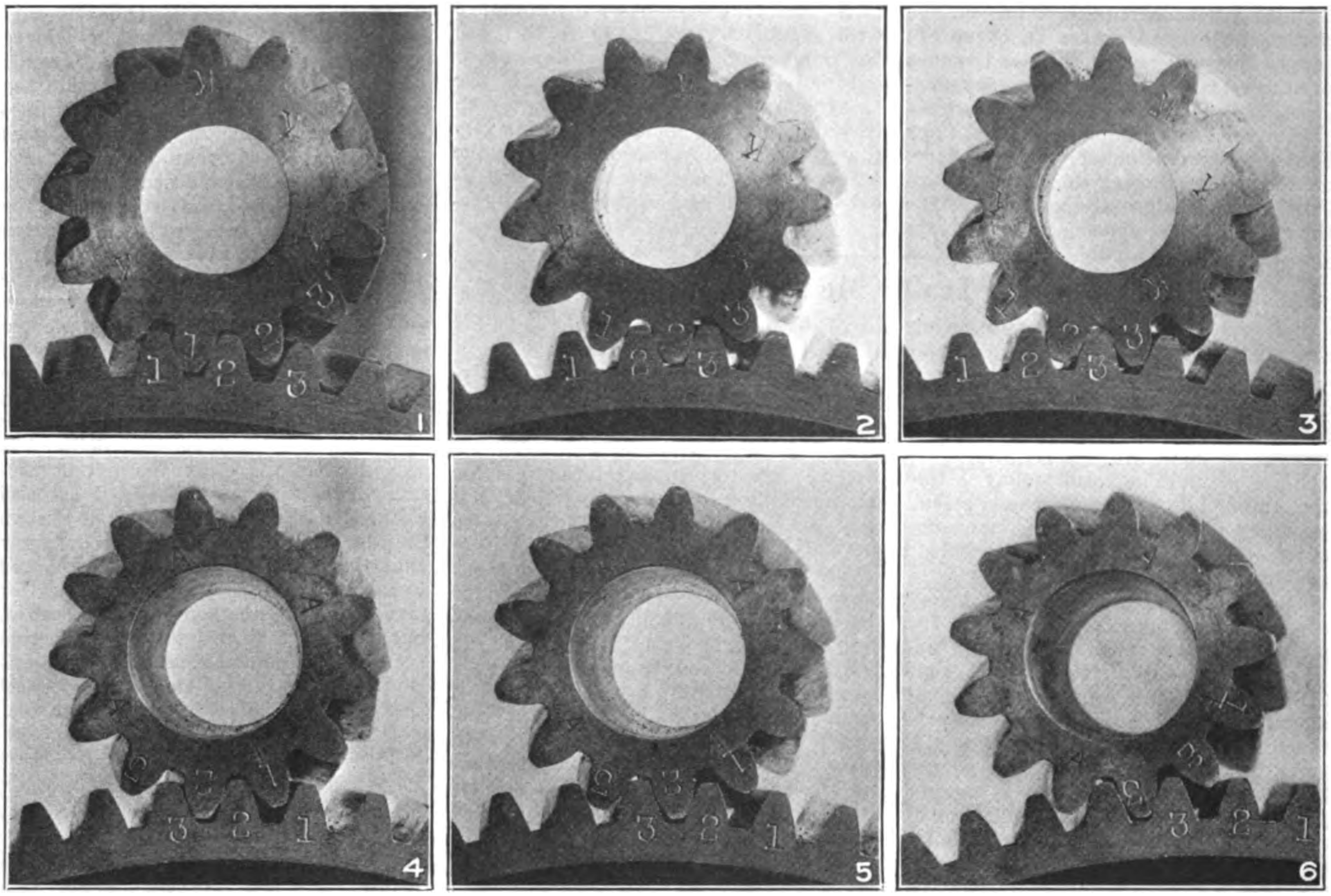
Company, East Pittsburgh, Pa.

The problem of the designing engineer in the field of gearing is the transmission of heavier torques at higher speeds with lighter weight equipment and less deterioration. The progress that has been made in the line of gearing may be outlined as: (1) Improvement in materials; (2) application of heat treatment; (3) development of flexible gears; (4) development in the method of forming teeth, rotary-cut, hobbed, planed, blocked-out and ground; (5) application of helical gears.



SUCCESSIVE POSITIONS OF HELICAL PINION AND GEAR TEETH THROUGH THE CONTACT PERIOD

Fig. 1—Tooth 2 just entering contact.
Fig. 2—Tooth 2 in contact near center of face.
Fig. 3—Tooth 2 just leaving contact.
Figs. 4 to 6—Positions of reverse face of gear for tooth positions shown in Figs. 1 to 3 respectively. The "A" face of Figs. 4 to 6 shows the following in of the helixes across the face, the "K" face shown in Figs. 1 to 3, being in advance of "A" as regards the helix.

In electric railway service in cities the pinion used in spur gear operation has from thirteen to sixteen teeth. In such a pinion for part of the time but one tooth is in contact with the corresponding gear tooth. It picks up its load across its entire face suddenly. It may be considered as a beam fixed at its root and loaded as a cantilever by the motor torque. The sudden load application produces two deflections, varying with the loading. Spur-tooth contact under load is unavoidably accompanied by shock and vibration.

Where large capacity equipments are involved, such as locomotives and multiple-unit cars for terminal electrification on trunk lines, the flexible gear has been used to soften or dampen the vibratory action of the gearing due to the phenomenon mentioned and also to other causes. In city service this would be too expensive, although there are cases of interurban service where it could be used with advantage.

The helical gear overcomes inherent gear vibration by eliminating the so-called "stepping over" action. The operation of this type of gear can best be realized by thinking of it as made up of a number of thin spur gears twisted on the shaft with respect to each other. Helical gears transmit practically average motor effort with properly maintained bearings. The gears tend to wear evenly over the full tooth length, thus preserving the original tooth form.

The contact from the tip of the tooth to the root and across the face is the property inherent in helical gearing which produces the smoothness of gear action. The action of engagement from one side of the tooth to the other is practically one of pure rolling. The action from the tip of the tooth to the root is one of sliding and rolling. The percentage of rolling action can be predetermined, within reasonable limits, and the teeth can be designed to give a maximum percentage of rolling.

As a result of this rolling contact across the face there will be at any time (after the tooth has come into full mesh) tip, pitch line and base contact. This tends to maintain the original tooth form. In the case of the spur gear it is in contact across the face first at the tip and then progressively from the pitch line to the base. From the design of the involute form of tooth, there is pure rolling at the pitch line, while at the tip and the base there are sliding and rolling. The tendency is thus to greater wear at tip and base. As the gear wears it is continually destroying the original tooth form.

As to helix angles, values from 5 deg. up to 20 deg. have been tried in all classes of railway service. From the results of service data an angle of 7½ deg. was prepared to meet all requirements, both for new and existing equipment. An angle that would provide approximately 13 per cent end thrust seemed desirable to give a cushioning effect.

The end thrust from a gear with 7½-deg. helix angle produces sufficient thrust to reduce the lateral movement of the rotating element and provides a cushioning effect on the bearing when there is lateral movement. An oil film is thus maintained.

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*Abstract of paper read before Pennsylvania Street Railway Association, Harrisburg, Pa., June 17, 1921.

Most helical gears and pinions have a right-hand helix on the pinion and a left-hand helix on the gear. There is no particular virtue in this arrangement except for standardization. Where maintenance conditions make it desirable to reverse the gears this can be done without difficulty.

It has been felt for some time that the tooth form in general use in railway gearing is unsatisfactory. No improvements were suggested or considered, however, as a change would introduce two standards. With the introduction of the helical gear the full advantage of the latest developments in tooth form could be utilized.

With this condition in mind the tooth form adopted with the helical gear is of the so-called "long and short addendum type." This has the following advantages over the old form: (1) Increased strength; (2) greater rolling action; (3) more metal from root of tooth to bore of pinion.

The angle of approach is much smaller than the angle of recession in the new tooth, which tends to smoother tooth action. The new tooth is substantially stronger at the base, to the extent of from two to two and one-half times. Further, the rolling action of the new tooth varies from 55 to 70 per cent pure rolling, whereas the old 14½-deg. tooth gives approximately 40 per cent rolling in the involute zone. This is an increase of nearly 50 per cent rolling contact. A study of recent spur gear design has brought out several different types of long-and-short-addendum teeth. These all have specific advantages over the old form of spur gearing and are being given considerable publicity.

ACCURATE TOOTH FORM POSSIBLE

The helical gear is manufactured by the generating process, the tool being a ground hob and the cutting edges being of rack form. This method of tooth generation insures a high degree of accuracy.

Comparative tests made on the efficiency of helical and spur gearing showed a slightly higher efficiency for the spur gear, the difference between them being so small as to be considered negligible.

Obviously when vibration can be reduced the over-all efficiency of helical gearing will be much greater than that of spur gearing.

Extensive applications of helical gearing in electric railway service have been made with motors of from 250 hp. down to 25 hp. The gearing involved ranged from 2 diametral pitch to 4¼, and from 5¼ in. face to 3½ in., with ratios of 25:48 to 13:74 inclusive. It has also been applied in several sizes on electric locomotives.

In most cases the helical gearing in electric railway service has been in operation from one to two and one-half years. The trial installation service mileage is approaching 400,000 with a minimum of approximately 150,000. Records show that in service helical gear operation reduces motor maintenance, increases gear life, and reduces gear noise and vibration. The lateral wear on motor and axle bearings is no greater than in spur gear service.

With 20,000 to 25,000 helical gears and pinions manufactured to date, and with the increasing demand for them in initial installations and in changing over old equipment, it is obvious that the helical gear is with us and will help to solve the problem of quiet, efficient, long-life transmission.

Equipment Men Discuss Problems

Information Brought Out of Value to Men Engaged in Car Maintenance—Reclaiming Worn Air Compressors, Causes of Freezing in Piping, Experience with Ball Bearings, Etc., Discussed

GATHERING forty-eight strong at Akron on June 8, 1921, the Association of Electric Railway Men, comprising the equipment men of Ohio, Pennsylvania and West Virginia, joined in their usual informal round-table discussion of rolling-stock maintenance matters. The discussion was led off by a paper on the maintenance of air-brake equipment by J. F. Craig of the Westinghouse Air Brake Company. Mr. Craig described the essential details of the various types of air brake equipment as used in city, interurban, subway, elevated and electric locomotive service.

In the discussions that followed this paper it was brought out that there is a small amount of leakage at the power valve or foot valve used on safety cars. This leakage is most noticeable when the doors are open and the brakes are applied, as the operator at this time keeps his hand on the controller handle or his foot on the foot valve.

In reply to a question as to the practice of his company in reclaiming worn air-compressor cylinders, Mr. Craig said that it is rebushing cylinders and then reboring them to standard sizes. P. V. C. See of Akron said that his company is doing this work in an ordinary engine lathe. The necessary bushings are bought with rough bores and are finished after they have been pressed into position. I. E. Church of Pittsburgh said his company is using bushings with four feet, which are used to bolt the castings to the lathe face-plate for turning and finishing. This scheme has advantages in making it easier to set up the casting in the lathe and results in better boring.

Discussion regarding the types of air-compressor rings used brought out the fact that three rings of the snap type are now usually used. The ring near the end of the piston acts as a wiper and keeps the oil from getting into the air. Mr. Craig explained a method of checking air-compressor performance by use of an orifice testing device with a standard-size tank. The time necessary to raise the pressure from point to point is taken, with the compressor removed from the car. The general opinion was that it is more satisfactory to remove compressors for testing and that uniform voltage is essential; otherwise the speed of pumping will vary.

Discussion of remedies used to prevent freezing of the air system brought out that a generous quantity of radiating pipe is of great assistance. Some companies have used anti-freeze devices with good results. Mr. Church described measures used by his company with success, which included the installation of piping having a diminishing size at each elbow from the reservoir to the first tank and from the second tank to the train line. The sizes gradually diminished from 1½ in. down to ¾ in. On some of the newer cars the size of piping used is diminished from 2 in. to ¾ in. in the direction of flow. In general, freezing is due to insufficient drainage or "pockets" in the piping. This led to a discussion as to the best location for the air intake. Some representatives felt that the strainers clog up to a greater degree when located inside the car than when underneath, and a case was cited where the strainer was found to be stopped with a kind of felt mat which probably came from the plush seats. In regard to the location of the strainer on the car roof, it was explained that this involves an additional length of pipe with greater possibility of leaking. Mr. Delaney of the General Electric Company said that his company is recommending putting the strainer inside the car as the greatest difficulty had been experienced from the dust when installed underneath. He said that the G. E. type of strainer should be cleaned about once in six months.

ELIMINATION OF KEYWAYS IN ARMATURE SHAFTS

In the discussion as to the necessity for using keys to hold pinions in position, the general opinion seemed to be that satisfactory results could be obtained without keys. A. B. Creelman of the Youngstown Municipal Railway said that his company has done away with keys in the pinions and so far has never had a loose one. Others said they had been following this practice with good results. This led to a discussion as to proper methods of installing pinions. In general most railways seem to be using the hot water method of heating pinions before they are installed. J. L. Crouse of the Westinghouse Electric & Manufacturing Company said that the Norfolk & Western Railway is shrinking pinions on by using gas heat, as it is impossible to get a sufficiently high temperature with hot water. They are removed in the same way.

Experience with the use of ball bearings was varied. Some expressed the opinion that they have proved very satisfactory, while others had found them unsatisfactory. It was pointed out that a new type of roller bearing which is adjustable has been recently brought out by the Gurney Company for electric railway use which eliminates the necessity for shrinking the race on the shaft. This has proved a particular source of difficulty in previous types.

There was considerable discussion in regard to the cause of side wear on brushes, and it seemed to be quite generally agreed that this was due to dirt principally. G. F. Randolph and P. D. Manbeck of the National Carbon Company said that to a certain extent this wear could be eliminated by using close-fitting brushes which would assist in keeping out the dirt which starts the wear. Mr. Creelman said his company is getting much less side wear on the brushes on cars operated on paved streets than on equipment with no paving. He said that he was convinced that the cause of this side wear is dust, as he is averaging 8,000 miles per brush in ventilated motors and 12,000 miles in closed motors.

In the discussion on methods of cleaning cars, one master mechanic stated that ONC cleaner, when diluted one part to seven or eight parts of water, will still bleach the enamel, where Modock cleaner will not bleach but will darken the enamel somewhat. Another master mechanic said that he is getting twice the life with Old Dutch enamel than he obtained with flat colors and that he is using clear water and a little soap for cleaning this. Another member suggested that he has been very successful in brightening dull enamel by using an ammonia solution one part to about eight or ten parts of water followed immediately with clear water.

The association was entertained at luncheon at the Portage Hotel by the Northern Ohio Traction & Light Company, after which the members made an inspection trip to the company's shop.

Rail-less Transportation to Be Taken Up by New England Club

THE New England Street Railway Club has appointed a committee on one-man car, trackless trolley and motor bus operation. This committee is to study the possibilities of each form of transportation as it affects New England, and report at the February, 1922, meeting of the club. The personnel of the committee follows: Louis Pellissier, Holyoke, chairman; W. J. Flickinger, New Haven; H. F. Fritch, Eastern Massachusetts Street Railway; John Lindall, H. B. Potter, and H. W. Putney, Boston Elevated Railway; and Albert S. Richey, Worcester, Mass.

American Association News

Committee of 100 Postpones Banquet

THE Committee of One Hundred of the American Electric Railway Association has decided to postpone the banquet scheduled to be held in New York on July 8, the reason being the impossibility of obtaining the speakers desired. The event will be held some time in the fall, when it is expected that an interesting program can be arranged.

Association Takes Up Study of Trackless Transportation

ON June 24 the newly appointed American Association committee on trackless transportation, of which H. B. Flowers, United Railways & Electric Company, is chairman, met at association headquarters to organize and discuss how the general subject of rail-less transportation could best be presented at the coming convention. The other members of the committee present were C. B. Buchanan, Virginia Railway & Power Company; Edward Dana, Boston Elevated Railway; C. J. McPherson, J. G. Brill Company; R. W. Meade, formerly with Detroit Motorbus Company, and W. H. Burke, proxy for C. W. Kellogg, Stone & Webster Management Corporation. Absent members were G. A. Green, Fifth Avenue Coach Company; H. L. Howell, National Railway & Appliance Company; A. W. McLimont, Winnipeg Electric Railway; H. A. Mullett, the Milwaukee Electric Railway & Light Company; Albert S. Richey, Worcester, Mass., and E. B. Whitman, Public Service Commission, Baltimore, Md.

A discussion brought out that about the only way in which something concrete could be put before the October meeting would be for sub-committees to handle different phases of the subject and then to collate these reports into one for the committee as a whole.

The report as planned will have a preamble on the field of the motor bus and a discussion as to the trackless trolley installation at Richmond, covering mechanical features, costs, and passenger loading limitations. General information as to the type of bus, costs of operation, depreciation, etc., will be shown for different operating motor bus companies. Similar statistics will be given for foreign systems as well as for those in Canada. An analysis will be attached as to what might be a fair differential for fares as between bus and rail cars. The report will also include an article on the desirability of a unified transportation system from the public service commission viewpoint.

The committee hopes to hold another meeting the early part of July, at which time the report for presentation will be prepared.

Committee on Reorganization to Meet

PRESIDENT GADSDEN has called a meeting of the committee on reorganization to be held in New York on July 8. At this meeting the committee expects to determine the changes in the constitution of the association necessary to carry out the reorganization plans under consideration and, if possible, to have its recommendations as to necessary changes in the organization in definite form. Members who have suggestions which they desire to have considered by the committee should forward them to President Gadsden, if possible, before this meeting.

Two-Day Session of Power Distribution Committee

THE power distribution committee of the Engineering Association held a two-day meeting at the association headquarters, New York City, June 16 and 17. Various reports of the sub-committees appointed on the seven subjects were presented and final decisions were reached regarding the reports of the committees to be presented at the October convention. Those present were Charles R. Harte, the Connecticut Company, chairman; C. C. Beck, Ohio Brass Company; Ralph W. Eaton, public service engineer, Providence, R. I.; H. H. Febrey, American Steel & Wire Company; C. A. Harrington, Pennsylvania Ohio Electric Company; C. H. Jones, Metropolitan West Side Elevated Railway, Chicago; F. McVittio, New York State Railways; M. D. Rosevear, Public Service Railway of New Jersey; W. Schaake, Westinghouse Electric & Manufacturing Company, and F. J. White, the Okonite Company.

Rhode Island Men Have Annual Outing

ON SATURDAY, May 21, the Rhode Island Company section held its fourth and most successful annual outing at the Warwick Club, Warwick, R. I., with an attendance of over 100 members. A program of sports was the feature of the afternoon, after which the members partook of a Rhode Island clam dinner. The outing was under the direct supervision of William B. Spencer of the transportation department and eight assistants from other departments.

On June 9 the last monthly meeting of the section for the current year was held. Superintendent Rounds of the Broad Street carhouse gave a talk on the duties of a carhouse superintendent. He stated that one of his duties was to provide enough service, but not too much, by means of trippers and extras. He said that he keeps informed of the riding on the various lines by encouraging the platform men to give him this information.

Recent Happenings in Great Britain

Prospects Better for Settling Miners' Strike—Tramways Burn Coal —Many Roads Inconvenienced

(From Our Regular Correspondent)

At the time of writing there are good prospects of an early settlement of the coal miners' strike which has been running its disastrous course since the beginning of April. Renewed negotiations between the mine owners and the miners' representatives are promising. On the other hand there is serious trouble in the engineering trade and in the cotton industry over wage reductions. Meanwhile, through the general dislocation caused by the coal strike the number of unemployed in the country has risen to about 2,000,000.

Several by-products of the strike are of interest in the traction field. Perhaps the most significant, as regards the future, is the substitution of fuel oil for coal in the power stations. This substitution has been carried out in many places in the country. One of the earliest changes of the kind was adopted by the London underground railways at their generating station at Chelsea. This is the largest purely traction station in the country. The large stocks of coal in hand were becoming exhausted and though some foreign coal was arriving by sea there was difficulty in getting it discharged owing to an embargo by the transport workers against handling imported coal. They thought it would help the cause of the miners.

In the ordinary way the Chelsea station needs to have fifty-two of its big water-tube boilers at work during the rush hours. The job was put in hand and was completed in about ten days of adapting the sixteen of the boilers for oil firing. This did away with the consumption of about 320 tons of coal a day. The oil is pumped from tank barges which bring it into the river creek beside the power station. The experiment has been successful and should necessity arise more boilers will be converted. The landing of foreign coal, however, went on, either through the defection of transport trade unionists or through the employment of volunteers. The remaining trouble about the matter is that the coal from the continent of Europe is frequently of very poor quality for steam-raising purposes.

In a number of places in the country full tramway services have been maintained by adapting power station furnaces for oil burning, and in some cases where services had been restricted the advent of oil has enabled every required car to be put on the road. Hull was the first place to change over completely. Leeds and Newcastle municipal stations followed. (What about the tale of carrying coals to Newcastle now?) The Carville station of Newcastle Electric Supply Company has to a considerable extent been changed to oil burning. This is one of the biggest power stations in the country and supplies power for all sorts of purposes, including traction on the North Eastern Railway local lines. In quite a number of other towns the change is being carried out, while in still others experiments are being made. At the power station of the London County Council Tramways everything has been made ready for effecting the change if necessary, but at the time of writing sufficient foreign coal has been available. Part of the auxiliary plant, however, is now oil-fired.

It has been found that at the present prices of coal and of fuel oil, and taking into account the relative calorific values of the two fuels, the oil is actually cheaper than the coal. Moreover, the supplies of oil are abundant and evidently easily obtainable. The cost of converting a furnace for the purpose of burning oil is small. It will thus be seen that unless there comes a very radical change in the relative prices of oil and coal there is little prospect of any reconversion of furnaces to coal burning. Thus once again the miners have been cutting off their noses to spite their faces. The whole situation is no doubt of deep interest to the great petroleum corporations of the United States and Mexico, especially when it is coupled with the announcement made in the end of May that all new ships of the British Navy will be oil-burning.

A really Gilbertian situation arose during the month of May in connection with the London County Council Tramways. With the object of supporting the coal miners in their strike, the executives of the trade unions of steam railway men and of general transport workers issued orders prohibiting their members from handling or transporting coal brought in from abroad. It should be clearly understood that the British Government did not arrange for this importation of coal for the purpose of breaking the strike, but solely in order to keep essential public services and domestic supplies going. None of the imported coal goes to manufacturing industries.

To a very great extent the members of these trade unions ignored the orders of their executives and unloaded and transported the coal freely. Where they refused they were suspended from employment and plenty of volunteers were available to take their places. The threat of a general strike against this arrangement was futile; the rank and file would not agree. At the power station of the London County Council Tramways at Greenwich, however, the cranemen refused to unload the foreign coal from the ships bringing it in. They were suspended and volunteers took their places. (Volunteers are easily secured when hundreds of thousands of people are out of employment owing to the miners' strike.)

Then a number of employees in the station—some skilled and some unskilled—went on strike as a protest against the suspension of the cranemen. Apparently they did not see that if the cranemen had been successful in preventing the landing of coal the employment of the other workers in the station would be gone. These men's places were also filled.

The pig-headedness of the unions' executives concerned was next further demonstrated by their taking a ballot of all the London County Council tramway employees on the question of striking in sympathy with the power station employees. The ballot was duly taken but the trade union executive refused to publish the figures of the votes recorded. It is known, however, that there was a very large majority against striking; apparently it was so large that the executives were afraid to make it known. Over the country it is safe to say that the enthusiasm for strikes is dying. The grim realities of the industrial and economic situation have been borne in on the rank and file.

During May there was in many towns in England a gradual reduction of tramway services owing to the scarcity of coal. The London underground railways made various cuts for the same reason, despite the partial adoption of oil fuel already noted. A turn in affairs began, however, early in June. The transport workers and railwaymen's unions, realizing that their embargo on the unloading and transport of coal was futile, withdrew the prohibition notices to their members, and coal was thereafter handled freely. Larger supplies began to arrive from abroad. Partly on this account and partly because of the conversion of more steam locomotives to oil burning, the main line railways began to increase their services which had been so much restricted, and improvements also commenced in some of the reduced tramway services.

In the end of May the oil-importing companies reduced the price of petrol by 6d. per gallon, bringing the cost down to about 3s. retail. The reasons assigned are that prices have recently fallen in America owing to production overtaking demand, that the rate of exchange has improved, and that freight rates are easier. The reduction is specially welcome to motor omnibus undertakings, particularly to the London General Omnibus Company, which is the greatest consumer of petrol for traction purposes in the country. That company, instead of having to restrict its services like the tramways, has been extending them. It has also added a series of one-day towns by motor chars-a-bancs through rural districts around London. A whole day's outing including luncheon and tea costs only 21s. On Whitmonday the company set up a new record, even for that holiday. By all its services it carried about 3,000,000 passengers.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Los Angeles Terminal Station Rehearing Resumed

The case of the four large railroads entering Los Angeles proceeding with the construction of a union terminal depot on the Plaza site as recommended by the commission engineers was reopened on June 16 in Los Angeles before President H. W. Brundige and Commissioners H. D. Loveland, H. Stanley Benedict and Erving Martin. A review of this ruling of the commission was given in the ELECTRIC RAILWAY JOURNAL, issue of May 7, page 868.

In asking for a rehearing of the case the companies affected have taken the stand that in instructing the various corporations to establish jointly this passenger terminal the commission was taking property without due compensation, and that its action, therefore, was not valid.

The companies further contend that the problem of establishing a union passenger terminal in Los Angeles, affects three transcontinental railroad lines, and is therefore an issue which only can properly be passed on by the Interstate Commerce Commission. The companies opposing this order of the commission consist of the Southern Pacific, the Atchison, Topeka & Santa Fé Railway, the Los Angeles and Salt Lake Railroad, and the Pacific Electric Railway.

COMMISSION'S AUTHORITY DEFENDED

The city of Los Angeles has secured the services of Max Thelan, former president of the State Railroad Commission, to assist its city attorney to argue against the reconsideration of this issue by the commission or its transfer to the Interstate Commerce Commission. The right of the Railroad Commission to issue an order relating to a terminal depot in Los Angeles will also be championed by Hugh Gordon, attorney for the commission. In opposing the application of the railroads, the city attorney and special counsel, Thelan, take the stand that the commission has the power to make the railroads comply with its order.

In answer to this position, it is the contention of the attorneys of the railroads that any such power, if ever possessed by the commission, was removed from that body by the passage by Congress of 1920 of the Esch-Cummings act, a law governing railroad transportation and establishing the status of the railroads following the turning back of the corporations to private control after the war. In the event that the commission refuses to grant a rehearing of the case, it is expected that the companies will go before the State Supreme Court and there ask for a writ of review. Pending a decision on this petition for a rehearing of the entire case, it is understood that the opponents of the commission's order will not appoint representative engineers to a common committee for the purpose of working out the details of a union passenger terminal. This committee of engineers was authorized by the railroad commission at the time the original decision was handed down on April 26, 1921.

At this hearing on June 16 motions were made to strike out all reference to the Pacific Electric Railway in connection with the proposed union terminal, and to vacate the terminal order until such time as unquestionable jurisdiction can be established. Frank Karr, attorney for the Pacific Electric lines, suggested that the company which he represents be taken entirely out of the proceedings except in the matter of Aliso Street grade crossings. The companies all laid stress on the fact that they are anxious to proceed at once with such grade crossing elimination as belongs to each individual railroad, and desire to divorce the Plaza terminal question from grade-crossing elimination.

Tax-Exempt Securities a Menace

Representative McFadden of Pennsylvania, chairman of the committee on banking and currency, told the House on June 23 that the subject of tax free securities was one of the most vital now before Congress. He is the author of the resolution providing for a constitutional amendment making it possible for the United States to levy an income tax on the interest received from investments in state and municipal securities. He considers exemption from taxation of the income from securities of this kind as an offense against economic law, social justice and the American spirit of fair play.

Mr. McFadden says that such opposition as exists to the elimination of tax exemption arises for the most part from an exaggerated idea of its advantages to the borrower. According to Mr. McFadden loss in tax revenue by the issuance of tax-free securities is appalling. He says that the railways and public utilities, accustomed to look to the wealthy investor for leadership in meeting their needs for funds, have had to go afield and establish new channels not yet adequate to their needs.

So far as action at Washington is concerned Congress appears to be marking time on the revision of the revenue act pending some disposition of the tariff measure in the House. Those close to affairs expect to see some speeding up, however, for it is generally agreed that the country is getting impatient and wants action.

City Makes Counter Proposal to Security Holders

A tentative proposal on the part of the city to the security holders of the New Orleans Railway & Light Company was submitted to the Commission Council on June 22 by Commissioner of Finance Murphy. It is reported that a majority of the Commission Council has agreed to the plan outlined. Further consideration of it went over, however, until the next meeting of the Commission Council.

PLAN INTENDED AS SUBSTITUTE

The plan is intended as a substitute to the program outlined recently by Commissioner Maloney of Public Utilities, suggesting the employment of engineering and utility experts. Briefly, it recognizes the justice of the valuation of $44,700,000 placed upon the property by the Citizens' Advisory Committee of Forty and admits that any appeal to prospective investors will be useless without recognition of this valuation. It acknowledges that $5,000,000 of new money will be required during the year following the reorganization of the company, and that thereafter $2,000,000 a year will be required for five years. It directs that the company shall be domiciled in New Orleans with its affairs controlled by residents of New Orleans.

On the purely financial side there would be provision for a return of 8 per cent for the present on new money, with any sum earned beyond $3,000,000 during the first year retained as surplus reserve. To the holders of present securities outstanding would go no more than 6.14 per cent, if earned. Further, the municipality would have authority to readjust the rate of allowable return, with an option in perpetuity on the property, at the base valuation of $44,700,000 plus any new money invested, not counting the surplus of earnings. The city is also to hold an option at 107 a share on the common stock, which is to be reduced to $4,219,300.

REDUCTION IN FARE RATES

As part of the agreement the corporation upon the discharge of the receiver is to consent to reduction in rates and fare upon completion of the reorganization, which is to be effective by Oct. 15, 1921, and not later than Dec. 31. These reductions in rates would be as follows:

A 7-cent fare; not more than $1.30 per 1,000 cu.ft. for gas; no increase in the schedule of electric rates.

All the rates just mentioned would continue until Jan. 1, 1923, unless conditions favor a lower basis of rates, in which event the rates would be further reduced.

C. C. Chappelle, who has been acting for security holders in the company, had this to say:

> All I can do under any circumstances is to see what can be done with the proposal in the investment market. I can only act as a connecting link between the city and the investor. But I should feel in duty bound to make every possible effort to carry through to success any proposition which in my judgment has a reasonable possibility of being sold to the investors.
>
> I will say frankly, however, that it is a step forward to bring a positive program before the public for discussion and for official action. Out of it a solution may come; nothing could come from inaction.

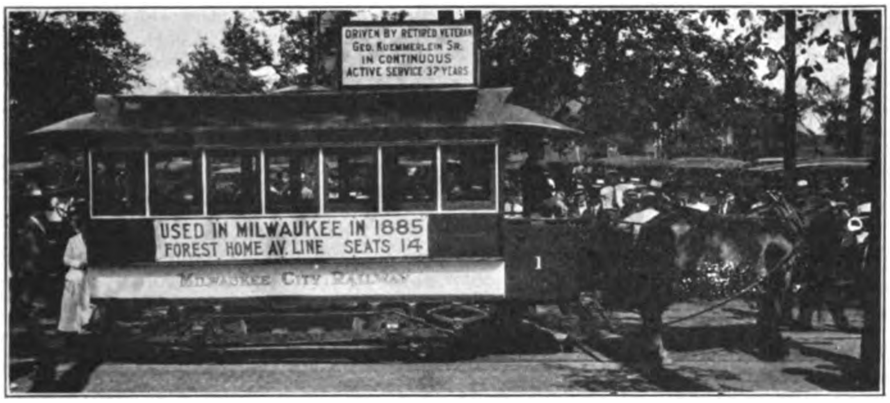
Railway Participates in City's Diamond Jubilee Celebration

Various stages in the development of the city of Milwaukee and of its industries were depicted in a historical parade and pageant in Milwaukee on June 18 in connection with the Diamond Jubilee of the city. The pageant was participated in by the Milwaukee Electric Railway & Light Company, which was represented both as a corporation and through the medium of its Employees' Mutual Benefit Association. It was planned to show the development of the industry and to have a fairly representative body of employees march in the parade.

The company had in line an early type horse-drawn street car followed by the latest type electric car. The horse car was driven by one of the company's veteran employees, George Kuemmerlein, Sr., the father of the present superintendent of transportation. Mr. Kuemmerlein, Sr., had been in active continuous service of the company and its predecessors for thirty-seven years. The horse car was last in use in 1885. It seats fourteen, and was in great contrast to the latest type of electric car, seating fifty-two and equipped with the latest safety and pneumatic devices.

The two cars were followed by the color bearers and band of the Employees' Association and then in the order given by a body of veteran company employees, a majority of whom had seen over twenty years of service; a body of trainmen, members of the Women's Auxiliary of the Employees' Association and finally in rows of eight representatives of the various departments of the company arranged by trades. These were dressed in the uniforms of their occupation and carried the tools pertaining thereto.

The company representation in the parade was very effective and was highly commented upon along the route of the march.


DRIVEN BY RETIRED VETERAN
GEO. KUEMMERLEIN SR.
IN CONTINUOUS
ACTIVE SERVICE 37 YEARS
USED IN MILWAUKEE IN 1885
FOREST HOME AV. LINE SEATS 14
MILWAUKEE CITY RAILWAY

PART OF THE MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY'S SECTION OF MUNICIPAL PARADE COMMEMORATING CITY'S DIAMOND JUBILEE

Electrification of Dan Patch Line Being Considered

The Minneapolis, Northfield & Southern Railway, formerly known as the Dan Patch line, has under way a project for electrification by overhead trolley. E. P. Burch, engineer, is making a careful survey of the whole subject. No date is suggested for taking up the project as the report is not yet ready.

The company now has five GE-205 gas-electric engines and three steam locomotives. One locomotive car is a private car, but the regular equipment has a combination baggage, smoker and coach, carrying ninety-four persons. Each of these cars is capable of hauling a trailer seating 104 persons. The question to be determined is whether more of these motors are to be bought or the line electrified and the present equipment converted.

This company has just announced that it will operate from the present terminus at Northfield into Faribault, Minn., over the Chicago Great Western. The company now has 60 miles of track, the main line from the city terminus in Minneapolis to Northfield being 47 miles. Through its connection at Faribault the management expects to make direct freight connections into Kansas City.

Another plan in embryo is the construction of a freight yard terminal at Robinsdale, surburb of Minneapolis, to cost $26,000. The company recently was reorganized and the new plans are the result. By construction of 6 miles of track the company will reach Robbinsdale, where it will connect with the Great Northern and the Soo lines.

Michigan Interurbans Crash.—Two interurban trains of the Detroit United Railway crashed between Chelsea and Ann Arbor, Mich., recently and as a result five people are reported to have been killed.

Telephone Announcers Tried in Boston Subway

The Boston (Mass.) Elevated Railway is experimenting at the Park Street Subway Station with telephonic announcers manufactured by the Loud Speaking Telephone Corporation. A set of five speaking trumpets, all electrically connected, has been installed on the north-bound platform, and plugs for the connection of the transmitting apparatus are located at various convenient points throughout the station.

The platform attendant, or starter, carries the transmitter about with him, plugging-in at any convenient socket when he desires to make announcements. He uses this equipment for announcing the destination of cars, the berths at which the various cars will stop in the station and for warning persons boarding the cars to let the passengers off first. In this way, by the distribution of the speaking trumpets the entire length of the platform, one man can keep a large and constantly shifting crowd informed.

The apparatus appears to have a special usefulness in times of emergency, when cars are delayed, or some accident requires rerouting or any other change in normal operation. At such times the natural impatience of passengers hinders the work of the platform man as everyone crowds around him trying to ask individual questions. With this equipment he can retire to an inclosed booth and keep repeating all necessary announcements, which results in equal service for all.

A number of officials of the Boston Elevated have witnessed demonstrations, and are reported to have been much pleased. If the present experiment proves successful it is not unlikely that the use of this apparatus will be extended to other stations on the subway and rapid transit lines. It has been suggested that when an open drawbridge on the main tunnel and elevated line causes a blockade, a frequent and unavoidable annoyance on this system, these announcers at various stations along the route could be used to inform the waiting passengers as to the cause of the delay and its probable duration.

New Road Seeks Franchise

Application for a thirty-year franchise for the construction and operation of a single-track railway has been filed with the City Commission of Birmingham, Ala., by the Norwood Street Railway. An ordinance granting the franchise and authorizing the construction was attached to the application and is now being considered by the commission.

The proposed line will start at the end of the present Norwood line of the Birmingham Railway, Light & Power Company and will make a loop through the Norwood Boulevard development of the Birmingham Realty Company.

Construction of the road will cost approximately $500,000, it was announced by officials of the Birmingham.

Realty Company. It will be built by the Realty Company through the Norwood Street Railway, a holding company, and eventually will be transfered to the Birmingham Railway, Light & Power Company.

The proposed ordinance granting the franchise and authorizing the line also authorizes the transfer of the road to the Birmingham Company. It provides that plans and specifications must be placed in the hands of the city engineer in four months from the adoption of the ordinance and the road must be ready in one year. The Norwood bus line, which has been operated by a holding company, will be discontinued when the new car line is completed.

Chicago Renews Attacks on Its Utilities

Evidently stirred to resentment by the loss of its pet measures in the Illinois Legislature, the city administration of Chicago has begun hostile action against the Chicago Surface Lines. Notice has been served on the companies to show before the Illinois Commerce Commission on July 13 why the present skip stop system for cars should not be abandoned. The city has also filed suit for $3,500,000 against the Chicago Railways for money said to be due under an "implied contract." Mayor Thompson sent a special message to the City Council asking that an appropriation be increased for the purpose of continuing the fight against the surface and elevated railways for reduction of rates.

The suit against the Chicago Railways was for the city's share of the net receipts called for by the 1907 ordinance. Payments were tendered to the city when due but were refused because the city lawyers feared that by accepting these amounts they would acknowledge the existence of the 1907 ordinances. The city claims that these ordinances were abrogated when the companies permitted the utilities commission to increase their rates of fare above the 5-cent basis. The money is now claimed as compensation for use of streets, and the city is hoping for a decision which will turn over the cash without prejudicing its pending litigation against the companies.

Special Counsel Cleveland stated that he is preparing to ask the new Illinois Commerce Commission to re-open the rate and valuation cases of the surface and elevated companies.

Court Asked to Decide When a Board of Arbitration Is an Arbitration Board

Whether the 250 conductors and motormen of the East St. Louis & Suburban Railway, East St. Louis, Ill., will accept a cut of 19 cents an hour, effective on July 1, was scheduled for consideration at a meeting on June 29.

Notice of the cut was posted by President W. H. Sawyer, following the granting of a temporary injunction by Judge English of the United States District Court restraining a board of arbitration from continuing to consider the wage question after the company's representative on the board had resigned.

The court held that the resignation of C. E. Smith, a consulting engineer, practically ended the legal existence of the board. The resignation was due to the pressure of other business engagements.

President Sawyer offered to appoint a new member for the formation of a new board of arbitration, but this offer was rejected by the union (Amalgamated) which sent for one of the international officers who has arrived for the meeting June 29.

The motormen and conductors now get 70 cents an hour, flat. The cut brings the pay down to 46 cents an hour the first three months, 49 for the following nine months and 51 cents after the first year of service. It is the rate that was established by the War Labor Board in 1919, and was in effect until April of last year.

News Notes

Property of Railway Burns.—Dighton Rock Park, built several years ago for amusement purposes by the Eastern Massachusetts Street Railway, was destroyed by fire on June 15. The park was located between Taunton and Fall River. The buildings in the park cost $60,000 when erected, thirty-six years ago.

Utility Commission Proposed in Louisiana.—The Constitutional Convention has written into the new organic law of the State of Louisiana a section changing the Railroad Commission to the Louisiana Public Service Commission. The commission, composed of three members, is empowered to supervise, regulate and control all railroads, street railways and interurban railroads, gas, electric light, heat and power and other public utilities and to fix the rates.

Foreign Countries Will Participate.—Another step has been taken by way of preparation for the International Exposition to be held in Portland, Ore., in 1925. The Senate has passed a bill authorizing the President to invite foreign countries to participate in the exposition. The exposition is intended to celebrate the completion of the transcontinental and Pacific highways, the centennial of the invention of the electro-magnet and to exemplify the development of hydro-electric energy.

Union Paper Praises Mr. Arkwright.—The *Union Leader*, under date of May 21, has reprinted an article which appeared in the ELECTRIC RAILWAY JOURNAL of April 23, entitled "Don't Hate Your Customers," by Preston S. Arkwright, president of the Georgia Railway & Power Company, Atlanta, Ga. The article is characterized as a common-sense talk made by the president of a progressive street railway. Further comment is made: "It is rare to find a railway president who has such a keen grasp of operating detail as to portray the importance of the occupation and the trials, difficulties and opportunities of motormen and conductors in the practical manner in which he presents them."

Released From $1,000,000 Bond.—The Dallas (Tex.) Railway has been released from its $1,000,000 improvement bond, made when it accepted the franchise in 1917 after extended negotiations between the city and the Strickland-Hobson interests. Release from this bond was voted by the City Commission on June 8 when it was shown by the company that it had carried out all pledges made in connection with the granting of the new franchise.

Recommends Subway and Elevated Line.—The annual report of Charles S. Butts, engineer of the Department of Public Utilities, St. Louis, proposes a subway for the Hodiamont line from Union Market to Spring Avenue with elevated tracks from Spring to Maple Avenue as a step toward the establishment of a better rapid transit system. In the opinion of the engineer the entire project would cost no more than $3,000,000. The report also suggests plans for the expeditious handling of passengers by the United Railways during the evening rush hours.

Improvements Held Up in Seattle.—In discussing the need of paving on certain business streets in Seattle, which has been held up on account of the necessity of new car tracks and rails, superintendent D. W. Henderson of the Municipal Railways said: "If the Municipal Railway had all the money that the jitney buses took from us in the last year, we would be able to pave First Avenue now. The jitneys are taking $300,000 or more a year from the railway revenues. If we had that money, the $325,000 First Avenue work could be financed.

Jitney Petition Denied.—The Public Utilities Commission of the State of Connecticut has denied the application of two operators to run automotive vehicles between Hartford and Manchester, a distance of 10 miles. The commission finds the existing transportation facilities of the trolley and steam road adequate to supply transportation requirements, except for about two peak hours each day, when auxiliary service would be a convenience. The applicant did not desire a certificate for this limited service. The commission prepared a lengthy decision covering the general controlling principles of competition, comfort, speed, general public requirements, permanency and continuity of service, etc. This is the first decision by the commission regarding public service motor vehicles to be made under the act of 1921 placing these vehicles under commission regulation.

Financial and Corporate

Importance of Adequate Junior Financing Urged

The bulletin of the Investment Bankers Association of America for May 28 contains the interim report of the subcommittee on electric securities presented by Lucien H. Tyng, vice-president of W. S. Barstow & Company, Inc., on the "Importance of Adequate Junior Financing." Mr. Tyng says that it has been found true of all classes of public service companies that too much of their financing has been done by sales of bonds.

A table which is included in the report prepared from figures by the *Commercial & Financial Chronicle* warrants, Mr. Tyng says, very careful study and consideration by everyone in the business of handling securities of public service companies. A company cannot create and sell bonds of the highest class unless a proper proportion of the financing is done by the sale of stock.

According to Mr. Tyng the best class of bonds should not exceed 60 per cent of the total value of the property of the company including intangibles, and it would be better for every class of security holders if the bonds were not in excess of 50 per cent of such value. This would leave 50 per cent to be raised by the sale of stocks which might be divided into 25 per cent preferred stock and 25 per cent common stock.

The interim report by Mr. Tyng is particularly significant in view of the discussion which was aroused at Chicago last February at the meeting of the American Electric Railway Association, at which financial topics were considered, among them "Present Mortgage Requirements," presented by F. K. Shrader of Halsey Stuart & Company, Chicago.

It is the opinion of Mr. Tyng that a determined effort is being made by all public utility managers at the present time to bring a number of the points made in his thesis constantly to the attention of the Public Service Commissions, so that the commissions will appreciate the necessity of companies being allowed to earn an amount sufficient to pay dividends that will encourage more stock investments.

He said that one reason why investment bankers had been reluctant to handle stocks is that in the past stocks were issued in excess of the amount of values represented. This, however, has not been so since the Public Service Commissions have had control of the situation and this question is removed entirely by the practice which has fortunately now been adopted in so many states, namely, issuing no-par stocks.

Constitutionality of Revaluation Law Questioned

E. W. Bemis has been chosen to represent the City Council of St. Paul, Minn., as expert in the hearings before the Minnesota Railroad & Warehouse Commission upon the application of the St. Paul City Railway for increased fares, requiring a new valuation of the property. The cost for the expert testimony is to be added by the street railway to the cost on which fares are based.

In the case of the Minneapolis Street Railway, the Council has no idea of employing a revaluation expert now, although Robert M. Feustal, New York, submitted his credentials. The city legal department plans to contest the constitutionality of the revaluation law at the outset by a motion to have the proceedings before the commission dismissed on the ground that it has no jurisdiction. This will enable a quick appeal, or the city may continue to submit its testimony on the revaluation of the railway property under protest until the constitutionality of the law is passed upon by the courts.

D. & H. Trolleys Do Not Meet the Cost of Service

According to the annual report of the Delaware & Hudson Company for the year ended Dec. 31, 1920, its four allied trolley lines failed collectively to meet the cost of service. All of the roads failed to earn anywhere near the same net income as during the previous year.

The report contains a review of the fare situation on each of its allied lines. The accompanying statement prepared from this review shows the actual condition of the financial operations for the year as compared with 1919.

EARNINGS OF DELAWARE & HUDSON ALLIED TROLLEY LINES

		Revenues All Sources	Operating Expenses	Net Operating Revenue	Taxes	Net Operating Income
United Traction Co., Albany,	1920	$3,253,973	$3,149,206	$104,767	$217,816	*$113,049*
	1919	2,848,871	2,525,880	312,991	208,252	104,739
Per cent change		14.22	24.18	*3.67*	4.59	*207.9*
Hudson Valley Railway,	1920	1,099,072	986,998	112,074	55,025	57,049
	1919	971,426	815,903	155,523	51,531	103,992
Per cent change		13.14	20.97	*2.98*	6.78	*54.11*
Plattsburgh Traction Co.,	1920	33,122	29,625	3,497	1,783	1,714
	1919	37,991	26,349	11,642	1,870	9,772
Per cent change		*12.29*	12.43	*70.00*	*4.65*	*82.46*
Troy & New England Ry.,	1920	39,442	44,397	*4,955*	1,870	*6,825*
	1919	36,429	35,589	840	1,550	*710*
Per cent change		8.27	24.72	*690.00*	20.62	*86.20*

Italics denote decrease.

Seattle $987,568 Behind

City Still Struggling With Problem of Meeting Interest and Debt Amortization Charges

According to figures contained in the memorandum financial statement of the city of Seattle, as of June 1, 1921, submitted by City Comptroller Harry W. Carroll, the municipal railway lines operated for the year at a total loss of $987,568. The total operating expenses of the system are placed at $4,908,122, to which are added depreciation amounting to $677,178, and deductions from the gross income of $865,660, covering interest on general and revenue bonds, amortization of discount on revenue bonds and miscellaneous interest, bringing the grand total of expenses to $6,450,960.

Operating revenues are given as $5,410,764, of which amount $5,283,658 was derived from passenger car service. Miscellaneous revenues are placed at $52,628, bringing the grand total of all revenues to $5,463,392, this leaving a total net loss for the year of $987,568.

In the profit and loss account, aside from the net loss above quoted, are losses of $3,559 caused by minor adjustments, expenses, charges, etc., and losses of $256,670 caused by delayed losses which accrued in prior periods, the largest item in this category being $174,216 for losses on ways and structures retired from service.

ACCRUAL BASIS OF ACCOUNTING

Establishing a system of setting aside each month's share of the bond interest and redemption charges accruing, the City Council utilities committee finds that the municipal railway must make up $425,625 for these two items. Against these charges, the railway had $218,740 cash balance on hand, after deducting outstanding warrants, leaving $206,884 to be made up.

The next interest payment on the $15,000,000 of bonds taken by Stone & Webster in payment of the lines is due on Sept. 1, but the money should be set aside in August to permit of its delivery in New York by that date, according to Chairman Erickson. The first redemption installment on the $15,000,000 bonds paid as the purchase price of the Stone & Webster lines will be due next March 1, the sum $833,000 likewise to be set aside thirty days earlier. Chairman Erickson said:

> The amount of interest charges accrued is $213,208, and as the cash on hand exceeds that total we expect to have the interest money on hand in ample time to meet the Sept. 1 installment. Whether we will be able to make up the next eight months the $212,416 accrued for redemption, but not set aside, is still uncertain. We may be able to do it without going on a warrant basis, as we did last February, when we set aside all receipts until we had enough to meet the interest charges.

New Issue of Bonds Offered.—Coffin & Burr, Inc., Boston, Mass., are offering at 84¾ and interest to yield 7¼ per cent $2,500,000 first mortgage lien and refunding gold bonds of the Alabama Power Company, Birmingham, Ala. The notes are dated June 1, 1921, and are due June 1, 1951.

Answers to Accounting Questions

Final Installment of Questions and Tentative Answers Under the Uniform System of Accounts for Electric Railways

The final installment of the tentative answers to questions raised in connection with the uniform system of accounts, prescribed by the Interstate Commerce Commission, recently made public, appears in this issue. These answers have been approved by the Committee on Standard Classification of Accounts of the American Electric Railway Accountants' Association, but as they have not received the formal approval of the Interstate Commerce Commission it should be understood that the decisions do not represent its final conclusions and that they are subject to such revision as may be thought proper before final promulgation in the accounting bulletins of the commission.

THE case numbers covered below are from A-616 to A-626, and from B-102 to B-109, with certain omissions. The omitted numbers represent cases which either are not of sufficient importance to justify publication or involve questions upon which a definite conclusion has not been reached.

Q. (*A*-616). To what account should be charged the value of material lost in transit between a storeroom and a power plant, or between a station and the storeroom?

A. Loss of company material while in transit on carrier's own line is chargeable to account 77, "Loss and damage."

Q. (*A*-617). An employee whose pay is chargeable to account 63, "Superintendence of transportation," uses his own automobile in performance of his duties, the carrier assuming the cost of repairs and supplies for operation. To what accounts should these expenses be charged?

A. The cost of repairs assumed by the carrier shall be charged to account 38, "Vehicles and horses," and the cost of supplies to account 96, "Garage and stable expenses."

Q. (*A*-619, b) Postal letter carriers are transported on basis of a monthly rate fixed by contract with postal authorities. To what revenue account should the receipts be credited?

A. To account 101. "Passenger revenue."

Q. (*A*-620, a). The franchise of a street railway company requires it to keep in good order and repair the paving between and adjoining its rails. The municipality bore the cost of the original paving, and the railway company carries nothing in its property accounts with respect to such coat. The municipality later replaced the paving with an improved kind, and charged the railway company the cost of the improved paving in the paving strip. What is the proper accounting?

A. In the absence of a reserve to provide for replacement such portion of the cost of the new pavement as may properly be considered as applicable to the betterment should be charged to road and equipment account 511, "Paving," and the remainder, including the cost of removing the old paving to account 10, "Paving," in operating expenses. (See Cases 42 and 194 of Accounting Bulletin 14.)

Q. (A-620, b). The purchase price of a street railway property, including its unexpired franchise, exceeds the appraised value of the physical property. The original franchise was free. What is the proper accounting for the excess payment?

A. The entire amount paid shall be charged to road and equipment account 527, "Cost of road purchased," for distribution as provided in the text of that account. In the distribution the amount paid in excess of the appraised value of the physical property shall be included in account 545, "Franchises," if the franchise may be regarded as the consideration for the excess payment and has an unexpired life of more than a year; and shall be amortized by monthly charges to account 91, "Amortization of franchises," as provided in the text of that account. Otherwise, the full amount of purchase price shall be distributed to the appropriate primary road and equipment accounts exclusive of account 545.

Q. (*A*-620, c). A street railway company incidentally furnishes steam power to an ice plant, charging therefor the estimated actual cost of fuel, water and labor and an arbitrary amount for use of boiler. What is the proper accounting for revenues and expenses?

A. The amounts received shall be credited to revenue account 118, "Power." The expenses shall be allowed to remain in the operating expense accounts appropriate for the carrier's own operations.

Q. (*A*-621). To what account should be charged the cost of testing meters used for measuring electric power furnished by a power company to the carrier's substation? These meters are owned two-thirds by the carrier and one-third by the power company.

A. Assuming that the carrier's proportion of the cost of the meters is carried in account 543, "Substation equipment," the expense of testing shall be charged to account 48, "Substation equipment."

Q. (*A*-622). Amounts billed against a carrier for work performed include cost of employees liability insurance. To what account should the payments be charged?

A. If the cost of work is chargeable to operating expenses, the insurance premiums paid shall be charged to account 93, "Insurance." (See Case 393, Accounting Bulletin 14.)

Q. (*A*-623). A carrier sells for $390 certain poles which were charged to the property account at $400, and with respect to which there is $40 in the reserve for depreciation. To what account should be credited the $30 representing the difference between the sale price and the ledger value less accrued depreciation?

A. The adjustment of the estimated depreciation previously charged to operating expenses and the actual depreciation as determined at the time of retirement shall be included in the account in operating expenses appropriate for the cost of repairs to the property before retirement, which, in this case, is account 20, "Poles and fixtures."

Q. (*A*-625). To what account should be charged the pay of section men for time used in cleaning and sanding stock cars?

A. To account 67, "Miscellaneous car-service expenses."

Q. (*A*-626). To what account should be charged amounts paid to employees for personal property damage while on duty such as the breaking of eye glasses, the damaging of uniform, etc.?

A. To account 92, "Injuries and damages."

Q. (*B*-102). To what account should be charged the cost of rubber boots carried on wrecking tool car as a part of service equipment?

A. To account 78, "Other transportation expenses."

Q. (*B*-103-1). A carrier is reimbursed by a realty company for the cost of grading a street. What is the accounting?

A. The entire cost of the grading shall be charged to account 504, "Grading." The amount contributed by the realty company shall be credited to account 305, "Donations."

Q. (*B*-103-6). A carrier changing from the cable system to the overhead trolley system, and from narrow to standard gage track, removes a portion of the cable system. How should it account for the cost of removing the cable structure, and for the cost of the new tracks?

A. The book value of the portions of cable railway removed shall be credited to the appropriate road and equipment accounts and charged, less salvage, to the appropriate operating expense accounts. The cost of removing such cable railway parts shall also be charged to operating expenses. The cost of installing the electric railway track shall be charged to the appropriate road and equipment accounts.

Q. (*B*-106). To what account should be charged the cost of handling sand for use in sand boxes of motor cars?

A. To account 11, "Cleaning and sanding track."

Q. (*B*-107). To what account should be charged payments to a contractor for removing ashes from power station boiler room during a scarcity of regular help?

A. To account 52, "Power plant employees."

Q. (*B*-109). To what account should be charged expense of maintaining small portable buildings used by flagmen at grade crossings?

A. To account 24, "Buildings, fixtures and grounds."

Interurban Merger Rumored

A consolidation of the Charleston-Dunbar Traction Company and the Charleston (W. Va.) Interurban Railroad may result from the sale of the Dunbar line to Isaac Lowenstein. Mr. Lowenstein purchased the road for other parties.

Fred M. Staunton, vice-president of the Charleston Interurban Railroad, said that negotiations are pending regarding the future of the Dunbar line, but was not prepared to admit that any definite plans have been consummated. Former Governor W. A. MacCorkle, president of the Charleston Interurban Railroad, said that he was not in a position to give any information concerning plans for the merger.

Mr. Lowenstein, the purchaser of the Dunbar line, is president of the Charleston National Bank. He took over the property from Fred. Paul Grosscup, candidate for the Republican nomination for Governor in the last primary election. The deal is said to have involved $400,000.

Roads at Providence Sold at Foreclosure

The properties of the United Traction & Electric Company, Providence, R. I., were sold under foreclosure at Providence on June 24. The roads included were the Union Railroad, the Pawtucket Street Railway, the Rhode Island Railway, the Pawtuxet Valley Street Railway and the Cumberland Street Railway.

They were bid in by Charles H. W. Mandeville, secretary of the joint reorganization committee, which has in its hands practically all of the outstanding securities of the companies liquidated. It is expected that the joint reorganization committee consisting of Colonel Samuel P. Colt, Stephen O. Metcalfe and Michael F. Dooley will assign the roads to the United Electric Railways as the successor company and that the owners of the stocks and bonds of the companies going into the reorganization will receive in exchange the securities of the United Electric Railways in accordance with the reorganization plan referred to at length in the ELECTRIC RAILWAY JOURNAL for Feb. 19, 1921, page 381.

Utilities Oppose Depreciation Reserve Fund

The proposal of the Corporation Commission of Oklahoma to require all public service corporations in the State to set aside a depreciation reserve fund met with united opposition from the owners and managers of public utilities, at a hearing before the commission on June 21. The commission reserved decision.

The hearing was on proposed order No. 168 to compel each utility and other public service corporation to set aside a cash fund to cover depreciation of its property and prohibit it from paying out in excess of 6 per cent dividends until this depreciation reserve fund was created.

The utility operators expressed themselves as in favor of regulation of their rates and matters affecting their service to the public, but declared unanimously that if a corporation commission or any other governmental body were empowered to direct the management of the company or to tie up its funds in such a manner as they could not be used in the business, they would be unable to finance a single improvement.

The testimony of John W. Shartel, vice-president and general manager of the Oklahoma Railway, the largest electric railway system in the State, was typical. He said that his company has not been able to declare dividends for several years but has used all its surplus and net earnings in taking care of depreciation of the property and in putting in new improvements.

In the opinion of Mr. Shartel the proposed order would probably tie up about $200,000 of the funds of his company which otherwise would be put back into the property for improvement. He also declared that when he went to borrow money to build or extend interurbans or improve his city lines the banker would flatly refuse to make the loans.

Interest Payment Planned

Frank Hedley, president and general manager of the Interborough Rapid Transit Company, New York, N. Y., announced on June 27 that the company would be able to pay the interest on the Interborough Rapid Transit 5 per cent bonds and the rental on the Manhattan Railway, both due July 1, provided earnings are maintained on a fairly normal basis.

Financial News Notes

Public Service Net Increases in May.—The Public Service Railway, Newark, N. J., reports a net income of $65,816 for May, 1921, compared with $55,099 for May 1920. There were 38,456,479 passengers carried during the month. Of this number 31,285,489 were revenue passengers and 7,170,990 were transfer passengers.

Interborough $189,152 Behind.—The Interborough Rapid Transit Company, New York, N. Y., failed by $189,152 during May, 1921, to meet the cost of service. In May a year ago the company showed a surplus of $26,152. The net corporate deficit for the eleven months ended May 31 is $3,997,003 against a deficit of $1,953,664 for the same period of 1920 and compares with the twelve months' deficit of June, 1919, which was $3,810,340.

Service Discontinued.—The Eastern Massachusetts Street Railway suspended service on June 13 on the Woburn-Billerica line in accordance with a notice given out that jitney service would have to be withdrawn if operation of cars was to continue. The railway has provided for the needs of school children. The action of the company is not understood by the Mayor of Woburn, who stated that he had vetoed all jitney licenses in an effort to retain the railway service.

Abandoned Line Runs Again.—The Nassau Electric Railroad, a part of the Brooklyn Rapid Transit System, began operating the Ocean Avenue line on June 25 after a suspension of almost a year. The line runs between Bergen Street and Sheepshead Bay. Receiver Garrison has announced that the revenue would at least pay operating expenses from June 25 to Sept. 1, the vacation season when travel to the shore is heavy. The receiver reserves the right to discontinue service after Sept. 1.

Carhouse Property Sold.—The largest single piece of property in the downtown district of Long Beach, Cal., owned by the Pacific Electric Railway, was sold recently to H. E. Ware, a capitalist and investor of Long Beach for $125,000. The property, located on the northeast corner of American Avenue and Fifth Street, was used as a carhouse and freight depot by the railway.

Refunding Proceeding Completed.—Kidder, Peabody & Company, Boston, Mass., and Charles H. Dilman & Company, Inc., Portland, Me., recently offered for subscription at 100 and interest $600,000 of five-year collateral trust 8 per cent bonds of the Cumberland County Power & Light Company, Portland, which does the entire electric light, power and street railway business in Portland, Me., and vicinity. The new bonds are issued to retire $614,000 of 7 per cent notes which matured on June 1.

Master Commissioner Appointed.—Richard Swing, Cincinnati, was appointed master commissioner with increased authority to determine the assets and liabilities of the old Cincinnati & Columbus Traction Company by Judge Stanley C. Roettinger of the Hamilton County Common Pleas Court during the week ended June 11. Mr. Swing will determine what assessment, if any, should be levied against stockholders, who are said not to have paid in full for their stock. He was appointed in a similar capacity about a year ago, but lacked sufficient authority to probe deeply enough into the affairs of the company and Judge Roettinger's appointment gives Mr. Swing the necessary authority to take testimony from claimants and stockholders. When the old Cincinnati & Columbus Traction Company failed, one of the largest creditors was the Union Savings Bank & Trust Company, Cincinnati, a bondholder for $300,000. Stockholders of the company objected to the bank's claim.

Traffic and Transportation

Fare Five Cents

Detroit Back to Old Rate, but Charges One Cent for Transfer—Temporary Arrangement

A new 5-cent rate of fare and 1 cent for transfer within the present one-fare zone went into effect on the Detroit (Mich.) United Lines on June 19. The City Council on recommendation of Mayor Couzens accepted the counter proposal made by the company after the city's plan of a 6-cent fare and ten tickets for 50 cents had been considered by the company and rejected.

In response to the Mayor's verbal request that the company begin to operate service in the one-fare zone on the fare schedule proposed by the city A. F. Edwards, vice-president of the Detroit United Railway, replied in a letter to the Mayor that the company did not believe the city's proposal would serve either the city's or the company's purpose. He stated that if the company is to try operation with a 5-cent paid fare, a 5-cent cash fare must be tried in place of the tickets suggested by the city. The proposal was made without prejudice to the rights of any or all parties and was subject to the one consideration that the company's and city's accountants should, with all due diligence, agree on a system of accounting acceptable to both parties. Under the agreement approved by the Council, the transfer charge will cover a transfer ride over the same routes as were previously in force.

NO CHANGE IN GENERAL TRANSFER ARRANGEMENT

The very same transfer ride that could be obtained on the payment of a single fare will continue to be given for the 5-cent cash fare and the cent for a transfer. On the so-called double transfer routes the one transfer will serve the purpose. The 1-cent charge for transfers is not to apply on the so-called intermediate transfers, namely, where a person requires two transfers to reach his destination. In that case the charge is only 1 cent.

The new fare arrangement will not affect the city's attitude toward the redemption of rebate slips attached to strips of tickets sold by the company since June 9, 1920, according to Corporation Counsel Wilcox.

While the plan has not been in effect long enough to determine whether or not the company can operate successfully on a 5-cent fare, figures prepared by the city's auditors and presented to the Council show that the new fare rates will save about $1,000,000 a year for car riders and will give the Detroit United Railway about $180,000 more revenue than the city's proposal. It is stated that between 25 and 30 per cent of the riders now get transfers and will have to pay the 6-cent fare to ride to their destination. According to figures presented by the Mayor, the Detroit United Railway will earn approximately $200,000 a month above operating expenses under the new fare rate.

The agreement can be terminated at will by either party.

Low Fare Experiment

Cleveland Planning to Sell Two Tickets for Five Cents Good Down-town —Riding Off 11 per Cent

An experiment to determine whether an extremely low rate of fare will stimulate short haul car riders is to be made in Cleveland starting in July. The Cleveland Railway has asked the City Council to approve a plan for charging only a 2½-cent fare for riders in the down-town business sections of the city instead of 6 cents plus 1 cent for a transfer, which is the prevailing rate for the entire city.

The street railway committee of the City Council has already assented to the scheme as have also the directors of the railway. The City Council is expected to approve the change before it adjourns for its summer vacation.

The experiment is being attempted because ever since last December there has been a steady decline in the number of riders in Cleveland, until at present the reduction in the number of riders over last year amounts to 11 per cent.

The experiment is not a test of a zone system. railway officials point out, because it will merely take in the down-town section. As described by Paul Wilson, assistant secretary of the company, the experiment is being made for these reasons:

> We want to learn whether this low rate of fare will revive and increase the car riding habit of Cleveland; second, whether it will thereby increase our receipts, and third, whether it will aid in eliminating pedestrian congestion in the down-town section. We'd rather have jammed street cars than jammed sidewalks.

Under the new rate of fare for the down-town section, two tickets will be sold for a nickel or four for a dime. No transfers will be given in connection with these tickets. The easterly limit of the low fare zone will be East Twentieth Street, the southeasterly East Fourteenth Street, and the westerly limits the east approach of the new high level bridge. The territory covering the low fare zone is a little more than a square mile in extent.

Cleveland is admirably suited to the experiment, because town-bound cars, that is, those headed toward the Public Square, are pay-enters, while out-bound cars or those headed away from the Square, are pay-leave variety.

Operation of the lines in May was conducted at a net loss of $38,000 which caused a drop of $22,000 in the company's interest fund, the fare barometer.

Both John J. Stanley, president of the company, and Fielder Sanders, City Street Railway Commissioner, believe that the experiment may result in thousands of additional car riders daily in the territory affected.

Eight Cents in Spokane

City Commission Resents Ruling by State Body and Threatens to Turn Jitneys Loose

The Department of Public Works of the State of Washington on June 14 issued an order granting the request of the two Spokane railways, the Washington Water Power Company and the Spokane & Eastern Railway & Power Company for an increase in fares from 6 cents to 8 cents for a continuous one-way passage.

Immediately the city authorities who have been opposing the raise of rates proceeded to put into execution their threat that they would let loose the flood of jitneys which they have held in check for the last several years.

There is unquestionably a strong popular resentment against the railways seeking an advance now. However, an effort is being made to effect some sort of a compromise between the railways and the city.

On June 16 a delegation from the Chamber of Commerce protested before the City Commissioners against the return of the jitney to Spokane streets.

The trainmen retaliated by threatening not to run any cars. They were counseled, however, by the officers of their companies not to do anything that might further complicate matters.

The whole matter now rests on the efforts of the Spokane business men who are trying to bring about a settlement before the jitney situation reaches a condition which must be disastrous both from the standpoint of Spokane and that of the railways.

The Board of Public Works is a department of the state government under the new administrative code of the state which has succeeded the former Public Service Commission.

The following tabulation gives the income statement for the Washington Water Power Company for 1920, based on the fares in effect during that year, and at the proposed 8-cent fare had the proper charges been made for electrical energy used in operating cars:

	Based on 6-cent fare 6-mill power	Based on 8-cent fare 12-mill power
Operating revenues (gross)	$1,085,345	$1,364,480
Operating expenses..	699,419	789,904
Depreciation (retirement expense)....	152,955	152,955
Taxes	78,814	78,814
Total deductions from revenue	$931,188	$1,021,673
Operating income (available for interest)	154,155	342,805
Rate base	4,500,000	4,500,000
Rate of return......	3.43%	7.63%

The commission says that the Washington Water Power Company has shown by the evidence to have actually lost money during 1916 and 1918 and to have earned less than 1 per cent in 1917 and to have earned approximately 3½ per cent in 1919 and 1920, and the Spokane & Eastern Railway & Power Company has actually lost money during all of these years.

The commission estimates that the 8-cent fare will enable the Spokane & Eastern Railway & Power Company to earn $113,605 more in the next twelve months than it earned in 1920, resulting in an allowance over operating expenses and taxes of $6,306 to apply toward its depreciation reserve, but providing nothing for interest upon its investment.

In disposing of the contention of the city that the roads should consolidate the commission said that a physical consolidation was possible and undoubtedly some saving in operating expenses could be accomplished thereby, but there are legal and financial reasons why a consolidation cannot be effected within such time as will avoid the increase of rates now necessary.

President Huntington of the Water Power Company said in part:

> If the Spokane public will read carefully the full text of the decision of the State Department of Public Works in the street railway fare case, we believe that it will not approve of the intention expressed by representatives of the city government of turning jitneys loose.
>
> We believe that the public wants efficient railway service and is willing to pay the reasonable cost of providing it. For years before the war, when cost of labor, material and taxes were far below present levels, the railways earned little more than the bare cost of keeping them going.
>
> The railway property of the Washington Water Power Company is one of the most economically operated properties of its kind in the country. No other property of its size in the country operates entirely with one-man cars. The saving from this practice alone is more than $300,000 a year. If we operated with two-man cars we should have had to ask the Department of Public Works for a 10-cent fare at least. The public benefits directly, and in large measure, by such economies, and the company is entitled to consideration for the efficiency it has shown.

Six Cents in Knoxville

The Tennessee Railroad & Public Utilities Commission has issued an order allowing the Knoxville Railway & Light Company, Knoxville, Tenn., to charge a 6-cent fare effective July 3. The original application of the Knoxville Company was for a 7-cent fare and a 2-cent transfer charge. This was denied, the commission holding that the company had not set up sufficient reason for such an advance.

Referendum Threatened in Cincinnati

Members of a citizens' committee have begun to circulate petitions in an effort to bring about a referendum election to prevent the recent railway ordinance passed by the Council of Cincinnati, Ohio, from going into effect. Under the amended ordinance, as passed by the City Council, the Cincinnati (Ohio) Traction Company is compelled to reduce fares one-half cent on Aug. 1. If the citizens' committee should obtain 10,000 signatures of voters to the petitions and file the petitions with the Board of Elections before July 14, the ordinance can not go into effect. The committee in explaining the motive for circulating the petitions said that the amended street railway ordinance did not insure any permanent lowering of the rates of fares.

Emergency Rates Asked

Minneapolis and St. Paul Railways Seek Temporary Increases Pending Final Adjustment of Valuation

The Minneapolis Street Railway and the St. Paul City Railway on June 22 filed with the Minnesota Railroad & Warehouse Commission applications for new valuations for the two lines. They were in printed form and covered details of finance and service.

In the case of Duluth an application already has been filed for an emergency increase in rate of fare from 5 to 7 cents and four tickets for 25 cents. The hearing was set for June 28 as to justification for the new rate. In the case of Minneapolis an existing ordinance permits the railway to increase its rate from 6 cents to 7 cents or four tickets for a quarter, or if it wants a higher rate it may go right to the state commission. In an application soon to be filed the St. Paul City Railway will ask an emergency rate of fare. The present ordinance there, allowing a 6-cent rate, which now prevails, does not contain any feature like the Minneapolis grant providing for an automatic increase.

In St. Paul taxes are being paid on about $16,000,000 of property and in Minneapolis a tax on about $21,000,000, which amounts do not include all items to enter into the valuation. The valuations to be obtained will be a basis for the permanent rate of fare. Experts will be retained by both cities, but the company will pay the bill in each case.

Inasmuch as thirty days is allowed before hearing on a petition it would be Aug. 1 before the emergency rate, if allowed, will take effect in St. Paul. At that time the 7-cent fare would be put in Minneapolis also, making the fares uniform in the two cities.

Except for an extension and construction now under way in Minneapolis the company expects to do no more work in 1921, notwithstanding $1,000,000 of intertrack paving and $600,000 more extensions have been ordered.

The companies desire the temporary rates to be effective until such time as the Railroad & Warehouse Commission may definitely determine the value of the property involved, at which time the company hopes that the commission will establish an equitable rate of fare assuring a reasonable return on the fair value of the properties.

It is pointed out that this is particularly important in view of the fact that both Minneapolis and St. Paul are asking for large capital expenditures, and until the commission has definitely fixed the value of the property it will be impossible to secure the needed money to make the improvements demanded. According to the Twin City Rapid Transit Company, which controls the Minneapolis and St. Paul lines, the one idea of the railway is to be placed in a position where it can furnish adequate service at cost and have its credit established so that it can secure the needed money to keep pace with these growing cities.

Peoria Now and Twenty Years Ago

The story of Peoria's transportation growth and progress is told in the May issue of the *Peorian*, the official publication of the Peoria Association of Commerce. The old mule car was replaced in 1889 by the electric car which started the modern electric improvements on the Illinois Traction system. The accompanying announcements from the same publication give some important facts about Peoria in tne twenty years of its development.

INDEED "TIMES HAVE CHANGED"

(From Peoria Star, Oct. 13, 1920)

TIMES HAVE CHANGED

Motormen and Conductors Elated Over Increase of Pay 20 Years Ago to $11 and $13.

Twenty years ago, as noted in the files of The Star, the Central Railway Co. posted notices in the car barns, announcing an increase in the pay of conductors and motormen of $1 a week. This brought their pay up to $11 and $13 a week, depending on the length of service, which, it is stated, caused much satisfaction among the men.

	1900	1920	Increase
Wages	18½c per hr	59c per hr	218%
Fares	5 cents	7½ cents	50%

Street Car Fares Have Not Increased in Proportion to Wages and Other Operating Expenses

Peoria Railway Co.

The Electric Railway —and Progress

Railroads are built with the object in view of serving some prosperous territory.

If the men who promote such a commercial carrier operate freight and passenger trains on frequent schedule, the terminal points benefit.

Peoria is so situated on the Illinois Traction System.

The northern point of the largest electric railway in the world, Peoria, taps the richest commercial and natural resource field in the state.

All Peorians have an equal advantage in partaking of the opportunities the Traction presents in Illinois

Illinois Traction System

(McKinley Lines)

HOW THE STORY OF PEORIA'S TRANSPORTATION GROWTH IS TOLD BY THE PEORIA CHAMBER OF COMMERCE

Circuit Court of Appeals Sanctions Higher Fare

A recent decision in the United States Circuit Court of Appeals authorizes the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., to put into effect a 10-cent fare and further enjoins the Railroad Commission from interfering with the collection of that fare.

The company a few months ago applied to the commission to increase its fare from 7 cents to 10 cents. After the commission had denied the request the company instituted injunctions in the Federal Court. The case was heard by three judges. The principal contention of the railway was that a fair return upon the value of the property could not be made at the 7-cent rate of fare.

Renews Petition for Increased Fare

The Carolina Power & Light Company, Raleigh, N. C., has renewed its petition before the Corporation Commission for an 8-cent cash fare with four tickets for 30 cents. At a recent hearing the company claimed $11,373 net earnings for the first four months of this year, which, it was stated, was insufficient to pay interest on bonds and dividend on a plant valued at $828,741. This case was continued from last January, when the commission ordered the city of Raleigh to show cause, on May 1, why the rate should not be advanced. The present rate is 7 cents, with four tickets for 25 cents.

Commission Rules on Cumberland County Fares

Announcement was made by the State Public Utility Commission that the Bridgeton & Millville Traction Company, operating in Cumberland County, N. J., had been allowed an increase in fare, from 6 cents per zone to 7 cents per zone, in Bridgeton and between Bridgeton and Millville; 7 cents per zone on the Bridgeton-Port Norris line between Bridgeton and Newport. The board allowed a charge of 8 cents per zone on what was characterized as the "non-paying" part of the system, south of Newport, between Newport and Bivalve. The rate to school children may be increased to 1½ cents a mile by the company.

The freight rates allowed by the board were 25 cents for the first 100 lb. or fraction of this weight, and 10 cents for each additional 100 lb. Where $1.60 per ton is now charged by the concern, $1.80 per ton was allowed by the board.

Wants Higher Fares.—The Athens Railway & Electric Corporation, Athens, Ga., plans to petition the State Railroad Commission for a 10-cent fare. The present rate is 6 cents.

Transportation News Notes

Interurban Rates Advanced. — The Pacific Northwest Traction Company has announced increased rates amounting to 4 cents on each commutation book ticket issued on its electric interurban line between Seattle and the Everett city limits. Only book rates are affected by the increase.

Two-Cent Advance in Fares.—The Corporation Commission of North Carolina recently permitted the Salisbury & Spencer Railway, operating in Concord, to increase its rates from 8 to 10 cents. The company is controlled by the North Carolina Public Service Company and would have had to abandon service had the commission refused the petition.

Four Cents a Mile Authorized.—Judge Louis FitzHenry, in the United States Court, has granted authority to the Galesburg & Kewanee Electric Railway, operating between Kewanee, Ill., and Galva, Ill., to increase its passenger fare to 4 cents a mile. The distance between the two cities is 8 miles and the fare is now 32 cents instead of 28 cents.

Commission Orders Summer Rates.—The Public Service Commission recently issued an order directing the United Railways & Electric Company, Baltimore, Md., to put into effect a single fare between city points and River View Park after 1 p.m. on Saturdays, Sundays and holidays and after 7 p.m. on other days. The ruling is to continue until Sept. 18.

Seven-Cent Rate Continues.—The Missouri Public Service Commission recently extended the 7-cent fare on the lines of the United Railways, St. Louis. The 7-cent rate was allowed some time ago and the time is extended until Dec. 31, 1921. This extension is permitted on the showing of the receivers' financial report for the first four months of this year.

Bus Route Planned.—Applications to operate motor buses have been filed with the California Railroad Commission by the San Francisco-Oakland Terminal Railways and the Napa-Soda Springs Bus Company. The key-route system is planning to operate a route from Fortieth Street, Oakland, to Montclair. The other route now being planned is between the cities of Napa and Soda Springs.

A Privilege for the Blind.—For the accommodation of the blind, Supt. Gaboury of the Montreal Tramways has given out notice that passes will be issued authorizing a blind person and his guide to ride for one fare. Accordingly, conductors will accept one cash fare in payment of passage of two such people. The pass will be printed in both the French and English languages.

Hearing on Fare Matter Scheduled.—Exceptions have been taken to the ruling filed recently by the Interstate Commerce Commission to the effect that the fare over the Daisy Line between Louisville and New Albany be reduced to 8 cents. The case will be argued before the entire Commission on July 14, and until that time the company will collect the regular 10-cent straight fare.

Court Upholds Railway. — Federal authority recently sustained the right of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill., to charge 10 cents for rides within the city of Ottawa. This decision rules out the petition of the city asking the Federal court to prohibit the company from charging 10 cents for rides which start and terminate in the limits of Ottawa. The company is also permitted to charge 3.6 cents per mile for passenger traffic.

Responsibility Fixed for Long Island Wreck. — The Interstate Commerce Commission deals at length in its summary of accident investigation reports for January, February and March, 1921, with the side collision between two passenger trains on the electrified Atlantic Avenue branch of the Long Island Railroad, near Autumn Avenue. The accident occurred on Feb. 13. It resulted in the injury of twenty-three passengers and one employee. The commission says the accident was caused by the failure of a motorman properly to observe and be governed by signal indications.

Anti One-Man Car Legislation Fails.—Efforts at Tallahassee to legislate Tampa's one-man cars—and those in St. Petersburg and other cities too, for that matter—out of business were finally frustrated by the tacking on of an amendment to the second section which practically kills the bill as effectually as striking out the enacting clause. The amendment has stuck through the final two readings in the House, despite efforts to knock it off, and on the final reading the bill was passed and sent to the Senate, where it is confidently expected it will either die in committee or pass as it stands. The amendment exempts from provisions of the act those cars specifically designed for operation by one person and known as "one-man cars."

Increased Rates Announced.—Increased passenger fares have been announced by the management of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont. One-way fare has been advanced from 2.5 cents a mile to 2.75 cents a mile; round-trip fare from 2.25 cents a mile to 2.47 cents a mile; monthly commutation books from 0.81 cents a mile to 1 cent a mile. In commenting on these changes A. Eastman, vice-president and general manager, said: "Only that we have enjoyed a splendid patronage and that operating expenses have been kept down to the lowest possible point consistent with safety this company would not have been able to continue operation during the past three years."

Personal Mention

Journal Editor to Aid in Preparation of Business Paper Course

Henry H. Norris, managing editor of the ELECTRIC RAILWAY JOURNAL, has been delegated by the New York Business Publishers' Association to assist in the preparation of a course of instruction for present and prospective employees in the field of business papers. The association has contracted with the Business Training Corporation of New York City to administer this course and Mr. Norris' first duty will be to supervise the preparation of text material. In this work he will have the assistance of a co-operative group of from thirty to fifty leaders in the business papers field. In the fall groups of students will be organized among the several publishing organizations and these groups are to be led by experts in the publishing field with whom Mr. Norris will co-operate during the initial period of the work. This new work will not interfere with Mr. Norris' connection with the ELECTRIC RAILWAY JOURNAL except that it will require a portion of his time for a few months.

E. A. MacMillan, formerly superintendent of the Stroudsburg (Pa.) Traction Company, and but recently returned from imprisonment in Soviet Russia, following his service with the British Railway Mission to Siberia, has been appointed assistant superintendent to the Atlantic City & Shore Railroad, Atlantic City, N. J.

Edward T. Stotesbury, who was long chairman of the board of the Philadelphia Rapid Transit Company, has accepted the chairmanship of the Committee on Finance of the Sesqui-Centennial Association of Philadelphia, to which he was recently appointed by Mayor Moore. His associates on the committee are: John Wanamaker, John H. Mason, Ellis A. Gimbel, and Mrs. Arthur H. Lea.

Fred B. Johnson, who recently retired from the Indiana Public Service Commission, has added his name to the list of those who, after severing their connections with the commission, immediately took up the practice of utility law. In an announcement Mr. Johnson states that although he will engage in a general practice he will specialize in utility matters. He states that in connection with Jesse I. Miller, of Washington, he will handle all matters before federal departments and bureaus in Washington, more particularly in connection with federal taxation questions.

Frank B. Musser, president of the Harrisburg (Pa.) Railways, is now in Edinburgh, Scotland, attending the convention of the International Rotary Club as the official delegate of his local club, of which he is vice-president. He sailed from this country on June 1. At the close of the convention he will take advantage of the opportunity to tour France and Belgium. His plans were to return to the United States about July 15. His friends among the railway men who attended the annual meeting of the Pennsylvania Street Railway Association, which met recently in Harrisburg, missed his joviality at the sessions. To remind him that he was not forgotten, the secretary of the association was instructed to cable him the greetings and best wishes of the members.

John H. Moran, general auditor of the Boston Elevated Railway, was called to Rochester, N. Y., recently in the capacity of adviser to the arbitration board, whose duty it was to settle the controversy between New York State Railways and its employees in Utica, Rochester, Syracuse and surrounding cities who are members of the Amalgamated Association. The arbitration board was composed of Judge Arthur Sutherland of Rochester, an impartial member; B. E. Tilton, vice-president of the company, and James H. Vahey, Amalgamated counsel, representing the company and the Amalgamated Association respectively. As announced on June 18 the arbitration board reduced the wages approximately 11½ per cent, with a maximum hourly rate for the trainmen of 53 cents.

C. E. Davies has been appointed by the American Society of Mechanical Engineers as managing editor of the society's publication to succeed the late L. G. French, who was both editor and manager. Mr. Davies was graduated from the Rensselaer Polytechnic Institute with the degree of M. E., and for several years afterward specialized in industrial management work. He became associated with the Smith-Premier works of the Remington Typewriter Company, Syracuse, N. Y., in 1914. During the war Mr. Davies was in the Ordinance Department at the Frankford Arsenal. Mr. Davies joined the editorial staff of the society in March, 1920, as associate editor of *Mechanical Engineering* and assistant secretary in charge of meetings and publicity. The society thus secured to assist on its publication and to help with its meetings one especially trained in large diversified business undertakings.

R. M. MacLetchie, comptroller of the Alabama Power Company, Birmingham, Ala., has recently taken over the duties of treasurer of the property formerly discharged by R. A. Mitchell, who was vice-president as well. As comptroller and treasurer Mr. MacLetchie will have complete supervision of all finances and accounting of the company.

W. I. Boyer has recently been appointed secretary and treasurer of the Hot Springs (Ark.) Railway. He is stepping into the place formerly occupied by W. E. Johnson.

Obituary

John I. Fistus, who had been associated with the transportation department at the main office of the Pennsylvania-Ohio Electric Company in Youngstown, died on May 15.

Joseph F. Devender, for twenty-eight years in the employ of the Brooklyn (N. Y.) Rapid Transit Company, is dead. Mr. Devender served in many capacities with the company, ranging from helper to general foreman in the line department, which position he held at the time of his death.

Michael J. Duffy, a veteran of forty years' service with the street car lines of Boston, died suddenly at his home in Roxbury, Mass., April 28. Starting in as a conductor on the horse-car lines he rose through the ranks, until at the time of his death he was assistant superintendent of Division 2 of the Boston Elevated Railway. His funeral was attended by officials of the company and by several hundred fellow employees and friends.

Will H. Bloss, manager steam railroad sales of the Ohio Brass Company, Mansfield, Ohio, died at his home in Mansfield on June 22. Mr. Bloss was born on April 4, 1869. After receiving his engineering training at the Indiana University he started his career in railroad work. At one time he was division engineer on the Santa Fé Railroad and later he held a position as chief engineer of the Indiana Union Traction Company. He went to the Ohio Brass Company in November, 1906, from the Buda Company of Chicago and was district sales manager in some of the Central States until about a year ago. From that time he had devoted his effort to electrification development and other steam railroad problems.

Lieutenant Daniel Sylvester, head of the traffic squad of the San Francisco Police Department, died on May 16. He was recognized nationally as an authority on traffic matters and was elected president of the National Traffic Officers' Association which convened at the Civic Auditorium in San Francisco last August. The convention came to San Francisco as a result of his efforts. To Mr. Sylvester belongs credit for many of the nation's traffic laws and since taking charge of the San Francisco traffic squad he had accomplished more in that direction than any other one man. In an effort to stir up interest in the larger cities of the country in a national and uniform law governing traffic in all of the states of the nation, Mr. Sylvester toured the country last year and visited forty-eight cities.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Prompt Deliveries of Heavy Track and Shop Tools

Prices Are Thought to Have Touched Bottom but Buying Continues Very Light

Excellent deliveries are quoted by manufacturers at the present time on heavy tools used on the roadbed and in shops, such as rail benders, rail saws, track drills, car movers, wheel presses, punches, shears, lathes, etc. Despite the present low level of production in this field producers are generally prepared to make immediate shipments on material that does not have to be made to specification. Where a product requires special manufacturing, work can be started as soon as orders are received, for back-order files have long since ceased to exist.

Substantial stocks of raw material are reported on hand which are gradually being made up into finished products of which a fairly large supply is also reported. Plants have either reduced their number of workmen or are running on part time, with operation ranging from about 25 to 40 per cent of capacity.

Manufacturers in this line apparently do not expect much improvement in business before the fall months. Lower labor costs may aid the steam railroad business somewhat as this class of buying has been even proportionately worse than electric railway demand. Steam roads have been so cramped financially, manufacturers state, that their buying of shop and track tools has been almost nil, whereas some of the electric roads have purchased up to about 25 per cent of their normal requirements.

Prices on track material such as rail saws, rail benders, track gages and levels, car replacers, etc., are said to have dropped about 20 per cent since the first of the year and are about 40 per cent below peak prices. Quotations on standard heavy shop products are down from about 10 to 20 per cent since the first of the year, and on special products selling prices are about 20 per cent below last year's quotations. The general view of manufacturers is that prices have about reached their bottom level.

Market for Car Ventilators Not Very Active

Demand for car ventilators is light—in line with slack buying of new rolling stock on the part of electric railways. The outlook for future business is said to be fairly good, but not much hope of a reaction from the present dullness is held out before this fall. One of the newcomers among manufacturers of railway ventilating equipment reports that because of the present condition of railroad buying the company has drifted into the building ventilation line, where its product is equally applicable and is meeting with good success.

Stocks in some instances are not carried where ventilators are a special product, but in others a fair surplus supply is held. Deliveries are generally very prompt although production is down to about 50 per cent of capacity. Working forces have been cut in half in some instances, too. Prices in this field were not advanced in line with many other products, it is stated, and therefore quotations at present are only about 5 to 10 per cent lower than last year.

Quiet Market for Car Seats

Demand for Repair Seatings Is Inactive, Too—Rattan Prices Down 25 to 30 per Cent

Activity in the car seat market at present is confined to the production of old orders and little else. Buying of new seats is very light; there has been some business emanating from St. Louis, Detroit and Canada in line with buying of cars there, but the general situation is dull. Even the repair market is inactive and producers are well stocked with rattan material as a result.

At this same time last year there was about six times as much business going through as there is at present, one producer reports. Steam railroads are not placing orders either, the export market is lifeless, and the motor-bus seat trade, which started to come to the front rapidly, has fallen way off. Some hope is placed in the inauguration of lower labor costs on steam roads as the turning point for better demand from that quarter. In this connection the item of high labor cost is probably the one factor that shows up the electric railway market more than any other, it is stated.

Production of car seat manufacturers is down low because it follows actual buying pretty closely. Stocks of finished seats are not carried, but customers' requirements as to delivery can be well met at the present time. Orders are filled in from two to four weeks depending upon their size.

Prices have come down considerably, a large seat manufacturer dropping the price on rattan, for instance, about 20 per cent the first of June. This makes a total reduction of between 25 and 30 per cent from the peak on that product. Slat seats are said to be close to bottom because the lumber market is well down.

Leather has receded considerably too, but imitation leather has been coming to the front on the grounds of price.

Railway Buying of Jacks Is Light

Prices Are Down 20 to 25 per Cent and Production Is at One-Quarter of Capacity

Railway buying of lifting jacks has been limited this year, manufacturers report, and bids fair to remain so for the balance of 1921. Electric railways have purchased nothing at all in this line, some producers state, while others have received a small amount of business. Orders for the most part are not large individually and very often cover emergency requirements. Steam railroad buying has figured even to a less extent in the market. Unfavorable labor and financial conditions and the smaller volume of material to haul on transportation lines and in the automobile-truck field too have all aided in reducing sales of jacks. In general it is not expected that the balance of this year will record a very great increase in demand.

Prices on jacks used by railways are down from 20 to 25 per cent from the peak. This drop has been aided by a cut in wages amounting to 20 per cent in some instances. Raw material has also receded, in fact it is stated that this item is not expected to go enough below its present level to justify further lowering of prices. The main thing that would aid in bringing about additional lower costs on jacks, it is said, is greater production, for at the present time the industry is down to about 25 per cent of capacity operation. This decreased output of course entails bigger overhead expenses.

Raw material stocks in the field have been large in some cases but are being worked off without being replaced with new material, in view of present conditions. Fairly large stocks of the finished product are held in comparison with current buying, so that in general immediate shipments can be made. In view of the limited production, however, sudden orders for certain jacks occasionally exhaust the supply and then a delay of some weeks may occur before the stock is replenished.

Strong Buying of Armature and Coil Winding Machines

Their Increasing Use Accounted For by the Elimination of Stocking Several Different Types of Armatures

Good buying of armature and coil winding machines is reported at present. Demand seems to be well distributed and is coming not only from railways in this country but also in good volume from foreign countries. The basis of this business, the amount of which seems rather surprising in view of general market conditions, is said to be the desire of railways to lower costs through doing away with the need of stocking complete armature and field coils. In some instances it has been found necessary to stock a dozen or more different types of these where various motors are used. With the use of these machines only certain frames need be carried in stock as they can be made up as quickly as needed.

As this product is more or less of a specialty prices have not receded to any great extent, a drop of about 5 per cent from the peak having been made. Production is well up at present with deliveries being made promptly, or in about ten days to two weeks.

Exports of Railway Material in First Quarter of 1921

Railway cars and parts with a total value of $15,073,000 rank twenty-third out of a list of the 100 chief exports of this country during the first quarter of 1921, according to the foreign commerce department of the U. S. Chamber of Commerce. Steel rails with a total value of $10,552,000 are thirty-first, railway switches, frogs, splice bars, etc., totaling $3,336,000, are seventy-first; bolts, nuts, rivets, etc., follow in seventy-fifth place with a valuation of $2,987,000; railroad ties are ninety-seventh with a value of $1,926,000, and electric switches, in ninety-eighth place with a value of $1,890,000, are the last railway item listed.

Comparison is also made on a few of the items that can be figured on a poundage basis, with the volume of exports in the first quarter of 1920. On this basis exports of steel rails increased from 28,529,000 lb. in the first three months of 1920 to 37,465,000 lb. in 1921, and bolts, nuts, etc., from 20,210,000 lb. to 30,937,000 lb. Likewise, exports of railroad ties in the first quarter jumped from a total of 700,000 ties in 1920 to 1,300,000 ties this year.

Good Stocks of Car-Type Lightning Arresters

Lightning arrester sales, so far as the car-type are concerned, have been disappointing thus far, manufacturers report. This of course is a direct result of the light buying of new cars by electric railways. In anticipation of the usual seasonal volume of business in this line producers generally stocked up on car-type arresters, so that deliveries there are immediate. Central station buying is fairly good at present, however, though not up to the standard of last year, which was also below par.

On large types deliveries can be made in from two to eight weeks, the lower range being for arresters generally used and the longer delivery for highly special products. Stocks of the finished product on this type are not carried, but a good supply of parts is reported on hand ready to assemble. Prices are down 10 per cent, this drop being made earlier in the year.

New Electric Railways in Japan

The Mushashi Electric Tramway Company, recently organized, according to the *Japan Advertiser*, will construct and operate a new electric railway from Tokyo to Yokohama, running approximately 1½ miles inland from the present railroad. The company will also furnish electricity to the villages along the route. Plans are being made, according to a translation from the Nagoya Shimbun, for the construction of a railroad between Nagoya and Yamada, a distance of 61 miles. Power is to be supplied by the Ibugawa Electric Power Company. Another line 30 miles long, around the Chita Peninsula, is planned by a company to be capitalized at 4,000,000 to 5,000,000 yen. A translation from the Osaka Mainichi Shimbun reports a project for the construction of an electric railway between Nagoya and Gifu. It is proposed to construct a double-track line paralleling the present steam railway, at a cost of about 7,000,000 yen.

Rolling Stock

The United Railways & Electric Company, Baltimore, Md., is expecting to buy twenty gasoline motor buses.

Detroit (Mich.) Municipal Railway is considering the use of trackless trolleys as feeders to be used in conjunction with the regulation municipal ownership cars. Specifications and prices for furnishing fifty of the new type cars will be asked. If bids sufficiently attractive to justify the purchase of the trackless cars are received by the commission that type of car will probably be used on some of the lines in the less congested districts. It is the belief of the commission that the cars can be manufactured in Detroit. The approximate cost is estimated at $7,000 each, and the maintenance is placed at 18 cents per mile as against 40 cents per mile for motor buses.

Track and Roadway

Indiana Service Corporation, Fort Wayne, Ind., owing to poor business conditions, has postponed for about a year building an extension to the proposed big truck plant which is to be erected just east of Fort Wayne, Ind., by the International Harvester Company. But the Greater Fort Wayne Development Company — a million dollar concern—which was formed among Fort Wayne business men to build homes, etc., is going ahead with plans already formed for putting in streets for the plant. One of the things which the development company is pushing right along is the extension of the car lines of the Indiana Service Corporation to the plant. Recently a remonstrance was filed by residents of Pontiac Street against the double tracking of that street, so another route to the plant east of the city is being considered.

Seattle (Wash.) Municipal Railway may resume work on an extension in East Marginal Way and First Avenue South, sus-

NEW YORK METAL MARKET PRICES

	June 1, 1921	July 1, 1921
Copper ingots, cents per lb	13.25	12.87½-13.00
Copper wire base, cents per lb	15.00-15.25	15.00 -15.25
Lead, cents per lb	5.00	4.40
Nickel, cents per lb	41.00	41.00
Zinc, cents per lb	5.20	4.75
Tin, cents per lb	31.50	29.12½
Aluminum, 98 to 99 per cent, cents per lb	28.00	28.00

OLD METAL PRICES—NEW YORK

	June 1, 1921	July 1, 1921
Heavy copper, cents per lb	10.75 to 11.00	9.50 to 10.00
Light copper, cents per lb	8.25 to 8.37½	7.25 to 7.50
Heavy brass, cents per lb	5.25 to 5.50	4.75 to 5.00
Zinc, old scrap, cents per lb	2.50 to 2.75	2.50 to 2.62½
Yellow brass, cents per lb	4.00 to 4.50	4.00 to 4.25
Lead, heavy, cents per lb	4.25 to 4.50	3.50 to 3.62½
Steel car axles, Chicago, per net ton	14.50 to 15.00	13.00 to 13.50
Old car wheels, Chicago, per gross ton	13.50 to 14.00	13.00 to 13.50
Steel rails (short) Chicago, per gross ton.	14.00 to 15.00	12.00 to 12.50
Steel rails (rerolling), Chicago, gross ton	13.50 to 14.00	13.00 to 13.50
Machine shop turnings, Chicago, net ton.	3.50 to 4.50	3.50 to 4.00

ELECTRIC RAILWAY MATERIAL PRICES

	June 1, 1921	July 1, 1921
Rubber-covered wire base, New York, cents per lb	16.00	16.00
Weatherproof wire base, New York, cents per lb	15.50	15.00
Standard Bessemer Steel Rails, per gross ton	45.00	45.00
Standard open hearth rails, per gross ton	47.00	47.00
T-rail, high (Shanghai), per gross ton, f.o.b. mill	.....	.....
Rails, girder (grooved), per gross ton, f.o.b. mill	.....	.....
Wire nails, Pittsburgh, cents per lb	3.25	3.00
Railroad spikes, drive, Pittsburgh base, cents per lb	3.40	3.25
Tie plates (flat type), cents per lb	2.75	2.75
Tie plates (brace type), cents per lb	2.75	2.75
Tie rods, Pittsburgh base, cents per lb	5.50	5.50
Fish plates, cents per lb	2.75	2.75
Angle bars, cents per lb	2.75	2.75
Rail bolts and nuts, Pittsburgh base, cents per lb	4.50	4.50
Steel bars, Pittsburgh, cents per lb	2.10	2.10
Sheet iron, black (24 gage), Pittsburgh, cents per lb	3.85	3.60
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	4.55	4.30
Galvanized barbed wire, Pittsburgh, cents per lb	4.10	3.65

	June 1, 1921	July 1, 1921
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.70	3.25
Car window glass (single strength), first three brackets, A quality, New York, discount*	82%	82%
Car window glass (single strength), first three brackets, B quality, New York, discount	82%	82%
Car window glass (double strength, all sizes, A quality), New York, discount	83%	83%
Waste, wool, cents per lb	11 to 17	10 to 17
Waste, cotton (100 lb. bale), cents per lb.		
White	9.00 to 14.00	8.50 to 11.00
Colored	6.50 to 12.00	6.00 to 8.50
Asphalt, hot (150 tons minimum), per ton delivered	33.00 to 35.00	33.00 to 35.00
Asphalt, cold (150 tons minimum, pkgs. weighed in), per ton	33.00 to 36.00	33.00 to 36.00
Asphalt, filler, per ton	36.00	36.00
Cement, New York, per bbl	3.20	3.20
Linseed oil (raw, 5 bbl. lots), New York, per gal	.78	.76
Linseed oil (boiled, 5 bbl. lots), New York, per gal	.80	.78
White lead (100 lb. keg), New York, cents per lb	.13	.13
Turpentine (bbl. lots), New York, per gal.	.65	.61

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* These prices are f.o.b. works, with boxing charges extra.

pended some time ago after expenditure of $27,000. This was forecast when Superintendent of Municipal Railways D. W. Henderson was asked by Oliver T. Erickson, chairman of the Council utilities committee, to furnish an estimate of cost of completing the work. The line would give a direct route for South Park cars, now routed through Georgetown.

Utah Light & Traction Company, Salt Lake City, Utah, as a result of a reduction in the wages of its employees now has at its disposal $125,000 for needed repairs to paved streets, track and for overhauling equipment.

Power Houses, Shops and Buildings

Union Traction Company, Anderson, Ind., lost a substation at Maxwell, Ind., by fire during a recent electrical storm.

Connecticut Company, New Haven, Conn., will hereafter be furnished with power for the operation of its cars in Derby, Ansonia and Shelton from the Derby Gas & Electric Company. Formerly current was generated by the Connecticut Company's own plant in Shelton.

Professional Note

J. O. G. Gibbons and **C. E. Brown** have formed a partnership under the name of Gibbons & Brown, consulting engineers specializing on power plants and industrial problems, with offices in the Ordway Building, Newark, N. J. Mr. Gibbons was formerly with Westinghouse, Church, Kerr & Company and is now engaged in private practice. For the past four years Mr. Brown has been a United States ordnance engineer.

Trade Notes

The Hi-Voltage Equipment Company, Cleveland, Ohio, has developed a new type of lightning arrestor for outdoor mounting.

The Black & Decker Manufacturing Company, Towson Heights, Baltimore, Md., has recently placed on the market a portable electric grinder.

The Walter Motor Truck Company, 227 West Sixty-first Street, New York City, has developed a new line of electric road trucks of from 1,500 lb. to 7-ton capacity.

The Independent Pneumatic Tool Company, Chicago, Ill., has put on the market the "Thor" electric drill stand for converting portable electric drills to drill presses.

The Esterline-Angus Company, Indianapolis, Ind., has brought out a graphic alternating current ohm-meter for recording the resistance of liquids, the concentration of solutions, etc.

The United States Steel Products Company, which handles the export business of the U. S. Steel Corporation, has taken an order for $400,000 of steel rails it is stated, from the Toronto (Canada) Transportation Commission.

The American Insulated Wire & Cable Company, Chicago, manufacturer of "American Brand" weatherproof and bare copper wire and cables, contemplates building a rod mill when building conditions are more settled.

The Benjamin Electric Manufacturing Company, Chicago, has recently placed on the market its type RR threaded fixtures for heavy-duty service which are especially adapted for use in railroad shops and yards and large industrial plants.

The Adapti Company, Cleveland, Ohio, announces that it has purchased outright the property and buildings formerly occupied by the Cleveland Refrigerator Company at East Seventy-second Street and Oakwood Avenue, Cleveland, where operations will begin about July 15.

The Whitman Electric Manufacturing Company, Whitman, Mass., has completed two new kilns of its own with large Sager capacity. The company is getting out a line of porcelain specialties—rosettes, receptacles, etc.—and is in a position to make shipments on special porcelain material.

John A. Roebling's Sons Company, Trenton, N. J., is considering the construction of a new building for its copper wire and electrical galvanizing department. Plans at present are in a preliminary stage and no definite time is set for the completion of the work, the company announces.

The Arrow Tool & Manufacturing Company is the new name for the Arrow Tool Company, 200 Cannon Street, Bridgeport, Conn., manufacturer of tools of all descriptions. The company will continue as in the past to manufacture tools, dies and special machinery with no change in management.

Belden Manufacturing Company, Chicago, Ill., manufacturer of electrical wires and cables, has issued bulletin No. 1, dated June 1, of the "Belden Bulletin." This bulletin will hereafter be issued to the trade monthly and will contain current net prices of the company's products. Bulletin No. 1 covers rubber-covered wires and lamp cords.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., during the first three months of this year billed sales amounting to $7,656,218 as against $6,320,597 for the same period in 1920. Net profits after provision for federal taxes amounted to $774,189. Unfilled orders on hand March 31, 1921, aggregated $12,943,633, compared with $19,442,791 last year.

The Safety Car Heating & Lighting Company, New York City, held a meeting of its board of directors on June 15 at which time the following officers were elected: W. L. Conwell, president; J. A. Dixon, R. Parmly and James P. Soper, vice-presidents; C. W. Walton, secretary and treasurer; William Stewart, assistant secretary and assistant treasurer.

The Industrial Protective Company, Dayton, Ohio, of which W. R. McLean was president, was dissolved as of June 30, and the Dayton office discontinued. With H. A. Fishleigh, Mr. McLean has organized the Fishleigh-McLean Secret Service Bureau, with offices at 720 Nicholas Building, Toledo, Ohio, which firm will continue the services heretofore supplied by its predecessor.

The Elliott Company, Jeanette, Pa., announces additions to its sales organization as follows: R. H. Schmidt has been assigned to the St. Louis district office, W. E. Widau to the Cleveland office and R. S. Bellman to the Philadelphia district office. In addition to the Elliott company's products they will also handle those of the Lagonda Manufacturing Company, Springfield, Ohio, and the Liberty Manufacturing Company, Pittsburgh.

The International Register Company, Chicago, Ill., through its sales agent the Electric Service Supplies Company, has leased 112 International portable hand registers to the Third Avenue Railway Company, New York City. These registers are attached to the fare box and used as an additional check on fares. About 250 of them were also placed with the Public Service Railway Company, Newark, N. J., earlier this year, for use on its safety cars.

Empire Engineering & Supply Company about trebled its capacity for making switchboards and panelboards when it moved into its new factory at Twentieth Street and Fourth Avenue, Brooklyn, N. Y., in May. The new building is 100 ft. x 160 ft., only one story in height but so constructed that two or three stories may be added as needed. The company reports a satisfactory volume of business in these types of boards with the shops running almost full time.

The Royal Indemnity Company, 84 William Street, New York City, after having worked for some months on a form of policy for the insurance of electric motors, etc., early this year received approval from the insurance authorities in New York State of the form of a policy which would indemnify for the electrical and mechanical breakdown of motors, generators, transformers, regulators and other electrical apparatus. The company guarantees the repair bills directly incidental to such troubles.

The Triumph Electric Company, Cincinnati, manufacturer of motors and generators, announces the removal of its Chicago office from 628 West Lake Street to 2814-16 Wentworth Avenue, where it has more spacious quarters. W. R. Bonham is manager of this office. The company has also moved its New York office, of which T. W. Kloman is manager, from 80 Cortlandt Street to the Knickerbocker Building, Forty-second Street and Broadway. The Wood & Lane Company, St. Louis, representative of the company, is now established at 1016 Market Street, St. Louis, where it has large warehouse facilities and carries ample stocks of the various lines.

The Stoker Manufacturers' Association at its summer meetings, held in Stockbridge, Mass., June 14 to 16, elected the following officers: President, Maxwell Alpern, vice-president American Engineering Company, Philadelphia; vice-president, S. A. Armstrong, vice-president Underfeed Stoker Company of America, Detroit; treasurer, Richard D. Hatton, vice-president Laclede-Christy Company, St. Louis; secretary, J. G. Worker, vice-president Phoenix Manufacturing Company, Eau Claire, Wis. These officers, with the addition of R. Sanford Riley, retiring president, and A. G. Pratt, of Babcock & Wilcox Company, make up the executive committee.

William Aldrich, who has recently been in charge of the Southern territory of the Metal & Thermit Corporation, New York, has been transferred to its Western territory. From 1899 to 1908 Mr. Aldrich was associated intermittently with the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. In 1909 he joined the former Goldschmidt Thermit Company, since when he has traveled in every State in this country, also in Canada, West Indies, Central America, Panama and the tropics in the interest of Thermit. Mr. Aldrich will travel extensively in the far Western States and will make his headquarters at the new South San Francisco office of the Metal & Thermit Corporation. William H. Moore, who until recently was assigned to the Chicago territory, now has charge of the Southern territory.

The Link-Belt Company, 910 South Michigan Avenue, Chicago, according to an announcement made by Charles Piez, president, has acquired all of the capital stock of the H. W. Caldwell & Son Company. At the same time Frank C. Caldwell has been elected director of the Link-Belt Company. Thus two experienced companies in the conveyor field have joined forces, with the result that the Link-Belt Company has added two lines, "Hellicord" conveyors and power-transmission machinery, to its line of manufactures. While the plant of the H. W. Caldwell & Son Company will continue to operate under separate corporate existence and under its present name, the joint facilities of the two companies and the broader avenues of distribution possessed by the Link-Belt Company should prove of distinct advantage to the customers of both, says Mr. Piez. There will be no modification of the policies of the Caldwell plant, no impairment of its service and no change in its product. The plant management will remain substantially the same as at present.

New Advertising Literature

Unaflow Engines.—Bulletin No. 29 recently issued by the Ridgway Dynamo & Engine Company, Ridgway, Pa., describes its unaflow engines.

Steam Tables—The Wheeler Condenser & Engineering Company, Carteret, N. J., has published the sixth edition of "Steam Tables for Condenser Work."

Electric Glue Pot.—"Glue Pot Service" is the title of a pamphlet issued by the Automatic Electric Heater Company, Warren, Pa., covering its electric glue pots.

Mill-Type Motors. — General Electric Company has issued bulletin No. 48121.1A, superseding bulletin No. 41821.1, entitled "Direct-Current Mill-Type Motors, type MD

Alternating - Current Engine - Type Generators.—This is the title of the fifteen-page, illustrated bulletin No. 1115 superseding No. 1098 issued by Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Electrical Porcelain.—"Standard Electrical Porcelain is the title of a new catalog recently issued by the R. Thomas & Sons Company, East Liverpool, Ohio, covering its porcelain products.

Wood Stave Pipe.—The Redwood Manufacturers Company, Hobart Building, San Francisco, Cal., has issued catalog X, June 1921, "A Handbook of Information for Hydraulic Engineers Relating to Remco Redwood Pipe."

Buffers and Grinders.—The Valley Electric Company, 3157 South Kingshighway, St. Louis, Mo., has issued a circular describing and giving net trade prices on its complete line of portable electric buffers and grinders which it has just recently developed.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
DONALD F. HINE, Editorial Representative A. D. KNOX, Editorial Representative GEORGE BUSHFIELD, Editorial Representative
G. J. MACMURRAY, News Editor

Volume 58 New York, Saturday, July 9, 1921 *Number* 2

The Golden Mean in the Use of Autos

THE USE of autos instead of street cars by railway officials in inspecting their properties has been criticised once or twice in these columns by managers who believe that thereby many faults of the transportation force escape detection. Mr. Dana, in a communication in this issue, points out very properly that the automobile is a necessary tool under modern conditions to annihilate time and distance in the efficient conduct of a large urban property, and his remedy is for the manager to see that this tool is used only for the purpose for which it is intended.

This is undoubtedly the correct answer. In nearly all questions on which men differ there is a golden mean. The Western manager whose letter published in these columns began the discussion called attention to a real evil. The best place for an official to watch the performance of the trainmen and to determine the effect of track maintenance on car operation is on the car itself. Hence, if an electric railway official uses his own cars so far as he can to travel from one point to another on his system he not only uses his time spent in traveling in the performance of his duties, but he gets better acquainted with the operating force. But there are times when speed in getting from one point on the system to another is essential, and here the faster vehicle is desirable. The Western manager admits that there are instances of this kind. He protests only against the automobile "habit," through which he says the company is in danger of losing the services of a once efficient official.

Stability of Earning Power of Electric Railways Shown

ONE of the claims often made, and properly, in the past for electric railways as an investment was that their earnings are not as greatly affected as are many other industries by adverse industrial conditions. During the past few years electric railways have rather been ignored by the average investor, who has been attracted by the more alluring industrials, "war brides," oil companies and shipping companies. During the past twelve months, and especially the past six months, however, some of these latter companies have fallen into hard times. The export business has decreased due to high exchange and other reasons and domestic demand has become much less, so that dividends have been suspended and both gross and net have decreased.

A table published in the department "Financial and Corporate" in this issue shows how the electric railways have fared during this period. The list is not a selected one, being all of the railways in a list published weekly in the *Commercial and Financial Chronicle* of public utilities which report monthly earnings to that paper. Of this list of thirty companies, only three show decreases in gross earnings for this year to date as compared with last year to date. The decreases for the companies mentioned are minor, while notable increases are recorded for the other properties reporting, especially the larger companies. All figures are quoted irrespective of mileage, but it is not believed that any of the companies outside of the two subway companies in New York have added materially to the miles of track operated by them during the year in which comparison is made. The showing is a notable one of the stability of earning power of electric railways.

What Happened in Illinois

THE Illinois Legislature has adjourned, leaving a record that, if not creditable for measures adopted, is at least complimentary for the bills killed. The principal measures fostered by the Governor and Chicago's Mayor, in line with election campaign pledges, were one that would create a transportation district as a means of bringing about people's ownership and a 5-cent fare and another designed to abolish the public utilities commission and create home rule. What happened was somewhat of a surprise, as there developed in the last few days of the legislative session a sentiment in the state which finally resulted in a clean-cut repudiation of the plans of the administration.

The transportation district bill, which had been so worded that the referendum vote on it would have come at the time of the next Chicago mayoralty election and thus again made the traction situation the election issue, was killed altogether. The public utilities regulation bill was finally passed, but not until more than sixty amendments had so disfigured it that the original measure could scarcely be recognized. The home rule feature is virtually eliminated. But the bill does abolish the present commission, and in that sense only does it carry out the Governor's promise. But even then the new law as amended makes a better statute than the old one from the standpoint of the utilities. The new statute practically continues the old one with these changes: The Illinois Public Utilities Commission, with five members at $5,000 each, is abolished and the Illinois Commerce Commission (I. C. C.), with seven members at $7,000 and eight assistant commissioners at $5,000, is created. There is a provision that a petition originating with the voters (not the City Council) and signed by 25 per cent of the registered legal voters will bring about a popular vote on whether the local utilities shall be subject to local instead of commission regulation. If home rule is established in any city, the order of appeal from orders of the Council shall be first in the county in which the complaint originates. Some of the positions of the commission have been removed from under civil service requirements. By a separate bill the annual appropriation for the commission was increased by $500,000. There may be other provisions contained in the mass of amendments jammed through at the last minute that are not yet assimilated.

Upon analysis, none of these provisions appears dangerous to the utilities. An increase in the size of the commission has often been thought desirable as a means of speeding up its work. The likelihood of securing a petition for home rule vote, signed by 25 per cent of the registered voters of a city, seems decidedly remote. In Chicago, for example, this would mean the names of more than 200,000 voters on the petition, and if that many people were sufficiently aroused against a utility to sign such a petition it would seemingly indicate that there was something radically wrong and a change ought to be made. Furthermore, since it is provided that appeal from a local order shall be made to the commission, this would seem to forestall any great value in having home rule and to strengthen the position of the commission.

So, while the new law does increase the patronage to be distributed by the Governor, no particular damage has been done the righteous cause of the utilities, and since the legislators have determined, in spite of the influence of a most pernicious and powerful political machine, not to take those steps that would keep the public service companies in politics and uncertainty, the fears for their future welfare in Illinois will be largely dispelled.

Central Electric Railway Association Provides for Better Engineering

HOLDING its summer meeting under ideal surroundings, the Central Electric Railway Association not only enjoyed to the fullest measure its delightful cruise on the Great Lakes but also set up a record of worth-while accomplishments. Of particular importance was the plan, approved subject to detailed development, providing for separate meetings of the engineering members. For several years there has been an agitation in the association for some scheme that would permit the engineers to gather by themselves, free from the restraint of the bosses' presence, for the purpose of exchanging ideas and experiences on common problems. The plan devised is quite different from any heretofore discussed and whether it will work out satisfactorily remains to be seen. At any rate the association is to be congratulated for taking steps to provide these much desired and potentially valuable meetings, and if the present plan does not work out it can be revised. Its success as always depends upon the willingness of individuals to work.

One weakness common to much association work has been recognized and guarded against by providing an engineering council whose duty it is to lay down a program each year for the work of the sectional meetings. The latter will therefore meet for a definite purpose and will know toward what end it is working. However, this definite assignment of duty should not preclude the possibility of having free round-table discussion on any point brought up by any member, for this was the primary reason for seeking these separate meetings. There is some doubt whether the grouping of equipment, electrical and track men together in the same meetings will be as fruitful of results as are the meetings held in Pennsylvania and Ohio for the equipment men exclusively. On the other hand, there will be opportunity to discuss and work out the various technical questions of mutual or interdepartmental interest. In any event the plan laid out by the association is a step in the right direction and will serve to make the association of greater interest and usefulness to the engineers and the operating men and finally to the companies.

What It Means to Classify the Jitney as a Common Carrier

PUBLIC carriers have exercised their calling for the last 2,000 years or longer, and the rights of the public to establish routes and exercise some sort of supervision as to their maintenance and to prevent discrimination in charges has been recognized for a very long period. In fact, it is difficult to imagine a common carrier service without the acceptance by the carrier of certain definite responsibilities to the public, along the lines at least of the maintenance of a schedule so far as it can be done and a uniformity in charges for the transportation supplied. The recognition of the right of the authorities to exercise such regulation is second nature to the railway men, but hardly so to the average jitney operator, who wants to enjoy the privileges of the common carrier but to avoid all of its duties and responsibilities.

While the thinking men among the motor bus operators favored and even urged the passage of regulating legislation, yet it is easy to understand the attitude created in the minds of many jitney operators in Connecticut by the passage of a law at the last legislative session recognizing the public aspects of the service being given by the jitneys in that state and putting the jitneys under the control of the Public Utilities Commission. This law goes into effect July 15 and the commission has now issued certain regulations under it.

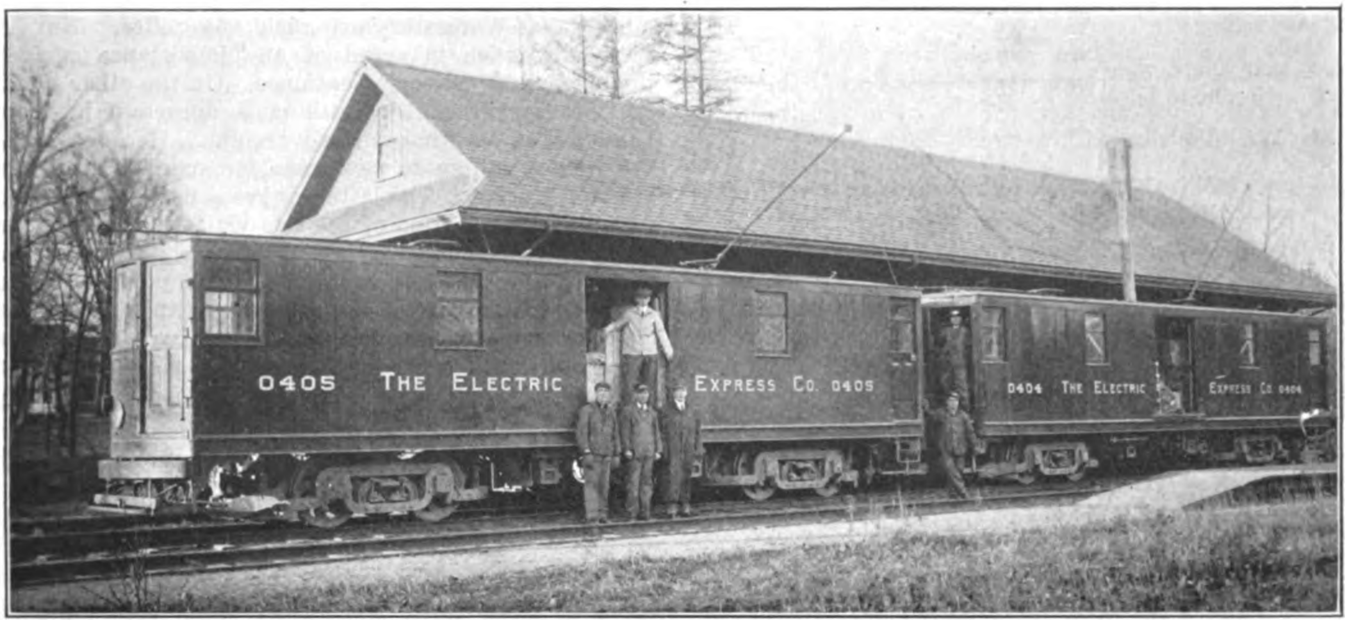
Under the new law proposed routes may be established only when proof is established of their convenience and necessity. The first decision on an application of this kind has just been rendered and in it the Public Utilities Commission of the state outlines its policy. Some of the controlling factors were held to be: (1) The general public good and the general public requirements rather than individual convenience; (2) essentiality of existing street railways; (3) stability, permanency and continuity of existing service; (4) protection of existing franchises from competition. When a commission stands for such a policy and is ready to protect existing franchises, not only for trolley lines but for steam roads, against competition that is piratical, there can be no reason for the transportation companies, the public or the municipalities served to feel that they are not going to get a square deal.

The railways, however, must not only be willing but must demonstrate that they can adequately serve the territory allotted. Of course the answer or governing index is the attitude of the public. To have the index favorable means that the trolley companies must do some real merchandising—they must put out the kind of service that will satisfy the people after it has been produced. In some cases running time can be cut, or better headways provided so as to lessen overcrowding. At least an attempt should be made to indicate to the public that its welfare is being considered. Then, too, the trolley company can add complementary bus service as feeders to existing rail lines serving territory now tapped by the jitneys, but nevertheless competing to a large extent with the trolley lines.

Undoubtedly transportation of the future will be a unified system that will utilize both trackways and highways according to their respective economic spheres.

Trolley Freight and Motor-Truck Customers

The Trolley Freight Systems of the Springfield-Worcester-Boston Area Hold Their Own Through Adverse Times Because of Reliability, Frequency of Service and Low Cost—Healthy Growth Attained Despite Drawbacks


0405 THE ELECTRIC EXPRESS CO. 0405
0404 THE ELECTRIC EXPRESS CO. 0404

TWO MOTOR CARS IN ELECTRIC FREIGHT TRAIN

IT IS well known that the electric railways in the older, more settled parts of the United States, particularly New England, were not built with the idea of carrying anything but passengers. When they did undertake freight and express carriage they found it necessary to overcome both franchise and physical obstacles. The lack of properly equipped and located freight houses and of unimpeded track facilities proved an especially severe handicap. Therefore, it is no wonder that more than one Eastern road made but a half-hearted attempt and then quit this field. More recently the advent of the motor truck has put a further damper on such efforts.

The very truth of these statements lends all the more interest to the work of a group of electric railways which has succeeded in attaining a healthy growth despite the drawbacks of partial operation over city streets and in a district where good roads and short runs give the motor truck many advantages. This service is given in western Massachusetts and adjacent districts of Connecticut and Rhode Island shown on the accompanying map, through the co-operation of the following electric railways, practically all of which are of the combined city and highway trolley type:

1. Springfield Street Railway
2. Worcester Consolidated Street Railway
3. Interstate Consolidated Street Railway
4. Milford, Attleboro & Woonsocket Street Railway
5. Attleboro Branch Railroad
6. Boston & Worcester Street Railway
7. Holyoke Street Railway
8. Connecticut Valley Street Railway
9. Northern Massachusetts Street Railway
10. Hartford & Springfield Street Railway
11. The Rhode Island Company
12. Boston Elevated Railway

Of the foregoing lines, 1, 2, 3, 4 and 5 are under one management, with R. E. Cosgrove as general traffic agent; lines 7, 8, 9, 10 and 11 grant running rights to the service conducted by Mr. Cosgrove; lines 8 and 9 are under the direction of Leon Bolster, assistant to vice-president and general manager, while line 6, Boston & Worcester Street Railway, carries on a freight and express business under the direction of F. O. Lewis, general freight and passenger agent, including running rights into Boston Elevated Railway, line 12. The Boston & Worcester cars also may run over the other trackage of the system, but ordinarily the through service is Springfield-Worcester-Boston, as noted hereinafter, aside from the service between Worcester and Providence.

EXTENT AND CHARACTER OF SERVICE

The distance between Springfield and Worcester is 55 miles and between Worcester and Boston 44 miles, so that the direct east-west service may be described as usually 100 miles, and the transfer service, Springfield to Providence, via Worcester, as 121 miles. The Springfield-Boston through service was not inaugurated until Feb. 1, 1921. This extension of direct carriage has stimulated business because of the elimination of transfer and rebilling at Worcester. About two-thirds of this class of traffic is from Boston west-bound.

For this through business single cars or two-car trains are run every night. Cars leaving Boston at 5 p.m. reach Springfield in time for the 7 a.m. store delivery the following day, the cars actually reaching the freight house about 3 a.m. At the Springfield end it is now customary to close the receipt of freight at 5 p.m., leave at 8:30 p.m. and reach Boston between 11 a.m. and 12 noon the next day, but arrangements are under way to assure a 7 a.m. delivery in Boston.

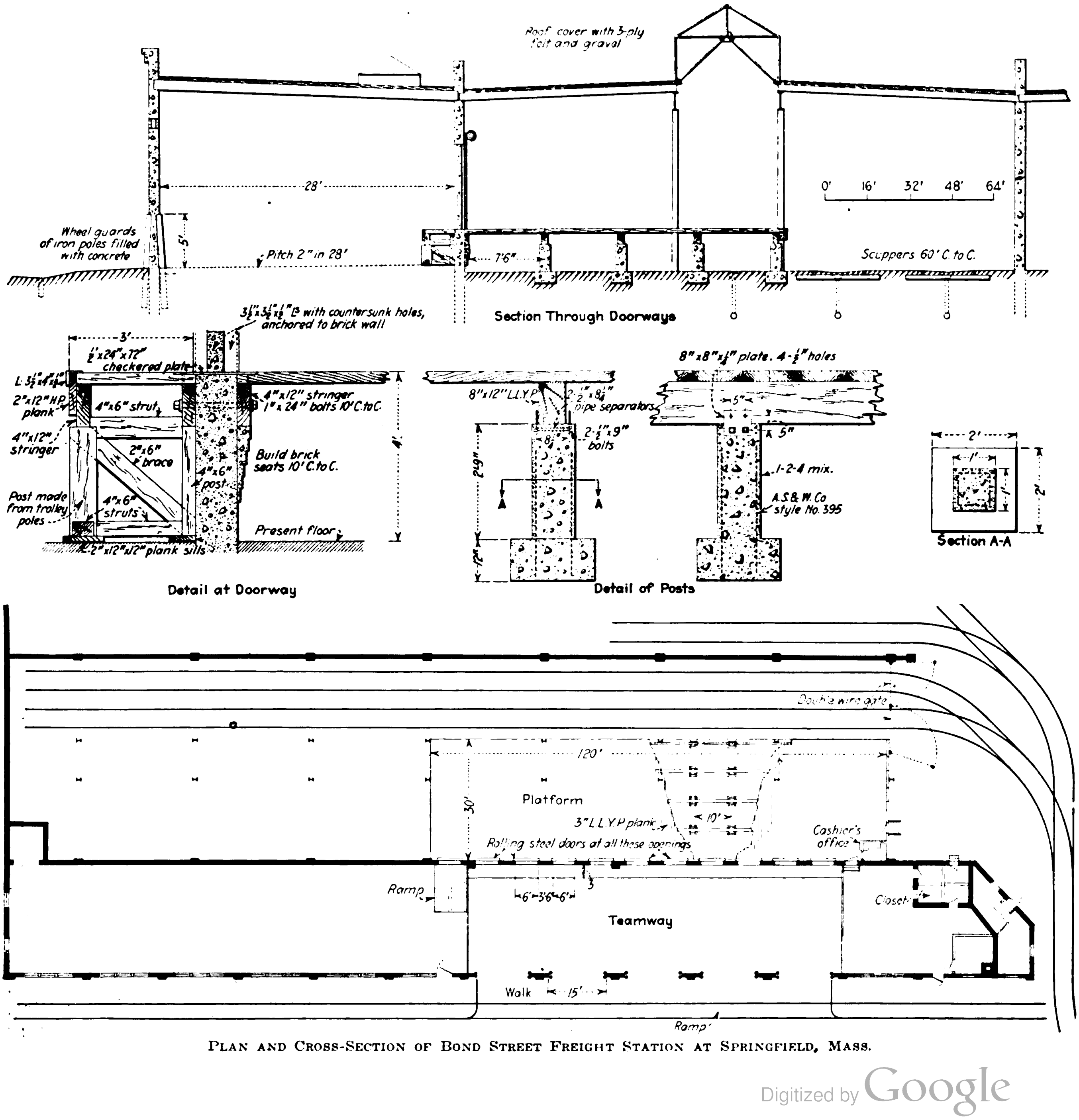
As to the service between Springfield and Worcester, trolley freight in each direction leaves regularly at

9:30 a.m. for afternoon distribution and at 8:30 p.m. for early morning distribution the following day. Since Feb. 1, 1921, a trailer has been added to the night car, because business has increased in spite of the fact that in this district the month of January, 1921, was the worst, industrially, in many years. This increase began before the industrial depression, owing to dissatisfaction with the rates and service of the steam railroads.

Two cars a day are run between Worcester and Providence to take freight transferred from Springfield. The connections are such as to permit delivery on this 121-mile run within twenty-four hours.

MOTOR TRUCK AND EXPRESS MEN ARE GOOD CUSTOMERS AND BUSINESS SOLICITORS AS WELL

Paradoxical as it may appear, the best business solicitors for the trolley freight service are the motor truckers in this district. These operators solicit motor-truck shipments for New York and other distant points, but request that the shipper use the trolley freight as far going south and west as Springfield, 145 miles from New York! The explanation of this paradox of electric railway for short haul and motor truck for long haul is simple. Those motor truckers, who have survived through the lean months that have followed the war fever and steam railroad embargoes, realize that they cannot compete in rates with the frequent-service trolley for such runs as Boston-Worcester, 44 miles, and Worcester-Springfield, 55 miles. Nor is their advantage in speed of any importance against the over-night delivery mentioned. On the other hand, the steam railroads are still most uncertain in their handling of less-than-carload freight. Hence a shipper who is willing to pay extra for speed will engage a motor trucker. The latter makes a flat over-all rate, including that portion of the trip via trolley. The rate charged to the customer is approximately first class or express, but that which the truckman pays over the electric railway part of the run may be third or fourth class or some extremely low commodity rate. Thus the motor-truck operator is sure of a clear profit for


Roof cover with 3-ply felt and gravel
28'
5'
Wheel guards of iron poles filled with concrete
Pitch 2" in 28'
7'6"
0' 16' 32' 48' 64'
Scuppers 60' C. to C.
Section Through Doorways
3½"x3½"x½" L with countersunk holes, anchored to brick wall
3'
½"x24"x72" checkered plate
L 3½"x4"x½"
2"x12" H.P. plank
4"x12" stringer
4"x6" strut
4"x12" stringer
1"x24" bolts 10' C. to C.
2"x6" brace
4"x6" post
Build brick seats 10' C. to C.
Post made from trolley poles
4"x6" struts
4'
Present floor
2"x12"x12" plank sills
Detail at Doorway
8"x12" L.L.Y.P.
2-½"x8¼" pipe separators
2-½"x9" bolts
8"
2'9"
12"
A
A
8"x8"x½" plate. 4-½" holes
5"
5"
1-2-4 mix.
A.S.& W. Co style No. 395
Detail of Posts
2'
1'
1'
2'
Section A-A
Double wire gate
120'
30'
Platform
3" L.L.Y.P. plank
10'
Rolling steel doors at all these openings
Cashier's office
Ramp
6'-3'6"-6'
3
Teamway
Closet
Walk
15'
Ramp

PLAN AND CROSS-SECTION OF BOND STREET FREIGHT STATION AT SPRINGFIELD, MASS.

possibly one-third of the run, which profit gives him a working margin to permit quoting an over-all rate of, say, 1 cent a mile per 100 lb.

With the great let-down in the demand for goods of any and every description, the motor trucker is no longer able to secure full loads and top prices. Aside from this, he has to meet the competition of furniture movers and others who take a good load one way and in their eagerness to return with a load underbid the concern which is trying to conduct a regular common carrier business. On the whole, therefore, the electric railways in this combination have no fear at all of the motor truck. Indeed, they are prepared to and do give space in their freight houses to motor truckers because of the business which they solicit for shipment by electric railway in its originating or final stage.

The old-time expressmen in Springfield and Worcester are also good solicitors for electric express. As in the case of the motor truckmen, their advertisements, which read "Direct Service to ——," etc., are to be taken with several saline grains, as they are glad to make use of the electric railway freight facilities for remarkably short distances. In fact, the most experienced operator at Springfield does not hanker for motor trucking in retail delivery for distances beyond 8 miles if his light trucks can radiate from railway stations. These operators were among the first users of motor trucks, but unlike the irresponsible individuals who entered motor haulage during the war, they are used to keeping books and know just what they can afford to charge for their services. The use of the electric railway by such operators to the extent of free space in the freight house and special cars (as at Worcester) is evidence on the relative cost of haulage by truck and electric of more importance than a ton of statistics.

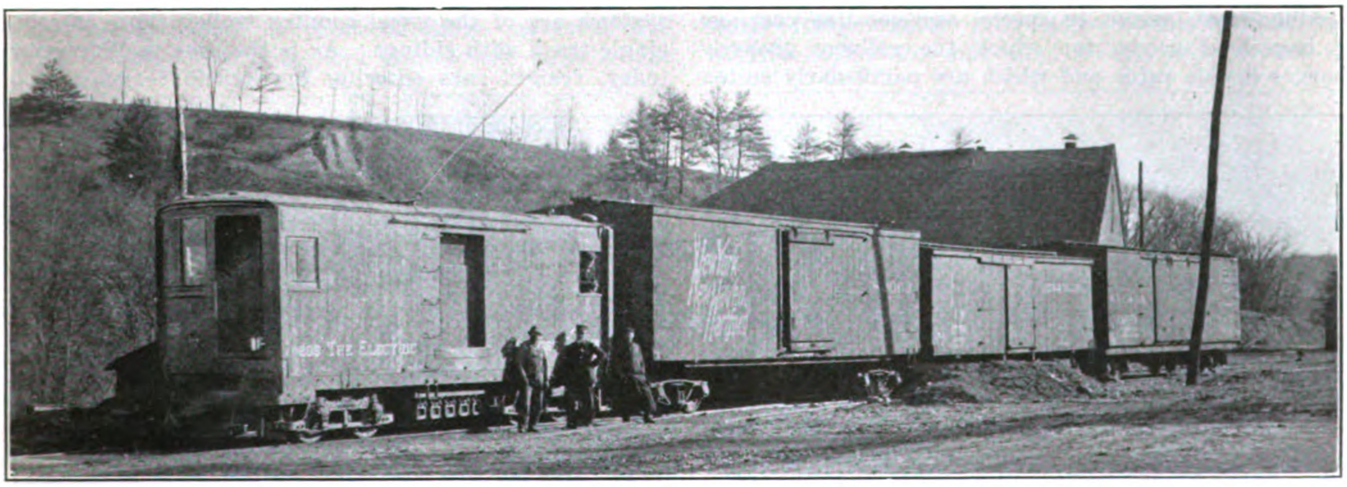
A more difficult problem for the electric railway freight agent is that of securing the business of wholesale firms who look upon the operation of motor trucks carrying their names from an advertising standpoint as well as from a delivery standpoint. In many cases the advertising argument prevails even when it is admitted that the electric railway, or the electric railway plus local motor truck short haul, would be cheaper than the through service and would be fast enough for all regular operations. In several cases the shipper has given up motor trucking with his own fleet, either purchasing the services of motor truckers at a saving to himself or making use of the electric railway where convenient. It goes without saying that much private-firm trucking is wasteful because of the comparatively small loading, so that it is only a question of time as to when the novelty feature will wear off and make way for clear economics.

FRONT OF THE ORIGINAL SPRINGFIELD FREIGHT HOUSE

It would hardly be profitable to list the variety of business done by trolley freight in this district, but some of the more unusual operations may be mentioned. For example, the jewelry manufacturers of the "Attleboros" in Massachusetts use trolley freight for direct shipments from factory to pier at Providence, Rhode Island. Again, there is the carriage of blooded horses and prize cattle from fair grounds to fair grounds as a proof of prompt and careful transportation service.

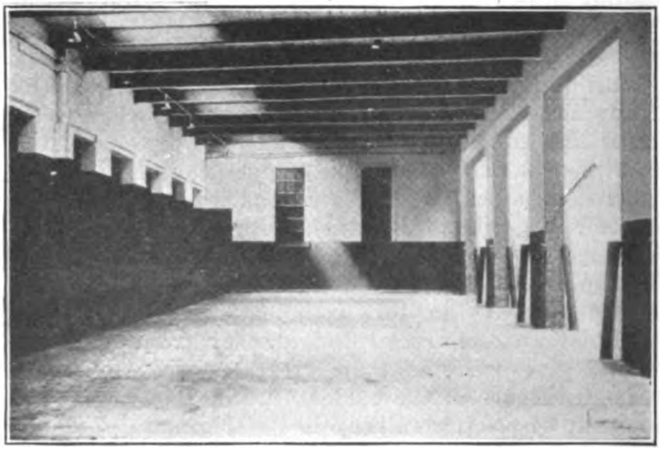
As shown on the map, the electric lines reach a number of towns that have no direct steam railroad service. This condition has developed considerable business in the switching of steam freight cars. Boston & Albany cars are taken at Palmer for Brimfield and other points to Southbridge, while New Haven Railroad cars are taken at Southbridge for Charlton City and Charlton.

An example of the highly economical service possible through electric freight is afforded in the case of the Holyoke Street Railway. Early in 1921 the management of the Holyoke system outbid a con-



ELECTRIC LOCOMOTIVE AND CARS AT SOUTHBRIDGE, MASS.

TEAMWAY IN BOND STREET TERMINAL—



INTERIOR OF THE BOND STREET TERMINAL. THE WIDTH OF THE PLATFORM BETWEEN ELECTRIC CARS AND MOTOR TRUCKS IS ONLY FIFTY FEET

tractor who uses motor trucks for the business of supplying trap rock and gravel for the bridge under construction over the Connecticut River at Springfield. The rock comes from the Holyoke company's quarries at the foot of Mount Tom, 11 miles from the point of use, whereas competitive quarries are at Westfield, only 7½ miles distant via the Boston & Albany Railway and the public highway. The gravel from the Holyoke system is taken at South Hadley, 13 miles away, which is about the same distance as the competitor's pit at North Wilbraham.

The contractor was using 5-ton trucks carrying 6 to 10 tons of rock, whereas the cars illustrated carry 24 tons of rock or 18 cu.yd. of sand. It is estimated that 3,500 carloads of material will be required for this job. In spite of the surplus of idle motor trucks in this territory, the trucks could not possibly meet the cost of transport possible with the trolley. This is clear from the fact that the entire haul costs but $1 per ton of rock or per cubic yard of sand.

RATES ARE ATTRACTIVE YET SENSIBLE

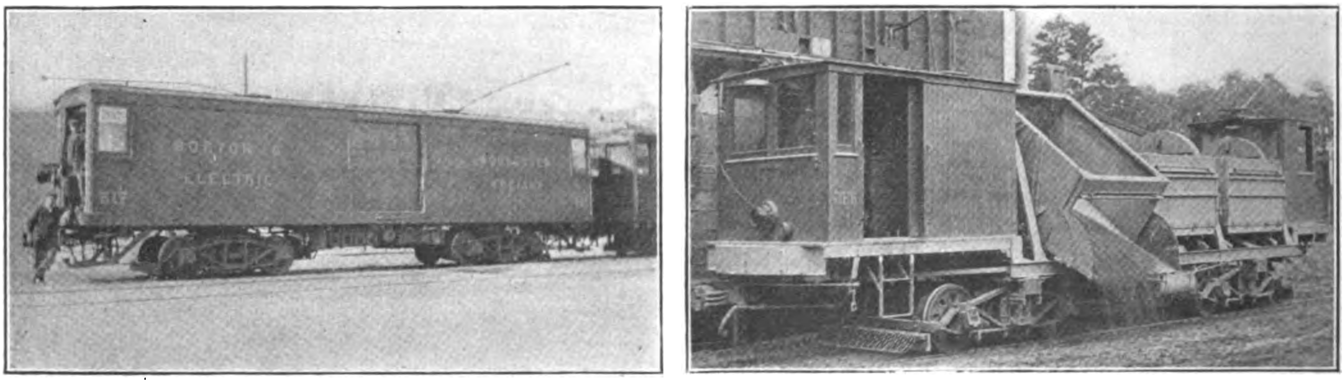
Generally speaking, the electric railway rates in this district were higher than steam railroad on the first, second and third-class categories. The electric railways took earlier increases parallel with steam railroad increases up to 20 per cent over pre-war rates. However, they have not followed the 40 per cent increase made by steam railroads in March, 1920, except in part for hauls in excess of 20 miles. The electric rates have always been lower than motor trucks could possibly meet, except in special services like carriage of household goods, for which the railway properly charges double rates and which are particularly suited for the motor trucks because of the desirability of minimum rehandling. It has already been pointed out that experienced motor truckers doing a common carrier business are glad to make use of the trolley freight as a source of revenue to themselves.

Milk is one item that has always enjoyed an exceptionally low rate. The Springfield company charges only ¼ cent per quart on a 26-mile haul for delivery to a Springfield creamery. In warm weather one advantage of milk carriage by trolley is that it arrives as milk and not as butter. Byproducts of milk also enjoy exceptionally favorable rates. It may be mentioned here that several years ago Mr. Cosgrove made the fertile suggestion that through the aid of trolley freight it would be practicable to establish municipal milk and coal stations, which would help to reduce the cost of living through the reduction of haulage expense and the elimination of duplicate or overlapping competitive routes. In his opinion, the time is coming when the present waste in goods carriage—particularly as regards trucking in cities—will have to go.

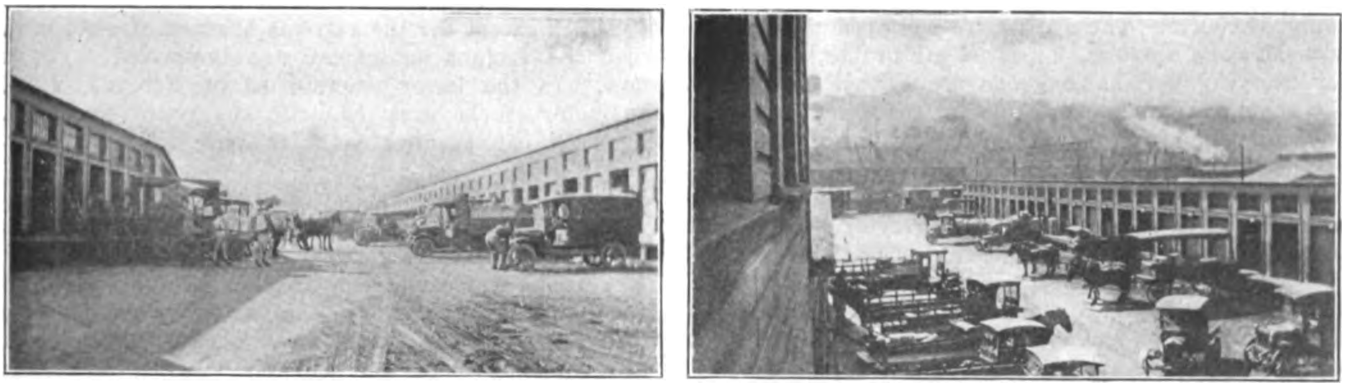
The trolley companies are popular with the shippers, not only because of more frequent service but also because of greater liberality in credits, weekly credits being the rule in contrast with the two-day limit of the steam railroads. Naturally, the electric railway group is also more closely identified with the local interests of the territory.

FACILITIES

Outside of the cities, the Springfield and Worcester systems are of the usual country trolley type, namely, single track with sidings. As is the case in Worcester today, freight cars entering Springfield formerly had



TWO TYPES OF ROLLING STOCK USED



Two Views of the Worcester Freight Terminal. The Freight Houses of the Springfield and B. & W. Face Each Other on Opposite Sides of a Broad Teamway

to come in and go out over the main travel-ways of the passenger cars. In 1920, however, the Springfield Street Railway built within that city 4 miles of single track with five turnouts. For the time being, this track is being used exclusively for uninterrupted entrance and exit of freight cars.

The Boston & Worcester Street Railway is somewhat better situated as regards the through run and the Worcester end. It is constructed as a high-speed, double-track line on reservation for 20 miles in the center of the public highway and on an absolutely private right-of-way for another 14 miles. Thus it has 34 miles of clear track out of 44. The 2 miles in Worcester do not constitute a handicap because they do not extend into the business center, but at the Boston end it is necessary to operate over 8 miles of city streets, although some of the track is on reservation. The running time for the 44 miles between Worcester and Boston is two and one-half hours, but the schedule allows for three hours.

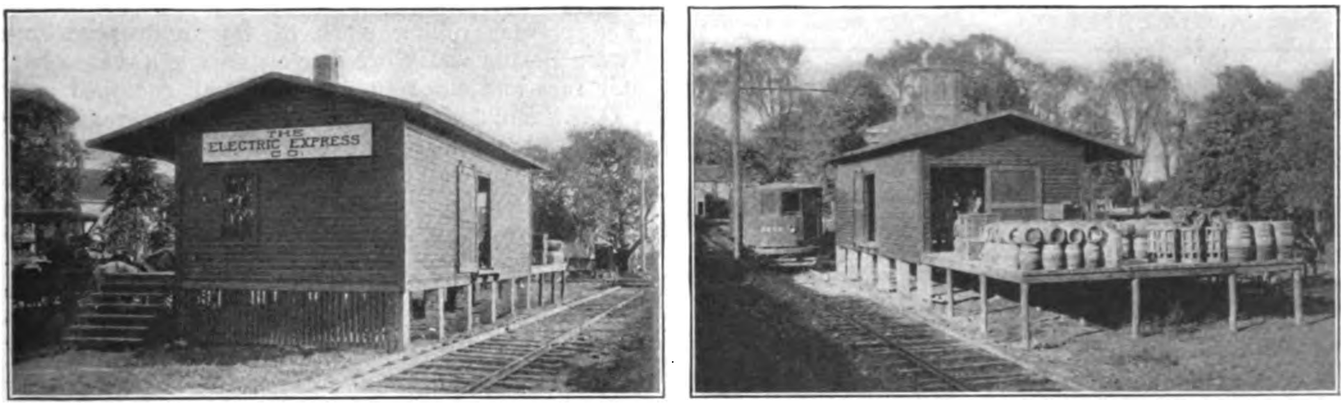
The Holyoke and Providence connections of this group also lack the advantage of direct right-of-way entrance into the cities. Nevertheless, they hold their own with any kind of competition; all the more so since the establishment of through connections with the Holyoke and Boston & Worcester companies for shipments from Springfield and Worcester or vice versa.

As shown in an accompanying halftone, the Worcester freight houses of the Springfield and Boston & Worcester companies face each other from opposite sides of a broad team and truck way. Vehicles bringing or carrying off goods simply back up against the platforms and are loaded or unloaded with an astonishingly small amount of trucking, since the longitudinal design of these buildings makes it possible to bring the teams and trucks very close to the "center of gravity" of the load to be transferred. The general scheme of the larger houses is illustrated also by the accompanying plan of the Bond Street building at Springfield. This house was altered to its present purpose in June, 1919. It has a covered teamway into which a dozen motor trucks can back at one time against the freight platform. This platform is only 50 ft. wide, so that it is an easy matter to transfer freight to or from the cars, which are set out, according to their destination, on two tracks on the opposite side of the platform. Both tracks can be loaded or unloaded simultaneously by making use of the doorways of the cars on the inner track. Much of the freight is moved no further than the width of the platform and possibly the first track, the rest being stacked in sections reserved for different destinations on the system. This building succeeded a most inconvenient structure which could handle only three or four wagons at a time.

Another halftone shows a typical intermediate station where there is a regular agent. At points of lesser importance store agents are engaged for $2.50 to $10 a week fees to take care of any business. No agents are employed on a commission basis, nor is there any solicitation staff as yet outside of the volunteer work of the motor trucker and expressman.

ROLLING STOCK AND STAFF

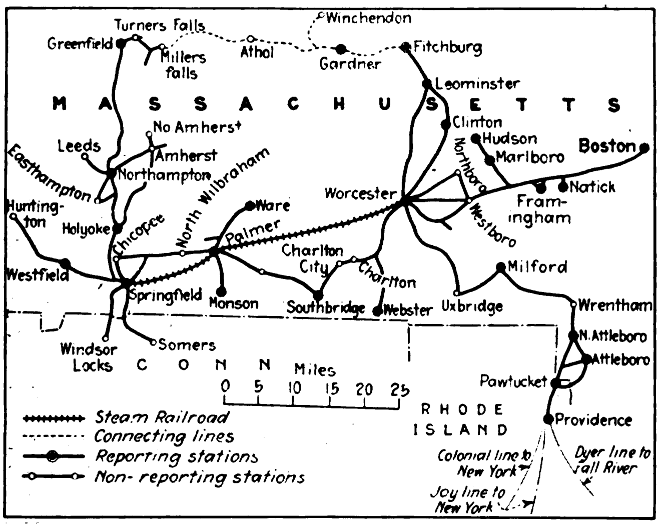
The cars used in freight and express service by the Springfield-Worcester companies comprise thirty-two motor cars, three trail box cars, two dump cars and two trailers for trap rock, sand and gravel business, eight double-truck freight cars for lumber, etc., and three electric locomotives, used chiefly for hauling steam freight cars. The latest standard motor car weighs 55,000 lb., has four 65-hp. motors and can



Two Typical Intermediate Electric Freight Stations carry 60,000 lb., the average less-than-carload loading being 40,000 lb. These cars are equipped throughout with M. C. B. couplers, improved air brakes, etc. Cars for carrying perishable goods are heated electrically —a strong argument for securing that kind of traffic in winter, aside from the greater winter reliability of the electric railway.

Economy in man-power with trolley freight service is attained not only through the greater capacity of the individual cars but also in train operation. A two-car and even a three-car train has but one motorman and one messenger. Usually, one car in a train is a sealed car for some one consignee or terminal. The messengers do a certain amount of delivery to store doors. As a rule, Springfield-Worcester crews cover all of the system served—approximately 290 miles single track in freight service—except that Boston & Worcester crews take charge during the run between those two cities.

For taking on steam cars at Palmer no extra crew is required. On the Attleboro Branch Railroad switching is done with crews borrowed from the passenger department.


Turners Falls
Winchendon
Greenfield
Millers Falls
Athol
Gardner
Fitchburg
Leominster
MASSACHUSETTS
Clinton
No Amherst
Hudson
Leeds
Amherst
Marlboro
Boston
Northampton
North Wilbraham
Easthampton
Northboro
Worcester
Natick
Hunting-ton
Holyoke
Ware
Fram-ingham
Westboro
Chicopee
Palmer
Charlton City
Charlton
Milford
Westfield
Springfield
Monson
Southbridge
Webster
Uxbridge
Wrentham
N. Attleboro
Windsor Locks
Somers
Attleboro
CONN
Miles
0 5 10 15 20 25
Pawtucket
RHODE ISLAND
Providence
Steam Railroad
Connecting lines
Reporting stations
Non-reporting stations
Colonial line to New York
Dyer line to Fall River
Joy line to New York

MAP SHOWING BOSTON-WORCESTER-SPRINGFIELD FREIGHT SYSTEM

Economy in the use of labor is essential as the men are paid on the minimum nine-hour day basis at 65 cents an hour with overtime, earning a bonus of one hour for lunch. On the Springfield-Worcester system the line-up of freight-express employees is as follows:

	Springfield	Worcester Consolidated	Milford, A. & W.
Freight handlers	3	5	0 (agent does work)
Messengers	11	10	4
Motormen	11	10	4
Foremen	1	2	0 (agent is foreman)

Messengers, like the motormen, get 65 cents an hour; freight handlers, 51 cents; foremen, $38.57 for a six-day week. The first car goes out at 7:30 a.m. from Springfield, the last at 11:30 a.m. Crew labor does most of the loading. The gross revenue from freight and express so far as the Springfield-Worcester lines (exclusive of Boston & Worcester Street Railway) is concerned has been as follows:

1920	$318,135
1919	264,681 or $53,454 less than 1920
1918	246,150 or 18,531 less than 1919
1917	220,210 or 25,940 less than 1918
1920	97,925 ahead of 1917

Business in 1920 would have shown a larger increase over 1919 except for the extreme blizzard of February, when the freight equipment was impressed to fight snow. In the lesser snowstorms of Feb. 22, 1921, the motor trucks deserted, with the result that Feb. 23 was a banner day for the electric railway.

GENERAL COSTS OF SPRINGFIELD-WORCESTER LINES

During the year 1920 the Springfield-Worcester lines operated 398,700 freight car-miles for $288,539, or 72.37 cents per car-mile. On the basis of $318,135 gross earnings, the gross earnings per car-mile were 79.79 cents, leaving a net revenue of 7.42 cents per car-mile. The operating ratio was 90.7 per cent. The departmental charges are given below.

TABLE SHOWING ANALYSIS OF COST OF FREIGHT OPERATION

Item		Per Cent of Freight Rev.	Note
Maintenance of way	$29,159	9.17	This charge is the proportion which freight earnings bear to passenger earnings, although only one-third of trackage is used for freight.
Maintenance of equipment	16,058	5.05	Amount actually spent on upkeep of freight equipment.
Power	27,872	8.76	This works out at 7 cents per car-mile. Tests show less than 3 kw.-hr. per c.-m. Springfield power costs 1.1 cent per kw.-hr. at substation and Worcester 1.5 cents.
Conducting transportation	183,756	57.76	Amount actually paid and includes $60,992 for station employees and $4,296 for station expenses.
Traffic (advertising, etc.)	5,826	1.83	
General expenses	25,869	8.13	
Total expenses	$288,539	90.70	
Net operating revenue	$29,597	9.30	
Taxes $4,295 and interest on investment $22,587	$27,512	.....	Interest on investment includes estimated car-mile proportion, although freight equipment avoids operation over expensive special work in cities.
Surplus	$2,285	.....	

When 1920 results are considered, it is to be borne in mind that not only was the freight equipment used to fight snow to keep the lines open for passenger service, but that the cost of snow-fighting was assessed against the freight department on a pro rata basis.

With regard to the general degree of care shown in the transportation of goods by trolley freight, the following figures on losses due to damage to goods in transit in percentage of gross revenue is of interest:

	Per Cent		Per Cent		Per Cent
1920	0.59	1919	0.58	1918	1.38
1917	0.76	1916	0.37	1915	0.29
1914	0.24				

Exclusive of the Boston & Worcester Street Railway, there were carried in 1920 approximately 262,000 tons, with an average gross earning of $1.20 per ton.

THE BOSTON & WORCESTER STREET RAILWAY

The present rolling stock of this high-speed line between Boston and Worcester consists of twelve 45-ft. motor cars and eight 40-ft. trailers, all equipped with M. C. B. radial draw-bars, automatic air brakes and GE-263-A motors (on Brill arch-bar trucks) geared for heavy loads rather than speed. As noted earlier, the run of 44 miles is made in two and one-half to three hours. There are few intermediate stops.

This standardized freight equipment succeeds miscellaneous stock that could not make good for the specialized needs of freight service. Trains of one motor car and two trailers have been run frequently and tests have been made with trains of two motors and two trailers.

The company's business has increased steadily, even through the flood period of unrestricted motor trucking, as indicated by the following comparison:

1916 gross earnings were 75 per cent above 1915
1917 gross earnings were 35 per cent above 1916
1918 gross earnings were 22 per cent above 1917
1919 gross earnings were 40 per cent above 1918

1920 gross earnings broke even with 1919 instead of going ahead because the freight and express equipment was used for snow-fighting during February and March, 1920. Motor trucks ran over the company's reservation as soon as it began clearing the snow away.

Because of the extraordinary conditions of 1920, Mr. Lewis suggests the following analysis of 1919 operations as giving a truer picture than 1920:

TABLE SHOWING FREIGHT EARNINGS AND EXPENSES FOR YEAR 1919 BOSTON & WORCESTER STREET RAILWAY

Gross income	$233,810	
Less payment of $25,190 to Boston Elevated Railway and of $10,186 to Worcester Consolidated Street Railway and $1,242 special expense for trucks used during Boston Elevated strike in July, 1919	36,618	
		$197,192
Expenses		
Conductors and motormen	$35,550	
Freight station and miscellaneous expenses	69,882	
Transportation expenses	67	
Station expenses	9,656	
General expenses	260	
Loss and damages (equal to 1.46% of gross revenue)	3,426	
Superintendence and solicitation	1,542	
Printing and stationery	2,141	
Advertising	65	
Maintenance of equipment	6,643	
Maintenance of buildings	40	
Insurance	840	
Power and trackage	1,695	
Total		$131.807
Net		$65,385
Total freight handled, tons		68.142
Total freight ton-miles		1,705.817
Total freight car-miles (of which 53,371 were trailer)		259.228
Average gross revenue per ton		$3.43
Average net revenue, per ton		0.96
Gross revenue per ton-mile		0.137
Cost per ton per mile		0.098
Gross revenue per car per mile		0.902
Cost per car per mile		0.649
New revenue per car per mile		0.253
Net revenue per mile of road		1.580
Miles of line operated		41.30

When the foregoing surplus figure is contrasted with that of the Springfield-Worcester lines, it is well to bear in mind that the latter have been assessed for track and power expenses on a different basis. Thus, the combined way and power charge for 398,700 car-miles was $57,031, whereas the Worcester Consolidated operation of 259,228 car-miles is assessed only $1,695 for the same items. The item "General expenses" is another which shows a great difference in the freight accounting practices of these properties.

Baking Soda Quenches Fire

AN EXTRAORDINARY case of spontaneous combustion occurred in an embankment fill on the Cleveland & Eastern Traction Company's lines at Chardon, Ohio. The effective method employed to extinguish it was outlined in the *Black Diamond* recently by J. A. Thomas, the consulting fire engineer. The fill was formerly a pine trestle, about 300 ft. long and 30 ft. deep, which was later filled in with 200 cars of cinders, containing more or less combustible. A top dressing of about fifty cars of furnace slag practically sealed the embankment. The fill, fired from spontaneous combustion, became a mass of fire after it had been burning about six months. It was then arranged immediately to extinguish the fire with plain baking soda and water. After the soda solution had been pumped into the burning fill for about two days the fire was finally extinguished throughout the embankment. Had plain water been used enough would probably have been necessary to have washed the entire fill down into the valley.

Five and Ten-Cent Boston Fares

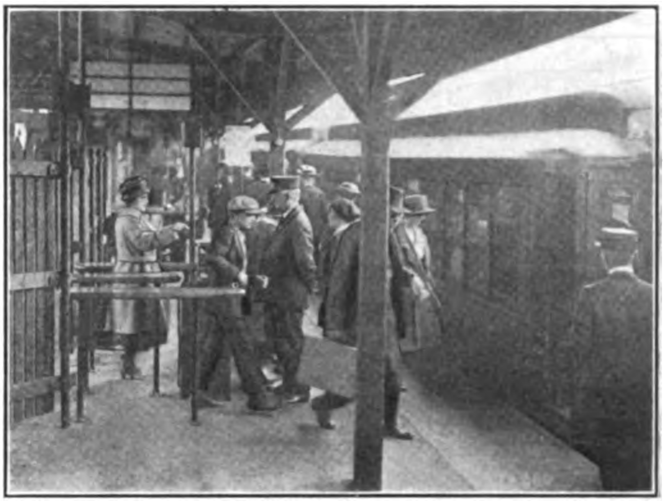
Account Given of How the Two Rates of Fare Are Collected in Everett and Malden Divisions of Boston Elevated Railway—Plan Has Met with General Approval

BY EDWARD DANA
General Manager Boston Elevated Railway

THE trustees of the Boston Elevated Railway have recently placed in operation a local fare of 5 cents for riders in the cities of Malden and Everett. This fare does not include the privilege of a free transfer and is entirely separate and distinct from the 10-cent fare for traffic from these two cities to the center of Boston or any other point upon the Elevated system, which comprises some 535 miles of surface railway and elevated railways.

The present article is written for the purpose of explaining the facts in order that a correct understanding may be had of what the plan involves.

In view of the fact that local conditions absolutely govern the application of a rate of fare on a street railway, the mere statement of the unit of fare in a city in terms of United States currency means nothing for purposes of comparison with another city unless all factors are considered in both localities. One cannot compare the tax rate of cities in New England, Florida or California and secure advantage from doing so without taking into consideration at the same time the different factors and conditions. This same thing is true on fares. When people compare on the basis of difference in cents, it is indicative of the superficial manner in which conclusions are arrived at. Even men in this industry have not been free from such comparisons.



COMMUTERS GOING CITYWARD. VIEW AT 8 A.M. ON EVERETT STATION PLATFORM

The cities of Malden and Everett are typical of such Massachusetts communities. While certain areas are given over to industrial activity, they are essentially residential, with well-defined centers near which are located substantial local stores, theaters, etc. They occupy an area of approximately 8½ square miles lying in the area from 3 miles to 6 miles from the center of Boston.

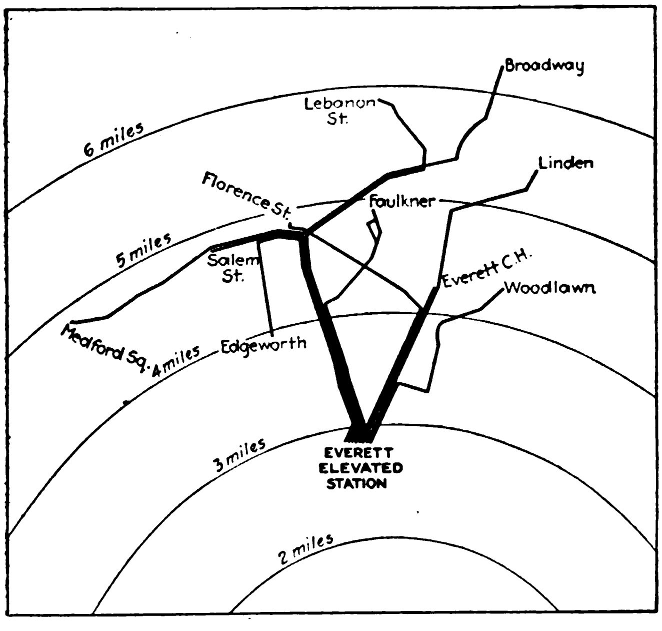
The combined population is 89,000, and as the centers of the two cities are only 1½ miles apart from a transportation standpoint they occupy a single section of territory tributary to the end of the main line of the elevated at the Everett Terminal and are really one city.

All of the surface lines operated in these cities run to the Everett Terminal, there being no through routes to Boston. At this terminal passengers change to the elevated trains. There are 32 miles of track in the streets of these cities and eight regular routes are operated, the average length of route being 3 miles. In the course of a day 5,100 miles are operated by 795 trips on these eight routes.

The total volume of traffic handled per day amounted to 63,000 in both directions. Of this amount 55,000 was so-called tidal traffic, or in other words Boston bound traffic, and the balance local rides within the district. When the fare advanced to 10 cents, undoubtedly the greatest proportion of loss of riders occurred in this local travel where people had formerly ridden for relatively short distances to points of concentration within these cities.

How the Fares Are Collected

The plan adopted contemplated an entire physical separation of the collection of the fares for through traffic from local traffic. On the trip inbound, or in the direction of Boston, the pay-leave plan is used. Local passengers, or those leaving the car before it enters the inclosure at the Everett station, drop 5 cents in the conductor's fare box as they leave the car. Through passengers to Boston leave the surface car after it has stopped at the Everett station platform and drop 10 cents in the station collector's fare box. On the outbound trip the only fares which have to be collected on the surface cars are the local fares, because the outbound through passengers paid their fares at the intown stations of the Elevated and entered the car within the Everett prepayment inclosure.



Map Showing Routes in Malden and Everett—Distances Shown Are from Scollay Square, Boston

With this physical separation of passengers paying different rates of fare it was a simple matter to place in effect any fare that might be decided upon for the local rides. It was decided to experiment with 5 cents because of the convenience and the incentive for local rides to be increased. Conductors on the cars today have the collection of only local fares.

The plan has been in operation some weeks and while in one section a jitney is operated which provides a frequent service, nevertheless the increase in local rides has been somewhat over 80 per cent. It is anticipated that the jitney situation will be worked out satisfactorily as there has come an appreciation by the public that the jitney and the street car cannot thrive in competition. The popularity of the 5-cent fare for local rides has resulted in a constant increase which undoubtedly has had a noticeable effect on the jitney patronage. A careful survey of the traffic secured locally disclosed the fact that the average length of haul for all of the present 5-cent riders is exactly 1 mile, and this, of course, makes it very apparent why a large percentage of this traffic was lost when the fare advanced to 10 cents.

The introduction of this plan has met with general approval on the part of the community as well as the officials of these cities. There seems to have come an appreciation that an honest effort has been made to make the service more useful at no increased expense, and it has brought out from many quarters the belief that an equitable situation now exists; in other words, that the 10-cent fare for the long-haul rapid transit ride under present conditions is necessary and just and that the relatively short haul, for which the 10 cents is manifestly so high that the people can walk instead of ride, is being taken care of in a fair way by the reduced fare for these rides.

The result of the experiment will determine as to the advisability of applying the same plan further upon the elevated system for similar rides. Already a further experiment has been authorized for the cities of Medford and a portion of Somerville and for the district across the harbor in East Boston. It has been estimated that if the local traffic can be increased 100 per cent no discrimination exists as no additional burden is thrown upon the 10-cent car riders of the system and that consequently the system could be made more useful for a great many millions of people in the course of a year. If this plan were in successful operation on the system as a whole and the amount of money secured was the same from twice as many people for the 5-cent fare as for the reduced number of people for the 10-cent fare, the amount of increased travel would restore practically all the passengers shown to have been lost when the flat fare advanced to 10 cents.

New Interlocking Installation on Boston Elevated

In CONNECTION with a recently completed extension of its rapid transit lines from Sullivan Square, Charleston, to a temporary station in Everett, the Boston Elevated Railway has installed a new electro-pneumatic interlocking plant with alternating-current control. The machine, described in the *Railway Signal Engineer*, is so designed that a total of 159 functions is controlled from seventy-four working levers, requiring a space of 17 ft. 3 in. The principal features of the interlocking installation include semi-automatic control of all main track signals, automatic stops at all signals governing movements in normal direction of traffic on the main tracks, section locking, sectional route locking, approach locking for all main line signals governing entrance of trains into interlocking, illuminated track diagrams, light indicators on all switch levers to show whether the track section in which the switch is located is occupied or unoccupied, and an intercommunicating system between the various signal towers.

San Francisco Rerouting Effective

Rush-Hour Conditions on Market Street Lines of Municipal Railway and Market Street Railway Became Such that Relief Was Necessary—This Ferry Terminal Holds the World's Record in Its Class for Traffic Density

MARKET STREET is the main thoroughfare of San Francisco and car lines extend on this street from the Ferry Terminal to Twin Peaks Tunnel, running through the principal retail shopping district. The population of the municipalities on the other side of the Bay of San Francisco is about equal to that of San Francisco, and it is said that more people pass through the Ferry Terminal than through any similar terminal in the world. The car lines of heaviest travel to and from the Ferry Terminal operate on Market Street for a greater or less distance. The shortest distance before turning out is one-half mile from the Ferry Terminal, and from there the lines diverge at intervals until the last line leaves Market Street at a point more than 3 miles from the terminal.

Most of the patrons of the ferries use the street railways in order to reach the commercial center contiguous to Market Street or the outlying districts served by the lines terminating on Market Street, and the residents of San Francisco use the lines from the outlying districts to reach the commercial center on or near Market Street or to reach the Ferry Terminal. Both the Market Street Railway and the Municipal Railway operate cars on this street and four tracks are laid the entire distance of more than 3 miles, terminating in three concentric loops at the Ferry Terminal.

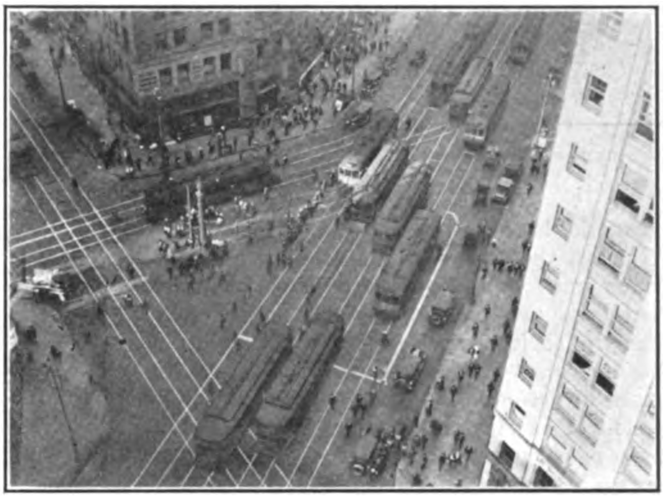
The greatest demands on the street railway facilities are made between 5 and 6 p.m., at which time the patrons and clerks of the mercantile establishments and the occupants of the office buildings are leaving the business center for their homes in various parts of San Francisco or for the Ferry Terminal. The major movement at this time is outbound to the residential sections of San Francisco and in the opposite direction from the travel toward the ferries. Most of this outbound traffic originates on Market Street in the mile commencing about one-half mile from the Ferry Terminal.

JOINT USE OF STREET CAUSES COMPLICATIONS

Since the construction of the two outside tracks by the Municipal Railway and the operation of the municipal cars on the street various attempts have been made to relieve the traffic congestion and to reduce the danger of accidents. The most recent change has been to turn back some of the Market Street Railway cars during the rush hours, by diverting them to Mission Street on the upper half mile of greatest traffic, thus keeping them off of lower Market Street. This results in an increase of headway between cars and gives more time for loading the rush-hour crowd.

Traffic counts made on lower Market Street since this rerouting show that the Market Street cars of the Market Street Railway are now carrying about 26,000 passengers from the business section to the outlying districts in the hour between 5 and 6 p.m. During this time 188 cars operate on a nineteen-second headway on lower Market Street, branching out at six points on to eleven lines to serve as many sections of the city; twenty-two inbound cars are diverted to Mission Street at Sixth Street, returning to Market Street as outbound cars at Fourth Street, and eighteen cars on Eddy Street are turned back at the Market Street intersection, transferring passengers to and from other cars on Market Street instead of continuing through Market Street to the ferry as at other hours of the day.

In this same hour the Municipal Railway operates an average of 101 cars around the ferry loops. These cars operate on headways ranging from two and one-half to four minutes on each of the six lines (which branch out from Market Street at three points to serve different districts), or, taken collectively, on a thirty-six-second headway. If all cars operated on two tracks the headway would be only twelve and one-half seconds on the lower half mile. Passenger counts made at the peak of the rush indicate that the average loads carried by municipal cars range from 115 passengers per car on the "D" line to 145 per car on the "J" and "K" lines. Taken together, the six municipal lines carry a total of 10,000 to 12,000 passengers from lower Market Street during the hour from 5 to 6 in the evening.



TRAFFIC CONDITIONS AT THIRD AND MARKET STREETS, SAN FRANCISCO

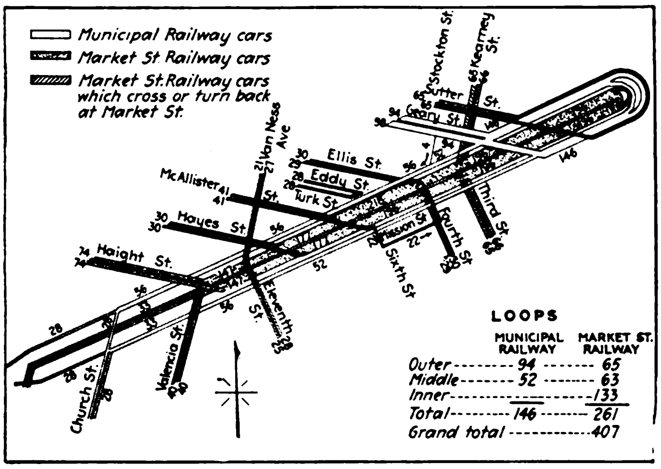
The accompanying sketch, prepared by the Municipal Railway, shows diagrammatically the operation of the cars on lower Market Street. The relative number of cars on the different sections is shown by the width of the band. The actual number for the ninety minutes of heavy traffic is shown in figures.

INSPECTORS EXPEDITE TRAFFIC

It would be impossible to handle so many cars with any regularity without the aid of inspectors. Commencing at 4 p.m. five inspectors for the Market Street Railway, located at four points of dense traffic, devote their attention to spacing the inbound cars, so that they may arrive at the Ferry Terminal and leave outbound at proper intervals. This force is increased at 5 p.m. to seven inspectors and two inspectors acting as flagmen, at eight locations, who work the outbound cars. The work of these inspectors, together with the increased headway made by looping twenty-two cars at some distance from the Ferry Terminal, has reduced the maximum delay from ten to three minutes.

All cars are of the P. A. Y. E. type. Normally the front end is used for exit only, but during this rush hour street collectors are used at the front ends of both Municipal Railway and Market Street Railway cars in order to speed up loading. Thirteen collectors are on duty for the Market Street Railway and probably increase the average load by forty passengers.

The clearance between the cars on the inner and outer tracks is a factor in the situation. The tracks are 11 ft. ½ in. between centers, which gives a clearance of only 1 ft. 4 in. between grab handles, window sills, etc., when the largest cars are passing. Passengers waiting to board the cars of the Market Street Railway on the inner track stand in this narrow space, while the municipal cars are passing on the outer track. There is also the serious predicament of a person caught standing on this "devil strip" when cars are moving in the same direction on the inner and outer track and the platform of the car on the inner track is so crowded that passengers are standing on the steps and thus occupy a considerable portion of the 1-ft. 4-in. space.



SCHEDULE OF CAR OPERATIONS ON MARKET STREET, SAN FRANCISCO, DURING RUSH HOURS: 4.30 TO 6 P.M.

The difficulty and danger incurred by passengers in crossing the line of team and automobile traffic and then crossing the track of the Municipal Railway hinders and slows down the loading of the cars of the Market Street Railway, especially since so little space is available for standing between the car lines, and many people hesitate to take this risk. If a patron, desiring to board a car of the Market Street Railway, does not do so very promptly, the municipal cars moving on the outside track cut off access to the cars on the inner track until the latter have proceeded, and it is necessary to wait for the next car. In order to maintain headway, it is imperative that the Market Street Railway cars limit their stops for loading passengers to the shortest possible time, due to the large number of cars operating at such short intervals on Market Street and the vehicular traffic to be taken care of at the numerous cross streets.

The Market Street Railway cars with longitudinal seats are found to be particularly well adapted to the traffic of the rush hours on Market Street. These cars handle a volume of business that would never be possible without the 6-ft. aisle down the center of the car, which a seat arrangement of this kind affords. Moreover, the ready access which this arrangement provides to the ample standing room inside the car is a factor of special importance on lower Market Street because it aids rapid loading. Anything which decreases the length of stops is regarded as of primary importance in improving the service, because officials of the Market Street Railway point out that the complaints are much less likely to come from failure to obtain a seat than from delays in the schedule. The twenty new cars recently added to the Market Street Railway equipment have the seats in the inside section built longitudinally.

Regulations for Jitneys

Text Given of Connecticut Rules, Which Go Into Effect July 15—Jitneys Made Common Carriers, Under Jurisdiction of Public Utilities Commission

UNDER Chapter 77 of the Public Acts of 1921, which takes effect July 15, 1921, all jitneys operating in the State of Connecticut are made common carriers and subject to the jurisdiction of the Public Utilities Commission. The term "jitney" as defined by the act includes any public service motor vehicle operated upon any street or highway in such manner as to afford a means of transportation similar to that afforded by a street railway company, by indiscriminately receiving or discharging passengers or by running on a regular route or any portion thereof or between fixed termini.

In order that there may be some consistency as to the operation of these vehicles where allowed by a certificate of convenience and necessity, rules have been established, subject to changes as the commission may subsequently find necessary.

These rules provide that certificates to operate can be revoked for violation of traffic ordinances or state laws regarding the operation of motor vehicles and that ownership certificates of operation are not transferable without the approval of the commission. Operators are required to display destination and route signs on the fronts of cars. These signs must have letters not less than 2 in. nor more than 3 in. in height and must be illuminated at night. Vehicles having a seating capacity of ten or more must permanently display on each outer side a notice stating the seating capacity. The letters used are required to be 2½ in. high.

Jitneys certified to operate must reasonably maintain the prescribed schedule and must post in a conspicuous place inside of each car a time table of the entire service prescribed, together with the rates of fare. This service cannot be reduced without the approval of the commission nor is any deviation from the route specified allowed except in case of emergency. All cases of interruption of the service, as required by certificate, for a period of twenty-four hours must be reported to the commission, together with the cause. In case of suspension of service for a period of five days the certificate of operation is automatically revoked unless the operator is excused for cause by the commission.

Jitneys can be operated only at a speed consistent with safety, depending on congestion of street traffic, danger of intersecting streets, curves, street railway crossings or other conditions requiring extra caution. In suburban service the speed may be greater than that maintained in urban territory, but must not exceed 20 m.p.h. for vehicles having a seating capacity of ten or more passengers, nor more than 30 m.p.h. for all other vehicles. Before crossing tracks of steam railroads at grade jitney operators must carefully observe warning signs and proceed over the tracks with due caution.

All cars must be equipped with a speed indicator.

Owners or operators are not allowed to solicit passengers by outcry or other noise, nor can an operator collect fares, make change, take on or discharge passengers while his vehicle is in motion. Passengers are to be received or discharged at the curb, when it is accessible, and at no other place.

Operators are not allowed to smoke while on duty, nor to transport any dangerous, explosive or inflammable substance except fuel for the locomotion of the car, and this fuel must be carried in the tank provided. Articles left in the cars by passengers must be reported to the commission, if they remain unclaimed for a period of more than twenty-four hours, with information as to where such articles may be recovered.

All cars must be maintained in a neat and sanitary condition and be lighted on the inside at night. The commission's memorandum certificate or at least a certified copy thereof must be posted in a conspicuous place in every vehicle.

Living Costs Drop in Akron

Brief Compiled for Use in Arbitration of Wages by the Northern Ohio Traction & Light Company Shows Comparison Between 1920 and 1921

BETWEEN April, 1920, and April, 1921, the buying power of the dollar so increased in Akron, Ohio, that a salary of $1,420 in 1921 was equivalent to a salary of $2,000 in 1920. These figures are shown in a compilation made of living costs in Akron, Canton, Massillon and Dover by the Northern Ohio Traction & Light Company and submitted in arbitration proceedings on the wage question.

The company first shows the principal commodities in the family budget, with the United States Labor Bureau apportionment, and the percentage of decrease with the corresponding increase in the buying power of the dollar. It then shows how the reductions are applied to a $2,000 family budget. (See table.)

TABLE SHOWING LABOR BUREAU BUDGET FOR $2,000 INCOME AND REDUCTION IN COSTS IN AKRON BETWEEN APRIL, 1920, AND APRIL, 1921

	U. S. Labor Bureau Distribution		Under Akron Conditions, April, 1921	
Food	Apportionment, Per Cent	Amount	Reduction, Per Cent	Amount
Food	43	$860.00	31.275	$591.25
Shelter	18	360.00	27.03	236.77
Clothing and dry goods	13	260.00	37.012	189.73
Light and heat	6	120.00	12.11	105.46
Sundries	20	400.00	25.74	297.04
Total	100	$2,000.00	*28.99	$1,420.25

* Average.

Figures on food were obtained from local dealers whose names are given in a list. To obtain figures on clothing was somewhat more difficult, due to changes in grades, but percentage figures were obtained in a number of cases. They show that in women's clothing hosiery prices declined 31.43 per cent, underwear 36.55 per cent, silks 35.75 per cent, woolens 42.55 per cent. The decline in women's suits, dresses and skirts averaged 33.09 per cent. The average decline in dry goods was 43.68 per cent. Shoes declined from 26.88 per cent to 66.88 per cent during the year and the reductions were greater in men's than in women's shoes.

The figures on shelter or rentals relate particularly to the territory and districts in which trainmen in the employ of the company reside and in general apply to houses ranging from $20 to $35 a month. The report points out, however, that this reduction does not apply to those who own their homes or are buying homes on the monthly installment plan. For these families shelter costs have, in fact, slightly increased, as taxes are somewhat higher than a year ago, due to an increase in the assessed valuation. The percentage, however, when applied to the total shelter cost is not material in fixing final living costs. Room rentals have declined in about the same proportion as house rentals.

Electric and gas rates have neither declined nor advanced during the year, but coal prices have dropped from an average of $9 per ton to an average of $7.91 per ton, making a decrease of 12.11 per cent.

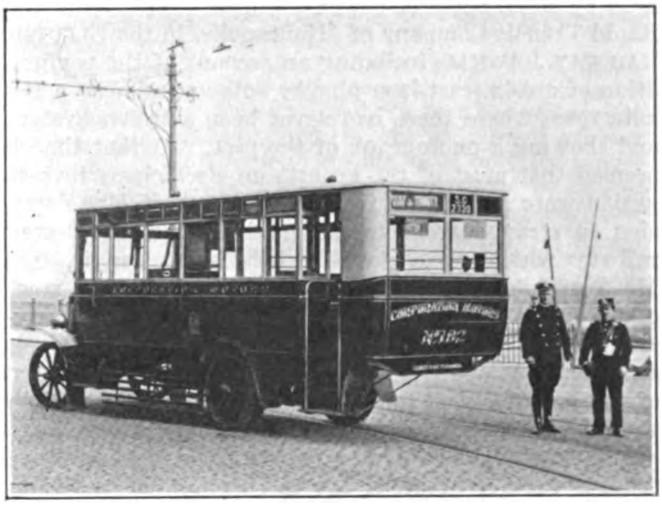
Under sundries, furniture, drugs, kitchen utensils, face powders, soaps, etc., were considered among other articles of family use. On these the report says: "Drugs and furniture were on the increase prior to April, 1920. Following that came a decrease of 20 per cent in drugs and a 10 per cent decrease in furniture. A 20 per cent additional decrease was noted after January, 1921. Kitchen utensils showed a decrease of 10 per cent to 25 per cent, and soap 20 per cent. The general average decline in sundries from April 30, 1920, to April 30, 1921, is 25.74 per cent."

In its conclusions the report states that from present forecast wholesale prices will tend downward for most of the remaining months of 1921, although unquestionably at a slower rate than heretofore, and "normalcy" should be reached by Jan. 1, 1922. Continued price declines are being reflected daily in food, clothing and sundries. House rents at present do not give any evidence of further reduction, and it is quite probable that the present level will continue until housing facilities are increased. Coal prices are not expected to show any material decline for some time.

The report is accompanied by a series of charts and tables relating to local prices.

Bus Substitute for Early Cars

TO SAVE coal the Edinburgh Tramways, which is a municipal enterprise, has discontinued the operation of cars on certain routes in the very early morning hours and has substituted therefor motor buses.



BUS USED BY EDINBURGH TRAMWAYS IN EARLY MORNING HOURS TO SAVE COAL

The accompanying engraving shows one of the tramway department buses at the Newhaven fish market near Edinburgh. As shown, the bus is a single decker with inclosed rear platform. It carries seats for thirty-one passengers.

Letters to the Editors

Traffic Regulation Has Its Difficulties

PUBLIC UTILITIES COMMISSION
STATE OF CONNECTICUT

HARTFORD, June 23, 1921.

To the Editors:

On page 1149 of the issue of June 18 is shown a photograph of a safety zone in Los Angeles. The text says that the entrance to this safety zone is up at the corner, but, contrary to the practice of safety, I notice that one man is stepping over the chain and a lady is walking between automobiles and around the end of the zone instead of entering the zone at the point of entry. The disregard of the safety zone limits by pedestrians makes it very hard for the police authorities to make proper rules regulating movement of motor vehicles.

E. IRVINE RUDD,
Chief Engineer.

Self-Corrosion, Not Stray Current Electrolysis, at Selkirk, Manitoba

WINNIPEG, MANITOBA, June 24, 1921.

To the Editors:

In the ELECTRIC RAILWAY JOURNAL for March 26, 1921, the writer's article "Electrolysis Mitigation in Winnipeg" contained a reference to the self-corrosive action of the so-called alkaline soils of western Canada on cast-iron pipe. Recently some conspicuous examples of such self-corrosion were found on the water supply system of the hospital at Selkirk, Manitoba, at points and under conditions quite outside any possible path of stray current from railway or other power circuits. The pipe affected was a 6-in. water main and the active cause was undoubtedly the alkaline salts in the soil.

The self-corrosion discovered corroborates the result of laboratory experiments conducted by the writer.

Similar laboratory experiments were reported in 1914 by E. H. Scofield, power engineer of the Twin City Rapid Transit Company of Minneapolis, in the ELECTRIC RAILWAY JOURNAL, including an account of the perforaation of a 4-in. cast-iron pipe by soil corrosion in a Dakota town where there had never been a trolley system, and showing a photograph of the pipe. At that time it seemed that most of the experts on electrolysis investigation were so bent on tracing the cause of pipe corrosion to stray current wherever there was an electric railway which could possibly be blamed for it, that Mr. Scofield's presentation did not appear to make much of an impression. However, the subject of the corrosion of iron has in the meantime been continuously studied by competent electro-chemists both in and out of the metallurgical industries, and the results of their work have become better known to public utility engineers. The evidence now gathered from Selkirk, Manitoba, is further proof, if any more proof be needed by engineers having even a little electro-chemical knowledge, that self-corrosion must hereafter be taken into account independently of stray-current electrolysis.

The time has now arrived when managers of electric railway properties about to employ experts for investigating electrolysis situations should insist upon the collaboration of competent electro-chemists with the electrical engineers and physicists, who have hitherto chiefly composed the body of experts from which such talent is usually drawn. Electrolysis experts will do well to recognize two things—first, that the electrolysis problem is fundamentally one involving electro-chemistry as well as physics, in order to evaluate the possibility of self-corrosion, instead of neglecting it, and secondly, that henceforth it will be possible, by means of testing equipment recently developed, to ascertain whether a pipe is really positive to the surrounding earth at the point of corrosion, before following the time-honored outdoor sport of chasing the deadly stray current to its lair.

Apart from all electrolysis controversies, the evidence mentioned will be of widespread value to the engineering profession in tending to dispel the traditional conviction that cast-iron pipe underground can be regarded as practically indestructible.

W. NELSON SMITH,
Consulting Electrical Engineer.

Auto Use Need Not Be Abused

BOSTON ELEVATED RAILWAY

BOSTON, July 5, 1921.

To the Editors:

I note in your issue of June 25, page 1172, an article contributed by a manager of a Western property on the "Street Railway 'Auto Superintendent,'" and I cannot refrain from passing a few remarks on the subject.

If I remember rightly, when urban transportation was provided by horse cars, trackmasters, division superintendents, general superintendents and the like were provided with horses and buggies. If that was so, then the reference to having "the street railway superintendent frisk past the street car" as not being an example of good business applied in a relative way in those days when the superintendent drove past a horse car in a light buggy. While in this era of flying machines and motor vehicles there is danger of automobiles belonging to officials being misused, even in the days of horse cars a similar situation existed as complained of.

But the fact remains that the abuse of materials or facilities provided for officials or employees to perform their work more efficiently of necessity requires a checking up system and a knowledge of whether they are misused or not. In addition, there is another factor just as important, and that is the spirit of co-operation throughout the organization—of pulling together to make the property successful and efficient. In other words, the mental attitude of subordinates of the type mentioned, and if this *esprit de corps* is right the danger feared by the manager in the article is rather remote, or at least confined to isolated cases.

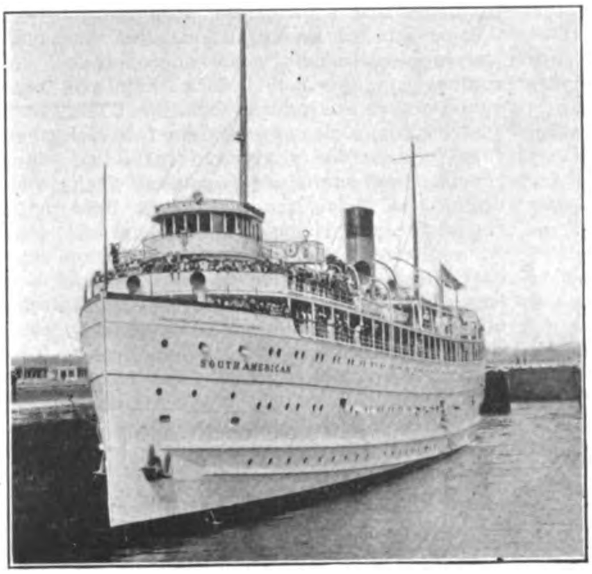
An automobile is a necessary tool under modern conditions to annihilate time and distance in the efficient conduct of a large urban property, and it is the duty of the management to see that it is used for the purpose for which it is intended.

EDWARD DANA,
General Manager.

The trustees of Princeton University have planned to enlarge its School of Engineering, giving courses in civil engineering, electrical engineering, mechanical engineering, chemical engineering and mining engineering. These courses will extend over four years, at the end of which time the bachelor's degree will be given. A fifth year will be required for an engineering degree.

C. E. R. A. Meets Aboard Ship

Real Accomplishment Marks Meeting, Intermingled with a Delightful Cruise on the Great Lakes—Automatic Substations, Merchandising Transportation, Freight Claim Reductions and Separate Engineering Organization Discussed



THE "SOUTH AMERICAN," WITH THE C. E. R. A. ABOARD, IN THE "SOO" LOCKS

UNDER ideal weather conditions, the Central Electric Railway Association held its summer meeting aboard the S.S. *South American*, on a six-day cruise in Lakes Michigan, Huron and Erie. And despite the complete freedom from care and the abandon to pleasure and scenery and good fellowship, the three business sessions held were outstanding for the interest shown, the free discussion and the accomplishment. These meetings were devoted to papers and discussions on automatic substations, merchandising transportation, reduction of freight claims, organization of an engineering section of the association, and other committee reports. The total attendance on the cruise numbered 314, of whom 164 made the entire trip starting from Chicago, and 150 others boarded the ship at Toledo and Detroit. There seemed to be unanimous agreement that it was the best gathering the association had ever had and many began before it ended to plan for a similar outing next year.

In the absence of President A. C. Blinn, who at the last minute was forced to stay home by unexpected developments in Akron, Samuel W. Greenland, first vice-president, presided at the various sessions. The first business session was held on June 29 and was devoted to the consideration of automatic substations. A paper by C. A. Butcher, followed by written discussion by Lawrence D. Bale and Charles H. Jones, appears in abstract elsewhere in this issue. In his absence Mr. Jones' paper was read by C. M. Davis, General Electric Company. Concluding Mr. Jones' written discussion, Mr. Davis went on to say that there was a fundamental difference in the method of control as followed by the two principal manufacturing companies. The one described by Mr. Butcher imitates hand operation while the other forces the machine to come up to speed with correct polarity through the use of a separate exciter. He said he agreed with Mr. Butcher that the single unit station is more desirable, though he could appreciate that there might be some instances in which a two-unit station would be advisable, though the use of any larger number than two was extremely questionable. He referred briefly to the possibility that it may be desirable to superimpose a remote control on the present complete automatic control for use in city service as a means of giving a centrally located load dispatcher control of individual feeders as well as whole stations. The possibility of a fire or serious accident giving rise to the necessity quickly to cut out a section of the trolley explains the need for such a scheme. He predicted that this remote control would become a feature of automatic substation power supply in city service.

Victor E. Thelin, Chicago Surface Lines, gave it as his personal opinion that the present automatic substation equipment is too elaborate, requiring so large an investment that it takes too long a time to realize a saving. He contended that further development must simplify the equipment and pare down the cost so that there will be greater appeal to the purchasers. He spoke briefly of an experimental installation of automatic reclosing circuit breakers in a substation otherwise manually operated and said that so far very good results had been obtained in cutting off the feeder altogether under overload conditions, rather than to have resistance inserted in the circuits at such a time. He believed that it was better to place dependence on the capacity of adjacent stations to carry the overload in case one feeder should trip out.

Mr. Davis explained that the use of limiting resistance in each feeder circuit in Des Moines virtually acted in this manner, for as the voltage is lowered at one station, the load is automatically shifted to other adjacent stations without killing altogether the feeder involved in an overload condition. This leaves adequate power on the line to keep the cars going while the trouble is being cleared.

Mr. Thelin then suggested that whenever resistance is put into circuits it means that power is lost. Mr. Butcher asked what difference it made whether the power were lost in resistance inserted in the circuits or in the resistance of the copper circuits where the load is shifted to another station. He urged the railway men to co-operate with the manufacturers in working out the problems involved in the application of automatic control, as this would hasten the simplification and lower the cost of the control system.

A special session of the association was called on the morning of June 29 for the purpose of disposing of various committee reports. The first to be heard was that of the committee on standards, of which H. H. Buckman, Scottsburg, Ind., is chairman.

REPORT OF STANDARDIZATION AND BUREAU OF STANDARDS COMMITTEE

1. **RAIL BONDS.** — On account of the many types produced by the manufacturers which are protected by patents and on account of the differences of opinion of the consumers as to the efficiency of the various types and methods of application and the difference in capacity required even on any one property, your committee finds that it would be impracticable to recommend or use a standard rail bond.

2. **TELEPHONES.**—Owing to lack of information on this subject and absence of members of this committee conversant with the subject, your committee begs for further time to investigate and report.

3. **ROLLING STOCK.**—Your committee after considerable discussion agreed that standard city and interurban cars are desirable, but on account of varying local conditions on different properties, it finds that it would be impracticable to recommend any particular standards.

Referring to equipment for both city and interurban cars, your committee begs to call to your attention that equipment parts have already been standardized to a great extent.

4. **CAR-STOP SIGNS.**—Your committee begs to call to your attention that a report with samples of standard car-stop signs was presented at the meeting held in Toledo on May 26, 1910, at which time it was decided not to adopt a standard car-stop sign. However, your committee will be glad to again submit samples or designs of a standard car-stop sign if the committee is again instructed to do so and is informed how and where such a sign is to be installed.

NEW SUBJECTS. — Your committee recommends that the following subjects should be taken up and worked out and that they be given instructions to do so.

1. Revision of standard signal lines and trailer light connector is necessary. June 25-26, 1914.

2. Additions and changes to train signal system adopted June 26, 1914.

3. Controlling dimensions of passenger and freight cars used in interchange.

4. Standard length of air hose.

5. Assembly and details of air piping on draw bars.

6. Standard location of classification and tail light brackets.

7. Standard lamps and sockets for railway use.

8. Standard design of trolley retriever and catcher.

9. Controlling dimensions of rolled steel wheels, not including standard contour of flange and tread.

The report was signed by H. H. Buckman, P. V. C. See, J. W. Osborn, John Zoll and M. F. Skouden, committee.

SEPARATE ENGINEERING ORGANIZATION PLANNED

The committee which has been studying the best plan of developing some form of organization by which the engineering personnel of the association would have an adequate medium for the interchange of common ideas and experience made its report. The report was read by Secretary Earlywine, the members of the committee being Myles B. Lambert, Westinghouse Electric & Manufacturing Company, chairman; P. V. C. See, Akron, Ohio; Harry Reid, Indianapolis, Ind.; Guy H. Kelsay, Elyria, Ohio, and J. W. Osborne, Lebanon, Ind., all of whom were present. As developed in the committee report and in the discussion which followed, the plan of organization is in substance as follows:

There is to be organized as a subsidiary of the Central Electric Railway Association an engineering council with four local engineering sections known as the Akron, Toledo, Dayton and Indianapolis Sections. Each section is to be headed by a director with six additional members to comprise the local executive board. The engineering council will consist of the director of each local section, two members of the executive committee, and a chairman who is to be the second vice-president of the association.

The local sections are intended to embrace all engineering branches of the industry. Each local section will arrange matters of discussion that will be of joint interest to the other sections or simply of local interest. Each section is to hold three meetings a year and at the annual meeting of the main association a half day is to be allotted to a general meeting of the engineering council, as a part of the regular program. At this time general engineering matters will be discussed, papers read, and any reports of the engineering council submitted for the approval of the association.

The plan of operation contemplates that at the beginning of the fiscal year the engineering council will prepare and submit to the local sections a program of subjects on which information, studies or reports are desired. It is to be the duty of the chairman of the engineering council to follow up the work assigned to these local sections, to insure execution of the assignment. All reports of an engineering nature are to be referred to the engineering council for approval before they are submitted to the main association. The same subject may be assigned to all four sections for study and individual report, the engineering council then acting to derive from these a final report for submission to the association. In addition to the assignment made, each local section is to be free to discuss other matters of interest or to initiate studies leading to recommendations to the engineering council and thence to the association. The standards committee of the association is continued for the present, but it is anticipated that the engineering council will function along this line and ultimately take the place of the standards committee. The president of the association, however, will be authorized to appoint an independent committee to study and report on any subject of a general engineering character, where this seems desirable.

The purpose expressed, of dividing the territory into four sections, was to keep to a minimum the amount of traveling and hence the amount of time off the property involved, and also to keep the size of the gathering small so that it could take on the nature of an informal round-table discussion. The reason for making these sections embrace all branches of engineering was that many of their problems are interrelated and furthermore, that the small informal groups would give an opportunity for frank discussion of interdepartmental differences and tend to eliminate the common jealousies which exist. It was also thought that the existence of four parallel sections might result in some healthy competition which would be fruitful of accomplishment.

As to the place of the manufacturers' representatives at these sectional meetings, Mr. Lambert explained that, all things considered, it had been deemed advisable that they should attend these sectional meetings only upon invitation. Whenever any particular subject is up for discussion, those manufacturers who are directly interested will be forewarned and invited to attend the meeting, prepared with data and information to take active part in the meeting.

The committee report was discussed favorably by the members of the committee and by R. J. Custer, Columbus, Ind.; F. H. Miller, Louisville, Ky.; H. A. Nicholl, Anderson, Ind.; S. D. Hutchins, Columbus, Ohio; C. L. Henry, Indianapolis, Ind., and F. D. Carpenter, Lima, Ohio. Mr. Henry expressed his belief that such an organization could be arranged without material change in the present constitution. He expressed the thought that the engineering council would probably either function as the standards committee or embrace the purview of the standards committee. He thought the plan was a good one except that it still embodied the old difficulty of getting men to do the work, and he emphasized the necessity to put behind the report the determination to put it through to success.

Mr. Carpenter said he thought the reason for much of the non-attendance at committee meetings was because the men were not properly backed up by their managements and urged to attend and give attention to their duty. He explained that no employee of the Western Ohio Railway is permitted to accept a committee assignment until this is approved by himself, but with this approval the man knows that he has the support of his superiors and therefore does his part. He recommended the same procedure to other companies.

Walter H. Evans, Tool Steel Gear Company, Chicago, urged the company to take good care of the subordinate equipment men and also emphasized the importance of not only getting the young college-trained men while the getting is good, but also to get good men without any particular technical training and bring them up in the shop. He lamented the passing of some of the outstanding equipment men, because there is no one coming along competent to fill their places.

After full discussion, the report of the committee was adopted and the president requested to appoint the engineering council as outlined in the report and direct it to work out the details for carrying out the organization planned by the committee and to report at the annual meeting in January. This resolution included the provision that the present standards committee should be continued and should work with the engineering council to be appointed, until the final details of the plan are worked out and such report accepted.

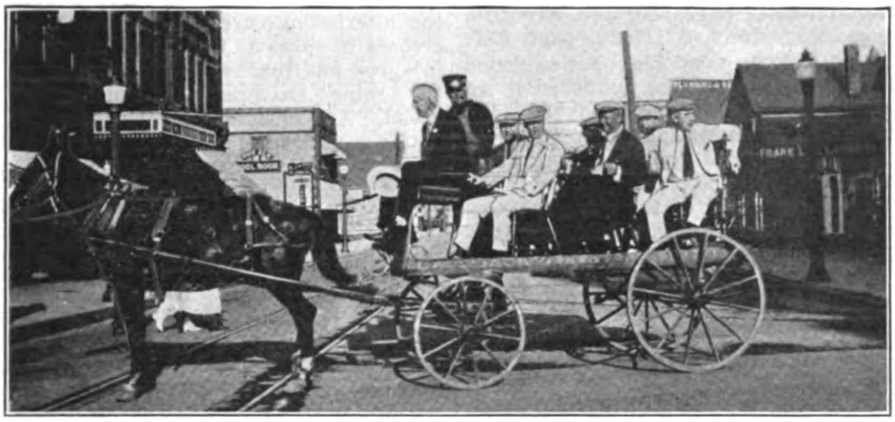
REPORT OF FREIGHT CLAIM PREVENTION COMMITTEE

The freight claim prevention committee of the subsidiary traffic association, headed by S. A. Greenland, Fort Wayne, Ind., was then called upon for a report. The other members of the committee are C. O. Sullivan, W. S. Whitney, N. Rumney, F. D. Norviel and J. H. Pound. This committee was appointed to look into the possibility of reducing freight claims, having in mind the very good results obtained along this line by the American Railway Association and the American Railway Express Company. The committee reached the conclusion that this was more than a traffic proposition and required the co-operation of all departments, and for that reason submitted the proposition to the main association for approval. The committee recommended that each general manager hold a meeting of company officials to formulate plans for working out the following suggestions:

It is proposed that on each property

a committee be appointed consisting of the best informed men in the service, whose duty it will be to make careful study of things that can be done to improve the service, to advise and instruct fellow workmen, particularly new men; to distribute literature issued by the company or the association, and to see that employees are notified of meetings of committees and secure their attendance. For the first meeting of these committees on the various roads, each committeeman is to be requested to give in writing his opinion of the proper way to handle the particular line of work in which he is engaged and to offer suggestions that will improve the method now in effect. The best of these letters is to be selected by the chairman and sent to the secretary of the association, where, from all such letters received, the best will be selected and published for the benefit of all association lines.

It is also proposed that pamphlets be got out by the freight claim prevention committee with suggestions covering subjects and topics for the use of the local committees at their meetings in order to furnish topics of interest and secure similar work by all committees. It is also suggested that the question of loss and damage be not made the only feature of these meetings, but rather that the object of the movement be to improve service as well, which will automatically reduce the loss and damage.



BACK TO THE GOOD OLD HORSE DAYS

Proving that railway men are not particular about the form of motive power so long as it affords transportation. The driver, George Radcliffe, Cleveland, and these six other "Indians" would not permit a shortage of autos to interfere with a tour of Sault Sainte Marie, when the ship stopped there for two hours.

The committee also requested the association to set aside an allowance of $250 to cover necessary expense of issuing circulars and pamphlets for use in conjunction with the work in hand.

While other members favored the adoption of the report and urged cooperation in carrying it out, H. A. Nicholl, general manager Union Traction Company of Indiana, Anderson, failed to see the need for it so far as his company was concerned and took exception to the idea of having instructions come into his organization from outside sources. He explained briefly the excellent results which had been obtained along the line of reducing freight claims through the work of committees already organized on his property.

C. S. Keever, Anderson, Ind., added that the seventy agents of the Union Traction Company had been called together in several meetings this year and instructed on the proper marking and handling of shipments, and the method of keeping record on the waybill of any irregularities. As a result of this campaign, he said that the company has had only ten claims this year of over $10. James P. Barnes, Louisville, also expressed the danger of any outside force endeavoring to secure a good *esprit de corps* in any organization which was unable to do this for itself. This opposition resulted in the report being referred back to the executive committee, where it was later adopted, however.

In discussing the report, S. W. Greenland emphasized the desirability of taking steps to reduce claim expenditures, by giving some figures developed by the secretary as the result of a questionnaire sent to all of the member companies. Of thirty-four companies who responded, it was found that in 1920 the total amount paid out in freight claims was $142,744. He said that by virtue of its "Right-Way Campaign" the American Express Company had decreased the claims in January this year as compared to the same month last year by 12 per cent, in February by 31 per cent, March, 38 per cent, and April, 69 per cent. For the first four months of this year a reduction in claims of 58 per cent as compared to the same period last year has been realized. Mr. Greenland gave these figures to indicate the possibilities in reducing this form of drain upon the companies' earnings.

The Thursday afternoon session was devoted to the subject of merchandising transportation. The meeting was started by the report of the committee on this subject, which is given elsewhere and was followed by some prepared discussions, abstracts of some of which are given following the committee report. This was followed by open discussion from the floor.

The general discussion which followed was led off by J. F. Ohmer of the Ohmer Fare Register Company, who said that all the points raised were mighty good, but who admonished the members of the association to "go home and do it." Myles Lambert of the Westinghouse company also raised the question, "Will you go back home and do it?" Mr. Lambert said that the best thing he had heard was a master mechanic (E. B. Gunn) tell how to sell rides.

C. L. Henry said that the fundamental fact is that if railways can't sell rides they can't stay in business. With reference to "going home and doing it," the thing that bothered him was how to do it. He recounted his experience in bringing his power plant up to date, and said that similar steps must be taken in an engineering way throughout each entire property, but he pointed out that it was easier to do it with physical things than with men. His advice was for everybody to work day in and day out, everywhere and all the time. Speaking particularly to interurban men, he expressed his belief to be as strong as ever in the full success of the interurban. As to the bus, it is here to stay, he said, and it must be used intelligently in this problem of merchandising transportation.

A. Swartz of Toledo said he thought the railway industry should let the public know its business. He advised against even thinking about lower fares at the present time, but it was brought out in later discussion that lower fare suggestions which have been made applied only to restricted areas, as a means of inducing short-haul traffic or of lowering city wide fares. Mr. Schwartz emphasized that the advertising work of the railways should be positive in its nature.

Mr. Lambert, speaking a second time, said that it is merely an economic law which dertermines the rate of fare and that it is the railways' duty to interpret this economic law and the resulting rate of fare, and this was what required sales ability. There are two conditions of fares which result in failure of railway companies: One of these is an unprofitable rate of fare, too low to pay expenses; the other is a rate which is beyond the reach of the average consumer, and this reduces the gross revenue. Some place between is an economic balance which, coupled with rigid economy of operation, means success.

The question of local securities sales was brought up and Harry Reid of the Interstate Public Service Company said that he started a year ago to sell preferred stock to friends and customers of the company and over $600,000 worth had been sold to more than 1,700 separate individuals. Mr. Henry pointed out the enviable position of the Lancaster (Pa.) Railway, where all stocks and bonds were owned in Lancaster County. In further discussion of the question of low fares and jitney competition, H. V. Bozell, editor ELECTRIC RAILWAY JOURNAL, quoted a leading public utilities commissioner who pointed out his very difficult problem in telling inhabitants of certain cities that they would have to pay 8 cents or 10 cents to ride from their homes to town, even though there were motor buses ready to carry them the same distance for 5 cents. While this commissioner said it would be necessary to do this in many cases, still it was a difficult problem for one in public life. Mr. Bozell called attention to a talk to trainmen given by P. S. Arkwright, president of the Georgia Railway & Power Company, Atlanta, Ga., (see ELECTRIC RAILWAY JOURNAL, April 23, 1921, page 771) as being one example of "how to do it" in training employees.

Mr. Barnes, in closing the discussion, commended the spirit of the association's discussion of the merchandising transportation question. He gave a brief reference to an experiment which he has just started in Louisville in the nature of a combined contest, safety campaign and closer co-operation between the trainmen and executives, the result of which is apparently most satisfactory. The experiment has been going on for such a short time, however, that he did not wish to draw any definite conclusions therefrom at this time. On motion the association continued the committee, requesting it to report again in January.

Abstracts of papers and discussions presented follow herewith.

Automatic Substation Progress

By C. A. Butcher
Westinghouse Electric & Manufacturing Company

REFERENCE to an automatic railway substation brings to the minds of some the small type used on interurban systems, and to others it means the large type of single or multiple-unit stations of larger capacity used for city service. Naturally the experiments in automatic substation operation were first carried out on a smaller and more isolated equipment. These experiments proved successful and applications were soon made to much larger machines. The largest at the present time are in the four stations on the property of the Cleveland (Ohio) Railway. Here three stations are now in operation, each consisting of two 1,500-kw., 60-cycle units in parallel operation. In all kinds of railway service there are at present approximately 100 automatically equipped substations in service. Approximately 200 equipments have been sold for the automatic operation of various types of substation equipment.

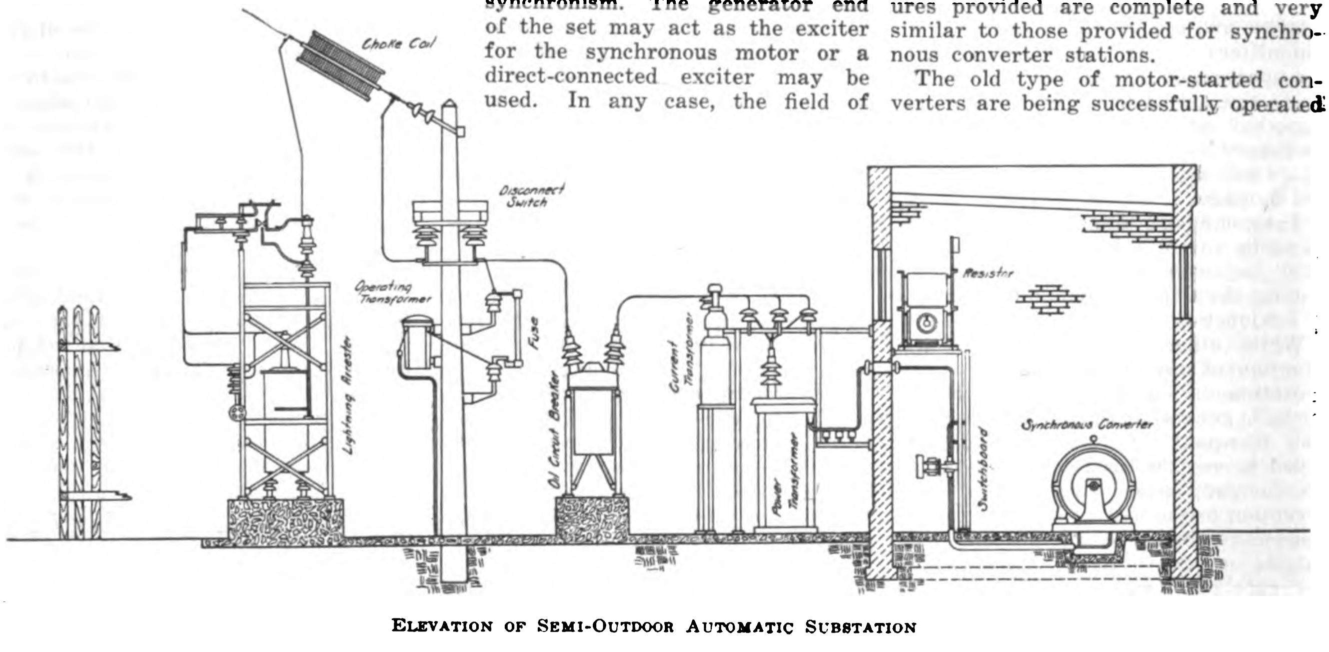
[EDITOR'S NOTE. — Mr. Butcher next explained the application of the automatic control principle, as developed by his company, with reference to the synchronous converter. This has been covered in some detail in articles in the issues of this paper for April 13, 1918, pages 705 and 707; May 17, 1919, page 948; the combined issue for Nov. 8 to Dec. 13, 1919, page 886; Jan. 31, 1920, page 259; March 27, 1920, page 654; Sept. 18, 1920, page 533. An extended further article will be published in an early issue. The balance of Mr. Butcher's paper was taken up with discussion of special applications of automatic control and concluded with the general summary of the present interesting problems in this field, substantially as below.]

CONTROL OF MOTOR GENERATOR SETS

Motor-generator sets are controlled in a fashion very similar to the plan used with rotary converters with the exception, of course, that it is not necessary to correct polarity. The stations equipped with motor-generator sets start up upon the indication from a contact-making voltmeter connected between trolley and rail. Transition from a.c. starting to running voltage is effected by the operation of relays responsive to various indications of synchronism. The generator end of the set may act as the exciter for the synchronous motor or a direct-connected exciter may be used. In any case, the field of the exciter is usually directly connected to the generator end or the exciter end of the set. In applying reduced voltage to the winding of the synchronous motor for starting, alternating current of the frequency of slip is induced in the field winding. Since this field winding is directly connected to the exciter, the alternating current induced in this winding will flow through its armature. This alternating current opposes any tendency of the direct-current armature to build up its voltage. As stated, since this induced current is of the frequency of slip, it obviously falls to zero when the motor reaches synchronous speed. There then being no opposition to prevent the exciter from building up its voltage, it builds up in a perfectly normal way, and in doing so builds up a normal field current in the rotating field of the synchronous motor.

There are three distinct indications of synchronism: The first is the falling of the starting current to a minimum value. When starting voltage is applied there is at first a rush of current from the alternating-current line. This decreases in value as the motor increases in speed and reaches a minimum when the rotor has reached synchronous speed. An accelerating relay actuated from a current transformer may be used to indicate the attainment of synchronous speed. A second indication of synchronism is the attainment of normal machine voltage. A voltage relay can be so calibrated as to close its contacts at normal machine voltage. A third is the attainment of normal field current. A series relay in the shunt-field circuit of the motor can be adjusted to close its contacts under normal field current. Any one or a number of these relays in combination may be used to operate such relays as will effect the transition from the alternating current starting to the running position. The generator is connected to the bus in a manner very similar to that described for synchronous converters. The protective features provided are complete and very similar to those provided for synchronous converter stations.

The old type of motor-started converters are being successfully operated



ELEVATION OF SEMI-OUTDOOR AUTOMATIC SUBSTATION automatically. There are now in operation a half-dozen of these old-type machines and they are giving service equivalent to that of the modern type converter. The method of operation is:

The motor is first started. An accelerating relay in the motor circuit indicates approximate synchronous speed when the converter is connected directly to the full voltage taps of the power transformers through limiting reactors which pull the converter into step. The polarized motor relay is used to effect the transition as described for alternating current self-starting converters.

SUBSTATIONS WITH TWO OR MORE UNITS

The control for stations equipped with two or more units is so designed that after load exceeding a given value has been maintained for a predetermined period of time on one machine another is started and automatically connected to the load. This feature is provided by means of a temperature relay which operates to close its contacts after the first machine has reached a given operating temperature. Under conditions of light load, the machines are cut out in the reverse order of starting. Switches are provided for making any machine the first to start. In case of failure of one machine to go into service, an auxiliary contact on the motor-operated timing relay closes to start the second machine after the lapse of 1½ minutes. The first is definitely locked out of service. A signal connected with the lockout relay may be used to indicate the failure. Until the lockout relay has been reset by hand, the second unit continues to function in the place of the first, the station starting up and shutting down on demand.

A 1,200-VOLT STATION

One very interesting application of automatic switching has been made to a 1,200-volt direct-current substation on the line of the Fort Wayne & Decatur Traction Company at Fort Wayne, Indiana. This line has but one substation and the cars are run into the Fort Wayne Terminal on the city line at 600 volts direct current. The station is started by means of a series relay in the trolley circuit at the junction point of the two trolley systems. When the substation is idle, these trolleys are tied together through an electrically operated contactor.

For example, a car leaving the 600-volt section and crossing to the 1,200-volt section draws current through a series relay, the contacts of which are closed and the relays of the substation are thus energized over pilot wires to effect the starting of the substation. The 600-volt and 1,200-volt sections are tied together until the machine has come up to full voltage. At this point, the running contactors, in closing, effect the opening of the contactor which bridges the two trolley sections. This contactor is interlocked so that in its open position it effects the closing of the contactors of the substation, thus applying full 1,200 volts to the trolley section. The machine shuts down by the action of the timing relay in the manner described. It is thus seen that in case of failure of the substation to start, the cars can still operate from the 600-volt supply, though obviously at reduced speed. In case the substation shuts down, a car laying over at the end of the line can restart it by drawing current through the series relay from the 600-volt section.

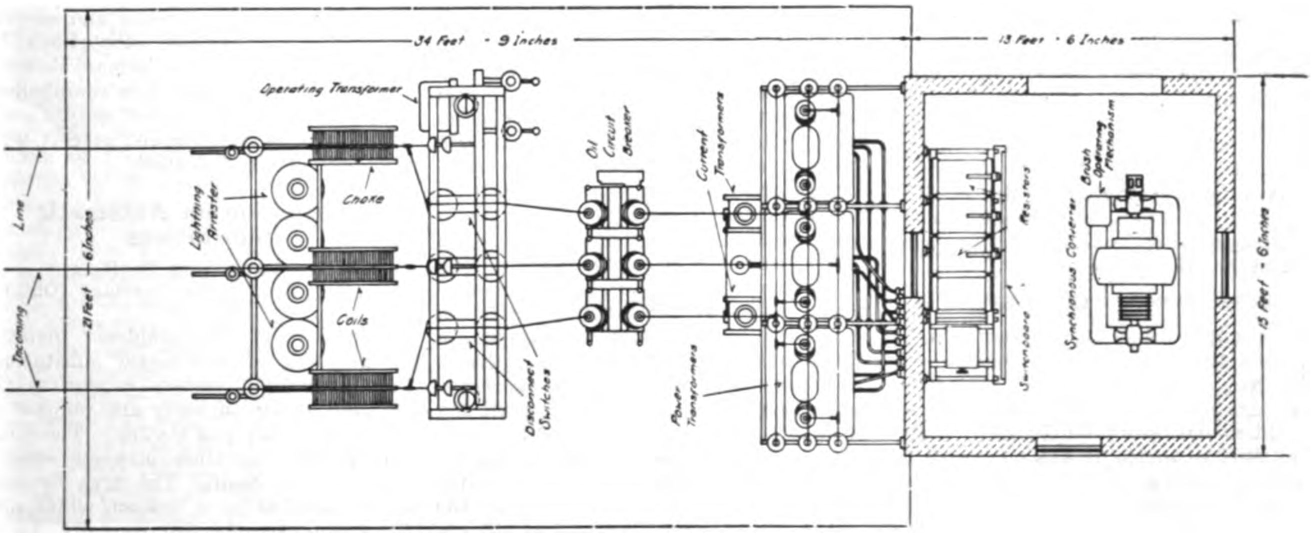
A novel feature of the 1,200-volt switching equipment controlling two machines in series is that but one control equipment is required for the station. The only duplication in equipment is the starting panel for the second machine. The starting contactor for the "high" machine is the first to close. Through the medium of an accelerating relay, after the first machine has reached synchronous speed, the starting contactor for the "low" machine is closed. The "low" machine acts permanently as an exciter for the "high" machine. Therefore, the scheme described for correcting the polarity of one machine automatically serves to establish correct polarity on the "high" machine, after the "low" machine has been corrected.

The transition from starting to running takes place simultaneously on both machines. The current limiting feature on the direct-current side is between the two machines rather than on the negative or positive side of the system. This is so that under no condition will greater than a 600-volt strain be imposed on the insulation of the devices used. A 1,200-volt contactor mounted on marble panel serves to disconnect the 1,200-volt side of the machine from the trolley circuit. These machines happen to have a rather poor starting characteristic and it is therefore necessary to use a relatively high starting voltage. For this reason the synchronizing torque on the starting voltage is very high, making it difficult to effect correction of polarity by field reversal. As in other cases where this trouble was encountered, the difficulty was overcome by paralleling the fields in the reverse position. Under parallel conditions never more than one field reversal is required to establish correct polarity.

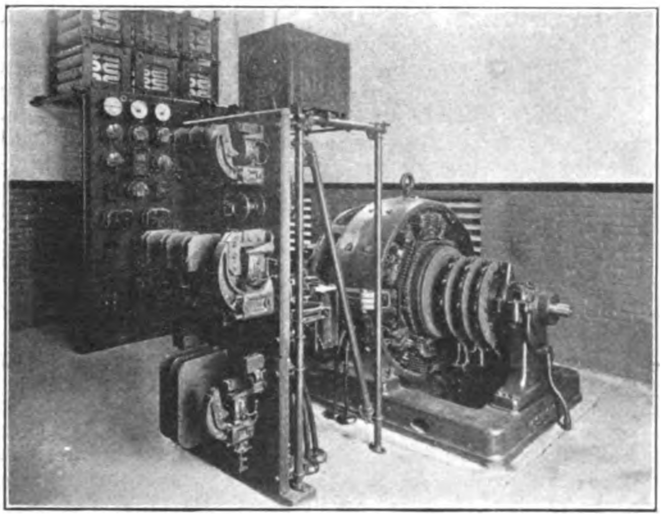
DIRECT-CURRENT FEEDERS FOR CITY SERVICE

We have felt since the beginning, and have more or less definitely established the fact, that the current-limiting resistance type of feeder in city service is not very desirable because only in the event of short-circuit is it desired to open a feeder circuit. If, due to congestion of cars, the feeder section is overloaded, it is obviously desirable to hold that section at as near full voltage as possible to clear the congestion quickly. To insert resistance and further lower the voltage under these conditions only aggravates the congestion.

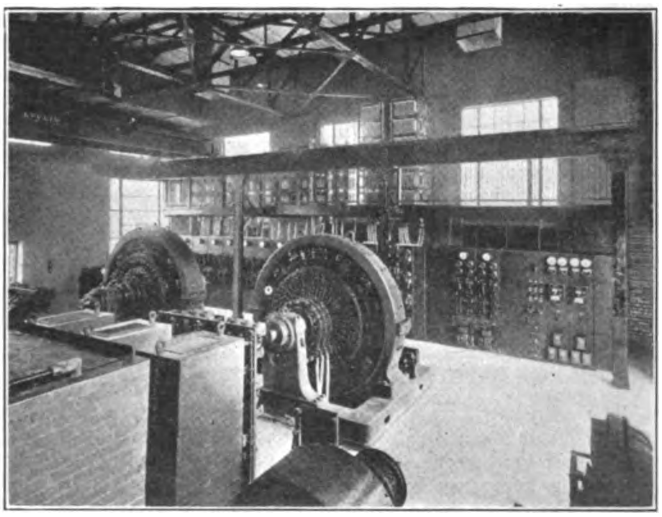
With this idea in mind there has been brought out a type of feeder equipment which eliminates this current limiting resistance. The feeder is so designed that it will not trip on a legitimate overload, but only in case of a short circuit. This is accomplished by means of a device which differentiates between a normal and an abrupt rise in load. The breaker, once opened



PLAN VIEW OF SEMI-OUTDOOR AUTOMATIC SUBSTATION



Rotary Converter and Automatic Control Apparatus in Substation of York (Pa.) Railways



View in Two-Unit Automatic Substation of Cleveland (Ohio) Railway

by this device, recloses only when the external resistance in the feeder circuit has risen to or above a normal predetermined value. In effect the device comprises a Wheatstone bridge arrangement which measures the external resistance of the circuit and operates a relay to effect the reclosing when the short circuit has cleared.

Inasmuch as the current-limiting resistance is retained in the machine circuit, the machine is protected from simultaneous overload on enough feeders from the station to cause overload on the machine. Retaining the current-limiting resistance in the machine circuit also makes possible rapid restoration of service on the system after a total "outage." In such a case, one machine starts up probably before a number of others and as it is the first machine in service on the system attempts to pull the total load. But for the limiting resistance, service would again be interrupted due to overload. By hanging onto the load through the current-limiting resistance for a short time, this machine permits others to come into operation very rapidly to bring about complete restoration of service.

The type of feeder described has proved very satisfactory. It will be applied to the three 1,500-kw. automatic substations now being built for the Cincinnati Traction Company. A device very similar to this is now being installed and will soon be in service on an automatic equipment designed to control a 1,000-kw. synchronous converter operating an Edison three-wire system in Milwaukee.

Substations in City Service

The application of automatic substations to city properties presents a very interesting problem. City traction lines are usually made up of a series of extensions and additions. As the lines were extended, it was necessary to install feeders in order to maintain the required voltage. Then as the system grew and more cars were added it was necessary gradually to add to the power-plant capacity. As a result, a great number of street railway power and distribution systems are today frequently pointed out to the public as striking examples of inefficiency. In addition to heavy losses in positive and negative feeders, much trouble and litigation has resulted from electrolysis. In fact many cities have passed ordinances which limit the voltage drop in the rail. To overcome this condition it is necessary to install large amounts of additional negative feeders as well as extensive bonding between rails and subterranean structures.

Conditions in many cities have been bettered by converting power plants from direct current to alternating current generation with direct current supplied to the system from substations. In order to cut down operating expenses, the tendency has been to build substations of large capacity near the load center. This is, of course, a decided advantage over distribution from a power plant which, of necessity, is located near adequate water and coal supply and perhaps a mile or more from the true load center. However, the conditions of electrolysis are only slightly improved and great quantities of feeder copper are still required.

The progress of generation is certainly in the direction of large centralized power plants. This is in line with the conservation of our natural resources and a plan to link these large plants to trans-continental transmission lines. Such development naturally means greater efficiency of power generation and distribution with a natural result of cheaper power.

It should not be the business of a railway company to manufacture power. Its real business is to sell transportation. Each man in that organization should be in a position to concentrate his efforts on the real object at hand. Why should he be worried or burdened with the trials of a relatively small and inefficient power plant? Would it not be better to buy power from the central station, direct current to be supplied from substations so located over the system as to give the greatest advantage? If the railway operates the central station or vice versa, the conditions really remain the same.

Automatic substations eliminate the item of attendance and therefore make it possible to operate a great many stations with but little thought of that item. By dividing the system into small blocks, each to be supplied from a substation located at the load center of the block, we do away with the necessity of a great amount of feeder copper. In addition we mitigate electrolysis by reducing the voltage drop in the rail to a very small and harmless value. The scrap value of the reclaimed copper, in a great many cases, goes far toward financing the improvements.

The annual return is represented by the saving of copper and generation losses and power saving realized by virtue of the improved average trolley voltage. Improved trolley voltage makes possible a greater leeway in the schedule or permits a speeding up of the schedule, which in turn means greater returns from more frequent service. It may be possible to save platform labor by taking a car out of the number which are now required to maintain a given headway.

The labor situation on a great many properties has reached the point where the men have gone on strikes and tied the property up for weeks and months at a time. Automatic substations, by the elimination of the human element, and by virtue of a complete complement of protective devices, not only give a high order of service but give it with economy and satisfaction.

Discussion on Automatic Substations

By Lawrence D. Bale

Engineer Substations Cleveland (Ohio) Railway

The first of the problems involved in the use of automatic substations in metropolitan service relates to the decision of the capacity and number of units to install per station. The solution of this question involves several problems in itself. The area or zone to be supplied by a station, which also fixes the capacity, is generally determined primarily by the investment necessary in feeder, and the annual charges, together with the losses occurring in the feeder layout. There are also several other considerations to be taken into account which often influence the problem radically. The most important among these are land values, building cost and restrictions, reserve equipment, alternating-current and direct-current feeders, and, above all, a system that will be conducive to a high degree of reliability of service.

With low land values, building cost and load densities which are encountered generally in small cities, sparsely settled areas or suburban districts of large cities there is no doubt a number of single-unit automatic substations will answer the requirements admirably. On the other hand, with relatively high current densities to contend with, and where the cost of land and building is high, the multiple-unit stations give the most economical layout, taking every item into consideration. This has proved to be the case in Cleveland.

On metropolitan systems, where continuity of service is one of the ruling factors, it is necessary to provide a large reserve capacity with the initial investments in equipment and distribution system. Where the multiple-unit station proves the most efficient and economical type to install, the factor of service insurance is further increased by reason of the scheme of automatic sequence operation which is included. The question of duplication of a.c. lines to a substation is also an important one from the standpoint of service insurance, for upon a system where disruption of service from "station outs" due to a.c. power line failures is at all prevalent high-class service cannot be maintained. Therefore, where the capacity of the station, in other words, its importance, will justify the expenditure for duplicate a.c. lines, which is the case with a two-unit installation of relatively large capacity, further insurance against service interruption is gained.

CITY SYSTEMS ARE DIFFERENT

The operation of automatically controlled equipment upon city systems is, of necessity, quite different from that found upon the average interurban system. In city service the frequent starting and stopping common to the interurban substation is impossible, for with all stations upon the systems arranged to feed into the general network of feeders and with a very low resistance between stations each and every machine in service will tend to assume its proportion of the system's load. This tends to keep equipment in service when there is really no necessity for it, resulting in a lowering of the all-day station conversion efficiency. The two-unit station has an advantage in this connection in that the two units will operate to capacity during the morning and evening peak, while during the remainder of the day one unit will be shut down.

To overcome this feature of machines tending to remain in operation when not required, F. C. Chambers arranged the automatic substation of the Des Moines City Railway to operate at different voltage, ranging from 600 to 650 volts. The voltage adjustment which is based upon peak-load conditions enables the station with the lower voltages to shut down as the curve of the peak load descends, this arrangement, in conjunction with the manipulation of high-tension lines to the lower voltage station, apparently working satisfactorily.

To operate successfully a large city system consisting of a number of automatic substations, together with numerous heavy feeders, the general feeling is that some form of remote control superimposed upon that of the substation automatic control should be utilized. Through this system machines may be controlled, load transferred, and, in fact, all of the operations necessary in a substation on an important property performed. It is not intended to have the remote control take precedence over the automatic control in any case during normal operation, but during emergencies full control of the system may be attained by this means.

REGARDING RESISTANCE IN FEEDER CIRCUITS

Referring to the section of Mr. Butcher's paper in which he discusses d.c. feeders for city service, this particular phase of the subject of automatizing the power supply of a large city system presents, as he intimates, one of the most troublesome problems of the whole question. Since an outgoing d.c. feeder may be subjected to a variety of troubles or conditions, it seems almost beyond reason to expect automatic equipment to function and be depended upon to handle properly each of the conditions that may arise. When a feeder is subjected to overload either from the extraordinary movement of cars or load from an adjacent plant that may be in trouble the feeder most certainly must not be disconnected from the station bus nor have the impressed potential lowered by the cutting in of resistance. When this feeder becomes grounded, generally by the breaking of a trolley wire, the proper handling of it will depend upon the policy of the operating company. On some systems it is customary to discontinue service on a grounded feeder until such time as the ground is removed, the time involved depending generally upon the efficiency of the line department trouble system, which may mean in some cases a considerable delay in the movement of cars. Upon other of the larger properties the policy is to burn off grounds, so that the movement of the cars may be subjected to the least delay. This measure is adopted on properties where a premium is placed upon continuity of service, as in Cleveland.

It is therefore seen that where a property wishes to maintain station bus potential on an overloaded feeder and also to burn off grounds neither of the two present methods of handling overloaded and faulty feeders automatically meets with both requirements, for the scheme of cutting resistance in on an overloaded feeder is not desired. On the other hand, this method may be utilized successfully in burning off grounds, while with the new method of feeder control mentioned by Mr. Butcher an overloaded feeder will not be opened nor its potential disturbed as far as the control is concerned, but a grounded feeder will open and remain so until such time as the ground is removed.

The presence of a number of outgoing tie feeders in an automatic substation under the present method of control constitutes a possible danger of disruption of service by causing the station bus potential to be lowered at a most inopportune time, or, worse still, by causing the rotaries to be disconnected from the bus entirely, by reason of the possible overload that may be transferred from one station to another through a number of feeders of low ohmic resistance, in the event of the failure of an adjacent plant under peak-load conditions.

Mr. Butcher states that in the event of the failure of a machine to connect with the load in one and a half minutes the machine is definitely locked out and remains so until the lockout relay has been reset by hand. In the Cleveland installation the sequence has been so arranged that, in the event of the failure of the machine to connect with the station load within the prescribed time, the first unit is locked out or shut down and the second machine is started in its place. However, when the second unit is connected to the station bus the first unit automatically unlocks and is then again made available for service upon demand. This feature is of particular value, for while it is true that if there is something radically wrong with the machine that failed, the unit will be locked out against further service. On the other hand, if the difficulty is of a minor nature, as, for example, a poor interlock contact, the possibility of the unit performing satisfactorily upon the occasion of the second starting is good.

Another very important feature is the starting of the second unit from the first upon the occasion of one machine being suddenly subjected to extremely heavy overload, causing the current-limiting resistance to be inserted in the machine circuit by the opening of the resistance shunting contactors. The second unit is normally started from the first by means of a thermal relay. This relay closes its contacts after the first machine has reached capacity load for a period of about fifteen minutes. To overcome the necessity of waiting for this relay to function under emergency or heavy overload conditions as mentioned above, the sequence scheme has been so arranged that when the resistance shunting contactor in the first rotary circuit opens, due to overload, the control circuit is established, starting the second unit after the lapse of one and a half minutes, thus promptly securing the assistance of the second unit in carrying the overload.

CLEVELAND EXPERIENCE SATISFACTORY

While it is true that my observations cover but a relatively short period of time, the first station in Cleveland having been placed in full automatic operation upon Dec. 15, 1920, judging from observations up to the present, there is no reason why the power requirements of any system cannot be met satisfactorily and economically by utilization of automatically controlled equipment. It must be understood that there will necessarily be variations of control features upon every new system by reason of different operating conditions to be met, but with the engineering talent of those men now heading the automatic control divisions of the principal companies interested in this field, with the inclination of the engineer in charge of the property to co-operate, the limitations of automatic control in railway traction power supply are not in sight.

The stations of the Cleveland Railway are, I believe, the first case on record of the adaptation of the automatically controlled substations to a large city system. These installations also enjoy the distinction of being the first two-unit automatic stations of large capacities to be constructed. Therefore, the majority of the work in connection with the planning of the layout and the scheme of control has been of a pioneer nature. The results have been exceedingly gratifying, for aside from the d.c. feeder control scheme comparatively few changes have been found necessary. Some of these changes necessitated the redesign, addition or rearrangement of relays, but the majority were accomplished by changing circuit connections.

In the first installation it was found that by reason of a combination of conditions that could be set up by unusual occurrences in operation (either conditions not contemplated, or experienced but not corrected) it was possible to lock out a rotary, or, in extreme instances, both rotaries. As fast as these conditions were recognized provisions have been made or are under way to prevent their recurrence. When these changes are complete protection of these equipments will be had against every possible contingency and will give to the automatic stations, as planned in Cleveland, the maximum degree of continuity of service.

There have been several demonstrations on the Cleveland property illustrating the reliability of the automatic equipment as to its emergency stand-by features which I know will interest the operating engineer. In Cleveland, after 1:30 a.m., with but the early morning service in operation, together with shifting of cars in yards, etc., the load upon the system averages about 7,000 amp. It is customary to handle this load from 1:30 a.m. to 4 a.m. from a centrally located, manually operated substation, this plant being the only source of power for the entire system during that period. Upon three occasions the source of energy to the system has been interrupted by the opening of the a.c. power supply to this station, leaving the entire system without power. This occurrence immediately caused the voltage relay in the one substation (existing at that time) to operate, starting the first rotary and connecting it to the station bus, picking up the entire system load, this being accomplished in approximately thirty-eight seconds. This station, of course, inserted resistance in the machine circuits and held on to the load until the manually operated station was again in service, after which the automatic station ran for a period of fifteen minutes and then shut down. It is thus seen that the presence of automatic equipment upon the system will restore service almost immediately in the event of an outage.

Discussion on Automatic Substations

By Charles H. Jones

Electrical Engineer Chicago, North Shore & Milwaukee Railroad

The steps through which it is necessary to go in starting up a rotary converter and putting it on the direct-current bus are few and easily performed and the ways used to do this mechanically may vary in detail, but the methods used by the two manufacturers have proved to be satisfactory in service. In fact, better results are obtained by the mechanical method than by the manual method, due to the elimination of the uncertain human element over which we have very little control, especially in case of emergency operation, and substitution of a mechanical device which will function in a certain predetermined sequence of steps regardless of whether they are performed under normal or adverse conditions.

After the machine is put on the line and is handling the load we are face to face with a condition of machine protection which is a great deal different with automatic than with manual operation. In the manually operated station the procedure was to take the machine off the line in case of any trouble or severe overload and leave it to the judgment of the operator whether or not the machine should be put back on the line. This cannot be done in the automatic station, so that a new line of trouble-differentiating equipment had to be developed which would replace the judgment of man. From my experience it appears to me that in solving this problem there are possibilities of overdoing the protection and loading up of the automatic substation with a lot of devices which may in theory be a good thing but in actual practice will be detrimental. Looking back over many years of experience with hand-operated stations, I believe I am safe in saying that the failures of line and equipment have been comparatively few, and I think we can safely use this as a basis for anticipating trouble. My suggestion is that we should not try to protect against every conceivable failure, but that we should take care of the common ones and supplement this with some sort of remote indicator to inform a centrally located attendant, after locking out the station, of any unusual trouble. A remote indication is desirable where a few stations are automatic and essential on a large interconnected system. The cost would be comparatively small and the benefits large. The advantage would be great to have a recording ammeter for each station at a central location which could be watched by a load dispatcher. Such a system would offer a possibility of general car service supervision as well as power supervision.

The above suggestion is right in line with station inspection, which is of great importance and will require careful study. There is considerable difference of opinion among operators of automatic stations today about the proper frequency of inspection. Practice varies from daily to every two weeks. Personally, I think that frequent inspection will be the most economical in the long run. Where an inspector has good facilities for getting from one station to another he could easily care for from four to six stations on a daily inspection basis.

SINGLE VS. MULTIPLE UNIT STATIONS

The question of multiple-unit stations has been raised in Mr. Butcher's paper. Experience has shown it to be practicable, but its desirability is another question. Among the savings to be made with automatic stations are reduction of operating labor and the elimination of d.c. line losses. Where a station has several machines and a large output per day, the cost of operation per kilowatt-hour becomes very small and may be less than the carrying charges on automatic equipment. The greater the number of machines in a station the larger the feeding area, with a corresponding increase in line loss over the loss which would accrue in the same area with more than one station. To be sure, increasing the number of stations by using a number of one-machine stations instead of a fewer number of multiple-machine stations will increase the initial cost due to land, building and transmission line cost, but there will also be a reduction in the distribution copper required. However, ample leeway will have to be provided in the distribution system to handle an adjacent station load in case of emergency.

Mention is made in the paper about the benefits to be derived in electrolysis mitigation by use of automatic stations. It seems to me that this is another very good argument for single-unit stations as the feeding area is considerably smaller. Since the advent of the automatic substation has completely revolutionized power distribution engineering, the question of single and multiple-unit stations cannot be answered in a general way, but the problem must be carefully studied at each location under consideration and a balance between all advantages and disadvantages arrived at.

RESISTANCE IN THE FEEDER CIRCUITS

In the average railway substation the ratio between peak and average load during the heaviest hour is about 2 to 1, so that under normal conditions we have very heavy swings. The combined feeder capacity is generally considerably greater than the machine capacity. There is of course considerable diversity of load between the various feeders, though at times the swing on any one of the feeders may tax the machine. If there is no limiting resistance on the feeders, the swings in load may act to keep part of the machine resistance in circuit a considerable portion of the time, which will penalize all sections from the station. If some limiting resistance is used on the feeders, the penalizing takes place only on the section producing the overload condition. In the past, feeders have been provided with limiting resistance, equipped with a thermostat to open the feeder circuit on excessive heating. The capacity of the resistance was set at a rather low figure, so that an undesirable interruption to service might take place. With the application of an automatic reclosing breaker which would absolutely keep the feeder open on a short, I believe the capacity of the load-limiting resistance could be increased and the thermostatic control of the feeder opening set either very high or eliminated altogether. This would be a compromise between the two extremes of resistance and no resistance on feeders and I believe this would be a desirable condition.

Report of Committee on Merchandising Transportation

FOR the successful merchandising of any product three major divisions may be recognized:

First—Raw material: The raw materials of transportation are, of course, the general layout of the system, the provision of suitable rolling stock, track and power facilities, carhouse and shop equipment, etc., all of which is assumed to be complete and adequate.

Second—Manufacture: Given the proper raw materials, the working up of a satisfactory commodity for sale must be carried out by an efficient, well organized and properly trained manufacturing force, which in the case of a railroad company rendering transportation service is composed of the operating and maintenance departments, whose production schedule is fundamentally the properly planned schedules for operating trains suitable for transportation conditions and maintaining equipments, roadway and other facilities, together with the necessary supervisory force to assure that these schedules are maintained and corrected from time to time to serve the changing needs of the community.

Third—Sales: The sales organization of a transportation company should follow the same general lines as the sales organization of other successful corporations. General policies and methods of salesmanship must be determined and laid down by the head of the concern, general manager, or other appropriate officer. Department or division managers, or superintendents, will follow the general policies laid down by the head of the organization, applying them to the local conditions of their respective divisions or departments. The traffic supervisors would direct the transportation on the streets, and from the carhouses, and from the dispatcher's office. The motormen and conductors on the cars constitute the sales force in direct contact with our customers, the public, corresponding in the department store to the clerk at the counter, who actually handles the detailed transaction of sales.

The degree of public satisfaction and service rendered will depend almost entirely upon the manner in which the transaction of final sale is handled by the motorman and conductor on each car in the system. To a large extent, if not entirely, the attitude of the employee toward the public will reflect the attitude of the corporation officials toward the employee. Employees who are courteously and considerately treated will in general reflect this treatment in their attitude to the public. Courteous and considerate treatment on the part of a salesman in his dealing with a customer will produce that without which no railway or any other business organization can exist, namely, "good will."

No sales force can function properly without adequate instruction and training in detailed technic of its work. Motormen should be properly and rigorously instructed in the handling of equipment and made to realize that the most economical method of operation, including maximum coasting and smooth stopping by proper application of air, is also the most comfortable operation for passengers.

The training of conductors should be along the lines of courteous but firm application of the rules of the company, care with regard to the collection of fares, issuing of transfers, calling of streets and the value of the voice with a smile. The training of platform men, particularly those already in the service, should be in full recognition of the fact that men engaged in the transportation business, as in any other business, honestly and sincerely desire to know the best means by which to perform their work in the most satisfactory manner.

Your committee believes that it is good policy for the platform men of the railway companies to be sufficiently informed as to the affairs of their company to be able to discuss intelligently with their acquaintances and with strangers the position of the company, not only with regard to its finances but as to the necessity for its rules and regulations. Rules and regulations founded on good principles of operation are not weakened by explanation or discussion but are on the contrary made better and more lasting in their effect.

All cases of complaint and suggestion regarding rules and regulations or other matters of operation are worthy of careful consideration and whenever possible direct reply should be made to the person making the complaint or suggestion, indicating either its adoption or the reasons for not complying with the suggestion.

Men selected for traffic supervisors should receive special attention and instruction in matters of general operation and should be encouraged to correct mistakes detected in the operation by individuals, rather than by complaint to the superintendent's office.

To the end of improving the technic of the entire organization frequent meetings of supervisors or inspectors for instruction and discussion should be held. This particular means may well be extended to occasional meetings of the trainmen and in all such meetings the utmost freedom of discussion should prevail. In all such meetings, as well as in interdepartmental relations, a spirit of complete frankness must prevail if the best results are to be obtained. The day of secret meetings and confidential memoranda is past. No corporation, particularly no public service corporation, whose affairs are a matter of public interest and whose dealings should be an open book can successfully operate on any basis other than all cards on the table, face up, with employees and public. Where this policy is carried out in a public service organization the policies and ideals of the management will be reflected throughout the organization and the prime requisite of the successful manufacturer of transportation is summarized in two conclusions; first, a policy looking toward the rendering of the best possible service in all respects, and, second, complete frankness regarding all matters of policy and operation with employees and the public.

The report was signed by James P. Barnes, chairman; E. M. Walker and H. C. DeCamp.

The Sales Work of Electric Railways

By Harry L. Brown

Western Editor Electric Railway Journal

At the last meeting of this association, held at Indianapolis, W. L. Goodwin gave an interesting talk about merchandising transportation and made the assertion that the street railway company is the only concern engaged in a large way in selling something to the public that does not have a sales manager. This is true, but the business is unique in another way. It is the only large enterprise in which the personnel employed in producing the commodity is also the sales force. This dual nature of the duties of trainmen is one of the circumstances that makes it difficult for a street railway company to meet its patrons with the proper sales spirit. The men have for years had impressed on them the necessity to get the cars over the road on time, to get the money and register it, etc., not to mention the sundry other duties. Undoubtedly those duties involved in the production side of the business are of first importance, for without a good product the best salesman on earth will have a hard row to hoe. Nevertheless, it may safely be said that much more attention may profitably be directed toward preparing the trainmen to carry out their duties as salesmen and constant representatives of the company.

What, then, are the strictly merchandising methods and sales activities that a street railway or interurban can employ to improve its business, assuming the service to have all the elements that go to make it good? The following list is suggestive and I shall discuss some of the points briefly; other points need no elaboration.

A. ACTIVITIES TO CREATE TRAFFIC

1. Sell the ride for the lowest possible sum commensurate with proper earnings.
2. Advertise attractions and points of interest on or near the system.
3. Advertise the weaknesses of the competitor by pointing to the corresponding merits of electric railway service.

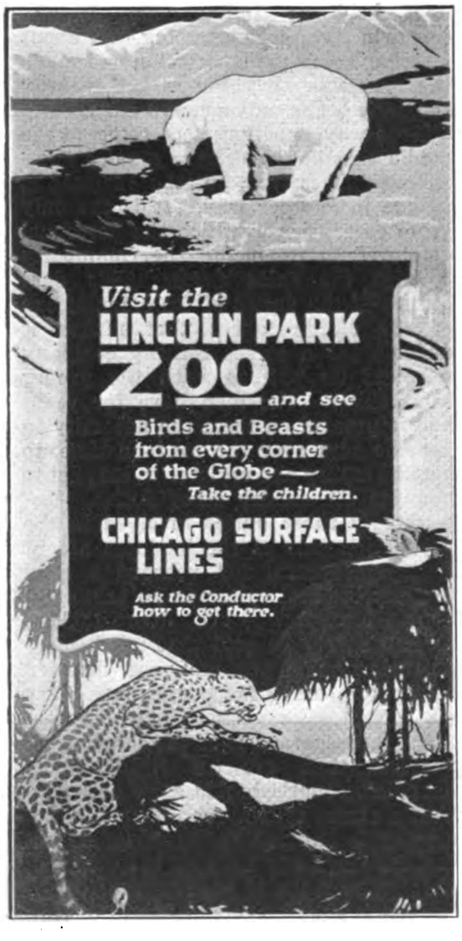
B. ACTIVITIES TO ENGENDER GENERAL GOOD WILL

4. Keep telling the people of service improvements, in public addresses and through the newspapers.
5. Maintain an open-door policy and a friendly, willing, sincere attitude toward the public
6. Go the limit in the endeavor to comply with the wishes of the public authorities; in fact, anticipate their wishes if possible.
7. Adopt the man-to-man plan of talking things over with those who represent the public in dealing with the company, and avoid a belligerent attitude and maintain a conciliatory one.

C. ACTIVITIES TO PLEASE CUSTOMERS ALREADY SECURED

8. Make good salesmen of the trainmen.
9. Keep the cars clean and bright.

1. The local transportation business is obviously destined to be one of the nature of the 5 and 10 cent stores—a tremendous volume of business at an exceedingly low unit profit. Selling the ride for a low fare is now assuming unusual and increasing importance because several things resulting from changing business conditions are conspiring to increase rapidly and to intensify the competition to be met by the electric railways. The first cost of automobile vehicles and the cost of gasoline, oil and tires have undergone substantial reductions, and the bottom has probably not yet been reached. Couple with this the fact that many men are out of work and that the second hand car market is flooded with good cars at an unusually low price, and it is not hard to understand the important increase in the number of these automotive competitors all over the country.



ARTISTIC COLORED POSTERS ARE NOW USED IN CHICAGO

The problem must be attacked not only by encouraging just legal restrictions but mainly on the basis of attempting to meet that competition with competitive sales methods. A high rate of fare is an invitation to jitneys to start or remain in business. A low rate of fare acts as a deterrent to them to start and it also provides about the most effective means of offsetting their competition.

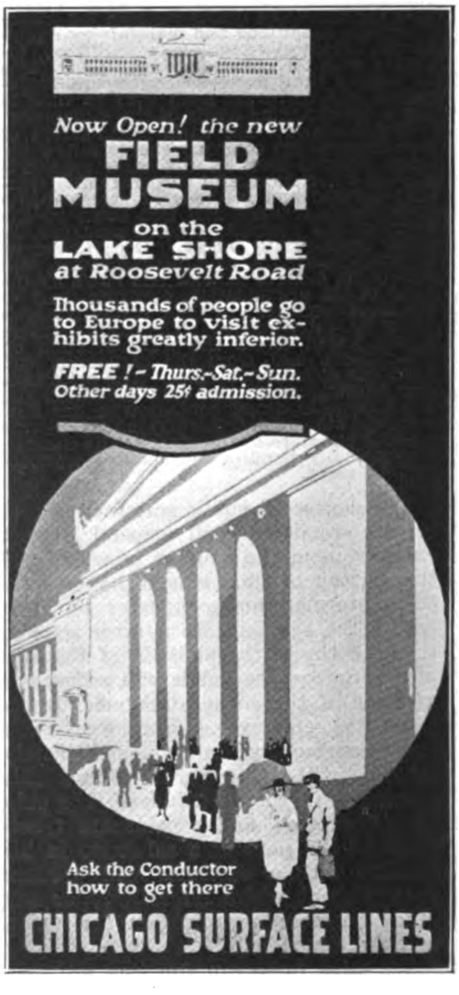
Aside from the competitive aspect, there is no need to dwell on the advantages of a low fare as a means of inducing greater riding, though it is to be expected that the resulting increase in number of riders will not always be sufficiently large to produce an increase in the gross revenue. There is another aspect of this short-ride consideration, however, which is worthy of attention. The jitney is usually a short-haul carrier, particularly if left to its own devices. Consequently, anything the street railway company can do to attract the short-haul riders to the street car strikes a telling blow. So it may be that where a system-wide reduction in fare cannot be justified, the establishment of a low rate for the central district will suffice to meet the competitive aspects of the business. Such experiments are now being made in Boston, Cleveland, etc.

But while the merchandising aspect of the low rate of fare is important, it is perhaps transcended in importance just now by the prospect of increasing competition. For this reason, if no other, it is my personal view that the electric railway companies will do well to take such steps as will make it possible to produce a ride for a smaller fare than the average now in force. In other words, the cost of operation should be brought down so that the fares may logically be reduced. Some of this reduced cost can be secured through a reasonable reduction in the rate of wages, keeping in mind that electric railway trainmen should be considered, in the future if not in the past, as skilled labor. More reduction can be secured by checking up on the practices of every department with a view to eliminating any waste and producing better efficiency all along the line. If the desired results are not obtainable through this process and by virture of lowering costs of materials and supplies, then (and perhaps anyway) the industry must face the necessity to make some radical departures from present operating practices—perhaps a great expansion of one-man operation both on safety cars and on present double-track cars, or something else having an equally important effect on the operating ratio, and making possible lower fares.

The company that has no jitneys now can thank its lucky stars, but it will make the most of that advantage if it recognizes the potential danger and meets that competition before it begins—meets it with low fares and in other ways.

2. This means of creating traffic by advertising attractions and points of interest is well illustrated by the accompanying samples of the work that is being done along this line this season by the Chicago Surface Lines. This form of merchandising rides is quite generally used and its value is seemingly well recognized, but more can be done.

3. As to how to advertise, the street car or interurban has many advantages not possessed by the automotive vehicle—at least to date—upon which the railways could base good advertising copy designed to set people thinking. For example, let the street railway advertise its organized responsibility, the financial protection it affords in case of accident, the reliability of the service, the comfort of the ride, absence of the indecency of crowded jitneys, the courtesy and trustworthiness of employees and the protection they afford passengers, absence of wild and reckless drivers, frequent inspection of the equipment to insure safe operation, etc. This kind of advertising can very well be carried on in the newspapers as well as in the cars. It should not point out directly the weaknesses of the competitor, but by pointing out significantly the advantages of the electric railway,



THE ZOO AND THE FIELD MUSEUM MAKE GOOD ADVERTISING COPY the inference will be obvious and the point will strike home without offense. Then, too, it should be remembered that in this business, as in any other, it is the persistent advertiser, the one who keeps plugging away and telling his story over and over in as many ways as he can, who derives the real value of his advertising expense.

8. Making good salesmen of the trainmen is the particular phase of the problem of merchandising transportation that is dealt with in the very able report of the committee headed by Mr. Barnes, and which forms a sequence of his particularly valuable paper presented before this association at its last meeting. I will take time for just a suggestion or two along this line, to supplement what is contained in this committee report.

Would it not be well to do more along the line of injecting the spirit of contest into the training? Give a worthwhile prize to the trainmen who gives the best account of himself along these lines. Something along the line of the politeness campaign conducted on a daily prize basis by the Chicago *Tribune* for the general public over a period of several weeks and attracting a great deal of attention and newspaper comments from remote cities is what I have in mind. This would put the trainmen "on their toes" on this phase of their work, and it would also create a good deal of public interest and favorable newspaper comment.

This would also put new interest in the work for a time, and, as a means of overcoming the humdrum and affording a variation from the "continual lecturing" which the trainmen on many properties undergo, is a good thing. Too often, the line of talk given to trainmen holds up some inducement for better work, some half-promise, the fulfillment of which is so remote as to offer no inspiration for renewed vigor, if indeed it does not actually react to discount the sincerity of the speaker. An example of this is the suggestion often made that if the expenditures involved in accidents were reduced through more careful operation, this money would be available for increased wages. This may be said in sincerity, but with the average company there are so many places, ahead of increasing the payroll, for any possible spare money, that the likelihood of any increase in wages because of a lowering of the accident account is very remote.

IS THERE NEED FOR A SALES MANAGER?

From the above incomplete outline of the strictly sales work that may be profitably undertaken by the average electric railway company, does it not seem that there might really be a place in the organization for a sales manager, as suggested by Mr. Goodwin? Here are presented quite an array of activities that are only incidentally part of the duties of any of the present department heads, and which at best are handled as more or less of a side issue by the general manager, whose time is so thoroughly occupied with matters more pressing than these merchandising considerations. The average street railway company does not have any one whose primary duty it is to concentrate a good deal of effort on the upbuilding of the company's good will and the expansion of its business. I am inclined to believe that a sales manager with the proper personality and viewpoint, and having specifically in charge the sales work of the company along the lines indicated herein, would make a very valuable addition to most street railway organizations, his duties even including the conduct of a sales school through which the student trainmen would pass after completing their training under the operating department.

Competition and Co-operation

By W. S. RODGERS

General Traffic Manager Detroit
United Railway

Merchandising of traffic by electric lines is a feature of our business which calls for stronger efforts at present than we have put forth during the past few years, as the picking is thinner and the competition more keen. We are confronted with changing methods of transportation which must be reckoned with, such as jitneys in the cities, buses in the country and trucks handling the short-haul freight. Added to these new forms of competition, we find the steam roads now fighting for the short-haul traffic which they scorned during wartimes.

In order to curb the wildcat motor truck and bus competition, we must continue to exert our efforts toward securing the enactment of regulatory laws to stabilize the various forms of automobile lines of transportation. This can be accomplished by proper publicity methods showing the injustice of cities permitting jitneys to run on the streets over which car lines are operated and competing with established lines of transportation by operating at their pleasure, charging what they will and not contributing in the same proportion as the car lines to the upkeep of the streets and in taxes.

The same method should be followed in dealing with the auto bus and truck competition on the country highways. We must show the state and county officials as well as those who are paying the expense of building and maintaining the highways the damage that is being done to them by the constant use of the roads by heavy vehicles which are deriving a valuable revenue from the handling of freight and passengers without paying their just proportion of the cost of furnishing the right of way needed for their operation. We must, however, recognize this class of competition and it must be met by supplying the class of service that will defeat it or keep it at a minimum.

Our equipment is more comfortable than the average jitney or bus and, if we can furnish frequent service and seats to passengers, I believe the loss of traffic to that class of competition will be greatly lessened. I am of the opinion that the ultimate end of the truck competition for distances over twenty or thirty miles will be by co-operation between the trucks and the electric lines to the extent of the former performing the pick-up and delivery service in the terminals and the latter handling the freight over the road, as it is obvious that the railway can perform the service of hauling much cheaper than the trucks and the most economical method of transportation is bound to prevail in the end.

Our lines started negotiations a year ago with representatives of the truck companies formerly operating between Toledo and Detroit with the idea of working out such an arrangement, but the proposition was dropped when the industrial depression began because the trucks were forced to cease all operations on account of the absence of business.

The question arises as to whether or not we are using all the means at our command for the purpose of advertising our wares. We sell the advertising space inside our cars and use very little of it ourselves. The front end space which is open to the whole community through which the cars travel goes unused to a very large extent. These are valuable mediums for setting forth our advantages and should be kept busy at all times in telling the public the attractive features of the service we are furnishing in a plain and interesting manner.

Through car service over connecting lines giving long distance service without the transfer of cars for both passengers and freight is one of the surest and easiest ways of attracting business, especially the long-haul traffic, to electric lines and this is the class of traffic we must especially cater to, if the automobiles are to continue making inroads into the short-haul business.

Another class of traffic to cultivate is that which can be handled in conjunction with the steam roads. The old time hostile attitude displayed by these lines toward the electric line industry shows signs of disappearing and we should do everything in our power to cultivate through arrangements with the steam roads and the joint handling of both classes of traffic.

To succeed in selling our wares we must give the best service that is possible to furnish, as service is the foundation on which all of our efforts to sell are based and is what counts for the most in the long run. Service in its full sense includes suitable accommodations in the form of stations, equipment, proper schedules and courteous employees. Too much emphasis cannot be placed on the necessity of educating the platform men, who are our final salesmen, as well as every one else from the president to the office boy and laborer, of the reward of the virtue of a pleasant smile and civil treatment to all with whom they come in contact.

We must instill in the minds of all that every one connected in any capacity with the operation of the railroad is selling transportation directly or indirectly.

We should be keen to study the requirements of our patrons and endeavor to the best of our ability to supply the kind of service they require even though it means the rearrangement of schedules and working conditions. We should also study the business policies of our competitors with a view of meeting them and not allowing them to eclipse us by more advanced methods or by supplying the public in a manner that we ourselves should do. It is very helpful in ascertaining what our competition is, to create a habit among all of our force of reporting to the proper officer any new service of our competitors which they find commencing operations and any suggestions of a general character for the improvement of the service which may occur to them. Too often such communications are received and filed away without even being acknowledged. This is the wrong course if we are to encourage co-operation from the force. Every idea presented should be considered and adopted or declined on its merits and an explanation given to the one offering the idea if it is deemed inadvisable to adopt it.

The Satisfied Employee

By Guy H. Kelsay

Superintendent of Power and Shops, Cleveland, Southwestern & Columbus Railway, Elyria, Ohio

Would you select the agency for an article if you knew that the organization of selling and manufacturing forces was poorly managed and backed by a loose, irresponsible corporation; if the departments in the company were selfish and jealous; where the spirit of the individual worker has been crushed to such an extent that he has no interest or pride in the finished article? Of course you would not, because it is not possible for a firm to put out a good article under such circumstances.

The key to a fulfillment of the ideas of Mr. Barnes and the committee is certainly supplied by an interested and satisfied employee. A man cannot work as a machine and have the spirit that is necessary to be a part of a successful organization. Your committee has very plainly stated that the time of "secret dealings" is over, and we must take each other into our confidence, and the employees to the last man should know and be interested in the multitude of affairs of the company other than the exact line along which he is spending most of his time so he may consistently be an enthusiastic supporter and advocate of the spirit of good will between his company and the public.

We should not fail to realize that an opinion freely expressed by an employee among his neighbors will carry more weight than weeks of pleading from the officers of the company through the channels that they must use to reach the patron. A very definite illustration recently came to my attention. A workman complained and criticised the company because he was not furnished material and help to renew and repair the particular part of equipment in which he was interested. In response to an explanation to this employee that the company earnings were not sufficient to meet all its needs, a very prompt reply was received, "Why I saw in the paper where the company's earnings last year were ——— hundred thousand dollars over the previous year." It was true that the report of the board of directors did appear in the daily paper giving the increase of gross earnings but failed to convey with equal force the much greater increase of operating expenses.

It is certainly our duty to censor the articles that go to the public and equally important that the employee gets a true impression of the facts. All our troubles are caused by a lack of knowing the facts, and if we "think out loud" or "lay the cards face up" every one will know that we do business that way and the matter of confidence and straight dealing in our own organization and with the public will be an established fact and patrons will soon be receiving bits of plain facts from our interested and satisfied employees. It takes a very big individual not to be selfish, egotistical or jealous to some little degree. The committee calls to our attention the importance of frankness in meetings and inter-departmental conferences. All parties to such gatherings must certainly be free to listen and exchange ideas without a trace of selfish or jealous rivalry.

Meetings with employees have often been conducted by individuals who were not qualified to obtain and maintain a free and interested discussion from workmen of all ranks, and these result in a frozen spirit. Suggestions from an employee may be ridiculed or ignored and this develops in him a dislike for such meetings.

We will sell our transportation just in proportion as we sell the idea to our employees who are our salesmen. We have all some time in our experience had to deal with a co-worker who liked, or thought it his duty, to call to the attention of the superintendent or manager the other fellow's shortcomings or small department matters rather than to be big enough to take the matter up direct in the right manner with the department. As long as individuals with this sort of spirit are in an organization the highest success is not realized. It is natural for one to like to do what is right but not so natural to want to do it because he is "jacked up by the boss."

Much has been said and written during the past five or six years to justify the terrific costs of transportation, and much has been talked and written during the past year to soothe our own feelings and the financial interests back of our properties, that we are nearing the "promised land" of lower operating costs and that we are to receive just recognition of the importance and necessity of adequate fares from the public and sanction from commissions. One of the "lower operating costs" is labor, but the reduction of wages to the average employee cannot be other than disappointing, even though the increased wage that has been paid was justified in the main by the increased cost of necessities which are now coming down in price. But many employees in all classes of service have meanwhile unconsciously changed their standard of living, which makes it only the harder to see the justice of wage reduction, so it will be incumbent upon the managements to be most untiring in their efforts to handle this delicate subject in order to maintain the maximum of loyalty and wholehearted support from the employees.

There must be a freer exchange of ideas between men who know and there must be a freer acceptance of ideas by men who do not know. The managements of properties must delegate their engineering matters to men who know engineering, their traffic matters to men who are students of traffic, and their equipment maintenance to men professional in their line, and all must work together with a corps of boosting and loyal workers, loyal because they believe in the policies of the company they are working for. Then we will sell our transportation.

Merchandising Transportation

By Bert Weedon

Traffic Manager Indianapolis & Louisville Traction Railway Company, Indianapolis, Ind.

The great transportation systems in our large cities, serving millions of people daily, are indeed important factors in the growth and welfare of the cities served. Cities may be likened to human beings, in that the transportation system of a city is as important to the life of that city as the arteries are to life in a human body.

Cities, as a whole, apparently do not realize or consider the importance of their transportation systems. Unfair treatment by city government of the city's transportation facilities not only affect adversely the transportation facilities, but also affect adversely the citizens of that city. The report of the committee deals with this subject on the basis of "merchandising any other commodity."

In a general way this is true, but let us look into the subject from this viewpoint. Is there a manufacturing concern in Chicago, St. Louis, Cincinnati, Cleveland, Louisville or Indianapolis that carries the heavy investment for producing its product as do the transportation companies of these cities? How often does the manufacturer turn his capital? How often does the transportation company turn its capital? In the average manufacturer's business, and the average transportation company's business, what is the difference in the relative ratio of net profit? But let us not enlarge on existing conditions more than to bring ourselves to realize the importance of the work in hand.

Selling our product, whether it be city street car transportation or interurban transportation, is perhaps one of the most, if not the most, important part of our work.

The training of employees in this work is surely very essential to the success of any property. From the pick and shovel to the president's office requires more gray matter than we realize. The committee reports that co-operation and co-ordination of all departments is important. This is absolutely necessary. General policies and sales methods should be determined by the executive in charge of this work. Extreme care and rare judgment should be exercised in determining these policies. To educate men to carry out these general policies costs vast sums of money each year.

It has been very truly said that the transportation company is largely judged by its platform men. The conductor and motorman are the salesmen who meet the public face to face. Do we realize the importance of personal contact with these men? Do we know their trials and difficulties? Are we giving these men the support they should have in order that they may deliver to us the success we demand?

Every man connected with a transportation company is a public servant; and when new men are placed on our pay rolls, they should be educated carefully in their duties, to the end that they may deliver to the public the service they demand.

The question is asked, How shall this be done? There are many theories offered, and many are worthy of consideration. The report of the committee covers this subject conclusively.

The matter of publicity is also an important factor. The transportation systems of the entire country are suffering from a lack of honest, straightforward publicity. Tell the public the truth. Does the public know the efforts that are being made to create and maintain the service they demand? Does the public know the cost of such service? Does the public realize that, because of adverse legislation, both by states and cities, the average investor refuses to buy public utility securities? Does the public know that petty politicians use the transportation facilities of their cities and states as food to stir up hatred and animosity? Do we realize that we have all of these problems to meet, and if so, how are we meeting them? Publicity and lots of it is necessary. Let the people know our troubles. Impress upon them the importance of their transportation system and of their duty to this system. How long can any great city exist without transportation?

Let us look well into our organization. Is it a real organization? Does the head of every department have his duties clearly outlined? Are the departments co-operating properly? Are the employees in each department being properly trained and educated to carry out their portion of the programs? Are we making future heads of departments in our own organizations? Are we endeavoring to fit our whole organization to meet the public squarely and fairly in the discussion of policies and rules which affect the public?

Further discussion on the Merchandising Transportation report will appear in an early issue.

Sale of Securities by Utilities*

By H. E. Weeks

General Manager Securities Department, United Light & Railways Company, Davenport, Iowa

In the beginning the financing of public utilities was cared for by public-spirited citizens. Gradually control passed into the hands of bankers, located in the financial centers, or clients whom the bankers were able to interest. As long as the utilities were controlled locally the personal contact of the owners with the customers did much to prevent misunderstanding.

When customer ownership of securities marketed by the utilities was first advocated it met with considerable opposition from the investment bankers, who rightly felt that the utilities owed them something for carrying them through the development period. The opposite is now true.

The high cost of money has done much to promote customer ownership of securities. High rates for money are more important to utilities than to enterprises where money is turned more frequently. Their financing is made difficult also by the tax exemption feature of government and municipal securities. The *Wall Street Journal* recently estimated that there are $14,000,000,000 of tax-exempt securities in the country, exempting $700,000,000 of income from our greatest direct tax.

The United Light & Railways Company operates seventeen companies serving 600,000 people in over fifty cities and towns. Some time ago the company decided to offer its securities to employees and the public and the board of directors offered for sale $2,000,000 of 7 per cent preferred stock at par. The stock was offered to the employees either for cash or on the installment plan. An employee was allowed 25 cents per share for each year he had been in the company's employ. If he was ill from six days to six months during the nineteen-months period of making payments his payments were made by the company and if he died a fully paid certificate was issued to a designated person.

The stock was offered to the public through employees only at par for cash or on the installment plan.

The employees of each of the large companies were organized into teams of ten each to compete in the sale of the stock to the public, and the cities were divided into districts to be assigned to the teams. After the team organizations had been maintained for about three months a separate securities department of the company was organized. The manager of each operating company was made responsible to the manager of the securities department for the sale of securities by his company. The department selected from the employees who had made the best record a corps of salesmen who were put permanently on the department payroll. The team organization was abandoned, but the company continued to pay a bonus of $2 per share sold.

Our experience shows that the average original sale is three shares. A map on which a tack indicates each sale demonstrates that where one sale is made others follow in the same vicinity.

The better knowledge of the affairs of the company secured by the employee who becomes a stockholder and salesman and the customer who becomes a stockholder is a great asset to the company. It is necessary, however, that a company protect the investment of investors in its securities, otherwise ill will is bound to result.

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*Abstract of a paper read before joint meeting of the Iowa Electric Railway Association and Iowa Section, N.E.L.A., Spirit Lake, Iowa, June 23, 1921.

Another Utility Information Bureau Formed

On June 15 the Georgia State Utility Information Bureau was formed in the interests of the companies in that State. L. K. Starr, formerly assistant city editor of the Atlanta (Ga.) *Journal*, was elected as the director. George T. Smith, Augusta-Aiken Railway & Electric Company, is chairman of the bureau.

On June 17 Labert St. Clair, director of the American Association's advertising section, met informally with the bureau and others interested in the railways in the southeast for a conference. The purpose of this conference was to show how the advertising section could materially aid these companies in their campaigns. It also gave Mr. St. Clair first-hand information as to some of the problems confronting the traction industry in this part of the country. W. P. Strandborg, publicity department, Portland (Ore.) Railway, Light & Power Company, and an officer of the Associated Advertising Clubs of the World, also attended the meeting. He spoke of the desirability of having a utility section in the Associated Advertising Clubs.

Among those who attended the conference, which was held at the offices of the Georgia Railway, Light & Power Company, were L. LeMay, Memphis (Tenn.) Street Railway; P. S. Arkwright, Georgia Railway & Power Company; W. J. Baldwin, New Orleans (La.) Railway & Light Company; C. R. Winston, Virginia Railway & Power Company; George T. Smith, Augusta (Ga.) Aiken Railway & Electric Company, and E. C. Stothart, Charleston (S. C.) Consolidated Railway, Gas & Electric Company.

First Convention of the New International Association

THE first convention of the new Internationale Strassenbahn und Kleinbahn Verein took place in Vienna May 29 to June 3. It will be remembered that this association, comprising the companies and individuals of several Central European countries, was formed six months ago for the purpose of an exchange of experiences. The new association in no way intends to be in opposition to the Union Internationale, and a connection between the two is maintained by a number of members, like those in Holland, Norway, Sweden and Denmark, which are also members of the Union Internationale. The meeting in Vienna was attended by delegates from the countries as well as from Rumania and Jugoslavonia. At the conclusion of the meeting these officers were elected:

President, Ludwig Spängler, manager of the Vienna Municipal Tramways; vice-president, Dr. Frederick Wussow, president of the Association of German Tramways and Interurban and Privately Owned Railways; secretary, Dr. Arthur Ertel, Vienna; executive committee: For Germany, Max Dräger, Berlin; Mr. Löwit, Manheim; Otto Hubrich, Essen; for Denmark, Kai Norregaard, Copenhagen; for Holland, Mr. Van Putten, Amsterdam; for Norway, Jörgen F. S. Barth, Christiania; for Sweden, Einar Hultman, Malmö; for Switzerland, Hermann Geiser, Schaffhausen; for Hungary, Wilhelm van Ghatel and Mr. Von Sztrokay, Budapest; for Czecho-Slovakia, Oscar Hausmann, Gablonz.

Standards Secretaries Meet

A CONFERENCE was recently held in London of secretaries of the national standardizing bodies. The conference had for its object the interchange of experience and the furtherance of co-operation among the several national bodies in their work of industrial and engineering standardization. Arrangements were perfected for closer co-operation between the national standardizing bodies and the International Chamber of Commerce, which was to give special consideration to standardization at its convention scheduled to be held in London during the week of June 27. Belgium, Canada, Great Britain, Norway, Switzerland and the United States were represented at the conference.

Association Meeting

Pacific Claim Agents' Association

At the last annual meeting of the Pacific Claim Agents' Association it was decided that the twelfth annual convention of the association be held at Butte, Mont., on Aug. 18, 19 and 20, 1921, provided these dates were satisfactory to the membership. At the executive committee meeting the following subjects were assigned:

"New and Recent Improvements in Car Construction Designed with the Object of Eliminating Accidents," H. C. Winsor, superintendent of investigations and adjustments, Tacoma Railway and Power Company, Tacoma, Wash

"The Importance of Claims Department Statistics and What Statistics Are of Most Value," J. H. Handlon, claim agent, U. R. R. of San Francisco, San Francisco, Cal.

"The Value of Moving Pictures as a Means of Exposing Malingerers and Fraudulent Claimants," C. M. McRoberts, general claim agent, Los Angeles Railway Corporation, Los Angeles, Cal.

"The Modern Trend of Workmen's Compensation Laws and the Effect that Such Laws Have upon Employees Who Have Minor Accidents," P. O. Solon, claims attorney, San Francisco-Oakland Terminal Railways, Oakland, Cal.

"Publicity in Connection with Accidents, Claims and Litigated Cases," W. H. Moore, claim agent, San Diego Electric Railway, San Diego, Cal.

"The One-Man Car and its Effects on the Traffic Hazard," Thomas G. Ashton, claim agent, Washington Water Power Company, Spokane, Wash.

"Co-operation with the Public in Accident Prevention Work," B. F. Boynton, claim agent, Portland Railway, Light & Power Company, Portland, Ore.

"The Doctrines in Law of Contributory Negligence and Last Chance Doctrine as now Applied to Accident Cases," Fred F. Furman, attorney, Butte Electric Railway, Butte, Mont.

"The Genteel Fakir," F. J. Lonergan, attorney, Portland Railway, Light & Power Company, Portland, Ore.

"Methods of Collecting from Owners of Foreign Vehicles Who Have Injured Company Employees While They Were at Work. Policies Pursued by Member Companies in Handling Claims of Employees Injured While Not at Work," S. A. Bishop, general claim agent, Pacific Electric Railway, Los Angeles, Cal.

"Methods of Following up Claimants and Witnesses to Accidents," J. W. Grace, claim agent, Sacramento Northern Railway, Sacramento, Cal.

"How Can the Personnel Department of a Company When Hiring and Training Employees Assist in the Prevention of Accidents," J. S. Mills, superintendent of personnel, San Francisco-Oakland Terminal Railways, Oakland, Cal.

"Suggested Legislation Governing Grade Crossing Accidents and Other Methods of Preventing Such Accidents," A. M. Lee, claim agent, Northern Pacific Railway, Seattle, Wash.

American Association News

Safety Campaign Suggestions

THE American Association's advertising section of information and service has just issued an illustrated twenty-page pamphlet on safety campaign suggestions. The booklet shows how electric railways working through employees, the general public, school children, motor car drivers and others, can prevent accidents and save money not only to the railways but especially to themselves. More than 200 slogans and catch lines for car cards, blotters, posters and advertisements are given for the benefit of the electric railway official who has to write advertising copy. As one official puts it: "It is one thing to plan a safety campaign and start the ball rolling, but to make it successful—to make the dreams come true—calls for 95 per cent perspiration."

Final Touches Put on Buildings and Structures Committee Report

THE buildings and structures committee of the Engineering Association held a meeting at the Emerson Hotel, Baltimore, Md., June 13 and 14. Those present were D. E. Crouse, Rochester & Syracuse Railroad, chairman; N. E. Drexler, Newport News & Hampton Railway, Gas & Electric Company, and J. R. McKay, Indiana Service Corporation. The chairman of the sub-committee on design of a typical shop presented his report and explained the details of the several conferences which have been held with the equipment committee. This report was reviewed and prepared for final submission to the other members of the buildings and structures committee. The sub-committee on equipment for prepayment and postpayment of fares submitted a report which represented the views of Mr. Hughes of the Transportation and Traffic Association and of the buildings and structures committee. This report was also put into final form for submission to the general committee.

A draft of the probable nature of the joint report on the subject of wood preservation was presented by the chairman of that sub-committee and was thoroughly discussed. All reports will be put into final form as soon as possible for submitting to the various members of the committee.

Chicago Elevated Section Holds Final Session

H. M. CRUNDEN, special agent Illinois Bell Telephone Company, was the principal speaker at the last meeting of company section No. 6, held by the Chicago Elevated Railroads on June 21. The warm weather kept down the attendance to eighty. Mr. Crunden, in an illustrated talk on "The Progress of the Bell Telephone Company," outlined the steps in the training of its switchboard operators. He also elaborated on the complexities of the modern switchboard and described the methods of combating sleet storms. High tribute was given to employees of utility companies because of the efforts they always put forth to serve and please the public.

New Monthly Bulletins Available

THE following reports and compilations are available to member companies upon request:

Summarized Income Statement and Operating Statistics of 60 Companies.

Motor Bus Operating Costs.

Some Franchise Requirements.

Fare Reductions and Causes.

Cost of Living Studies.

Wage Reductions and Causes.

Supplement to Fare Bulletin.

Supplement to Compilation on Jitney Regulation.

Supplement to Compilation on One-Man-Car Legislation.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Unified and Concentrated Control Essential to Success

The members of the committee of Aldermen from Chicago who recently made a tour of large cities in the West presented their report to the local transportation committee of the City Council on June 30. They gave a brief résumé of conditions in Kansas City, Denver, Los Angeles, San Francisco, Portland, Ore.; Seattle, Vancouver, Minneapolis and St. Paul.

Their conclusions were as follows:

1. The present method of private ownership and operation qualified by public regulation has resulted in a division of control among numerous governmental and private agencies, and has led to confusion, wasteful litigation and ultimate disaster, as evidenced by the experience of Kansas City and Denver.
2. The operation of the street railway lines by the municipality in San Francisco has proved satisfactory to the people of that city.
3. The acquisition and operation of the street railways in Seattle has not proved satisfactory.
4. Rates of fare are necessarily determined by the character of service rendered, quality of management and the cost of financing, and the lowest rate of fare compatible with the best service can be secured only by the most efficient management and the most economical financing.
5. The most efficient management can be had only by unifying and concentrating control and management of the street railways, and the most economical financing by the issuance of securities that will absolutely assure payment of principal and interest.

$200,000 Allowed for Inquiry

On recommendation of the committee, Chairman Schwartz decided to appoint a sub-committee to make a study of the traction bills which failed of passage in the last Legislature and to engage legal counsel to decide on a course of action for the coming special session of the Legislature.

The City Council failed to allow Mayor Thompson's requested appropriation of $315,000 to prosecute cases against the transportation and telephone companies, but did allow $200,000 for this purpose.

Publicity Department Continued Unchanged

Electric Railway Service, issued by the Detroit (Mich.) United Railway, suspended publication with the issue of June 17, and while no definite announcements have been made, the company will continue its publicity department. A. D. B. Van Zandt, the company's publicity agent, and C. A. Drummond, associate editor of the paper, will devote their time to important matters which have developed in their department.

As noted previously in the ELECTRIC RAILWAY JOURNAL, changed business conditions resulting in reduced revenues with the necessary corresponding reductions in expenditures and the practice of every economy possible are among the reasons given for suspending the publication. Among these economies is the saving in printing costs.

Franchise Modifications Suggested

Former Cincinnati Director Points Out Weaknesses Discovered by Him in Local Grant

Drastic changes in the service-at-cost franchise governing the operation of the railway system were urged by William C. Culkins, former Director of Street Railways at Cincinnati, Ohio, in his annual report for 1920.

While Mr. Culkins gave his support to the service-at-cost plan as being sound of principle, he urged modifications in the ordinance which would give the city more power and a better method of enforcing its orders.

Forfeiture Clause Assailed

The forfeiture clause in all railway franchises was assailed by the former street railway director. He asserted that a very weak point of this clause was that in order to gain a forfeiture of franchise the operation of cars would have to stop.

Mr. Culkins also urged that the Rapid Transit Commissioners work out a system linking up the surface lines with the proposed transit loop. Mr. Culkins said that a new grant could be made for the full period that the present franchise has to run.

Mr. Culkins advocated a larger reserve fund for the Cincinnati Traction Company. In the fixing of fares, Mr. Culkins said the city should have the right to make the rate sufficient to cover the cost of service, instead of being restricted by fixed grades. Conversely Mr. Culkins said there also should be a provision whereby the city and company might at any time agree to withhold an increase in fares if economic conditions warranted, despite the technical requirements of the ordinance.

Furthermore Mr. Culkins said the expense of the street railway commissioner's office should be paid out of the operating expense, with ample allowances for the employment of all the experts and other assistance.

Either in connection with the ordinance revision or otherwise steps should be taken at once for the proper unification of the rapid transit system with the surface lines. Mr. Culkins also recommends in his report that the Rapid Transit Commission make a study of the development of a system of motor trucks or trackless trolley feeders to connect with the stations of the proposed system and such laterals as might in that event be found desirable.

Nothing Tangible Accomplished in New Orleans

It was generally believed that the railway settlement plan of Commissioner of Finance Murphy of New Orleans, submitted some days ago and indorsed by the Association of Commerce and the representative business men of New Orleans, would receive favorable consideration at the meeting of the Commission Council on June 28 or that the discussion might be followed by the adoption of some such plan of action in a modified form. To the surprise of not a few, however, nothing tangible was accomplished. Mayor McShane lectured the members of the Commission Council who differed with him in the stand which he anticipated they were about to take on the Murphy plan.

It was finally decided to reopen the question, *de novo*. This will delay action on the matter.

The citizens' advisory committee of forty, which was appointed by Judge Foster, whose report was turned down when submitted to the Commission Council, has been invited to confer with the Council again and help the Mayor and the Council arrive at some practical, satisfactory and enduring plan of action. The anti-8-cent fare committee and other bodies were included in the invitation.

Hearings Less Stormy

Commissioner of Public Utilities Maloney, at the conclusion of the session, said that "the public utility mess appears to be in a worse state than ever." He failed to see where the Council could get anywhere so long as such tactics were pursued.

Federal Judge Henry D. Clayton has agreed to set July 8 as the date for hearing the petition of the railway to make permanent the injunction granted several months ago by Judge Clayton, restraining the city from interfering with the collection of 8-cent fares by the city.

The conference held on July 1 between the City Commissioners and the representatives of the committee of forty and the civic and commercial organizations of the city resulted in the adoption of a resolution providing that a committee of one from each of the organizations present meet the Commission Council on July 7, for the purpose of helping shape some definite plan of action.

Expressions of opinion from these various bodies disclosed no pronounced feeling unfavorable to the valuation placed upon the public utilities property by the committee of forty appointed by Judge Foster. The proceedings were unlike the stormy scenes that enlivened last Tuesday's meeting.

Arbitration Board Award Less Than Company's Proposal

Wages have been fixed by the arbitration board for the trainmen in the employ of the Northern Ohio Traction & Light Company, Akron, Ohio. The decision was rendered on June 30. The new rates are to continue from May 1, 1921, for one year. Rates of pay for the various classes of service are as shown in table below.

All regularly scheduled runs are to be as near ten hours as possible and not more than 10 per cent of regular schedule runs are to exceed ten hours and thirty minutes, and no run is to be scheduled in excess of 12½ hours. Nothing contained in the award is to affect the present working conditions as to layover time. The maximum number of hours which any motorman or conductor may be called upon to work in any calendar day of twenty-four hours, are to be as fixed by statute of the State of Ohio. Any motorman or conductor working a regularly scheduled run of less than eight hours is to be paid for nine hours.

INTERURBAN

Consisting of motormen, conductors and trainmen of the A. B. C. Division, Canton-Akron Division, Canton, New Philadelphia and Uhrichsville Division, and Akron, Kent & Ravenna Division.

First year's service	48 cents an hour
Second year's service	50 cents an hour
Third year's service and thereafter	53 cents an hour

SUBURBAN

Consisting of motormen, conductors and trainmen of the Akron, Barberton & Wadsworth Division.

First year's service	44 cents an hour
Second year's service	46 cents an hour
Third year's service and thereafter	49 cents an hour

CITY LINES

Consisting of motormen, conductors and trainmen of the Akron City, Canton City and Massillon City.

First year's service	43 cents an hour
Second year's service	45 cents an hour
Third year's service and thereafter	48 cents an hour

Other points made in the ruling are as follows:

> Whenever any schedule may be improved by shortening the hours and bettering the runs, without curtailment of the service demanded by the public, the association shall have the right to have such changes made in such schedule.
>
> The merit and demerit plan of discipline now in force on the A. B. C. and A. K. R. Division shall be continued to Jan. 1, 1922, with the understanding that all lines under the Northern Ohio Traction & Light adopt the merit and demerit system on or before Jan. 1, 1922. Should they fail to adopt same, then the merit and demerit system shall be inoperative on all lines.

The matter of the renewal of the wage contract between the men and the company came up for settlement about April 1. No agreement was reached relative to the wages and on May 1 the company put into effect a reduction of 15 cents an hour. This was followed by a seven-day strike after the men had refused to submit to arbitration.

An offer from the International Amalgamated Association was followed by the men agreeing to return to work at a 15-cent reduction with the understanding that the question of wages and the number of working hours, together with the merit and demerit system, be submitted to arbitration. The company appointed Charles Currie as its arbitrator, the men selected E. L. Crawford, East Liverpool, to represent them and the Governor of the State selected F. S. Harmon as the third man or referee.

Under the reduction of 15 cents an hour from the scale then in effect which was suggested by the company, the wages in cents per hour would have been as follows:

	City Lines	Suburban Lines	Interurban Lines
First year	44	45	50
Second year	47	48	52
Thereafter	50	51	55

This offer of the company proposed that 3 cents an hour additional over the city scale be paid for the operation of one-man city cars.

Muddling Through in Washington

Municipal ownership of the electric railways in the District of Columbia is advocated in a bill which has been reported favorably to the District of Columbia committee of the House of Representatives. The favorable report comes from a subcommittee of the District committee. The municipal ownership bill had a margin of only one vote in the subcommittee.

The subcommittee has initial jurisdiction over bills affecting electric railway traffic. Various other bills pending before the subcommittee were reported to the full committee without recommendation. Among these bills was the Woods measure which proposes to levy an excess profits tax on the earnings of the Washington Railway & Electric Company and the Capital Traction Company after a fair return on their valuation has been allowed.

The subcommittee took no action on the bill now before the Senate which proposes to give the Potomac Electric Power Company the right to merge with the electric railway companies.

Col. Charles W. Kutz, chairman of the public utilities commission of the District of Columbia, has announced a public hearing for July 14 to consider rates of fare. In that connection William F. Ham, president of the Washington Railway & Electric Company, declared that he would ask for a zone system of fares if the commission should reduce the present rates.

Eight-Cent Wage Reduction.—Representatives of the Monongahela Power & Railway Company, Clarksburg, W. Va., and representatives of the Amalgamated Association have reached an agreement on the wage scale for the coming year. The men have accepted an 8-cent reduction on the hour. The scale that formerly existed was from 51 to 62 cents an hour for work in the city, while that signed ranges from 43 to 54 cents. The old scale for interurban work ranged from 51 to 63 cents an hour, while that signed fixes rates at 43 to 55 cents.

Railroad Commission Recommends Improvements

For relief to Pacific Electric Railway's traffic problems in handling its Hollywood local service to and from Los Angeles, a tunnel outlet westerly from the Pacific Electric Hill Street Terminal to Figueroa Street, was recommended on June 15 to the State Railroad Commission by its chief engineer, Richard Sachse. His recommendation was the result of an investigation conducted by him in conjunction with the Chief Engineerr H. S. Osborne, Jr., of the Los Angeles Board of Public Utilities. The report of the engineers was submitted at a hearing in Los Angeles before the Commission, consisting of Commissioners Brundige, Loveland and Benedict.

The investigation of passenger service to Hollywood was ordered by the commission last April following conferences of civic bodies with the railroads.

Two plans for the tunnel outlet from the Pacific Electric Hill Street Terminal were suggested by Engineer Sachse. One is for a tunnel from the station coming to grade at Figueroa Street, estimated to cost $725,000, including necessary changes in the Hill Street station. The other plan is to continue the tunnel under Figueroa Street, to come to grade near First Street and Lake Shore Avenue, but do not include the cost of the right of way for the tunnel. The engineers report embodied further additional recommendations to solve the Hollywood traffic problem.

O. A. Smith, general passenger agent of the Pacific Electric Lines, submited to the commission a plan for a zone system for Hollywood, with a scale of fares that would bring an adequate return to the company.

E. O. Edgerton, former president of the Railroad Commission, represented the Los Angeles Railway Corporation's interests at the hearing, and expressed the opinion that the transportation problem in Los Angeles had resolved itself into a question of what sort of service the public is willing to pay for, as at present the 6-cent fare prevails on the Pacific Electric Lines, while the Los Angeles Railway lines have recently been allowed a 5-cent token fare or a 6-cent fare on straight rides.

The Los Angeles Railway Corporation went on record as being radically opposed to the extension of its lines into Hollywood, branding them as "duplication of service."

The hearing closed with the chief engineer of the utilities board recommending that the commission bring about an arrangement whereby city buses be placed in operation to and from Griffith Park to meet the Los Angeles Railway cars at First Street and Vermont Avenue, carrying passengers in proposed municipally operated buses to and from the park, fares to be paid either on the buses or on the cars, and transfer from one to the other to be recognized.

Difference Over Methods

Detroit United's Proposal to City for Taking Over Lines Now and Paying Later Is Rejected

City officials of Detroit, Mich., have rejected the last proposal for taking over the lines of the Detroit United Railway, whose purchase was approved by the voters last April. The suggestion of the Detroit United Railway was that the city take over the lines immediately and then arbitrate the price to be paid.

In a letter to the secretary of the Street Railway Commission, A. F. Edwards, vice-president of the Detroit United Railway, suggested that the city pay $1,600,000 to the Guaranty Trust Company, New York, trustee, upon taking over the day-to-day lines, or as an alternative take possession on paying to the trustee the value placed upon the property by the city appraisers, which is approximately $1,400,000, with the agreement that the whole price be arbitrated promptly under the terms of the agreement, and that the city make upon completion of the arbitration such additional payment, if any, as may be required.

Mayor Couzens stated that if the proposal went to the arbitrators a lower price might be asked by the city than that which had been offered the company. The city's offer was withdrawn.

The price first fixed by the city appraisers on the day-to-day lines under consideration was $1,339,998. Approximately 30 miles of lines are included in the thirteen pieces of construction. The company figures the original cost of these lines as $1,965,942.

No prolonged delay is expected in the matter of arbitration. The company has named Prof. Henry E. Riggs as its arbitrator and the city has named William H. Maybury as its representative. Professor Riggs and Mr. Maybury represented the company and the city respectively in arbitrating the price paid by the city in taking over the Harper Avenue line.

Joseph S. Goodwin, general manager of the Detroit Municipal Railway, has been asked by the commission to outline the best way of tying in the lines already constructed by the city with the Detroit United Railway day-to-day lines, and the Fort Street and Woodward Avenue lines on which franchises have expired and which the city plans to take over if the action meets with the approval of the voters at the next election.

Wages Reduced in Joliet

The Chicago & Joliet Electric Railway, Joliet, Ill., has induced its employees to accept a reduction in wages of 5 cents an hour for all who work on an hourly basis, and $12 a month for all who are employed on a monthly basis. The new scale for trainmen on the Joliet city lines is 51 cents for the first three months, 53 cents for the next nine months, and 55 cents an hour thereafter. On the suburban line from Joliet to Lockport, the wage is 57 cents an hour and on the main interurban line, 60 cents an hour. The contract signed with the men is on the open-shop basis, and time and one-half for overtime is allowed.

The traffic of the company for the first six months of the year was approximately 11 per cent less than for the corresponding period last year. A motor bus line in competition with the Chicago end of the interurban railway has been ordered by the Illinois Public Utilities Commission to cease operation. The bus company having failed to comply with this order, the interurban made a further complaint to the utilities commission, which referred the matter to the attorney-general's office, which is expected to take some action. The bus company has no certificate of convenience and necessity.

North Shore Reduces Wages

The trainmen of the Chicago, North Shore & Milwaukee Railroad have agreed to a reduction in wages effective from June 16, which brings the new wage scale down 10 cents an hour on each of the steps, except that the maximum rate is reduced only 9 cents an hour. The new scale is 67 cents an hour for the first three months, 68 cents for the next three months, 70 cents for the next three months and 73 cents thereafter. The wages of all other employees have been reduced in proportion to the cut in the pay of the trainmen.

Incline Reported to Be Safe

Following an examination, with tests of the mechanism of the Mt. Adams Inclined Plane, Bert L. Baldwin, City Engineer, reported to William Jerome Kuertz, Director of Street Railways, that the structure was in safe operation for cars of the Cincinnati (Ohio) Traction Company. Operation of the plane was suspended some time ago by order of the street railway director when an accident took place at the Lock Street end. In his report Mr. Baldwin said the use of the incline for double-truck cars was safe in his estimation.

Wages Reduced in Pittsburgh

Effective on Friday, July 1, wages of platform men on the Pittsburgh (Pa.) Railways were reduced from 64, 68 and 70 cents an hour to 54, 58 and 60 cents an hour. This cut amounts to about $1 a day, or 15 per cent, and makes the wages the same as of May 1, 1920.

Negotiations between the receivers of the Pittsburgh Railways and the wage scale committee of the trainmen are being continued. A conference of the receivers and the committee was set for July 5, but on that day the wage scale committee of the employees failed to meet with the receivers.

The receivers in a statement issued during the week ended July 2 declared that should arbitration be resorted to and a smaller wage cut be fixed or the arbitrators rule against a reduction of wages, the railway will pay back to the men any amount due them.

Public Service May Run Jitneys as Feeders

If the demand for the service is found to be inviting the Public Service Railway, Newark, N. J., may establish jitney routes as feeders to its trolley lines. This statement is attributed to Thomas N. McCarter, president of the company. Nothing definite, however, has as yet been decided. Mr. McCarter is quoted to the effect that the plan has not advanced far enough to discuss the financial arrangements, but that if the company does take on bus operation the new branch of its transportation business will be financed in such a manner that there will be no failure.

News Notes

Wage Cut in Nashville.—A wage reduction of 3 cents to 7 cents an hour for all trainmen of the Nashville Railway Light Company, Nashville, Tenn., has been announced by E. C. Edgar, vice-president and general manager. The rate of pay of 45 cents to 55 cents an hour has been reduced to 38 cents to 48 cents, a maximum reduction of 15 per cent.

More Bus Lines Planned.—The Board of Estimate of New York City has voted to authorize Grover A. Whalen, Commissioner of Plant and Structures, to put in operation a bus line from Eighth Avenue and 155th Street to the Dyckman Street ferry landing. The board also authorized bus lines from Fifth Avenue and 110th Street to Mosholu Parkway and from the Fort Lee ferry landing to Mosholu Parkway.

City Stipulates Settlement Terms.—The City Council of Des Moines, Ia., on June 27 pigeonholed indefinitely three ordinances proposed to place the Des Moines City Railway on a footing where it could be financed until a new franchise is negotiated and through Mayor Barton, served notice on the company that it must reduce fares substantially before buses will be eliminated from car line streets, and must bring in a complete, detailed franchise proposal before any franchise action will be taken.

City Must Restore Tracks. — The controversy between city officials of Lafayette, Ind., and the Terre Haute, Indianapolis & Eastern Traction Company was settled temporarily at least by Judge Ferdinand A. Geiger in Federal Court on June 23. Judge Geiger entered an order giving the city three days to replace the 15 ft. of track which was removed by the city. This will enable the railway to operate its cars by way of Kossuth Street to the interurban station. He also gave the city thirty days in which to restore 2,000 ft. of tracks in Main Street.

Financial and Corporate

Nearly All Companies Reported in "Chronicle" Show Increase in Gross Over Last Year

The statistics in the accompanying table are from the *Commercial and Financial Chronicle* for June 25 and give the gross earnings of the electric railway companies reported in the regular weekly list of public utilities for which the *Chronicle* publishes monthly figures. All of the electric railway properties listed in that department were included except those whose monthly earnings are less than $100,000, or where the company supplies a combined utility service and the greater part of the earnings comes from electric lighting and power.

GROSS EARNINGS OF VARIOUS COMPANIES SINCE JANUARY 1 THIS YEAR AND LAST YEAR

	Period Ended	Current Year	Previous Year
Brooklyn City R.R. . .	March	$2,664,937	$2,401,385
Coney Island & Bklyn	March	576,989	529,209
Nassau Elect., Bklyn. .	March	1,113,119	1,450,105
New York Consol. . . .	March	5,316,987	5,085,766
Bklyn. Qu. Co. & Sub.	March	428,462	418,154
Chattanooga Ry. & Lt.	April	447,313	432,639
Cumberland Co. (Me.) P. & L.	April	1,058,719	940,752
Duluth-Superior Trac.	May	756,624	809,054
East St. Louis & Sub. .	April	1,375,619	1,338,745
Georgia Lt. P. & Rys. .	April	577,234	564,879
Harrisburg Railways. .	April	560,964	563,016
Hudson & Manhattan.	May	4,343,186	3,468,496
Illinois Traction.	April	7,450,003	6,751,171
Interboro Rap. Tran. (total sys.)	• May	23,675,145	22,986,332
Lake Shore Elec. Ry. .	April	816,064	995,044
Nashville Ry. & Light.	April	1,283,371	1,220,313
Newp. N. & H. Ry. G. & E	April	1,112,164	1,030,043
N. Y. & Queens Co. . . .	March	279,856	233,556
N. Y. Railways.	March	2,260,010	1,793,018
Eighth Avenue, N. Y.	March	277,737	163,592
Phila. Rap. Transit. . .	May	17,987,696	15,475,733
Port. (Ore.) Ry. L. & P. Co	April	3,399,221	2,958,907
Porto Rico Railways. .	March	340,885	316,951
Reading Trans. & Lt. Sys	April	963,174	946,793
Third Avenue System.	April	4,310,722	3,499,666
Twin City Rap. Trans.	April	4,717,181	4,135,037
Virginia Ry. & Power.	April	3,419,192	3,111,072
Winnipeg Elect. Ry. . .	March	1,487,578	1,400,625

Reduction in Taxes Urged

The Chamber of Commerce, of Kansas City, Mo., in extensive resolutions urging reduction in taxes for the Kansas City Railways, points to the distinction between a public utility of this kind and an ordinary business enterprise. The resolutions make plain the fact that street railways can be turned to no other use than that for which they were built, while most other businesses can turn the property to other than the original uses.

The resolutions constitute a clear and complete picture of the value and relation to a community of its street railway system. They further demonstrate that taxes should be reduced because of the reduced value of the property as reflected in the selling price of the securities.

It is the opinion of the Chamber of Commerce that a valuation based on about the lowest permissible percentage of market value of its outstanding securities is the maximum basis of taxation in the public interest under the present emergency conditions; that the maximum measure of relief by reduction of taxes of all kinds, even to the extent of complete remission of them, for the time being, if that were possible, would be for the best interests of the public, and that increased taxes must be reflected in increased fares if good service is to be continued.

In conclusion it is resolved that a copy of the resolution be sent to each member of the State Board of Equalization, and that the members of that body be urged, for the sake of the best interests of the people of Kansas City, to give serious consideration to the conditions and propositions set forth by the Chamber of Commerce, and to grant the fullest measure of relief within their powers.

Receiver of Atlantic City Road Discharged

A. J. Purinton has been discharged as receiver of the Atlantic City & Shore Railroad, Atlantic City, N. J., on application in the United States District Court before Judge Rellstab. The company was placed in the hands of Judge C. L. Cole as receiver on Nov. 26, 1915. Mr. Purinton succeeded Mr. Cole as receiver on June 9, 1919 The appointment of a receiver followed inroads made into the receipts of the company when fleets of jitneys started to operate on Atlantic Avenue, Atlantic City, occupied by the railway. It is alleged the company lost $84,000 in the first eight months in competition with the jitneys. Subsequently the city ruled the jitneys off the main thoroughfare, shunting them to Pacific Avenue, which parallels Atlantic Avenue. That aided the railway, but it is said the principal factor in restoring the credit of the company has been the fact that for more than a year the company has been operating most successfully under a 7-cent fare.

$39,403 Surplus in Seattle in May

The Seattle (Wash.) Municipal Railway showed a surplus of $39,403 for May. The number of passengers carried was 8,202,955, compared with 10,838,603 in May, 1920. Car miles decreased from 1,341,380 in May, 1920, to 1,285,153 in May, 1921. Cost of operation per car mile in May, 1921, was 28 cents, and per car hour $2.58, as against 31 cents and $2.77, respectively, last year.

Total revenues for the month were $530,148, and total operating costs $361,927. The revenues exceeded the operating costs by $168,221. Out of this sum $128,818 has been set aside for interest and depreciation funds.

California Railroads to Challenge Validity of King Tax Bill

Announcement has been made that the Southern Pacific Company and Santa Fe Line would file a suit in the Federal Court to test the validity of the King tax bill, which was passed during the last Legislative session of the State of California, increasing the state tax rate on the gross receipts of steam railroads and electric railways from 5¼ to 7¼ per cent. As an aftermath of the announcement of the Southern Pacific officials of its intent to file suit, the State Board of Equalization on June 14 announced that it would deny the protest of the Southern Pacific and Atchison, Topeka & Santa Fé against the use of the 7 per cent rate.

It was declared in a statement issued by the board through its secretary, M. D. Lack, that the proposed suit will be a legal test of the method, or the so-called Seavey formula, used to determine tax rates on corporations. In the event the railroads were successful in their attack on the King bill, the reductions in tax rates would necessitate an ad valorem of 22 to 25 cents per $100 on general property to make up the deficit, the statement said.

The passage of the King tax bill was reviewed in the ELECTRIC RAILWAY JOURNAL of March 5, 1921, page 464.

New Issue of Bonds Offered

The Columbus, Delaware & Marion Electric Company, Columbus, Ohio, will immediately float a bond issue to the amount of $500,000 under a new general mortgage to secure $1,822,000 of 8 per cent bonds covering all the property owned by the company. This mortgage was recorded at Marion, Ohio, on May 17. The first and refunding mortgage securing the 5 per cent gold bonds due 1937 is closed so far as additional bonds in the hands of the public are concerned, as no bonds can be issued except as they may be deposited as security for the new general mortgage or issued for the purpose of refunding the present divisional bonds which are now outstanding.

Rhode Island Receivers Will Pay $1,000,000

Justice Tanner of the Superior Court in a recent decree ordered the receivers of the Rhode Island Company to pay $1,000,000 to Cornelius S. Sweetland, receiver of the United Traction & Electric Company. This is a reimbursement sum for the use of the properties of the Union Railroad, Pawtucket Street Railway and the Rhode Island Suburban Railway since the operation under the receivership. The United Traction & Electric Company owned all the capital stock of these companies. A decree of the court provided a payment on the part of the Rhode Island receivers, for the use of these properties a sum to be determined by Richard E. Lyman, master in chancery.

Neither an Electric Company Nor an Electric Railway Among Them

The *Wall Street Journal* in its issue of June 30 lists sixty-two of the more important companies that have ceased paying dividends since the first of the year, giving the capital outstanding and losses to security holders based on the last or usual dividend rate. The total capital outstanding of the companies is $978,366,953, exclusive of stock having no par value, while the dividend payments omitted total $23,040,897. In this long list there is neither an electric company nor an electric railway.

Desire to Foreclose Ohio Electric Railway

The Fidelity Trust Company, Philadelphia, Pa., trustee under the mortgage securing the second and general 5 per cent bonds of the Ohio Electric Railway, has filed an intervening petition in the case of the railway in the Federal Court at Toledo, Ohio, asking for the sale of practically all of the property to satisfy its obligations of $5,000,000 under the mortgage securing the bonds.

The bonds were issued on June 2, 1913, against all of the property owned by the company. They bore interest at 5 per cent, payable semi-annually. Failure to pay interest within ninety days constituted default under terms of the mortgage according to the petition.

The clauses in the trust agreement describing the property covered indicate all of the system from Zanesville through Columbus and Springfield to Toledo.

Receiver B. J. Jones, Columbus, asked recently for the partition of the Ohio Electric system into its subsidiary lines.

The city of Columbus intervened to protect a claim due on a lien on the property within the city limits there. Clarence P. Steiner also filed to protect a damage judgement of $600 against the company.

The court has issued no orders in the matter yet.

Sufficient Revenue Not Provided by Present Fare

The International Railway, Buffalo, N. Y., recently outlined its program and policy of 1921. The six months' report, January-June, 1921, now in course of preparation will show, according to President H. G. Tulley, that the company will do little more this year than meet its fixed charges after providing in its operating expenses the full annual allowance of $1,016,000 for depreciation and renewals, in accordance with the Public Service Commission formula.

Industrial depression has been felt very much in Buffalo. This is noted in the traffic handled on the lines of the International Railway. It is estimated that 1,300,000 fewer passengers are being carried a month than during the first six months of 1920.

The statement of the company says in part:

> The program of repaving, undertaken by agreement with the city of Buffalo and other municipalities, requires during this year the rebuilding of more than 20 miles of track construction, of which 13 miles is entirely new and the remainder rebuilt to conform with city paving requirements. This, with 50 miles of trolley wire renewals, complete overhauling of more than 300 cars and other necessary improvements and additions to property, will require a total expenditure approximating $2,000,000.

$1,330,000 for Improvements

In an ordinance drafted by T. J. L. Kennedy, first assistant corporation counsel, for the public utilities committee of the City Council, provision is made for eight street railway extensions, the purchase of fifty additional cars for the Seattle Municipal Railway and the acquisition of all the railway properties of the Western Washington Power Company within the city limits.

The proposed ordinance has been prepared on recommendations from the railway department. It is intended to cover the betterments now contemplated by General Superintendent D. W. Henderson and the Council. The estimated cost of the proposed improvements has been placed at $1,330,000. The Council would be authorized to issue and sell negotiable bonds to that amount.

The Western Washington Power Company line referred to is the Greenwood Avenue line, 2.28 miles in length, operated by the city since Jan. 1, 1920, on an agreement with the owners that when a bond issue was called, it would be purchased at the Council's appraisal.

Montreal Tramways Loses Appeals

The Montreal (Que.) Tramways was unsuccessful on June 28 in two appeals before the Court of Appeal which was asked to sanction the addition of $534,055 and $243,596 to the capital of $36,286,295 upon which the company has a right, under the existing contract with the city, to exact a revenue of 6 per cent per annum.

The first appeal was from a decision of the late president of the Public Service Commission of Quebec, dismissing the company's appeal from a ruling of the Montreal Tramways Commission, rendered on Aug. 25, 1919, deducting the sum of $534,055 from the capital on which the appellant has a right to 6 per cent interest.

In the second appeal, the tramways protested against judgment dismissing an appeal to the president of the Public Service Commission from a decision of the Tramways Commission which refused to add to the capital upon which the company has a right to 6 per cent interest, the sum of $243,516.

Under the statute covering the Public Service Commission, appeals lie to the Court of Appeal only on questions of jurisdiction and questions of law. In this case, therefore, the finding of the fact was accepted without question.

No Rights Over Rentals

Pennsylvania Court, in Significant Ruling, Opposes Inquiry Into Rental Payments Under Leases

The Supreme Court of Pennsylvania on July 1 denied the right of the Public Service Commission to inquire into the reasonableness of the approximate $10,000,000 annual rentals paid to underlying companies by the Philadelphia Rapid Transit Company.

In an opinion written by Justice Alexander Simpson, Jr., the court, in essence, declares that what a public utility such as the Philadelphia Rapid Transit does with the money it receives by way of "reasonable return for the service it furnishes" is no concern of the Public Service Commission or the public.

If the Philadelphia Rapid Transit, from the rates which it is authorized to collect, is not able to pay its fixed charges (of which the rentals are a part), and at the same time maintain or extend its service and facilities, that also is no concern of the commission or the public, says the court.

The opinion proceeds to point out that the underlying companies are not "operating" companies and that they do not render "service" or "make or collect rates," and consequently are not amenable to the commission. Says the opinion further:

> No contract made by a public utility is subject to a direct attack and revision, unless it is in itself a rate contract; and no contract may be indirectly reviewed in such cases, unless it has some relation to one or more of the elements to be considered in revising the rate * * * Fixed charges for franchises and assets long since acquired and now entitled to be retained only by continuing the payments provided in the lease thereof are not among those elements * * *
>
> Besides, neither the commission nor the public has anything to do with the disposition of the rates which the utility is authorized to collect nor is it any concern of either that the sum total thereof may not be sufficient to enable the operating company to pay its fixed charges and maintain or extend its service and facilities. The company is entitled to receive a reasonable return for the service it furnishes, and no more; the public is entitled to receive an adequate return for the reasonable rates it pays, and no more.
>
> Beyond making sure of these two things, the statute does not vest a greater power in the commission, so far as the matter under consideration is concerned. It has ample authority to see that its orders, as to service and facilities are fully complied with by the Philadelphia Rapid Transit Company, if the effect of so doing is that the latter's stockholders receive no return on their investment, because of the necessity for compliance with the terms of the leases, this concerns them alone, and not the complainants or the public.
>
> Moreover, if the statutes give to the commission the power to reduce these rentals, it may also increase them, a conclusion which would be a great surprise to everybody and against which, if decreed, these interveners would be among the first to complain. As the matter now is, the law gives neither right, and hence the commission should at once have halted this attempt to induce it to exceed its powers. * * *
>
> It follows that appellee was right in objecting to interveners' attempt to subject the rentals to the jurisdiction of the commission, but was wrong in supposing the remedy for its error in not dismissing the intervening complaints was by appeal.
>
> The decree of the Superior Court is reversed, the appeal from the order of the Public Service Commission is quashed and the record is remitted to that body for further proceedings according to law.

Counsel for the underlying companies say their contention has been upheld.

Important Pamphlet Issued by Bank

To stimulate the interest of investors in securities of public service corporations and to help the continued development of the utility industry as of vital importance to the material welfare of the people, the National City Company, New York, N. Y., recently issued a booklet, "The Giant Energy," which presents the public utilities of today as an attractive field for the discriminating buyer of high-grade, carefully investigated securities. In an interesting and novel way "The Giant Energy" tells the story of electric light and power development and in illustrations of household articles electrically operated, generating stations, powerful locomotives hauling long trains over the "Rockies" and Cascades the impressive record of progress in this industry is shown. The booklet will encourage the man with funds for investment to give careful consideration to the fundamental soundness of the business which stands behind public utility bonds. In conclusion the pamphlet says:

> Before the war public utility securities issued by corporations of undoubted strength and based on sound values and earning power were sold on a basis to yield around 5 to 5½ per cent. Now with largely increased values and increased demand for output the same class of securities can be bought on a basis to yield from 6½ to 8 per cent. Discriminating investors are now analyzing the public utility situation and buying well-secured bonds. Such analyses should pay investors through strong security and liberal return from well-selected public utility issues.

Financial News Notes

Railway Changes Name.—The Durham (N. C.) Traction Company, organized and operating since 1901, certified with the Secretary of State about a month ago to a change in name to the Durham Public Service Company.

Preferred Dividend Passed.—The directors of the Duluth-Superior Traction Company, Duluth, Minn., have passed the preferred dividend of 1 per cent. The company has been paying its preferred dividend since January, 1901. The payment of the company's common stock dividend was stopped in October, 1918.

Municipal Line at Tacoma Still Behind.—According to a report filed by City Comptroller John M. Roberts of Tacoma, Wash., the municipal railway there lost $2,334 in cash in May, and has a total deficit, after inclusion of all charges for interest, taxes and depreciation, of $5,724. Receipts were $8,069 and expenses $10,404.

Recently Sold Property Reorganized.—The Sunbury & Selinsgrove Electric Street Railway, Sunbury, Pa., a part of the system known as the Sunbury & Susquehanna Railway, was recently reorganized with a cash capital of $120,000 and a bond issue of $230,000. The property was sold at receiver's sale a few months ago.

Protective Committee for Seventh Avenue Holders.—A protective committee to represent the holders of the first consolidated mortgage 5 per cent gold bonds of the Broadway & Seventh Avenue Railroad, New York, N. Y., has been formed with the Metropolitan Trust Company as depositary. The committee is headed by Harold B. Thorne, vice-president of the Metropolitan Trust Company.

Traffic Increases in 1920.—According to the fifteenth annual report of the Pacific Gas & Electric Company, Sacramento, Cal., 1920 was a peak year for the railway system. There were 15,770,295 passengers carried, a gain of 1,690,923 over 1919. Jitney competition had spent itself on account of local enactments and the railway showed a remarkable gain in business in contrast to 1914, when jitney competition greatly diminished the company's revenue.

Operating Arrangement to Be Renewed.—The Dallas (Tex.) Railway will again take over the line of the Standard Traction Company, now serving Mount Auburn and Parkview additions to the city of Dallas on the East. The lines of the Standard Traction Company are now being operated by George P. Dunlap as receiver under orders issued by the District Court of Dallas County. Final details of the agreement between the companies remain to be worked out.

Messrs. Milner and Nicklett, Directors.—At a meeting of the board of directors of the Community Traction Company, Toledo, Ohio, recently, A. P. Nicklett, secretary, auditor, and purchasing agent of the company, was elected a director. The board also elected W. L. Milner, formerly chairman of the commission which drafted the cost-of-service ordinance, a member to represent the public interest in the company. From time to time additional directors shall be elected to represent the city.

Settlement Proposal Made.—A proposal which may solve the railway problem in Lafayette and West Lafayette, Ind., has been made to the city by Clarence H. Geist, president of the Northern Indiana Gas & Electric Company. The gas company has an option on the railway and offers to exercise the option if the citizens will raise $100,000 to help finance the project. The gas company would turn the railway over to the Terre Haute, Indianapolis & Eastern Traction Company for operation. Regulation of the jitney traffic also is asked.

Right to Abandon Service Denied.—The City Council of Sheridan has denied the application of the Sheridan (Wyo.) Railway for permission to abandon service in Montana and Summer Streets. The Council acted in accordance with public petitions and remonstrances against the suspension. General Manager Jones has stated that the suspension did not depend upon a paving problem, but was one of economy in operation as it could be shown that the entire city system was a nonpaying proposition. He said that he would take the matter before the Public Service Commission and if relief were denied to him he would resort to the courts.

Reorganization Cost $434,400.—While declaring that certain charges and disbursements in the reorganization plan of the United Railroads, San Francisco Cal., appeared to be excessive, the Railroad Commission in a decision on June 27, held that it was without jurisdiction to pass upon the expenditure, as the funds to be used were not subject to the commission's control. The reorganization expenditure aggregates $434,400. This sum has been accumulated out of net earnings, made possible by non-payment of interest on bonds. In this way, the commission points out, the bondholders are really standing the cost.

Reorganization Plan About Ready.—Talk has been renewed recently of the coming reorganization of the San Francisco-Oakland Terminal Railways, Oakland, Cal. The San Francisco *Bulletin* of June 23 said: "The definite information as to the details of reorganization and refinancing were not obtainable, but it was admitted that such a move was under way. President Alberger said that the directors have been meeting with San Francisco financiers three times a week for the past six months and that while the plans are practically adopted the company is not yet ready to make the details public."

Railway Extends Notes.—The holders of the $750,000 of one-year 6 per cent notes of the Chattanooga Railway & Light Company, Chattanooga, Tenn., which matured on June 1 are offered a new one-year 8 per cent note in exchange for their maturing notes. In all other respects except rate of interest and maturity the new notes will be identical with the present ones. The notes will be secured by deposit of $682,000 Chattanooga Railway & Light Company's first and refunding mortgage 5 per cent gold bonds and $389,000 Lookout Mountain Railway's first mortgage 6 per cent gold bonds.

Brooklyn Employees Buy Bonds.—Approximately 1,000 employees of the surface lines of the Brooklyn (N. Y.) Rapid Transit Company have joined the National Thrift System and subscribed for nearly $100,000 in bonds. The drive was started on May 10. The employees of the rapid transit lines will be solicited during the current month. G. L. Terhune, who directed the campaign, expressed his appreciation for the men's co-operation. The *Brooklyn Rapid Transit Monthly* in commenting on the bond movement said that Mr. Terhune's talks on the value of systematic saving were directly in line with the campaign now under way for power saving: "Saving power, saving material, saving money—the three made a well-rounded thrift campaign of vital interest to every one at the meetings."

Traffic and Transportation

Six Cents in Knoxville

Original Application Denied—Commission Abrogates Contract for Engineering Advice

The Tennessee Railroad & Public Utilities Commission recently issued an order allowing the Knoxville Railway & Light Company, Knoxville, Tenn., to charge a 6-cent fare, effective July 3. The original application of the company was for a 7-cent fare and a 2-cent transfer charge. As noted in the ELECTRIC RAILWAY JOURNAL for July 2, this was denied, the commission holding that the company had not set up sufficient reason for such an advance.

The commission also abrogated the contract between the Knoxville Railway and the American Cities Company by which heretofore the Knoxville company has been paying 3 per cent of its gross income to the American Cities Company for operating and engineering advice. The commission held that the practice at present in existence of the company's paying to another corporation any percentage of its gross receipts for operating and engineering advice shall be discontinued on June 30, 1921.

The company was also directed in the order to furnish light and power to all consumers at standard rates thereby eliminating the discrimination which appears in contract rates. There probably will be later hearings before the commission to adjust these rates. The order of the commission in part follows:

> That the company may from and after midnight of July 3, charge a maximum fare on its railway system of 6 cents for each continuous ride upon the same car between any two points upon the railway lines of the Knoxville Railway & Light Company, where 5 cents or less is now being charged, and the Knoxville Railway & Light Company shall give transfers without charge, the use of such transfers to be governed by conditions in effect prior to this order.
>
> The Knoxville Railway & Light Company shall on or before Aug. 1, 1921, file with this commission a standard schedule of electric light and power rates.
>
> All bills rendered for electric light and power consumed during the month of July, 1921, and billed on or after Aug. 1, 1921, shall be billed at the rate set forth in the standard schedule of rates filed with the commission. In other words, rates for electric light and power shall remain as at present, except in those cases, whether under contract or not where service is being rendered at more or less than standard rates, the rates to said customers being served at more or less than standard rates shall be decreased or increased to conform to standard rates.
>
> The company shall furnish to the commission at as early date as possible a statement showing in detail the cost of the appraisal of this property, segregating these costs as between engineers and their assistants, employed by the Knoxville Railway & Light Company and the engineers and assistants representing the Tennessee Railroad & Public Utilities Commission. After the receipt of this report by the commission such an order will be entered as to the disposition if these costs as may later be determined by the commission.
>
> The object of this order is to place the operations of the Railway & Light Company on a service-at-cost basis, so that the patrons of the company shall pay for service only such rates as will provide sufficient funds to pay all operating expenses and take care of an adequate amount of renewals and replacements and render a reasonable return on the investment.
>
> The commission reserves the right to amend or modify this order from time to time in the future as the necessities of the case may demand.

Accounts of the Knoxville valuation were given in the ELECTRIC RAILWAY JOURNAL for May 21, 1921, page 970, and Dec. 25, 1920, page 1302.

Six-Cent Rate to Be Continued One Year

The 6-cent fare for the Dallas (Tex.) Railway has been continued in effect under an ordinance passed by the City Commission of Dallas. While the traction company will accept the new fare ordinance, according to Richard Meriwether, vice-president and general manager, the terms are somewhat disappointing and the company has not been granted just what it had asked for. The traction company had sought a continuance of the 6-cent fare for an indefinite period, leaving the city to revoke it at any time the commissioner might see fit. However, as adopted the fare ordinance continues the 6-cent fare for a period of twelve months and makes no provision for its continuation beyond that date.

According to Mr. Meriwether, the company will not be able to rehabilitate its finances within one year, especially when there is no guarantee of income after one year. The company will accept the new fare ordinance, however, Mr. Meriwether said, with a desire to co-operate with the city and do everything possible to improve the street car service. Reference to the company's application for a continuation of the 6-cent rate was made in the ELECTRIC RAILWAY JOURNAL for June 25.

Commission Suspends Rate Advance

In an order recently issued, the Oregon Public Service Commission suspended until Oct. 1 operation of the new tariffs increasing the fares on the lines of the Southern Pacific Company in Salem, Eugene and West Linn. The commission announces that an investigation would be prosecuted to determine the reasonableness of the rates included in the proposed new schedules. The Salem company and the West Linn company propose to increase single-ride fares from 5 to 8 cents, while the Eugene company, in addition to asking an advance from 5 to 8 cents on its city lines, sought to raise the rates between Eugene and Springfield from 10 to 16 cents. The new tariffs would have become operative July 1, had not the order been issued. The application for increased rates was filed with the commission several months ago, the companies claiming at that time a 7 per cent return on the investment.

Emergency Proved

Court Holds New Jersey Company Was Justified in Seeking Ten-Cent Rate —Difference Over Emergency

Holding that the increase in its rate of fare from 7 cents to 10 cents sought by the Public Service Railway was in a large measure justified, the New Jersey Supreme Court on July 1 handed down an opinion setting aside the decision of the Board of Public Utility Commissioners denying the increase. The court also remanded the case back to the commission for further consideration "in order that it may fix a just and reasonable rate based on the evidence in this particular proceeding."

The increase to 10 cents was asked as an emergency rate, but the commission in denying the application held that the emergency was gradually passing with the improvement in economic conditions. Justice Bergen, who wrote the opinion by the court, maintained that the railway was entitled to sufficient revenue to relieve its straitened financial condition. The opinion says:

> We think the evidence shows conclusively that a considerable part, at least, is just and reasonable, and that the major part is required to pay the cost of operation and maintenance, and that, without additional income to make required repairs, they cannot be made, thereby endangering the lives of passengers.
>
> A rate which does not provide for the depreciation fund imposed by the board, nor for the operating expenses of the utility company, is not, in our judgment, a just and reasonable rate, which the statute contemplates. The evidence clearly shows that the present rate under existing conditions will bankrupt the company as well as endanger the lives of its passengers for want of funds to make imperative repairs. To require a maintenance fund to be carried, and at the same time refuse an income to provide it, is, to say the least, a peculiar exercise of discretion under our statute relating to the power of fixing rates.
>
> The board treats the situation as an emergency that soon will pass. To call this situation an emergency and to refuse relief for that reason is giving a meaning to the word emergency which neither our statute nor adjudged cases warrants. Why an increased tax, enhanced cost of labor, of operation and of necessary repairs should be called an emergency is not apparent to us, either from the evidence, or conditions of which we can take judicial notice, nor, as the board did, can we assume that other conditions will shortly exist.
>
> Assuming the estimate of the board is correct, there will be a deficit of $400,000 if the service is to be efficient and safe for the public use, without taking into account the losses for 1918, 1919 and 1920, amounting to more than $1,600,000. If this be called an emergency it is one that needs prompt relief, and ought not to be postponed until the board has reached a result in another case involving the fixing of a just and reasonable rate based on valuation. The prosecutor is entitled to cost of operation and fair return on capital invested, under the statute, and to have its rights determined on the case made by it in this proceeding.

Counsel for the railway, in a brief filed on July 5 with the Board of Public Utility Commissioners in the valuation case, maintained that a 10-cent fare is the lowest that the company can charge to meet operating expenses, taxes, replacements and pay a return on its stock. The company places the value of its property for rate-making purposes at $200,898,906. This is nearly $76,000,000 higher than the valuation fixed by Ford, Bacon & Davis, acting for the state valuation commission. The brief is considered one of the most complete ever filed in a rate-making case.

Jitney Competition Not Favored

Connecticut Commission Believes in Protection of Existing Transportation Franchises from Unfair Competition

The Public Utilities Commission of Connecticut has denied the application of W. A. Perrett and Christopher Glenney, brought under chapter 77 of the Public Acts of 1921 for a certificate of public convenience and necessity for operation of jitneys in competition with the trolleys and steam railroad between Hartford and Manchester, about 10 miles distant. Under the provision of this act jitneys are named common carriers and become subject to commission jurisdiction on and after July 15, 1921. The act also provides that no one shall operate a jitney until the owner has obtained a certificate from the Public Utilities Commission that public convenience and necessity require its operation.

SEVERAL hundred cases were brought before the commission during the month of June. The first case heard involved many issues applicable to other cases and in the decision the commission outlines the general principles controlling their action, although some of the principles do not pertain specifically to this case.

JITNEY FARE LOWEST

The rates of fare between Hartford and Manchester are 33 cents for the steam railroad, 20 cents on the trolley by use of a ticket, or 30 cents cash with a free transfer in each case, as compared to a 15-cent fare on the jitney without transfer to other lines.

The existing transportation facilities, the commission found, were capable of handling all the passenger traffic between Hartford and Manchester, although the record of rush hour service on the trolleys prior to the advent of the jitneys did show some overcrowding. The present record, however, shows many vacant trolley seats and many trolley cars operated at a loss.

The question of public convenience and necessity as between competing jitneys and street railway service over the same route is clearly raised. The street railway is operated under a franchise granted by the state, and it has been the legislative policy of the state to protect such franchises and refuse competing franchises in the original franchise territory so long as such territory is being reasonably and adequately served under the original grant.

ADEQUATE SERVICE THE CRITERION

A certificate of public convenience and necessity for jitney operation, the commission says, is in the nature of a franchise, but without the corresponding obligations of permanency and continuity of service on the part of the recipient that is imposed upon the chartered utility companies. The granting of a certificate for jitney operation involves to a limited extent the same principles as a legislative grant to a proposed street railway in competition with already existing franchises. Such a competitive franchise should not be granted if the existing franchised company is willing and capable of giving adequate service at reasonable rates.

There then arises the question as to what extent the different forms of transportation, the speed, the rates of fare on the jitneys, affect the adequacy of service and the fulfillment of the requirements of public convenience and necessity by the street railway company. At the hearings it was not claimed that there was greater or even equal comfort riding in a jitney bus compared to a trolley car. It was shown, however, that the jitney made quicker time and charged a lower rate of fare. The speed, however, with jitneys, the commission holds, having a seating capacity of twelve or more passengers is not materially greater than the speed of the trolley car.

The tendency of jitney fares will undoubtedly be upward when a scientific count is kept of operating revenues and expenses, while the tendency in trolley fares should be downward, particularly for short haul passengers. The controlling influences should be the general public good and the general public requirements rather than individual convenience and the desire to engage in business.

It is not disputed that the street railways are absolutely essential, neither was it claimed that jitneys could supply the entire service required.

In cases where the operation of jitney service would result in the discontinuance and abandonment of the trolley service otherwise possible to exist, the commission will be inclined to refuse a certificate of public convenience and necessity until the substitute service shows more stability and permanency than at present. Even when a part of the proposed jitney route is through territory not otherwise served, if this route as a whole is competing with and destructive of trolley service, the application should be denied, provided the street railway company is capable and willing to supply adequate service. It would be highly desirable to have connecting jitney service in such unserved territory.

However, where the traffic demands have outgrown the capacity of existing transportation facilities or where there is no other form of transportation there can be no question but that public convenience and necessity would require additional or supplementary jitney service.

The public good requires permanency and continuity of service, which cannot be reasonably guaranteed by the numerous applicants for certificates to operate jitneys. If such operation proves to be unremunerative and impracticable it may be discontinued at any time by the holder of the certificate, but in the meantime the trolley may be driven into bankrutpcy, dismantled and the general public deprived of all forms of transportation.

To substantiate this argument the policy of the Pennsylvania Public Service Commission is quoted in the case of the Commonwealth Transportation Company, which wanted to operate motor vehicles in competition with the trolleys in Scranton.

CERTIFICATE OF SERVICE OVER GIVEN ROUTE

Where an existing or proposed jitney route parallels the tracks of a steam railroad company, and in thus competing with the service rendered by that company, but on account of the limited number of trains, public convenience and necessity require jitney operation, consideration should be given to granting the certificate, to location of termini, and fixing of schedules. Jitney operation as a rule is without certain facilities, but this fact should not authorize the operators to utilize the station and station grounds of their competitors to run a schedule coincident with their train schedule.

The commission is of the opinion where a single person, association or corporation is capable, willing and equipped to supply the entire necessary service over a given route that it is for the interest of the public as well as for proper public regulation to grant a certificate to any person, association or corporation for the entire necessary service over a route rather than to issue certificates to the several different applicants thereby distributing the service, complicating the schedules, and dividing the responsibility.

For the rendition of good utility service, the party supplying the service must receive a fair financial return and also be protected against unnecessary destructive competition. If no one applicant is capable or willing to supply the entire service, it then becomes necessary, of course, to grant a sufficient number of certificates to supply the necessary service.

SELECTION OF APPLICANTS

Where several parties apply for a certificate over the same route each of which is capable, willing and equipped to supply the entire necessary service on that route, it becomes the task of the commission to determine the party who in its opinion would supply and maintain such service.

The commission in determining or selecting such a party will take into consideration the financial responsibility, the past record of the applicant and his employees, the rendition of jitney service, the type and general maintenance of equipment, and so far as may be expressed, the public sentiment of the people in the community or territory to be served. Public sentiment is important to the extent of affording good will, which is essential for the successful operation and conduct of any public utility.

City Firm in Stand Against Railways

The committee of citizens which attempted to bring about a settlement of the fare controversy between the two street car systems of Spokane and the City Commissioners failed to get the commissioners to concede anything although they secured from the railway people the promise of a 7-cent fare with five tickets for 35 cents. The city commissioners over the protests of a large number of citizens have issued permits to 62 jitneys to cover some ten routes, this being in retaliation for the 8-cent fare authorized by the State Commission to be charged by the electric railways. Only a partial service can be maintained at present. The case was viewed in the ELECTRIC RAILWAY JOURNAL for July 2.

Many opinions have been expressed condemning the action of the city authorities. D. L. Huntington, president of the Washington Water Power Company, sent a statement to his employees in which he reviewed the fare controversy, the offer of the company and the flat refusal by the city. He also quoted the public statement of the Chamber of Commerce in which it is said that "the car lines have shown a disposition to be fair and meet every reasonable suggestion."

More Bus Routes Planned

At the hearing to grant certificates for convenience and necessity for the operation of independent motor bus routes held in Waterbury on June 30 the Connecticut Company announced its readiness to operate two supplemental bus routes to serve territories not now reached by trolley service. The fare on these bus routes will be the same as if they were served by rail service. Free transfers will be interchanged.

Hearings were also held during the week at New Haven, Norwalk and Stamford, but only in Waterbury does the railway believe that motor bus service is essential to the transportation needs of the community.

President Storrs said that it was only by having the sole right to do business that the railway company could give the best service. Chief of Police P. H. Smith of New Haven recommended that if the jitneys were allowed to operate they be barred from the center of the city.

Paul Russo, a real estate operator, who had a land development in the territory formerly served by the Shore Line Railway, favored barring jitneys where the Connecticut Company rendered adequate service. He pointed out that while the people complained of the Shore Line service, the minute the service was halted they demanded its restoration.

Vice-President E. G. Buckland of the New Haven Railroad opposed the operation of suburban motor bus routes to Hartford, Derby and Bridgeport and immediate points.

Transportation News Notes

Bus Service Started.—The Delaware Rapid Transit Company has started a new motor-bus line connecting Delaware City, Del., with Wilmington. Hourly trips are made.

Zone Fare Raised.—The new 10-cent zone rate is in effect on the Milford, Attleboro & Woonsocket Street Railway's line which connects with the Rhode Island Company's line in Woonsocket. The old rate was 7 cents for single fares. Strip books are provided, giving thirteen trips for $1.

Rules in Favor of Railway.—The City Commission of Trenton, N. J., has defeated the resolution introduced by Mayor Donnelly calling for the establishment of a jitney line on the streets of Trenton. The commission declared that jitneys would injure the traction company by decreasing its revenue.

Wins Fare Suit.—The Paducah (Ky.) Railway will continue to collect a 10-cent fare as the result of a recent decision of Federal Judge Walter Evans, making permanent an injunction against the city, which sought to hold the fare at 6 cents. The city, however, may reduce the fare after the franchise expires in October, 1921, if an examination of its earnings shows the 10-cent fare is excessive.

One-Man Cars in Cleveland.—The Cleveland (Ohio) Railway began operating forty-two of its standard double-truck cars with one man about June 1. These cars are being run on some outlying lines and on one cross-town line where the traffic is light. Because of the high number of stops per mile on this cross-town line, the average schedule speed is only about 5 m.p.h., and the service as provided with one man on a car has been satisfactory.

May Solve Traffic Troubes.—One step looking toward the solution of the traffic problem in Newark was reached recently in the form of a tentative ordinance which will be introduced at the City Commission's meeting. This ordinance is the result of the efforts of Director Brennan, Traffic Captain McReil and a special committee of business men. The new traffic code will put an end to all-day parking which is considered the cause of the street congestion and subsequent interruption of traffic.

Automobiles Lead in Fatal Accidents. Deaths resulting from automobile accidents in California for the last three years, and for the first four months of 1921, totaled 2,305, as compared with 1,472 persons killed in all other vehicles, including steam and electric railroads and street railways, according to figures made public on June 24, 1921, by L. E. Rodd, State Registrar and Director of the Bureau of Vital Statistics. The deaths from automobile accidents for the past three years and the first four months of 1921, were as follows: 1918, 559; 1919, 685; 1920, 804; 1921, 257.

P. A. Y. E. on All Lines.—To establish a uniform system of collecting fares on all cars of the Cincinnati (Ohio) Traction Company, William Jerome Kuertz, Director of Street Railways, has announced the "pay-as-you-enter" system will be extended to all lines. The present system of paying when leaving the cars, in vogue on certain lines, has caused considerable confusion, Mr. Kuertz announced. It also has caused delays at the end of the routes and has multiplied the worries of the conductors. Before any final determination will be made, however, Mr. Kuertz said, the question will be taken up at a conference with the traction officials.

Fare Issue Before U. S. Court.—The Galveston fare fight will be carried to the United States Supreme Court. An order granting an appeal to the Highest Tribunal has been filed in the United States Court at Galveston. The suit is styled Galveston Electric Company vs. The City of Galveston. The railway is seeking relief from what is declared to be a confiscatory fare charge. An injunction against enforcement of a city ordinance prohibiting the collection of more than 5 cents as car fare is sought by the railway, which recently lost its fight in the United States District Court for the Southern District of Texas at Houston when Judge J. C. Hutcheson held that the 5-cent fare order is not confiscatory, but that the earnings of the railway under the 5-cent fare are adequate. In holding the 5-cent fare adequate Judge Hutcheson overruled the master in chancery, Judge J. O. Dannebaum.

Increased Rates Approved.—An increase in fare from 5 to 7 cents in each of the zones of the Burlington County Transit Company, operating between Moorestown and Burlington, N. J., has been sanctioned by the Public Utility Commission. Rates for school children heretofore in effect are continued. Children under five years when accompanied by an adult paying fare will be carried free. Children over five years must pay full fare. Inauguration of the increased fare is subject to improved service, especially on the branch between Borton's Landing bridge and Moorestown. Small dividends had been paid during the past three years, but these had been paid from earnings accumulated during previous years. The board said that this company had never been able properly to maintain its property, and in 1910, owing to inability to pay interest, the road was sold at receiver's sale, the bondholders purchasing the property for $120,000. It was testified for the board that the property was worth the amount of bonds paid for it, which at that time had a face value of $400,000. The company also submitted an appraisal of its property showing original cost of $343,004, and reproduction cost of $530,911.

Personal Mention

S. S. Colvin is the successor of R. Kingseed as electrical engineer, master mechanic and engineer of overhead construction of the Tiffin, Fostoria & Eastern Electric Railway, Tiffin, Ohio.

Wilfred E. Ervin is now connected with the Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., as secretary. J. Elliott Newlin was previously with the railway in this capacity.

J. L. DuVall is the successor of John P. Dake, master mechanic of the Sioux Falls (S. D.) Traction Company and L. S. Smith has become engineer of maintenance of way following the resignation of William Adams.

A. F. Jones was recently appointed general freight and passenger agent of the Columbus, Delaware & Marion Electric Company, Columbus, Ohio. George H. Dusler formerly held this position with the company.

J. Edgar Reed has recently been appointed superintendent of the Shamokin & Mt. Carmel Transit Company, Mt. Carmel, Pa. A. Howard Thomas, Jr., formerly superintendent and purchasing agent, is no longer connected with the company.

T. A. Darrow was recently appointed superintendent of the Northeast Oklahoma Railroad, Miami, Okla., as the successor to E. M. Tanner. L. M. Greene is no longer connected with the company as master mechanic, E. M. Applegate having been selected for this position.

D. G. Callihan has been promoted from superintendent and purchasing agent to general manager of the Webster, Monessen, Belle Vernon & Fayette City Street Railway and the Westside Electric Street Railway, Charleroi, Pa. The roads were formerly managed by the president, C. F. Thompson.

W. V. Hill, manager of the California Electric Railway Association, has been appointed representative at Washington of the joint tax committee of the American Electric Railway Association, American Gas Association and the National Electric Light Association, according to announcement made by Philip H. Gadsden, chairman of the committee. Mr. Hill is well known because of his active participation in association affairs. During the war he was assistant manager of the American Electric Railway War Board and before that was Washington representative of the California Electric Railway Association. When the War Board was disbanded, Mr. Hill was placed in charge of the Washington office of the A. E. R. A. under the committee of national relations. Owing, however, to the urgency of his duties with the California association he resigned in May, 1919, to return to the Pacific Coast.

F. Hoffman has succeeded J. Morton as auditor of the City Railway Company, Dayton, Ohio.

W. F. West has resigned as master mechanic of the Newport (R. I.) County Electric Company. At present the position is still vacant.

Mr. Fallon Promoted Again

As General Manager of the Chicago Elevated He Relieves President Budd of Many Responsibilities

For the second time within a period a little longer than a year Bernard J. Fallon, assistant general manager of the Chicago Elevated Railways, has received promotion. He has just been made general manager and his duties and responsibilities have been broadened so as to relieve President Britton I. Budd of a large share of the responsibilities of operating the elevated railways, the fast interurban roads and other electric railway properties.

B. J. FALLON

Mr. Fallon held, until his promotion to assistant general manager in April, 1920, the position of engineer maintenance of way. His operating experience with the Chicago Elevated Railroad has extended over a period of fourteen years. In June, 1907, he was appointed engineer maintenance of way of the old Metropolitan West Side Elevated Railroad. After two years in this capacity he was made assistant general manager of the same road under Britton I. Budd, then general manager. When the several elevated railways of Chicago were consolidated and Mr. Budd became president of the combined system in 1911, Mr. Fallon was made engineer maintenance of way, with jurisdiction over all these combined properties. Some time later his authority was extended to include the Chicago, North Shore & Milwaukee Railroad, the operation of which had been taken over by Mr. Budd for the Insull interests.

Mr. Fallon was born on Aug. 10, 1880, at Rutland, Ill. His experience and training for his work with the elevated systems were gained largely in the steam railroad field. After receiving a B. S. Degree from La Salle Institute, Chicago, in 1898, he became a rodman with the Burlington Railroad. During the following eight years he held the position of assistant engineer, division engineer and finally engineer of track elevation in Chicago. Since his connection with the elevated systems he has served on the American Electric Railway Engineering Association way committee. He is a member and a director of the Chicago Engineers Club and a member of the Western Society of Engineers.

As was previously stated, the more intimate details of operation will now fall on Mr. Fallon. That he is well qualified to shoulder these additional burdens and make an eminent success as an operator, one needs but examine his past record of efficiency and of rapid promotion.

Obituary

George J. Foran, manager of the condenser department of the Worthington Pump & Machinery Corporation and the associated companies of the International Steam Pump Company, since 1901, died on May 12. During the war Mr. Foran was a member of the committee on condensing apparatus of the United States Shipping Board and War Industries Board and also chairman of the American Engineering Service Committee of Engineering Council.

Edward Payson Shaw is dead. Mr. Shaw was well known in electric railway circles, more particularly in Massachusetts. He was one of the first to become convinced of the practical use of electricity and made large investments in electric plants. He equipped with electricity the Haverhill, Merrimack & Amesbury Railway. Another road in which Mr. Shaw and members of the Shaw family were interested was the Boston & Worcester Street Railway. In recent years he had confined his activities largely to real estate developments. All through his active business career Mr. Shaw retained his interests in politics and served the state of Massachusetts in many capacities, among them treasurer of the Commonwealth. He was born in Newburyport in 1841 and was educated in the public schools there and at the academy at London, N. H. He went into business at an early age and soon became interested in various transportation undertakings. Mr. Shaw is survived by two sons. James F. Shaw and Samuel J. Shaw, and by several daughters. His son James F. Shaw, now in the banking business in New York, is a former president of the American Electric Railway Association.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Steel Companies Again Reduce Steel Rates

Lead of Bethlehem Company on July 5 Followed by Other Independents and by Corporation on July 6

Effective July 5, the Bethlehem Steel Company has further reduced its steel products in amounts varying from $4 a ton to $10 a ton. The change in bars is from 2.10 cents to 1.90 cents; plates and structural shapes, 2.20 cents to 2.00 cents; sheet bar, $39 to $35; billets, 4 x 4, $37 to $33; slabs, $38 to $34; blue annealed sheets, 2.85 cents to 2.65 cents; black sheets, 3.75 cents to 3.50 cents; galvanized sheets, 4.75 cents to 4.50 cents; tin plate, $6.25 to $5.75. The former price change was on April 13. Previously the Bethlehem company had announced a 15 per cent reduction in wage scales and a 10 per cent reduction in salaries of employees, effective July 16.

E. G. Grace, president of the company, in his announcement declares that present manufacturing costs do not in any sense warrant reductions, but that his company desires to contribute even more than its full share to re-establish conditions in the steel trade on what may be regarded as a normal basis. He attributes the increase in freight rates as the largest factor in increasing the cost of manufacturing steel products, with materials and labor as the cost factors next in importance.

These reductions were followed by most other independent steel producers early in the week, and on July 6 the United States Steel Corporation announced a similar reduction in its products. Judge Gary also announced the abrogation of the so-called basic or overtime day, which in effect is a lowering of wage scales about 15 per cent on those men working twelve hours a day, effective July 16.

Hickory Tool Handles Cut 15 to 20 per Cent

Manufacturers of wooden tool handles just recently reduced prices on hickory an average of about 15 to 20 per cent, the cheaper grades of wood being reduced the most. Ash handles were also cut about 10 per cent, it is stated. Some producers put these decreases in effect as early as the first of last month, others not until within the past two or three weeks.

The market during the first half of this year has held a very quiet course and at present there is not much activity with steam or electric roads either here or abroad, as consumers have been fairly well stocked up since last year. Some producers expect a change for the better this fall; others can see nothing ahead until next spring. Dealers and jobbers are buying from hand to mouth and have light stocks on the whole. Producers of wooden handles have fairly good stocks as supplies dumped on them by cancellations have not been worked off. Consequently, immediate shipments can be made. The best grade of hickory wood, however, is becoming scarce, it is stated, partly because the automobile industry has for long been making such inroads on the supply. Production is down low; about 25 per cent of normal capacity would probably be a representative figure.

Strong Volume of Lubrication Buying

Unlimited Supply Available as Stocks of Crude Oil Are Large—Prices Down 45 per Cent

Buying of lubricants by electric railways holds up very well according to producers. Steam railroad demand has been flat for a long time, for with slack general business conditions fewer cars are operated, but electric traction companies must, of course, maintain their service even at a loss.

The supply of lubricating oils and greases is better now than virtually any time since the war. Producers' stocks are large and crude oil has piled up at refineries to such an extent that it has been necessary to take a loss to move stocks. Some of this surplus will now find an outlet through the automobile trade, which has been expanding ever since the opening of summer and now shapes up as a strong market, especially for fuel oil. In the fall this business will naturally fall off again, but electric railway demand is expected to hold its own. Traction companies are buying close to their requirements and, as usual, are not stocking ahead, but the low point of decreased revenue from depression in the industrial centers has been passed and from now on summer travel to vacation resorts and to the amusement parks will make itself felt.

Price is the only point upon which consumers have hesitated and this has been felt to some extent where renewals of contracts for lubrication on a mileage basis have been made, but in general no more difficulty than usual has been experienced in renewing contracts. Prices of oil are well down, the average general reduction from peak quotations on railway lubricants being about 45 per cent. As recently as the middle of June one of the largest producers reduced prices 20 per cent and on June 28 another made a cut of about 10 per cent.

Tariffs on Electrical Goods Provided in New Bill

Wire, Poles, Ties, Insulating Materials, Brushes, Axles, Wheels and Metals Among Items Affected

The Fordney tariff bill, designed to afford full protection to American industries, was formally reported into the House of Representatives on June 28. It is thought that under this measure duties will be in the neighborhood of 30 per cent higher than under the existing tariff. Splitting of duties is common and the American valuation plan is the basis of lists. Paragraphs referring to the electrical industry are printed below:

Mica, unmanufactured or rough-trimmed only, 6 cents per pound and 17 per cent ad valorem; cut or trimmed. splittings, plates, built-up mica and all manufactures of mica or of which mica is the component material of chief value, 12 cents per pound and 17 per cent ad valorem; ground mica, 6 cents per pound and 20 per cent ad valorem.

Carbons and electrodes of whatever material composed and wholly and partly manufactured, for producing electric arc light; electrodes of carbon or graphite for electric furnace or electrolytic purposes: brushes for electric motors, generators, etc.; plates, rods and other forms for making into brushes; other wares not especially provided for, 35 per cent ad valorem.

Incandescent electric light bulbs and lamps, with or without filament, 35 per cent ad valorem.

Storage batteries and parts and materials, 30 per cent ad valorem.

Anti-friction balls and rollers for ball and roller bearings, and parts, 35 per cent ad valorem.

Aluminum, scrap and alloys in crude form, 5 cents per pound; in plates, sheets, bars, etc., 9 cents.

Copper wire not coated nor covered and also tin-coated, 1½ cents per pound; in rolls, rods or sheets, 2½ cents; seamless tubing, 7 cents; brazed tubing, 11 cents; brass wire, rods, sheets, etc., 4 cents per pound; seamless tubing, 8 cents.

Telephone, light, power or railway poles of cedar or other woods, and railroad ties, 10 per cent ad valorem.

Asbestos paper and millboard of long-fiber asbestos and electrical papers not exceeding 0.05 in. thick, 8 cents per pound; of other asbestos fibers, 1½ cents; sheets and plates not exceeding ¼ in. thick, 1 cent per square foot, up to 2½ cents for over ¼-in. thickness.

Electrical insulators and other articles wholly or partly or in chief value of shellac, copal or synthetic phenolic resin, not especially provided for, 30 per cent ad valorem.

Portland, Roman and other hydraulic cement in barrels, etc., takes 5 cents per 100 pounds; in bulk, 4 cents; other cement not specifically provided for takes 17 per cent ad valorem.

Axles and parts thereof, axle bars, etc., valued at not more than 6 cents per pound, six-tenths of 1 cent per pound. Wheels for railway purposes and parts thereof, of iron or steel or steel-tired, 1 cent per pound. Axles attached to wheels take wheel duty.

Railway fish plates or splice bars made of iron or steel, ½ cent per pound; all other railway bars of iron or steel, T-rails and punched iron or steel, flat rails, 7/40 cent per pound.

Brake Shoe Prices Again Down

Little change is evident in the market for brake shoes in so far as demand is concerned. Buying continues light, with railways ordering close to their requirements and not stocking far ahead. Replacement buying by steam roads is especially slack because fewer freight cars are being operated owing to the low volume of business.

Prices are again down, one of the leading producers having reduced quotations $2 per ton on July 1, a cut of about 3½ per cent. This is the third decrease to be made this year, the first, of $6 per ton on Jan. 1, amounting to about 8½ per cent. The second decrease, made on April 1, was also $6 per ton.

Manufacturers' stocks at present are not extra large, but the moderate surplus supply of the finished product is sufficient to provide immediate shipments. The large number of cars now in urgent need of repairs in this country, it is stated, is sufficient guarantee that brake shoe business is bound to increase.

Rolling Stock

The Seattle (Wash.) Municipal Railway will obtain fifty additional cars if the ordinance which has been drafted by the Assistant Corporation Counsel of Seattle for the public utilities committee of the City Council goes through.

Track and Roadway

Alabama Power Company, Birmingham, Ala., has been formally granted a permit for the construction of a dam and power plant on the Coosa River near Verbena. The first work to be done will be the building of six miles of railroad from Verbena to the river. The project will cost approximately $7,000,000. This undertaking was referred to in the ELECTRIC RAILWAY JOURNAL for April 2, 1921.

Sacramento Northern Railroad, Sacramento, Cal., may be included in an improvement program contemplated by the Western Pacific Railroad. The railroad has under consideration the extension of the electric line from its Chico terminal to Red Bluff according to J. P. Quigley, superintendent of transportation. With the purchase of the electric line the Western Pacific plans extensions to penetrate to points that promise to be good feeders to the big line.

San Francisco (Cal.) Municipal Railway will extend its line to the Sunset District. Three possible routes have been suggested. One extension would run from the Market Street Twin Peaks line along Seventh Avenue to Judah Street. The second would be from Duboce Avenue and Market Street to the ocean, using a tunnel 3,400 ft. long with a connection at Duboce Avenue with the Market and Twin Peaks tunnel line. The third possible route would be on Judah Street from the ocean to Auguello Boulevard.

Cincinnati (Ohio) Traction Company will resume service on Aug. 1 over the East End line between Ferry and Lumber Streets. This announcement was made recently by Walter Draper, vice-president of the company. The line was abandoned several months ago in order to make a fill of 9 feet of ground. The city was compelled to condemn property on the south side of the street and raise houses on the other. When this section is completed a maximum fill of five feet will be started on another section between Corbin and Strader Streets.

Oklahoma Union Railway, Tulsa, Okla., may help in the construction of an interurban terminal with a belt line around the city. While a definite route for this line was not proposed the Sand Springs Railway and Oklahoma Union Railway's lines could be utilized for this purpose by building a connection from the Oklahoma Union Railway's tracks at Fourth Street and Elgin Avenue with the Sand Springs line on East Archer Street.

Chambersburg & Shippensburg Electric Railway, Shippensburg, Pa., will extend its system to the Western Maryland Railway's line.

Houston, Bay Shore & Texas City Interurban Railway, which proposes to build and operate an electric interurban line from Houston along the bay shore to Texas City, near Galveston, has purchased from the Pittsburgh Steel Company 54 miles of 85 lb. rails for delivery in Houston. Grading work on the first unit of the line, which will extend from the city of Houston to the San Jacinto Battlefield on San Jacinto River, a distance of about 18 miles, is well under way, according to Ed. Kennedy, president.

Power Houses, Shops and Buildings

New York Central Railroad, New York, N. Y., is considering the building of a new power house at its locomotive repair shop in Solvay.

Oklahoma Railway, Oklahoma City, Okla., will start work on its new $150,000 terminal station not later than March 1, 1922. This announcement was recently made by John W. Shartel, vice-president and general manager of the company.

Columbus, Delaware & Marion Electric Company, Marion, Ohio, has just completed a new power plant at Scioto. This plant consists of three Babcock & Wilcox boilers, 866 hp. each with Westinghouse underfeed stokers and condenser. This project was referred to in the ELECTRIC RAILWAY JOURNAL for March 19, 1921.

Professional Note

C. D. Parker & Company, Inc., investment bankers and controlling managers of central station properties at Amesbury, Palmer, Plymouth, Franklin, Great Barrington, Marion and Provincetown, Mass., and elsewhere, have moved from 67 Milk Street, Boston, to a remodeled six-story office building at 150 Congress Street, in the heart of that city's banking district.

Trade Notes

The Esterline-Angus Company, Indianapolis, Ind., has developed a graphic kva. meter.

The Hi-Voltage Equipment Company, Cleveland, Ohio, has developed a new type of lightning arrester for outdoor mounting.

The Black & Decker Manufacturing Company, Towson Heights, Baltimore, Md., has recently placed on the market a portable electric grinder.

The Railway Track-Work Company, Philadelphia, has placed on the market a new "Ajax" resistance-type arc welder.

The Rome Wire Company, Rome, N. Y., has developed a "superservice" cord for portable electric tools, etc.

The Hazard Manufacturing Company, Wilkes-Barre, Pa., has put on the market its new "spiralweave" cables for portable light and power service.

The Knight Engineering & Sales Company, Los Angeles, has placed on the market its new "One-Hand-Y" electric drill.

Edward J. Ronan, representative of the Gold Car Heating & Lighting Company, died at his home in Brooklyn, N. Y., on July 3. Mr. Ronan had been connected with the company for a period of twenty-one years.

The Diamond Holfast Rubber Company, 33 Auburn Street, Atlanta, Ga., manufacturer of friction tape, has purchased a site of eleven acres for its proposed new factory for the manufacture of its "Diamond Holfast 2-plex" insulating tape.

The A. H. Petersen Manufacturing Company, Milwaukee, manufacturer of tools and dies, etc., announces that it has discontinued this department and will turn over its entire plant to the manufacture of "Hole Shooter" portable electric drills and other automotive devices.

The Quasi-Arc Weldtrode Company, Inc., Atlantic Avenue and Warwick Street, Brooklyn, N. Y., announces that since July 1 it has been in its new quarters at 114 Hudson Avenue, Peekskill, N. Y. In the new location the company has not only much better shipping facilities than before but also better arrangements and machinery for the manufacture of its "weldtrodes." The new works will also be completely equipped for the manufacture of all arc-welding accessories and for the building of the entire line of welding apparatus, including controllers (for both alternating and direct current) and welding generators.

The Standard Safety Equipment Company, 168 North Michigan Avenue, Chicago, has been organized to manufacture and distribute electrical and mechanical safety equipment and supplies, embracing gloves, linemen's blankets, first-aid cases, etc. C. A. Kingsbury and L. W. Dickson, both formerly with F. A. Hardy & Company, are respectively president and secretary. F. L. Hurlbutt, for the last ten years safety engineer of E. I. du Pont de Nemours & Company, is treasurer and in addition will have charge of all service work. A. U. Barnes of the Hardy company has been appointed Eastern manager with offices in the Clinton Building, Newark, N. J. There is also a Detroit office at 414 West Grand River in charge of O. L. Smith. A Cleveland connection and stockroom is under consideration. In addition to safety supplies the company will market a full line of welding equipment. "Standardize for safety" has been taken by the company for a slogan.

New Advertising Literature

Temperature Control.—The Fulton Company, Knoxville, Tenn., has issued two folders on its "Sylphon" temperature regulators.

Pressure Regulator.—The Fisher Governor Company, Marshalltown, Iowa, has issued Bulletin No. 210 on its series 90 pressure regulators.

Temperature Regulator Chart.—A "Temperature Regulator Chart, or Engineering Data Sheet," has been copyrighted by the Fulton Company, Knoxville, Tenn., for use in figuring tank regulators.

Export Trade Directory.—The *American Exporter*, 370 7th Avenue, New York City, has just published the 1921-22—the seventh edition— of the "Export Trade Directory." There are 1,036 pages in the book.

Insulating Tape.—The Diamond Holfast Rubber Company, 33 Auburn Avenue, Atlanta, Ga., is distributing a leaflet covering the "Diamond-Holfast" two-plex insulating tape recently placed on the market.

Air Purifying Apparatus—"Carrier Air Washers and Humidifiers" is the title of catalog No. 480, recently issued by the Carrier Air Conditioning Company, Buffalo, covering its air washers, generator coolers and other apparatus.

Stoker Coal Crusher.—The Jones automatic coal crusher for use on Jones standard stokers has been put on the market by the Under-Feed Stoker Company of America, 721 Book Building, Detroit, and a descriptive leaflet concerning it has been issued.

Electric Specialties.—The G & W Electric Specialty Company, 7440-52 South Chicago Avenue, Chicago, manufacturer of electrical specialties, has issued catalog 11, containing bulletin No. 211, covering its pot heads and accessories and bulletin 212, describing its underground boxes.

Fire Protection.—The Oil Conservation Engineering Company, Wade Building, Cleveland, is distributing a pamphlet describing the 10-gal. "Oceco" chemical engine recently developed by the company. The engine is designed particularly for use in electric power stations, transformers, relay and storage-battery stations.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
DONALD F. HINE, Editorial Representative A. D. KNOX, Editorial Representative GEORGE BUSHFIELD, Editorial Representative
G. J. MACMURRAY, News Editor

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A Secretary of Proved Ability

THE association is to be congratulated upon the recommendation which its reorganization committee has made with reference to a permanent secretary to succeed E. B. Burritt, who resigned last March. J. W. Welsh, whom the committee has recommended to the executive committee and who will doubtless be appointed by that committee, already has the confidence of the entire membership of the association and has shown himself amply able to perform the duties which will devolve upon him.

As special engineer to the association, Mr. Welsh already had made his work felt in the association's activities, and when President Gadsden asked him to undertake, quite suddenly it will be remembered, the work of secretary, Mr. Welsh stepped into the breach and, in this rather trying position as acting secretary, has acquitted himself so admirably and has shown so satisfactorily his complete fitness for the permanent secretaryship that he was the only logical candidate out of a multitude of suggestions to be considered for the place.

The ELECTRIC RAILWAY JOURNAL is sure that the association headquarters activities are in good hands and congratulates both Mr. Welsh and the association upon the new relationship, which will probably be arranged at the next meeting of the executive committee.

Get Work Commensurate with Wages Paid

THE news columns of nearly every recent issue of this paper have recorded wage decreases on electric railways in almost every part of the country, but probably few of them have been equal in percentage to the demonstrated reduction in cost of living which has occurred since the peak of prices in the early part of 1920. Undoubtedly wages on electric railways are still due for a further decrease, but in this readjustment, an opportunity is offered to put the wages on a different basis than that which existed in most companies before the war. Reference is made particularly to companies which used to have a high labor turnover.

Statistics of the present rate of turnover on the average electric railway property are not available, but it is safe to say that generally it is much lower than six or seven years ago. It is also a matter of observation that the physical and mental and other standards which go to make up a desirable trainman are being exhibited in a higher degree than before the war. All of this helps toward efficient transportation, and, in the last analysis, toward economical operation. The higher wages paid on one-man cars tends also along these lines.

The future wage for motormen and conductors should be sufficient to attract men of a high grade permanently to the service and not simply to take it as a stop gap between better paid industries. The companies should cut loose from the unskilled labor theory and should make employment on the platform attractive to the kind of men who can give economical service from every viewpoint. The public has got away from the 5-cent flat fare and will expect good service, regardless of the rate of fare. The companies will not be allowed to earn more than a fair return, and in their own interest as well as in that of the public, the most certain way of supplying good service should be followed. This is to pay good wages and get in return from their men faithful and efficient work, commensurate with the wage paid.

How Manufacturers Safeguard Their Products

THE attention which manufacturers give to the testing of the raw materials which enter into the apparatus supplied to electric railways and the extensive precautions that they take in testing such material are amply illustrated in the article by John S. Dean on testing insulating material, the second and concluding part of which is published in this issue. In reading these articles one cannot but be impressed by the large variety of insulating materials which are used in the construction of railway apparatus. In the selection of such materials it is most essential to take into consideration the operating conditions, which are extremely severe for electric railway equipment. High temperatures are encountered, the trolley voltage is most variable and line surges are frequent. The equipment is exposed to considerable moisture, dust and dirt, and is subjected to severe mechanical strain, as well as excessive vibration and frequent abuse by rough handling. Ruggedness in construction is as essential as high dielectric strength.

The proposed tentative methods of testing insulating varnishes which were included in the report of committee D-9 on electrical insulating materials for the American Society for Testing Materials at its recent meeting follow along the line outlined by Mr. Dean for the testing of liquid insulating material. The tests given are intended for varnishes which are applied by brushing, dipping or spraying, in order to provide high electrical insulation. The dipping of coils and even complete armatures by electric railways has increased considerably during the past two years, and the reduction of troubles which has resulted has shown the great advantages to be obtained. Those who have had experience in dipping and baking processes have found water absorbing tests and endurance tests to be most desirable. Another important consideration which directly affects the time that cars are withheld from service is the time necessary for drying. Tests for determining insulating compounds which will have a short period for drying and at the same time possess the necessary dielectric strength and other insulating properties are of interest. Aside from the essential characteristics that are necessary for insulating materials, this description of the method and apparatus used by a prominent manufacturer for determining these characteristics should give those interested a broader conception of the care used to safeguard the various products which they purchase.

Capitalize— or Amortize?

THE brief which sets forth the arguments of the Public Service Railway in support of its valuation is one of the most interesting documents in this line which has appeared for some time. It is thorough, it is out of the ordinary, it is legal, and it has touches of appreciation of the lack of conception of the railway problem by the usual citizen.

But there are two or three points with reference to which questions of best valuation policy — or public policy, perhaps—may well be raised.

One of these is the advisability at this time, if ever, of arguing in favor of unit prices on a particular date. This is admittedly in line with the association's valuation committee recommendation, but that makes it all the more important that this question be examined with due care and consideration. Prices of many articles are admittedly going down, and while pre-war value will probably never be realized, the public consciousness cannot but carry the feeling that it is the future return upon the value of the property which is of most importance. Legally, present value—present-day value —has much to support it. Any modification of that to certain trend conditions or estimated future conditions can of course be supported only as a question of public policy, but that is worth considering seriously when companies are presenting final arguments on definite figures.

Another point which it will be most interesting to have determined, as mentioned editorially in these columns under a discussion of the Ford, Bacon & Davis valuation of this same property (see ELECTRIC RAILWAY JOURNAL, April 23, 1921, page 758) is that of capitalizing the "power contract." As the brief states, every witness testified as to the value of this contract to the railway company. The question it will be interesting to have decided by a court, if possible, is whether the value of such a contract should be reflected by an increased legitimate capitalization or rather by an increased rate of return in recognition of the good management which is evident in thus obtaining power at a lower rate than the railway company could realize under its own operation.

The third, and perhaps most important, point from the standpoint of policy is the question as to whether certain sums of money, admittedly invested and invested legitimately, should be added to capital or should be set up as a fund to be amortized. Reference here is to consolidation value—again possibly a question of good management rather than either capitalization or amortization sums—superseded property and certain other elements of value which, in any private business, would be amortized as early as possible. This is not an argument in favor of eliminating such amounts from consideration on the theory that they should have been amortized out of excessive dividends in the past; there probably were no excessive dividends, and there certainly is no basis to assume them without positive evidence of them. This is rather a suggestion of much better public policy to set up such expenditures as amortizable funds so that they may be eliminated from the perpetual charge upon the community. This may not be the best for the market value of the securities at the instant, but it is apparently the best business in the long run. There is also the question as to whether or not there is much more probability of having such sums allowed in their entirety when set up as amortizable funds than when added to capital. Virtually, of course, when it is probably impossible to earn enough to pay a return on the allowed valuation and to pay off installments on amortizable funds the fund to be amortized is added to capital for the length of time it still exists in the accounts of the company. The same end is realized, then, in a manner which has much to support it as being a more logical plan to present to the public, one which will appeal more to men in other lines of business who are accustomed to write obsolete equipment off of their property accounts and one which, to repeat for emphasis, is better public policy. Legally, either may be correct. To amortize where possible seems better business.

Material Testing Specifications Are Important

SOME of the advantages to be obtained by the adoption of standards of materials were given briefly at the last meeting of the Society for Testing Materials by George S. Webster, the retiring president. The list follows: (1) Ease in specifying the quality of the material required; (2) ease in testing materials delivered under the specifications through the use of standard methods; (3) ease in obtaining standard products; (4) an effective means for minimizing controversies over purchases of materials, and (5) a feeling of security that the materials used are satisfactory as a result of the knowledge of how the standard specifications are formulated and that they reflect the latest knowledge and experience.

For a number of years this paper has abstracted the discussion on specifications of interest to electric railway engineers at meetings of the American Society for Testing Materials, and an account of the action taken by the society at the recent meeting at Asbury Park appears on another page. The importance of testing the various materials used by electric railways is being given increased consideration by those responsible, and the American Society for Testing Materials has long been considered as foremost in formulating specifications for this particular branch of engineering. This year the society achieved a remarkable performance—probably without precedence in its history—by dealing with more than 150 specifications. Of these seventy-one were new, being presented for the first time and adopted as tentative standards, while sixty-three were revised. Others were advanced from tentative to standard rank. Some forty steel specifications were disposed of in bulk by a single ballot. The flatness of this procedure was relieved somewhat in the closing session by an animated discussion over chilled-iron car wheels. This discussion brought out the desirability of chemical limits for car wheels and for making wheels safer by requirements more severe than those set up by the Master Car Builders and the American Railroad Association as well as those with which the committee on cast iron of the American Society for Testing Materials was content.

The method of procedure for the various committee reports and the care used in the adoption of specifications by the society are shown in the specifications of concrete which are now being formulated.

At last week's meeting the preliminary report was made public and in the form now written it will be circulated among the members of five contributing societies—which means about 16,000 engineers. This report will be a subject for discussion among those engineers and their committees during this year, and the committee of the American Society for Testing Materials will then proceed to the writing of the final specifications with due consideration of the various points brought out in discussion.

A number of the standing committees of the American Electric Railway Association are now co-operating with committees from the American Society for Testing Materials toward bringing into agreement similar specifications, therefore the work of the society accomplished this year is given added interest to electric railway men.

Reorganization Committee Suggests Constructive Program

AS INDICATED on another page of this issue, the special reorganization committee appointed by President Gadsden to make recommendations to the executive committee with reference to the reorganization of association headquarters and any other modifications of existing activities or rules of the association which it thought advisable now has its report in the hands of the executive committee in practically final form. In order, however, that there shall be "open covenants openly arrived at," the committee is making public the gist of its recommendations to the executive committee before the meeting of the latter committee in order that it may have the benefit of comments from the field with reference to the recommendations made by the reorganization committee.

The recommendations are constructive. They are all an effort to make the association's activities more useful to the membership—the only reason for the existence of the association. It is recognized that the association is a voluntary organization and all that is done is to modify the machinery so that, judged from past experience, it will run more effectively. That considerable revision of the constitution was advisable is not unexpected. The revisions, however, are not radical, but only provide those things which leading opinion in the industry have felt for some time were either necessary or advisable.

The fact that the executive committee will meet monthly if the recommendation is adopted will of itself mean more virility in the association and more active interest in the conduct of its affairs by its officers. That membership modification should be made so as to allow in special cases admission of trackless transportation systems and to allow management companies, consulting engineers, investment bankers, etc., to assume a formal place in the association is a logical development. Provision for regular standing committees with obligation of monthly progress reports should also tend to add life to the association activities.

Of the questions recommended to the executive committee for its own consideration, those concerning co-operation with the various sectional railway associations, those having to do with an adequate geographical distribution of the executive committee and other committee meetings, as well as geographical representation on all the committees, and the one regarding admission of municipally owned or operated railways deserve consideration by the membership at large. All but the last speak for themselves. On this question there is bound to be considerable honest divergence of opinion, some of which has already developed, but the question has been raised and must be met squarely and settled. The editors of this paper believe that the association and the industry would benefit by permitting such municipalities as desired, when they operate their own railways, to enter the association and discuss problems in which all railways are mutually interested. The editors of this paper do not believe that the American public is so organized at present as to be able efficiently to operate transportation systems, but where municipalities have taken over the responsibility, it is to the interest of the entire electric railway industry that the municipalities understand all the problems which they have assumed. Furthermore, it is only by sitting down at the same table with experienced transportation men that municipal officers will be able fully to appreciate the magnitude of what they have undertaken. But on this question the executive committee deserves especially to have advice from the industry. It is probable that the final discussion on this point will not be conducted until after prolonged, and, it is to be hoped, intelligent, debate at Atlantic City in October.

As a whole the report means progress. That the final action be word for word in line with the recommendation of the committee is immaterial. A frank discussion of the questions which have been raised and action by the association on them is in itself worth while and the association will be better for it in the end.

Covering Up Their Deficiencies

SEATTLE continues to go behind in the operation of its municipal railway. The fact sticks out like a sore thumb, for Seattle is at present on the cash-and-carry basis. Explanations may tend to mitigate the feelings aroused by the fact that things are bad with the road from the standpoint of earnings, but excuses don't remove the evidence. Every month new explanations for the poor showing have to be thought up. This has taxed the ingenuity and strength of the representatives of the city, but they have not run out of ideas entirely. Thus Councilman Erickson has hit upon the clever scheme of overcoming this need for establishing the monthly alibi by charging a 3-cent fare on the lines and meeting out of general taxation the difference between the receipts of the road and the cost of operation.

Apparently, Seattle cannot and will not pay more for fare, so that the avenue of escape is closed which that procedure might open. If car riders won't pay more, then let them pay less. The psychology behind the idea is correct from the standpoint of good politics. And with the railway supported by the tax rolls the sky of course would be the limit on expenditures. The plah would seem to be so palpably absurd as to preclude its adoption, but then there is no telling to what lengths a community will go in continuing to fool itself that municipalized its railway in spite of the preponderance of evidence against such undertaking.

Bond Testing Cars

To Test Bonds at a Faster Rate than Can Be Done with Hand Bond Testers and to Provide Automatic Permanent Records of the Test a Car Containing the Necessary Instruments Is Most Convenient

By G. H. McKelway
Engineer of Distribution Brooklyn (N. Y.) Rapid Transit Company

WHEN a car is used for bond testing it is necessary to insulate the front and rear trucks, or front and rear wheels in a single-truck car, from each other. With a single-truck car the truck must be cut and insulation inserted between the two sections. Much better results in maintaining the car, although not in testing the bonds, will be obtained from a double-truck than a single-truck car as the cutting of the frame weakens the latter and permits the two ends to sag.

Either a motor-generator set is necessary to supply the current for the test at a low voltage or a resistance to reduce the voltage of the current from the trolley wire or third rail sufficiently to permit of its being used in the test. The motor-generator set or resistance should be large enough to supply 800 to 1,000 amp. at 5 volts, although so large a current will seldom be needed and the average amount will be only about one-half of the maximum capacity.

In addition to the motor-generator set there should be in the test car a table upon which all of the testing instruments can be mounted and grouped so that they can be conveniently read by a single operator. The instruments should comprise an ammeter and two millivoltmeters, together with apparatus for protecting the latter in the case of bad joints which might otherwise throw a high voltage across them and burn them out. The ammeter measures the current supplied to the test circuit by the motor-generator, while the voltmeters indicate the drop across the joints as the car passes over them, one voltmeter being in position to measure the drop across the joints in one rail of the track and the other being similarly placed in regard to the other rail.

The voltmeter circuits are continued to the track through brushes which rub on the rails and which are spaced 4 or 5 ft. apart so that they will always be certain to span the joints no matter how long they may be. It is very difficult to pick out and record the locations of all of the bad joints by this method, even when the car is moving quite slowly, especially if the poorly bonded ones are close together. With the car moving at a speed of only 5 m.p.h. and with all rails fully 30 ft. long, the contacts will pass over one joint in each rail every four seconds. If the joints happen to be staggered, one voltmeter or the other will be swinging every two seconds. When a line of bad track is being tested the open joints come so frequently that it is almost impossible for the locations of all of them to be recorded unless the car is stopped occasionally to allow the observer time to catch up. If this is done it will "drag" the cars behind it and spoil their running schedules.

One way of directly marking bad joints, not so permanent as with the hammer and chisel, but which lasts long enough to permit the bonders to find the joints, and which does not require stopping the car, is by squirting a little white paint on the rail, tie or pavement as the car passes along. Most of the cars now in use are equipped with recording instruments. The record shows the condition of the bonds and indicates the moment that the bond is passed over. These cars are known as "autographic" bond testing cars and are the invention of A. B. Herrick. Their equipment, however, is so complicated that a perpetual inducement is offered to change some of the details in an effort toward greater simplicity or less troublesome maintenance. A short time ago the writer asked another railway engineer if there was not a "Herrick" test car on his line. The reply was that it was a Herrick car when first bought, but did not look much like one now. In fact, all of the cars that the writer has seen or heard of appear to differ considerably among themselves, although the general principles on which they operate are the same.

AUTOGRAPHIC RECORDS

On the autographic cars the record is made on a long roll of paper which is unrolled and carried across the table, a small motor furnishing the power for operating the drive. The strip of paper is 11 in. in width, and as it passes five pens, two for each rail and one for marking locations, make continuous marks upon it. Two of the pens merely mark the zero lines, indicating where the millivoltmeter lines would be if there was no drop in the rail, while two others are for the purpose of locating open joints, which is done by the pen moving from side to side whenever the voltage across the joint is so high as to make the relay, which protects the voltmeter, operate a cut-out. The fifth pen, for marking locations, is moved through a switch closed by the operator or his assistant whenever the car gets opposite some point, for instance a house or trolley pole, which will serve as a permanent location for the starting point of measurements to give the exact location of the bad points in its vicinity. On one window on each side of the car and directly opposite the seat of the operator is painted a plain, vertical stripe. When the object whose location is to be recorded is covered by the stripe the operator presses a key and the pen, which has been making a straight line down the center of the paper as it moves past, makes a jog. This jog is given a number by means of a numbering stamp, the numbers of which increase by one each time it is used and so numbers the pen jogs consecutively. A sheet of paper already numbered is used to record the house or pole number, or name of intersecting street or something else that will definitely mark the location of the car at the time that the pen moved. Where the bonds in the track under test are in good condition the location points need be taken only occasionally, but the worse the track the closer they should become, and with bad track 400 or 500 ft. apart is a good spacing distance.

A toothed wheel revolving in the center of the table punctures the paper at intervals, each space between the holes being equivalent to 10 ft. on the track. At each tenth hole an additional hole is punched about one-quarter of an inch outside of the center so that the 100-ft. lengths are easily counted and it is not necessary to count all of the dots representing 10 ft., but only those to the nearest 100-ft. mark.

As the car moves along, the current in the track and the current from the motor-generator set cause the voltmeter needles to deflect a certain amount, which is comparatively constant, and which shows the difference of potential between the two brushes on a piece of unbroken rail. The current in the rails due to the operation of the cars may be either added to or subtracted from that produced by the motor-generator set and occasionally the latter should be cut out, by opening the switch, in order to see in what direction the current in the rails is flowing and its value.

RECORD PAPER MOTOR DRIVEN

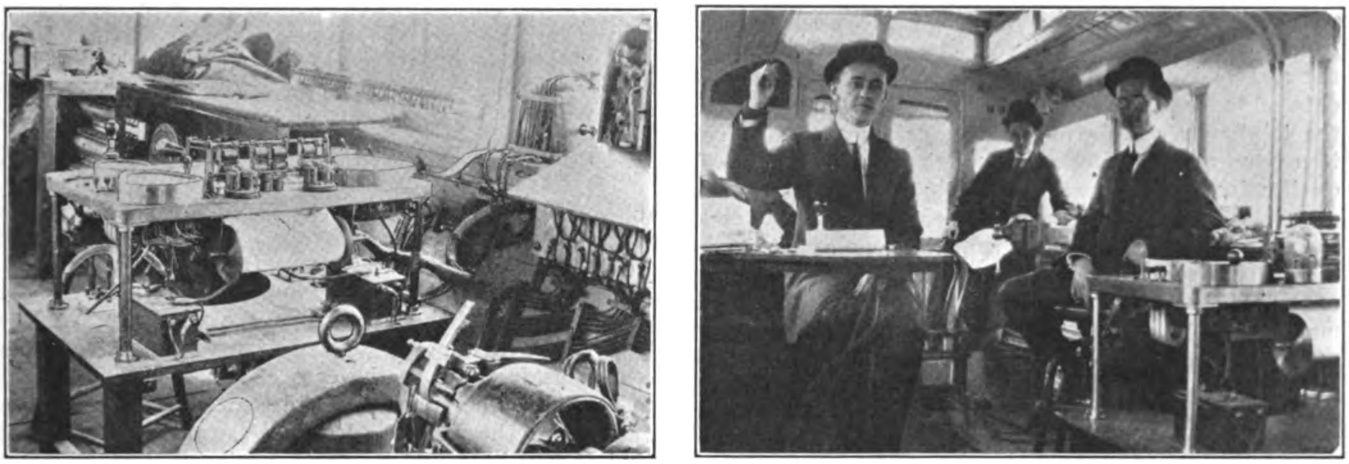
In addition to the generator which is used for supplying a heavy current at a very low voltage there is also a smaller one supplying current at about thirty volts, which current is used for the paper drive and also, after passing through a make-and-break device of some sort, and through condensers, is used in recording the difference of potential between the brushes on the rail. One side of this circuit is connected to the voltmeter needles which swing over the paper and also over contacts which are underneath the paper. Between the ends of the needles and the contacts below sparks are drawn which puncture the paper, each needle making a dotted line of little holes which are burnt in the paper and which show every swing of the needle and its amount except in those cases where the drop is so great that the relays have to act to protect the instruments. In those cases the little holes will run up to a peak at the point where the relay cuts out, and on the pen line underneath the peak and near the edge of the paper will be found a sharp jog, showing that the joint is "open."

Although some cars have been operated with only two men, a motorman and an operator, yet such an arrangement throws so much work on the latter that, as a rule, it will pay to use at least one more man in order to pick out and record the locations on the separate sheets of paper while the operator stamps the corresponding numbers on the record at the points shown by the movement of the pen. In addition to marking the locations on the record the operator will make use of other stamps reading "special work," "railway crossing," etc., in order to explain the sudden throws of the voltmeter needles not attributable to bad bonds. He also stamps "right rail" or "left rail" and "inbound" or "outbound," as the case may be, on the record occasionally so that there will be no mistake in reading the record later and, from time to time, he opens the generator circuit and tests the direction of the flow of current in the rails. This should always be done when there is reason to believe that its direction has changed as, for instance, just after passing a point where return wires or tracks are expected to lead the current to a power or substation, and at fairly frequent intervals elsewhere.

The voltmeters are supplied with two scales, one giving a reading about twice as high as the other. By making use of the proper scale and regulating the output of the motor-generator it will always be possible to get the record on a fairly large scale and yet not have "opens" shown where they should not appear, whatever may be the weight of the rails and the condition of the joints.

After the record has been made that portion of the paper containing it is cut off from the rest of the roll and gone over to be put in permanent condition for filing and to have the locations of the bad bonds placed in more convenient form for handling and carrying about in the field, so that the poor joints can receive attention as soon as possible.

The first step is to mark at each of the numbers what that number is supposed to indicate, as then no time is lost by having to refer to the separate sheets, which need be kept no longer as all of the information is then on the large roll. These locations can be written on with pen and ink, although the neatest way is to typewrite them at the proper points. Then, having determined on the maximum resistance of the joint expressed in terms of feet of continuous rail that can pass as good, find all of the joints the resistance of which was higher than that amount and mark them for rebonding. If only the "opens" are to be considered as bad the task is comparatively easy, as it is necessary only to follow the two pen lines and mark down those places where the jogs in the line show that the voltmeters had been cut out of circuit. Where the bonding is to be kept in better condition and joints of a lower resistance are to be rebonded the curves made by the arcs from the voltmeter pointers must be closely followed, and whenever the height of a peak exceeds the predetermined ratio


INTERIOR ARRANGEMENT AND LOCATION OF APPARATUS IN BOND TESTING CAR

between that of the joint and the uncut rail the location must be marked for rebonding.

Some of the papers used for these autographic records are chemically coated so that the minute burns in it show up black and can be readily seen, but such paper is more difficult to puncture than the plain paper and often cannot be obtained. Another method of blackening the holes is, after the record has been made, to paint the underside of the paper along the general lines of the curves with ink or thin water color paint so that some of the color will pass through the holes and show on the upper surface of the paper. This takes additional time and is not reliable as the color does not always come through. Probably the best method of following the curves is to pass the record before a light and have the light shine through the little holes. This can be done either by holding the record up in front of a window or, better still, by passing it over a box in which is contained an incandescent lamp or lamps.

TABULATING RECORDS FOR FOREMEN

In order accurately to locate the bad joints for the bonders, their locations are generally copied on sheets of paper, which are given to the foreman in charge. A well-planned sheet of this type is printed with spaces to be filled in, giving at the top the name of the street, the streets between which the test was made and the date of the test. Below are columns in which to locate the joint as a certain number of feet in a given direction from an easily found point; the direction of traffic on the track, if there is more than one track on the street; whether on the right or left rail of that track; the date repairs were made, and the type of bond used in making the repairs. By the use of such a sheet not only does the bonding foreman receive all of the information that he requires but, when he returns the sheet after finishing the work, the office has a complete record of all of the bad joints and when and how they were repaired.

The records made by the testing car should be valuable, not only at the time of making the test, to point out the bad bonds, but also as legal evidence in case of any suit brought on account of the alleged defective condition of the bonding. The writer has found, however, an unwillingness on the part of several lawyers to make use of the records in such cases, as they feared that the height of the peaks of the curves would be misunderstood by the non-technical members of the jury, who would not be able to understand that what appeared to them to be very sudden sharp rise in potential would, in fact, be only a very few millivolts and therefore negligible in considering the question before the court. It would seem, however, that such records could be used very effectively in some cases if the curves were carefully explained, in a manner that all could understand, by some one who knew just what the records showed and could bring out those points to the best advantage.

During this year the Grosse Berliner Strassenbahn, the tramway system in Berlin, celebrates the fiftieth anniversary of its founding. Long operated by a private corporation, the system has recently been taken over by the municipality and consolidated with the other surface lines in Greater Berlin, so that it now serves all parts of that district, which embraces about 5,000,000 inhabitants. The property itself consists of 1,250 km. (800 miles) of track.

Factors Affecting Electrification

COMMENTING upon the elaborate analysis of electrification conditions on the Northwestern Railway of India, which has been running in its columns for some time, the *Railway Engineer*, London, calls attention editorially to some of the points that have been brought out. These illustrate the importance of a knowledge both of electrical engineering and of railway working in making a decision on the electrification question.

The editorial states that the author of the article in question shows that for the same adhesion weight electric locomotives can be designed to develop two or even three times the power of the heaviest steam locomotive in India. By articulating the design, the number of driving axles could be multiplied indefinitely with the same permissible axle weight and it would be possible to put a 3,000-hp. electric locomotive on the Northwestern which could run anywhere where two coupled or doubled engines of the 0-6-0 standard type can now run and would be capable of hauling loads five times as heavy.

The large number of heavy grades on the Northwestern are an extremely important factor in the electrification problem. The present and previous articles show that electrification will pay on many lines with heavy grades where for the same traffic on the level it would be out of the question. On a 4 per cent grade the electric locomotives can do at least 40 per cent more work than a steam locomotive with the same expenditure in energy. To this must be added the economy resulting from regenerative working, which also saves rail and brakeshoe wear. It is said by the engineers that on the Giovi tunnel line near Genoa the rail saving was enough to pay the whole interest on the cost of power station and transmission line. The enormous increase in the cost of coal and repairs has more than offset the increased cost of electrical apparatus, and the *Railway Engineer* expresses the belief that it will be found by those engineers who have the time to make a really accurate study of the conditions obtaining today on many lines that the changed conditions often make electrification worth much more serious consideration than before the war. As for the capital outlay, the difficulties here are apt to be lessened when the directors are really convinced of the savings which can be effected through the application of electricity to heavy traction.

Toronto Retains Odd Gage

CONTRARY to what was popularly expected, according to the *Canadian Engineer*, the 4-ft. 11-in. gage at present existing on the lines of the Toronto Railway, Pacific Railway and the MacKenzie Radials, with the exception of the Metropolitan, will be retained by the Toronto Transportation Commission when it co-ordinates and rehabilitates the several systems within the city. The Commission felt that a change of gage, the estimated cost of which had been figured at $1,500,000, showed no immediate advantage and would be likely to increase the operating difficulties until the work was completed. One point which swayed the Commission in reaching its decision was that outside systems will not be able to get running rights over Toronto tracks, as their cars would be of the wrong gage. It is said this was why the odd gage was originally chosen for the Toronto system.

Testing Insulating Materials—II

Aging and Weather Tests Are Important to the Users of Railway Insulating Materials as They Show What Life Can Reasonably Be Expected and the Deteriorating Effects that Result

By John S. Dean
Railway Motor Engineering Department, Westinghouse Electric & Manufacturing Company

IT IS ESSENTIAL THAT SPECIMENS FOR THE DIELECTRIC TEST ARE PROPERLY TREATED

IN AN article published in the May 21 issue of the ELECTRIC RAILWAY JOURNAL some strength and dielectric tests of treated and untreated insulating materials were described. In the following, attention will be given to tests showing the effects of heat, acids, oil, weather, etc., on treated materials, together with various essential tests on composite materials.

AGING TEST OF FLEXIBILITY

To determine the ability of a varnish to retain its flexibility under the action of continued heat such as is found in a railway motor in service, the only apparatus required is a suitable baking oven fitted with a high-reading thermometer or an indicating or recording pyrometer. Test specimens consist of strips of sample cloth cut 6 in. x 3 in. which are given several dippings of the varnish to be tested. A space is left untreated at the top of the samples to record the test data.

Four samples are prepared and placed in an oven which is maintained at a temperature of 100 deg. C. The samples are removed one at the end of 100 hours, the second at the end of 200 hours, the third at the end of 250 hours and the fourth at the end of 300 hours.

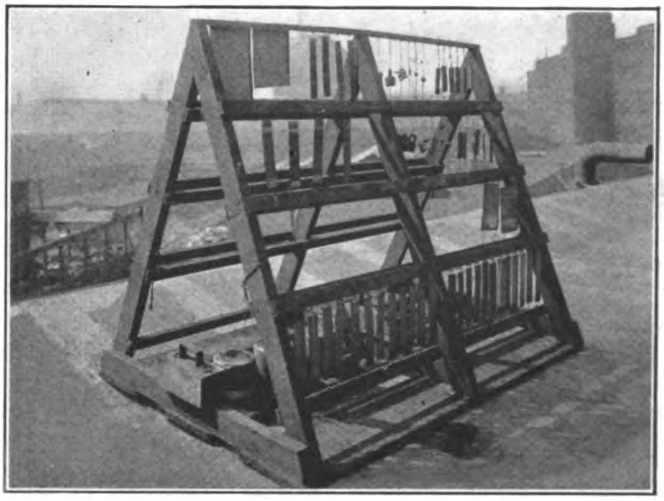
These samples are then tested by folding or bending over rods of different diameters and noting the smallest diameter around which they may be formed without cracking.

A test specimen which after baking 300 hours at 100 deg. C. and allowed to cool to room temperature can be folded and creased without showing any indications of cracking is considered very satisfactory.

In the operation of railway motors, due to careless and in some cases too frequent oiling of the bearings, excess oil finds its way inside the motor frames. In this connection it is important that the varnish used for insulating purposes should not be affected by this oil, and to this end it is advisable to use an oil-proof grade of varnish. To make an oil-proof test samples of cloth are prepared similar to those used in connection with the aging test, and after being thoroughly baked they are placed in a mineral-oil bath, which is held at a temperature of approximately 60 deg. C. for several days. If the varnish on the treated sample shows no signs of softening or becoming tacky, this is an indication that it is proof against the action of the oil. A similar test can be quickly made on the baked treated samples of cloth by rubbing them with oily waste. Under these conditions, if the varnish is oil-proof, it will not soften and cannot be rubbed off the surface of the cloth. The acid, alkali and salt-water test is made on insulating varnishes used in treating coils, etc., to determine ability to withstand their action.

TESTS FOR OIL, ACID, ALKALI AND SALT WATER

To make the test a large rectangular glass jar is fitted with a wood rack and a number of metal test rods and a testing circuit with a light in series is arranged. Test specimens consist of ⅜-in. round steel rods 12 in. long, well rounded at the lower end, which are given a uniform coating of varnish 2½ mils thick baked on the entire surface to within several inches of the top of the test rod. In preparing these test specimens the bare rods are first thoroughly cleaned and dipped in the sample of varnish and baked. This operation is repeated not less than three times, and sometimes more, depending upon the fluidity of the varnish in order to get the desired 2½ mils thickness of film which is specified for this test. The treated test rods are then placed in the rack which insulates individual rods and are suspended in the acid, alkali or salt-water solution contained in the glass jar. During the first four hours of the test an alternating current from a 110-volt circuit with a light in series is applied every fifteen minutes through the terminals one of which is connected to the liquid solution and the other is applied to the individual test rods for a short interval of time to locate any breakdowns. After this set of short-time readings is taken similar tests are made each morning and evening until the insulation breaks down or the test has run its specified time limit. In connection with these tests either a saturated acid, alkaline or salt-water solution is used, depending upon the nature of the test. The final results are represented by the average on three test rods of each grade of varnish.


PAINTS AND VARNISHES ARE SUBJECTED TO ACTUAL WEATHERING TESTS

The amber insulator used in connection with the dipping and baking of railway motor armatures when tested under the above conditions shows an average of 880 hours in a saturated solution of salt water.

CEMENTING AND STICKING QUALITIES OF VARNISH

To determine the ability of a dipping varnish to cement the treated coil into a solid, tough, elastic mass, which will be strong mechanically as well as electrically, a sample coil is wound up, using about No. 20 B. & S. gage double-cotton-covered wire, is given two dips of the test varnish and is then baked for 300 hours at a temperature of 100 deg. C. The coil is then removed from the oven and inspected for its toughness and elasticity as compared with a similar coil that has not been treated.

In order to improve the distribution of the heat which is generated in the various parts of the winding of a motor it is essential to use a varnish with good heat conduction and radiation properties, to insure a more uniform temperature of the motor under service conditions.

To test for heat conduction and radiation two coils are wound up with the same size of wire and the same number of turns, identical in every respect. One of these is treated with the varnish and baked, while the other is left untreated. These coils are connected in series and the resistance at room temperature is carefully measured by means of a Wheatstone bridge-testing set. A current is then passed through these two coils in series, resistance measurements are taken of each coil at stated intervals of time and temperatures are calculated from the increase in resistance. The difference in temperature of these two coils is an indication of the heat-conducting and radiating properties of the test varnish.

It is necessary to know something about the time and temperature required thoroughly to dry or bake out the insulating varnish. To get the best results with the least possible delay to production, samples of cloth or tin are dipped in the air-drying varnish and are hung up in the open. The time required to dry is noted and recorded. In testing the baking varnishes, the test samples after being dipped in the varnish are placed in the oven and baked at a constant temperature for a definite period until thoroughly dried. The temperature is then increased and the time noted. In this manner a number of tests are made with varying temperatures through a range of from 90 to 120 deg. C., noting the time required to bake thoroughly. The maximum temperature which will not damage the texture of paper or cloth to be treated is taken, as this temperature will expedite the production in the factory.

It is also very important to know just how certain paints and varnishes resist the action of weather under varying conditions, and to determine this a weather rack, such as shown, is constructed and placed on the roof of one of the shop buildings. On this rack the various treated samples are securely suspended and exposed to all weather conditions over a long period of time and are carefully inspected at stated intervals of time to determine their deterioration. These observations are recorded and comparisons made of the condition of the various samples of paints and varnishes under test.

ADHESION TEST FOR FRICTION TAPE

To determine the adhesion or sticking properties of friction tape and cloth, which is very important with this kind of material, an adhesion testing machine especially designed for testing friction tape is used. It consists primarily of an upright support having a small swivel clamp which is connected to the pencil on a Thompson steam indicator through a system of levers. The lower clamp, which holds the test roll of tape, is connected to the cylinder on the Thompson indicator

IMPORTANT THAT INSULATING VARNISHES WITHSTAND ACTION OF ACIDS, ALKALI AND SALT WATER and is driven in a vertical direction through a worm drive by a small electric motor.

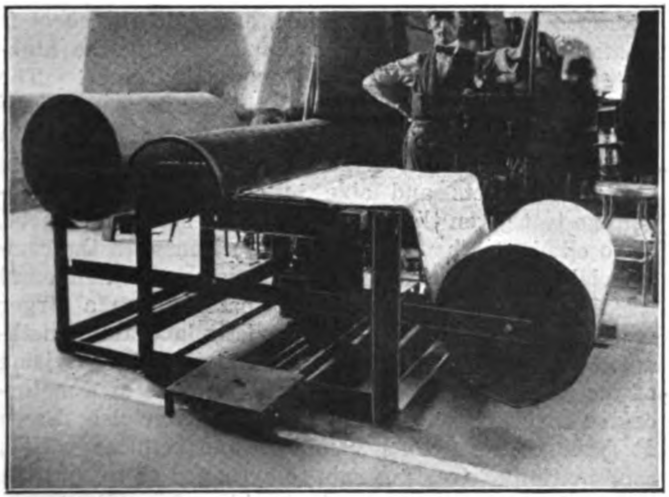
The test specimens are cut 22 in. long from standard rolls of friction tape. In the testing of friction cloth the strips are made 1 in. wide, cut from the rolls of cloth.

The 22-in. specimen of test tape is rolled up on a test spool under a uniform tension of 5 lb. The test spool is then placed in the lower clamp of the machine, free to turn, while the free end of the tape is attached to the upper clamp. With a chart in place on the cylinder of the Thompson indicator and the pencil adjusted, the driving motor is started. This unwinds the tape at a uniform rate of speed, registering the pull due to the adhesion of the tape on the rotating chart. The readings in pounds are taken from ten uniformly spaced points on the chart and averaged. This test is repeated on a similar sample after the tape has been baked for sixteen hours at a temperature of 100 deg. C. The loss in adhesion, due to aging by heat, changes with different grades of tape. In general, it will vary from 35 to 50 per cent, depending upon the quality.

Paper treated on one side with shellac or bakelite varnish and used in the manufacture of micarta tubes, sheets, etc., should stick together thoroughly when subjected to heat and pressure during the process of manufacture.

Special detail apparatus, consisting of two electrically heated irons with controlling rheostat to regulate the heat and a 300-deg. C. thermometer for measuring the temperature of the heated irons is used for the test.

The test specimens are cut 2¼ in. wide and 12 in. long and are taken from the rolls of paper during the process of treatment. The test strip of paper is folded lengthwise, with the treated sides together, and pressed between the two electrically heated irons, which are held at a temperature of 105 deg. C. The crease is placed between the two irons with the two free ends extending out from underneath the irons. To the lower free ends is attached a 30-gram weight, while the upper one is held to the side of the iron. After thirty seconds' application, or pressing, the top iron with the free end of the test specimen is lifted, allowing the treated surface of the test strip to be pulled apart due to the action of the 30-gram weight suspended from the lower free end. The adhesive property of the test specimen is gaged by the amount of separation at the treated surfaces as measured on one side of the folded test specimen.



BUILT-UP MICA AND PAPER SUBJECTED TO A DIELECTRIC TEST BEFORE GIVEN FINAL GAGING TEST

This method of testing gives comparative results only and is a check on the uniformity of the treated material. Under these conditions a piece of treated paper used to make micarta tubes, etc., as used for insulation on railway motor parts, will show a separation of from ¾ to 1¼ in.

MICA FOR RAILWAY MOTOR COMMUTATORS IS TESTED FOR UNIFORM THICKNESS

TREATING TEST SPECIMENS

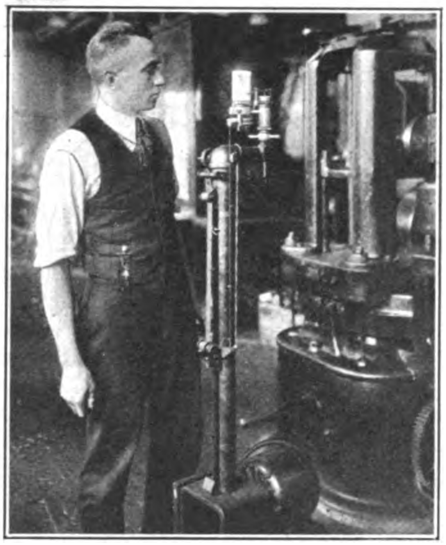
In connection with the preparation of samples of treated cloth and paper for the dielectric test it is very important that the untreated materials be given a uniform and even coating of the varnish. This makes it necessary to draw the samples through the varnish at a slow uniform speed so as to eliminate any variation of the coating on the surface of the treated samples which are being prepared for test purposes. The apparatus used consists of a motor-driven hoist, to which the sample test sheets are attached and pulled through the test sample of varnish.

The sample varnish, which is poured into the glass jar, is diluted to have the same specific gravity as is used in the factory and is kept at room temperature. The test sheets of untreated material, which are cut 6 in. square, after being thoroughly dried out, are attached to the hoisting mechanism and drawn through the varnish at a uniform rate of about 14 in. per minute, after which the samples are baked in an oven for a certain number of hours at a definite fixed temperature, which depends upon the grade and quality of varnish being tested. Amber insulator samples require baking at from six to eight hours at 110 deg. C. From two to four dips are given all samples and in making successive dips the direction of drawing the sample through the varnish is reversed to insure uniformity. All test samples are gaged with a micrometer before treatment and after final treatment in order accurately to determine the thickness of the coating of the varnish on the test specimens, which should be approximately 3½ mils total for both surfaces.

To determine the dielectric value of sheet insulating materials in their original plain uncreased form a high voltage (at least of 1 kw. capacity) transformer is used. This is provided with a number of taps and is arranged for voltage control using a regulator so designed that the circuit is not broken between steps. Two circuit breakers, one on each side of the low-voltage line, and a voltmeter are required. A testing board is fitted with two short brass terminal rods 2 in. in diameter, having the edges on one face well rounded. One of these terminals is permanently mounted upon the baseboard and the other is hinged to the board and so located as to rest on top of the fixed terminal when swung in position on the test sheet.

Test specimens cut 8 in. wide and 2 ft. long are taken from the treated rolls and should be selected free from defects such as creases or rough lumpy surfaces. The test sheet is placed between the two brass test terminals so adjusted that each terminal makes a good face contact with the material. The test voltage is raised rapidly and steadily and the reading of the meter is noted when breakdown occurs. While making this test care must be taken that a puncture and not a flash over the surface is obtained. The average of five or ten breakdowns is taken as the final dielectric test of the sample.

To determine the amount of moisture that a treated sample of cloth or paper will absorb under conditions of exposure to water, the sample, which consists of a section of the treated material 6 in. square, is carefully weighed and then immersed in a jar of water and kept at room temperature for twenty-four hours, after which it is removed and all surface water wiped off with a dry cloth. The sample is again weighed. The percentage of moisture absorbed is then figured by dividing the difference between the weight of the sample before immersion. Immediately after the moisture test has been made the test sample is given a dielectric test to determine its relative dielectric strength before and after immersion.



EVEN THE ADHESIVE PROPERTIES OF FRICTION TAPE ARE DETERMINED

It has been found that a good grade of treated cambric such as used for railway motor insulation will absorb from 3 to 4 per cent of moisture under these conditions. This same sample of treated cambric will show a dielectric test before immersion of 9,440 volts and after immersion of 1,780 volts.

In making the above dielectric tests two samples are used, one for the "before immersion tests," the other for the "after immersion tests." These values represent an average of five breakdown tests, which are made at different points on the surface of each test specimen.

To insure a uniform thickness of the built-up mica used principally in the manufacture of railway motor commutators a metal surface plate on which is mounted an indicating micrometer is used. The jaws of this plate are actuated by means of a quick-acting lever. The readings are indicated by a needle on a uniformly divided scale on a large upright mounted dial conveniently located so that it can be read easily by the operator.

The test specimens are commutator mica segments and sheets used to make commutator V-rings and bushings. The material to be tested is placed on the surface plate and is drawn by the operator between the open jaws of the micrometer, while at the same time the controlling lever is pressed down with a uniform pressure, bringing the face of the jaws on the mica board and registering the thickness in thousandths of an inch on the dial. The operation is repeated a number of times over the surface of the sheet, and in general if material varies more than one-thousandth of an inch above or below standard gage it is rejected. Commutator segments that are 0.0005 in. over or under size are rejected.

All built-up mica sheets used in connection with the above work and before they are given this final gaging test are subjected to a light test by placing the sheets on a large pane of glass backed up by brilliant illumination, where they are carefully inspected for foreign particles and light spots. In this manner all impurities are removed from the sheets and the light spots are reinforced and built up, thus securing a clean, uniform product.

Mica cells for insulating railway motor field and armature coils are tested in order to weed out the defective sections due to poor workmanship and material. The apparatus used is a special testing machine built by the Westinghouse Electric & Manufacturing Company. The roll of composite material is mounted at one end of the machine as shown and as it unrolls the sheet passes over a plate and under two rows of spring-supported contact fingers about ¼ in. apart which are staggered, so that they cover the entire width of the sheet as it is fed through the machine. The material is subjected to a voltage test ranging from 1,000 to 10,000 volts, depending upon the grade of the material being tested, by connecting one side of the test circuit to the plate of the machine and the other to the sliding contact fingers. When a defect in the sheet is located by the material being punctured by the high-voltage test the machine automatically stops. The defect is plainly stenciled and the machine is again put in operation. This test insures the selection of a good grade of material for winding coils free from electrical defects and able to stand the final high-voltage test given the completed motor before shipment.

To eliminate the defects in connection with the commercial production of treated materials an experimental treating tower is used to treat materials on a larger scale than is possible by using strictly laboratory methods. This tower, which is under the direct supervision of the research laboratory experts, consists of a motor-driven series of rolls over which the material is drawn at from 10 to 40 in. per minute and is fitted with a combination of treating vats so arranged as to coat the material on either one or both sides, depending upon the requirements to be met in the factory. The tower is provided with a steam-heated chamber, the temperature of which can readily be adjusted and controlled to secure the range of baking temperatures, which will vary with the different grades of baking varnishes used in the treatment of the cloths and paper. This tower has greatly facilitated the commercial productions of the various grades of treated paper or cloth.

Preparing for Pageant of Progress

Extensive Terminal Facilities Have Been Built at the Municipal Pier in Chicago by the Chicago Surface Lines to Handle the Large Crowds Which Are Expected July 30 to Aug. 14

CHICAGO is to have a Pageant of Progress on July 30 to Aug. 14 which is expected to approach a World's Fair for exhibits and interest. It is to be held on the mile-long Municipal Pier, used primarily for shipping purposes but including at its outer end a large recreational center. The entire upper level and outer end of the pier are to be used in the pageant.

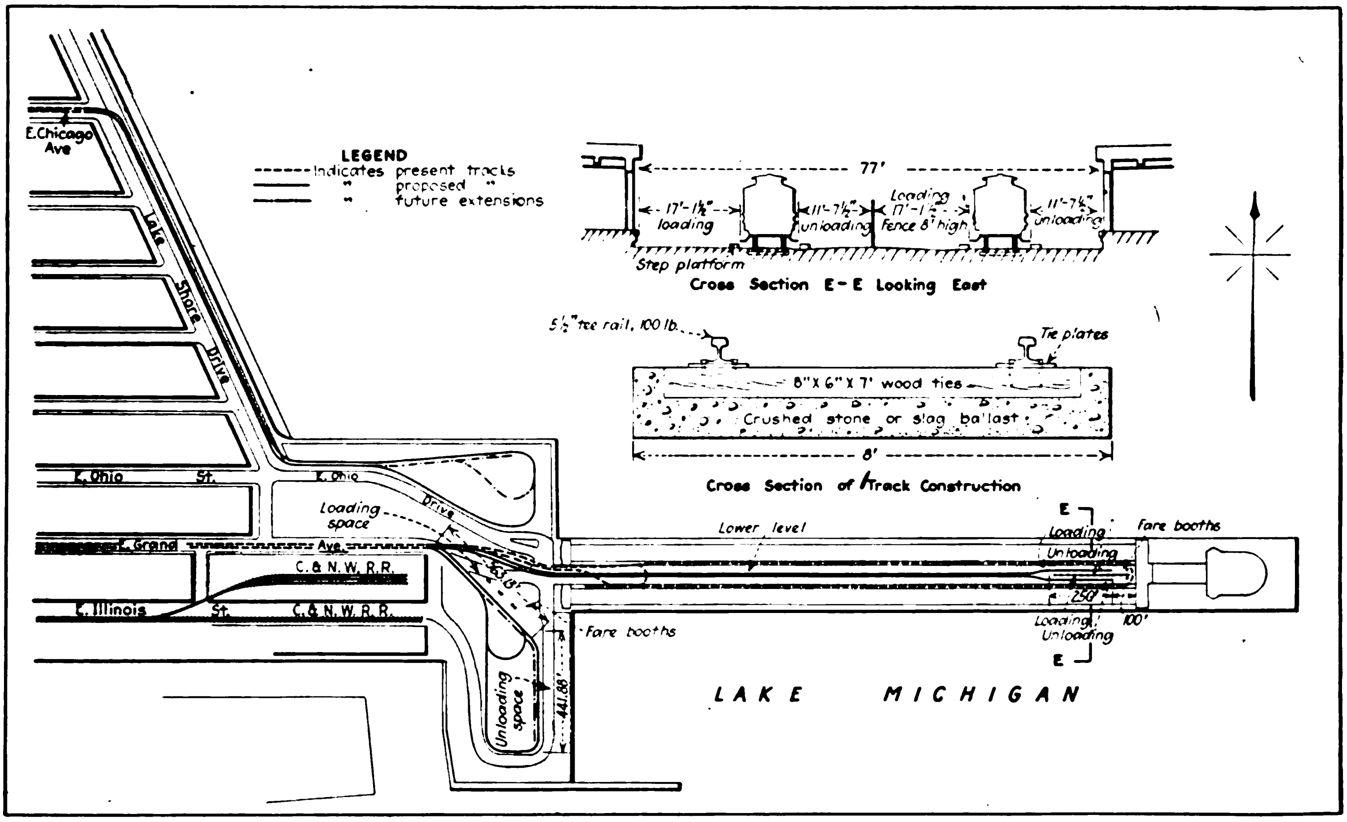
The Chicago Surface Lines built an extension to its Grand Avenue line at the time the pier was erected, extending the tracks out to the far end of the pier to serve directly the people using the recreation center. These tracks were built on the upper level of the pier, one track on either side with a loop at the outer end, and another loop at the land end of the pier for short-routing in winter. In making arrangements for the pageant, the city authorities desired to have the complete use of the upper level of the pier and therefore required the Surface Lines to remove its tracks from the upper level and re-lay them through the center of the lower level or main driveway. The entire work of tearing up the track and rebuilding it, largely from the same materials, on the lower level was completed in twenty-eight days, including the construction of extensive additional terminal facilities at the approach to the pier. Altogether 2¾ miles of track were laid, most of which was of the open-type construction.

In the construction of the tracks extensive use was made of machines to save labor and speed up the work. Three electric shovels were simultaneously employed. The first took up the asphalt which was hauled away. The second excavated the crushed stone used underneath the paving and placed it along one side of the trench for reuse. The third shovel then dug out the trench to the subgrade. Steam rollers were used to roll the subgrade and the 8 in. of crushed stone placed underneath the ties.

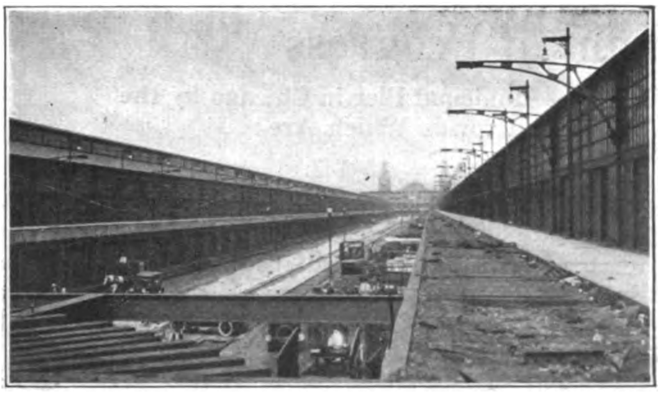
The 100-lb. T-rail and the wood ties were expeditiously transferred from the old to the new location by simply sliding them down ramps. The gravel ballast which had been used under the ties on the upper level was transferred to the lower level by shoveling into rough troughs which carried it to the edge of the lower track trench. Except for the fact that this transfer of gravel ballast took place on a rainy day, which changed the angle of repose of the material, it would have been possible to discharge the ballast directly into the lower trench. As it was, however, the pitch of the trough had to be steepened and the ballast discharged along the side of the trench, whence it was distributed. An Ingersoll four-tool air tamper, a Buda two-tool direct-current electrical tamper and a Jackson two-tool alternating-current electrical tamper were used in tamping the tracks.

The type of track construction used on the pier is largely shown in the cross-section in the accompanying drawing. The six-bolt Weber joints used on the upper level were reused below. Pin-type bonds were used and were placed under the fish plates in the open tracks and outside the fish plates where the track was to be paved.

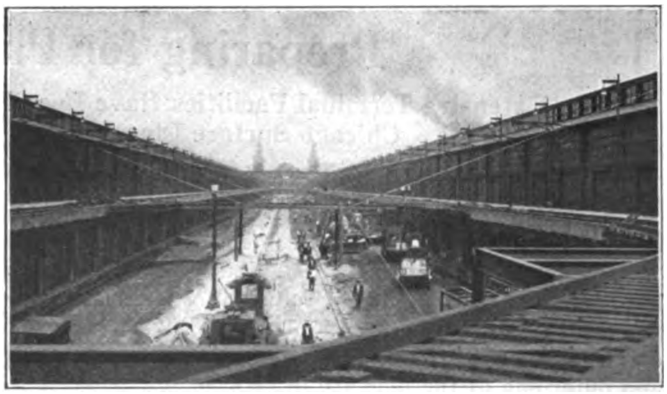
Terminal facilities for this track extending out on


E. Chicago Ave
LEGEND
------Indicates present tracks
" proposed "
" future extensions
Lake Shore Drive
E. Ohio St.
E. Ohio Drive
Loading space
E. Grand Ave.
C. & N. W. R.R.
E. Illinois St.
C. & N. W. R.R.
Unloading space
441.88'
Fare booths
77'
17'-1½" loading
11'-7½" unloading
Loading 17'-1½"
Fence 8' high
11'-7½" unloading
Step platform
Cross Section E-E Looking East
5½" tee rail, 100 lb.
Tie plates
8" X 6" X 7' wood ties
Crushed stone or slag ballast
8'
Cross Section of Track Construction
E
Lower level
Loading
Unloading
Fare booths
250'
Loading, Unloading
100'
E
LAKE MICHIGAN

LAYOUT OF NEW TRACK AT CHICAGO'S MUNICIPAL PIER, WHICH PROVIDES THREE TERMINALS FOR HANDLING CROWDS



The Street Car Tracks Were Removed from the Upper Level to the Center of the Lower Level of the Pier



Looking Down the Center of the Pier. The View Shows New Track Under Construction and Method of Suspending Overhead

the Municipal Pier were provided by widening out the devil strip, stub-ending both tracks and providing a double crossover at the approach to the terminal. Each of these track ends has a capacity for five cars and the double crossover will make it possible to route the cars into either stub. Unloading will take place on one side of either track while the loading takes place on the opposite side.

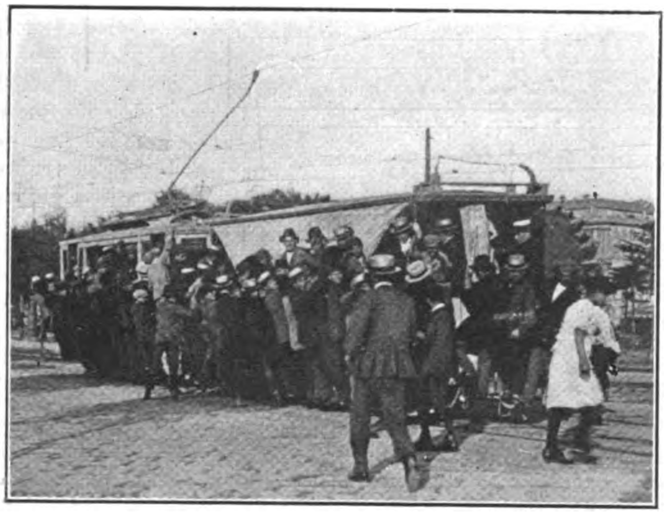
On the upper level tracks the trolley was supported directly on steel brackets attached to the building and extending out over the tracks. When the overhead for the new track on the lower level was erected the old trolley wire was taken down, and these same brackets were used to support long span wires extending across the center driveway to the bracket opposite on the other building. The double trolley was suspended from these cross spans, over the lower level tracks. These span wires are about 100 ft. long but are under very little strain, as there is so much sag. Standard ⅜-in. stranded steel span wire was used. A wood strain insulator at the bracket, another adjacent to the trolley, and the trolley ear, provide triple insulation. This overhead construction is shown in accompanying views.

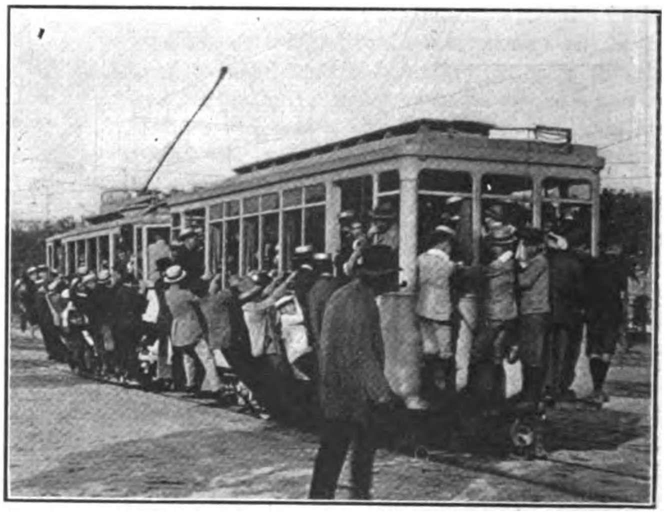
In addition to the stub-end terminal facilities at the outer end of the pier, the terminal capacity of the Grand Avenue line, which has served the pier alone heretofore, was greatly increased by the building of a long and short loop in front of the pier. This will be used particularly during the pageant, as the crowd, in order to see the exhibits, will leave the cars at the shore end of the pier and walk down one side to the far end and back on the other side. This will bring the principal loading and unloading requirements at the shore end of the pier. The short loop in the new terminal will be used when there is light traffic and the long loop only when traffic is heavy. Under heavy traffic conditions the cars will stop for unloading at the space indicated for that purpose on the accompanying drawing and then pull up to a new stop for loading.

The capacity of the surface lines to handle the expected crowds was also materially increased by extending the Chicago Avenue line down the lake shore and terminating it in a large loop in front of the pier. This track extends in the parkway adjacent to Lake Shore Drive for a distance of five blocks along the lake shore and is the only piece of track the Surface Lines has immediately adjacent to Lake Michigan. This track is almost entirely of open-type construction, employing center poles for the overhead along the parkway. It is planned to install cashiers' booths with fare registers or turnstiles and establish a prepayment area or sell tickets to speed up the loading.

They Crowd Them in Italy

MARQUIS FERDINAND CUSANI, a member of the visiting Italian delegation of engineers, provided the illustrations from which the two accompanying halftones were made. In presenting these for publication for American readers, Marquis Cusani remarked that this would give proof that the United States was not the only place where it has become necessary to load street cars to their ultimate limit.



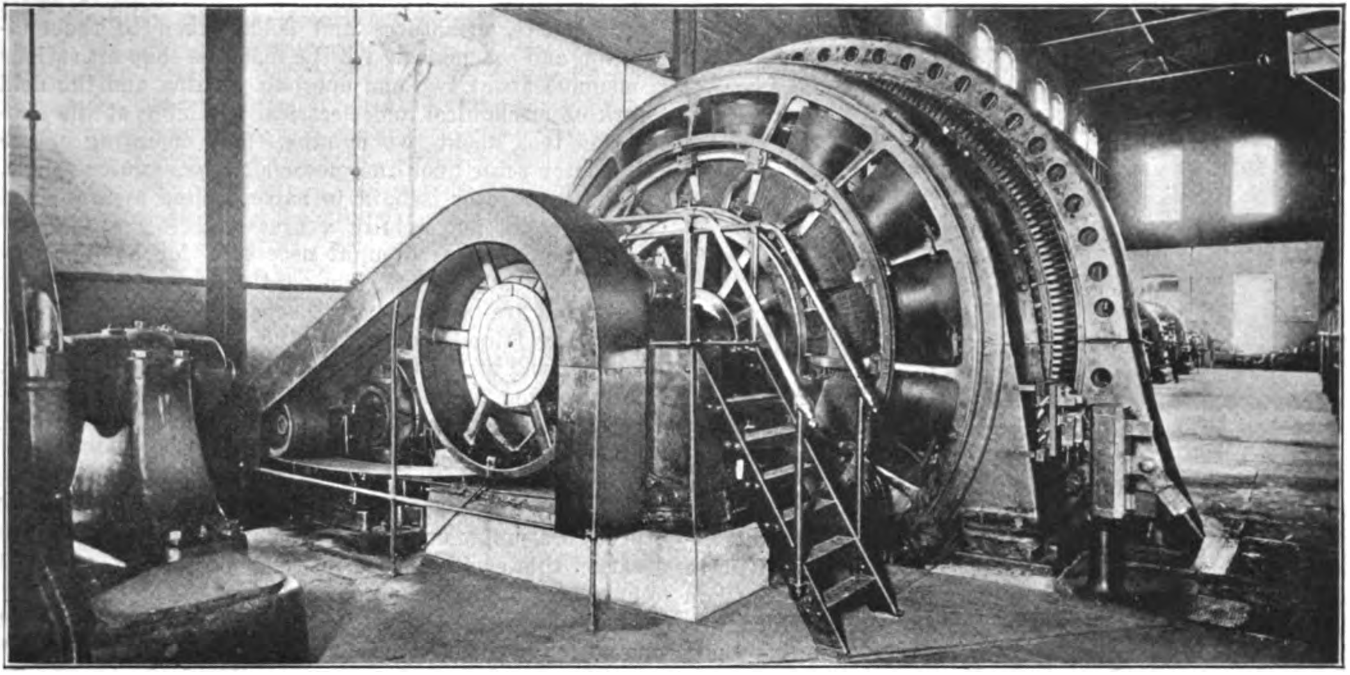


"Compression Des Voyageurs," as the French Express This Italian Scene

Railway Motor-Generators in Winnipeg Rebuilt

Three Old Direct-Current Generators and Two Alternators Direct Connected to Corliss Engines, Already in the Shadow of the Scrap Heap, Reassembled Into Two Motor-Generator Sets—Additional Capacity Has Been Obtained

BY W. NELSON SMITH
Consulting Engineer Winnipeg Electric Railway



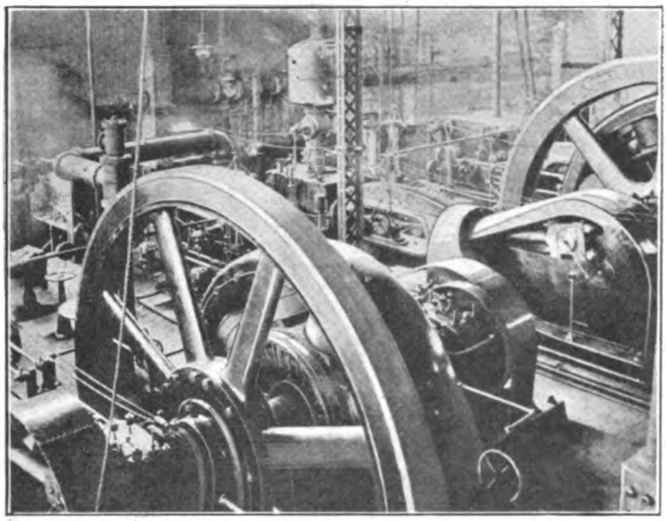
MOTOR-GENERATOR SET REBUILT FROM OLD GENERATORS
One 800-kw. alternator in the center operating as a synchronous motor driving two 400-kw. direct-current generators for three-wire service.

IN AN article published in the ELECTRIC RAILWAY JOURNAL for March 26, 1921, the writer describes the rearrangement of the substation equipment and the trolley distribution system of the Winnipeg Electric Railway. In the course of changing from two-wire to three-wire operation, for the purpose of electrolysis mitigation, additional motor-generator equipment became necessary. The prices asked and the time required for delivery by manufacturers during 1918 and 1919 were so unsatisfactory, however, that we made a study of the possibilities of converting some old station equipment to this new use and succeeded in accomplishing the desired results within the required time and with a small expenditure of additional capital.

The steam plant that had constituted the original source of the company power supply, located on Assiniboine Avenue, was permanently closed down in the spring of 1918. It dated back to 1898 or earlier and was fitted entirely with engine-type generating units, both alternating and direct current. The alternating-current units had been superseded since 1911 by a modern turbine power station which relays the hydro-electric system that has supplied nearly all the company's power since 1906. The old direct-current steam units had since been used only on rare occasions, such as heavy blizzards.

The engine-type direct-current generators comprised one 850- and two 400-kw. machines, the latter shown in an accompanying illustration in their original condition in the old generating station. The former ran at 85 r.p.m. and the two smaller machines at 100 r.p.m. Among the engine-type alternators there were two 800-kw. machines operating at 90 r.p.m. The fact that the speeds of the direct-current units were so near those of the alternating-current units immediately suggested the possibility of yoking them up together, with one 800-kw. alternator driving the 850-kw. railway generator, and the other 800-kw. alternator driving the two 400-kw. generators as a three-unit machine. There was no doubt that an 85-r.p.m. railway machine would generate 575 to 600 volts when run at 90 r.p.m., and a test performed for the purpose showed that each of the 400-kw. railway machines could generate 575 volts at 90 r.p.m. With these facts established, it appeared feasible to create an addition to the motor-generator equipment of the company to the extent of at least 1,600 nominal kilowatts out of equipment on hand. The engineering problem was thus reduced to the mechanical design and assembly of these machines as motor-generators, on suitable shafts and bearings. The new substation at St. Boniface was then being constructed, and provision was being made for space for a railway motor-generator to take care of the trolley lines east of the Red River. It was thought worth while to reconstruct a three-unit machine for the substation out of the two 400-kw. generators and one 800-kw. alternator.

The old engines on which the two 400-kw. machines were mounted were of the cross-compound Corliss type. One of them was of so old a pattern that the engine frames and the pillow blocks were in separate pieces bolted together, and this suggested utilizing the two engine pillow blocks as the center bearings of the three-unit machine, between which the alternator would be mounted as a motor. A pattern of a ring-oiling bearing was found in a local foundry which proved to be easily adaptable for the two outboard bearings required. The shaft from the oldest Corliss engine was found to be just long enough to provide shafts for mounting the direct-current generator armatures, after being cut in half. It remained to find a suitable central shaft on which to mount the rotor of the alternator which was now to be turned into a motor. An old engine shaft was discovered at another machine shop, which was just large enough so far as its strength was concerned, though not sufficiently large in diameter to fit the hub of the alternator rotor which had been fitted to a 22-in. engine shaft. This fit was accomplished by providing a heavy cast-iron bushing, and the remaining necessary elements were two cast-steel face couplings and the necessary keys, with some smaller cast-steel bushings for filling out certain places on the generator shafts that were too small for the direct-current armature fits. How these elements were all assembled to create the newly reconstructed three-unit machine is shown in an accompanying illustration, and another view shows the finished machine operating in the substations.



RAW MATERIAL FOR REBUILT MOTOR-GENERATOR SETS

Corliss engine-driven units in the old generating station, one of two 400-kw. direct-current units in the foreground, and one 850-kw. direct-current unit in the background.

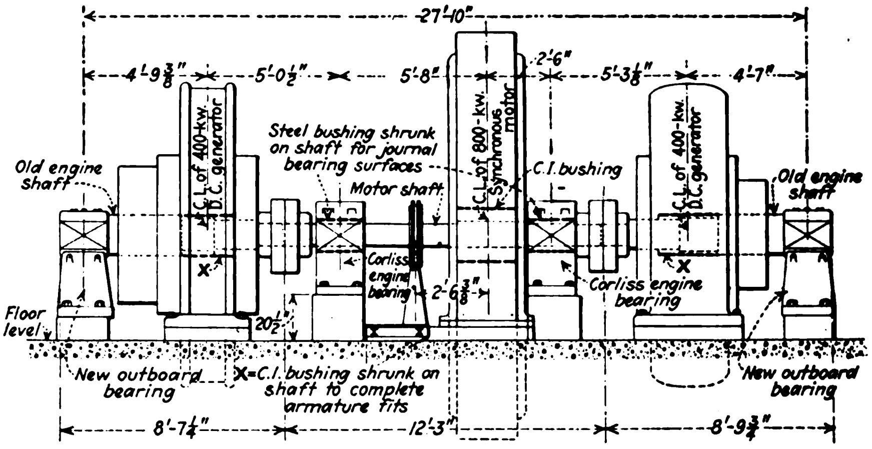
The order of operation was as follows: The flywheel of the oldest Corliss engine connected to a 400-kw. direct-current generator was taken off the shaft, the crank disks pulled off and the old engine frames separated from the pillow blocks. The armature of the generator was then pressed off the shaft, and the latter was sent to the machine shop to be cut in two, turned up for coupling seats and journals and fitted with the necessary bushings and keys for completing the altered armature fits. The other Corliss engine was of more modern design, and it was thought best to save it for possible sale, so that the shaft was dismantled, one crank disk was pulled off and the armature was removed.

When the two new armature shafts were ready they were brought back to the power plant, each with its half-coupling and the necessary keys, and the two direct-current armatures were then pressed on. Meantime the central piece of shafting was also fitted with the heavy bushing of 22 in. external diameter for the hub of the rotor of one of the 800-kw. alternators, the cast steel bushings for forming new journal bearings upon it, and the other halves of the couplings. The new outboard bearings were then completed and all the parts, bearings, shafts, armatures and fields taken to the substation and assembled. All the machine-shop operations consumed about two and one half months and the field work of mechanical and electrical assembly at the substation took about two months. The mounting of the alternator rotor upon the motor shaft was quite simple, because the rotor is built in halves bolted together and therefore did not require a press fit.

No bedplate was thought necessary for holding this machine in alignment. The stationary parts are very heavy and are bolted down to separate foundation piers which are joined together at the bottom by masses of concrete and at the top by the reinforced-concrete floor. The machine foundation piers all rest on a single concrete slab about 32 ft. long, 22 ft. wide and 1 ft. thick, reinforced with old 60-lb. rails.

The exciter for the field of the alternator is a 30-kw. slow-speed machine, which had formerly been belted through a pulley on the engine shaft. In the new substation this exciter is driven through an inclosed silent chain by a 40-hp. induction motor.

The old pillow blocks are fitted with the four-part babbitted bearings and adjusting wedges with which they were originally provided, so that close adjustment is possible. The two new outboard ring-oiling bearings are adjustable vertically by means of shims and horizontally by means of adjusting bolts.



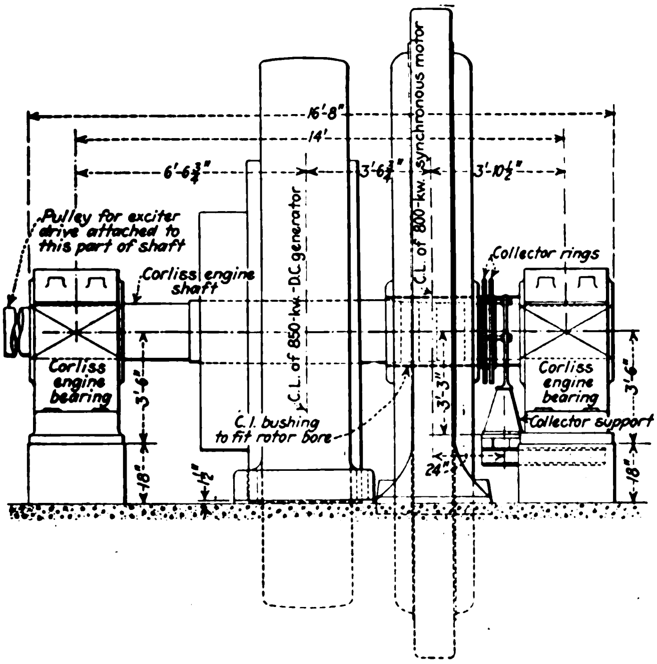
ASSEMBLY OF THREE-UNIT MOTOR-GENERATOR SET SHOWN IN ANOTHER ILLUSTRATION

The bearings of the old Corliss engine were used for center bearings, and two new bearings ordered for outboard bearings. The old Corliss engine shaft cut in two served for the two direct-current machines. A second-hand shaft was found for the alternator. Cast-iron bushings of suitable diameter were shrunk on these shafts to fit the bore of the three machines, and steel bushings were used to enlarge the shaft and provide new journal surfaces in the center bearings. Note the concrete pedestals or pads necessary to bring the bearings and machines in correct alignment.

The machine went into permanent operation about Sept. 1, 1919, and has since given very satisfactory service excepting for a period of several weeks during the summer of 1920, when one of the main pillow-block bearings burned out, owing to a failure of the lubrication.

The two generators when running in parallel operate together much better now than they ever did when they were mounted on separate steam engines in the old steam plant. Occasionally they run two-wire, but the usual operation is three-wire with the generators in series.

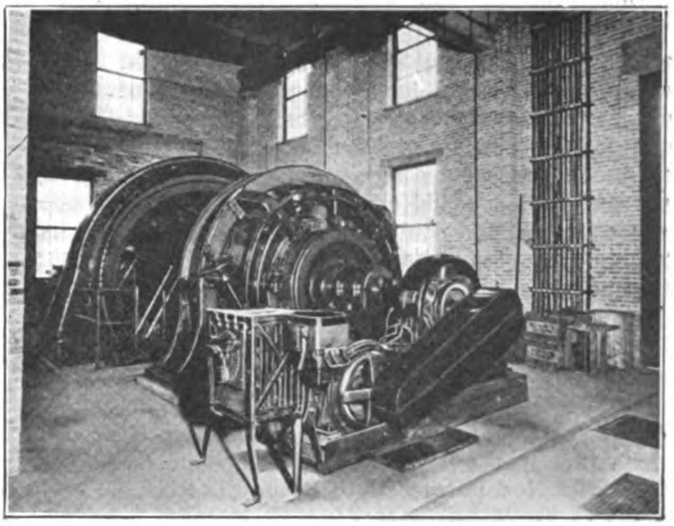
The success of this reconstructed motor-generator set was sufficiently marked to justify the conversion of the two remaining engine-type machines into a two-unit motor-generator. It was therefore decided to scrap the 1,200-hp. Corliss engine which had been driving the 850-kw. direct-current generator, excepting its armature shaft and main bearings. Careful measurement had indicated that if the flywheel, eccentrics and crank disks were removed from the engine shaft there would be just room enough in the space formerly occupied by the flywheel to mount the rotor of the second 800-kw. alternator and at the same time provide sufficient space in the pit for shifting the alternator stator to uncover either field or armature for inspection or repairs. Fortunately, this could be done without moving the heavy direct-current armature from its position on the shaft, for it is about 10 ft. in diameter, weighs something like 36 tons and had required a force estimated at 400 tons to press it on the shaft. The shaft and bearings being therefore on hand and all made to size, the mechanical operations were simple and consisted in cutting away all unnecessary metal from the heavy cast-iron engine-frame housings in which the main pillow-block bearings were set; taking off the 50-ton flywheel with the eccentrics and crank disks; cutting a new keyway for the hub of the alternator rotor; providing a cast-iron bushing of about 22 in. inside and 24 in. outside diameter and long enough to carry the rotor hub and the collector rings, and a suitable bushing to fit on the external shoulder formerly occupied by one of the crank disks, where it was decided to mount the 60-in. pulley for the belt drive to the exciter. The remainder of the engine was sold for junk.



ASSEMBLY OF TWO-UNIT 800-KW. MOTOR-GENERATOR SET SHOWN IN ANOTHER ILLUSTRATION HEREWITH

The 850-kw. direct-current generator, its shaft and bearings were left untouched. The flywheel and other parts of the Corliss engine were removed from the shaft and replaced by the rotor of one of the 800-kw. alternators, with a suitable cast-iron bushing to fit the rotor bore. Note the concrete pedestals or pads necessary to bring the direct-current machine and the bearings in the correct alignment, while the alternator feet were dropped slightly below the floor level for this purpose.

The layout of this assembly, excepting the exciter drive, is shown in one of the illustrations herewith, and another shows the complete unit including the exciter.



REBUILT TWO-UNIT 800-KW. MOTOR-GENERATOR SET

Built up from the 850-kw. direct-current generator visible in background of another illustration herewith, and from one 800-kw. engine-type alternator serving as a synchronous motor.

No electrical changes were made on the generator. This machine, as well as the three-unit set, is started from the direct-current end. Work on it was started Feb. 1, 1920, and the rebuilt machine was ready to turn over early in July. It went into regular operation in October, 1920.

As in the case of the first reconstructed machine, the only trouble that developed was in the bearings, one of which had a crack in the babbitt of the lower portion, inherited from its steam-driven service, and after several ineffectual attempts to remedy this, the bearing was rebabbitted. There was some further trouble from oil throwing as the shaft was of sufficiently large diameter to make its peripheral velocity greater than in the case of the first machine, where this trouble had not developed. This was finally overcome by the addition of disks inclosed in sheet-metal guards.

Electrically, both these reconstructed motor-generator sets operate perfectly. Mechanically, there are only two or three elements that would be changed if the work had to be done over again. In the case of the three-unit machine it would have been better to have provided cast-iron sole plates about 15 in. deep underneath the two center bearings so designed that they could be readily withdrawn from underneath the pillow blocks, in order to permit the lowering of the pillow blocks when any repairs were required on the center bearings, as this would save the trouble of uncoupling the motor shaft and lifting it out of the center bearings at such a time. It would also have been better to have designed a modern lubricating system for the old engine bearings on both machines, prior to the construction, including the oil-throwing disks required for the 22-in. shaft.

The original cost of the five old generators purchased between 1898 and 1905 was about $93,000. An engineering appraisal of the property made in 1915 had set the present value of these machines at about $41,000, but at the time the steam plant was ordered discontinued these generators were regarded as obsolete. The cost of reconstructing them and setting them in operation, as described, exclusive of foundations, was about $31,000 for labor and material on a wartime basis. In pre-war days the same work would probably not have cost more than $18,000.

Quotations on new motor-generator equipments in 1918 were on the basis of more than $40 per kilowatt at the factory, or say $45 per kilowatt erected in Winnipeg, which would have amounted to about $72,000 of new capital for 1,600 nominal kilowatts. The construction herein described is therefore believed to have saved the railway company more than $40,000 and prevented what would otherwise have been a deliberate waste of valuable equipment, for these machines have proved their title to a new lease of life and are able to render the same service they did twenty years ago.

Impairing and Repairing Street Railway Rates

Owing to the Increase in Commodity Prices the Nickel Fare in 1914 Had Already Become Too Small—Decreases Not Now Possible Until Balance Is Reattained

WALTER H. BURKE has contributed an interesting article on street railway rates to the June number of Stone & Webster *Journal*. At the beginning of this article he points out that even before the war a great many city railway companies could no longer make both ends meet on the universal 5-cent fare. This was the cause of the gradual but steady increase in commodity prices and wages which began in 1896. Statistics of the United States Bureau of Labor show that wholesale commodity prices, rated at 66 in 1896, had advanced to 100 in 1913. Average hourly wages also had increased during the same period from 69 to 100. On the other hand, street railway fares on the whole had decreased during the period, due to various factors, including the extension of the use of free transfers, the sale of tickets at reduced rates, etc. Thus, the beginning of the war found the industry as a whole like a man, already in poor health, who suddenly contracts an acute illness.

The condition since 1914 is shown by the chart. The index numbers for commodity prices and of wages in this chart are from publications of the United States Bureau of Labor Statistics. The fares are an average for all cities in the United States of more than 50,000 population except New York City and are weighted according to population. The data on fares were prepared by Prof. A. S. Richey. The latter portion of Mr. Burke's article, considerably abstracted, follows:

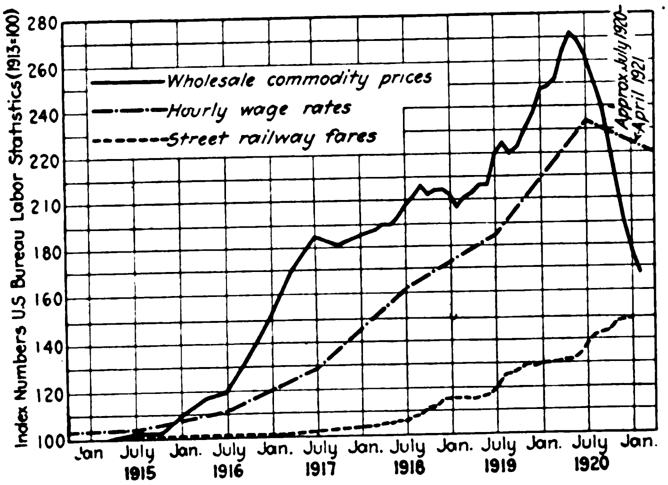
The point to be particularly noted from the chart is the lag between railway fares and other prices, no appreciable increase having been shown in the former until the middle of 1918, *i.e.*, a few months before the close of the war, whereas commodity prices had practically doubled in the meantime, and the hourly wage rate had advanced some 65 per cent. This in a nutshell was the trouble with the street railway situation.

The future trend of prices is uncertain, but economists quite generally agree that for a number of years at least the average will be from 50 to 60 per cent above pre-war figures.

Assuming a 50 per cent higher price level for the future, it is evident from the chart that street railway fares, even with the increases of the past few years, still are short of what they should be to meet the permanently changed conditions. This, however, takes no account of the tremendous discrepancies of the past five years between the prices of street railway transportation and those of other commodities and of labor. This is a disparity which must be compensated for in the long run if the companies are to go along on a comparable basis with other industries. The fact must not be lost sight of that while the increases in fares of the past few years or so have helped conditions, they have by no means repaired the damage which resulted from failure to allow this relief more promptly. This can be accomplished only by continuing the increases in force for such period in the future as may be necessary.

The under-development of the properties during recent years, in the face of the rapid and continued growth of the communities served, means that, in addition to refunding their short-term obligations, a tremendous amount of new money will be required to bring them back to pre-war standards of development and enable them to keep pace with future city growth. What rate of interest the street railways must pay to get this money can only be guessed at. If, as generally agreed, from 7 to 8 per cent was the minimum fair return for the public utilities before the war, and if we are now to find ourselves on a 50 per cent higher price level than at that time, then, to use a rough yardstick, the fair rate of return becomes at least 10½ to 12 per cent.

The above situation is emphasized because recently there has been some scattered sentiment in favor of reducing existing fares on the general theory that "the price of everything else is coming down and the street railways should take their medicine along with the rest of us." It is only necessary to refer again to the accompanying chart to show that for several years past the street railways have been "taking their medicine" in double doses at a time when other business has been getting the largest profits in its history. It is just now approaching what might be termed the convalescent stage of its illness. It would have been to the best interests of all concerned if, beginning in 1916, street railway fares had more nearly kept pace with the increases in other commodity prices and wages. Unfortunately, this policy was not followed, and the penalty is the continuance of higher prices for a longer period than would otherwise have been necessary, assuming that the street railways are to function and meet the needs of the public for adequate and dependable transportation service.



RELATIVE INCREASES IN WHOLESALE COMMODITY PRICES, HOURLY WAGES AND STREET RAILWAY FARES

Nevertheless, there are a great many encouraging factors in the present outlook. The fundamental soundness of the business has been proved without doubt. There are few if any other industries which could have withstood such a test as the street railways have had to face during the past five or six years. The companies have no large inventories, carried on their books at inflated war prices, which must be liquidated. Again, while the street railways have been forced to suspend practically all new development work for five years past, their new construction work of the future will require a substantially smaller capital expenditure than would have been the case under war conditions. The war has naturally stimulated previous efforts to effect economies in operation, like the Birney car. Finally, the general public is coming to appreciate that the street railway fills a vital need because it furnishes a service which the cities cannot do without. As a result of the companies' efforts a great many of their patrons now own securities in the properties, and this is one of the most effective means of securing and holding the public interest. The regulatory authorities also are devoting their efforts to a correct solution of the problem; the same is generally true of the press. It is this co-operation which will accomplish more than anything else toward working out the street railway situation on a permanently sound and satisfactory basis, fair alike to the public and to the companies.

Public Service Railway Offers Valuation Argument

Extensive Brief Which Is Presented to the New Jersey Board of Public Utility Commissioners Gives All Details on Which a Value of $200,898,906 Is Claimed and 10-Cent Fare Petitioned

IN ONE of the most complete valuation briefs which have so far made their appearance, the Public Service Railway of New Jersey presents its argument to the New Jersey Board of Public Utility Commissioners to support its own figure of valuation and its petition for a 10-cent fare. The brief contains a complete review of the total valuation history of the Public Service Railway, giving all details of previous valuation, and it is replete with arguments, some of them novel but convincing, to support contentions for various elements of value.

Commencing with a description of the Public Service Railway property, the brief then takes up the argument that the property is private property and on this has to say:

> The reason for here stating them (these arguments) is simply to plant upon them the further proposition that the value for rate purposes of a street railway property—the same being private property—must be determined in accordance with established legal principles, and is the value of the property and not merely a sum of money, on which, in the discretionary opinion of the commission, the owner of the property should be permitted a return.

The various elements of value which the brief considers are:

1. Structural value.
2. Value of the land.
3. Going value, which includes:
    - a. Development costs including:
        - a1. Money expended in attaching the business.
        - a2. Money expended in tuning up the property.
        - a3. Carrying charges until the property becomes self-supporting, including deficit of earnings.
    - b. Consolidation of a number of small properties into one property under one management.
    - c. Superseded property due to advance in the art, obsolescence, inadequacy, etc.
    - d. The value imparted to the property by reason of its favorable location, referred to by the court as its adventitious value.
4. Value of the power contract (discussed under a separate heading).

Considerable attention is paid to the item "Going value," for which an allowance of 30 per cent of the physical value is claimed. In connection with the element of going value due to consolidation of the smaller properties, the brief has to say:

> The properties necessarily purchased or leased to effect this consolidation were not so purchased or leased at the cost of their physical parts. Their "going value" was recognized and it entered into the price which this company paid for them. This cost of consolidation was a cost necessary to the creation of the existing railway, and it added largely to the value of the property which is to be determined in this proceeding.

Superseded property and attaching business to the lines of the company are also supported by argument. The cost of training a staff to make it familiar with the needs of the communities served and conversant with the routes and rules of the company, the rules of the commission, the traffic rules and ordinances of the communities and the various intimate details of operation that come only from experience and practice and in the perfection of the company's personnel in the knowledge of its duties is portrayed. The report says "an example of the nature of this cost is found again in the fact that prior to the putting in service of the so-called safety cars, trainmen were given five days' course of actual operation on cars that were not transporting a single paying passenger. Through the year with its frequent changes in both means and methods of operation, this cost has enlarged, and there is nothing to show for it in the physical property inventory. It is a part of the cost of the present railway, and its results constitute an element of value in that railway."

The power contract, as a separate element of value, is supported in the same manner that it was supported in the appraisal made by Ford, Bacon & Davis outlined in ELECTRIC RAILWAY JOURNAL April 23, 1921, page 767. The state valuation and the Cooley appraisal are reviewed. An argument of the significance of present value is followed by a summary of all the valuations which have ever been made of the property, with some of these modified to make them represent present-day figures.

The brief goes into detail in discussion of the qualifications of the various witnesses who have appeared before the board in connection with the valuations which have been made.

The inventory, unit prices, general contingencies, engineering and superintendence, law expenditures and administration, interest during construction, taxes during construction, organization and development, cost of money, promoters' remuneration, working capital and material and supplies, franchises, land, non-deduction of depreciation, the property of miscellaneous subsidiary companies, historical costs, are all chapter headings under which extensive argument and citation of cases are given. This leads the brief to the statement of the value of the property as follows:

> The value of the property of the Public Service Railway fixed in the report of the engineering concern (Ford, Bacon & Davis) employed by the state is $125,000,000, and under the acts of the Legislature this is the presumptive value of the property.
>
> The only evidence before the board that can possibly overcome the legal presumption in favor of $125,000,000 is the Cooley appraisal, as brought down to date, and the testimony of the numerous expert witnesses sustaining and supporting the same.
>
> The value of the property of the Public Service Railway is:

Physical property with additions to May 31, 1921 (Cooley appraisal)	$149,922,236
Development cost, going value, including location and consolidation values (30 per cent of structural cost, as allowed in the Passaic gas rate case)	44,976,670
Value of power contract (the lowest value placed upon it by any witness)	6,000,000
Total value	$200,898,906

The brief then points out that the value of the property must be found independently of the rate of fare and allow the return upon the value of the property as found. "This does not mean," says the brief, "that this company should necessarily be permitted to charge the highest rate that the traffic will bear. We are now only discussing the relation between the value of the property and the rate of fare and pointing out that the value of this property cannot be reduced because there is no rate that will net a return upon it. . . . We suppose that the New York subway constructed out in the country somewhere between two small places would be so expensive that no rate of fare would net a return upon it. But that is not this situation. This property is not overbuilt. It is not constructed in the Sahara Desert; it is right here in New Jersey, connecting the principal cities of the state and furnishing the only complete system of urban transportation available in all these great populous centers."

The brief ends with a plea for a just and reasonable fare and recites various cities in the country in which a 10-cent fare is charged and gives supporting testimony from officers of other railway companies which charge 10 cents. In the discussion on rate of fare, the brief takes up the claim of people that the company has valuable rights because it is allowed to do business in the streets. The brief continues:

> It is just as sensible to talk about the valuable rights of the policeman because he is allowed to perform his service to the public in the street, or the fireman because he is allowed to perform his services in public places. The policeman and the fireman perform honorably and are paid for their labor by the public, notwithstanding the fact that such labor is performed in the public streets. The street railway company also performs a valuable service in the public streets, and it should be paid for its service, notwithstanding the fact that it is performed in the streets. That is all the company seeks to obtain in this case, and yet the idea is continually advanced that perhaps the company ought not to be paid or ought to be paid less because of this valuable "privilege" it enjoys.

The entire brief is filled with innumerable citations from court and commission decisions and with many direct quotations from the testimony of witnesses before the board.

Letter to the Editors

Why Baltimore Departed from the Standard Car

United Railways & Electric Company
Baltimore, Md., July 11, 1921.

To the Editors:

The letter published in your issue of June 11 from W. G. Gove, superintendent of equipment, Brooklyn Rapid Transit Company, it seems to me, merits comment, because it fails to recognize the fact that more than one type of one-man car is required because of traffic conditions.

To quote the first phrase in the third paragraph, "it is particularly unfortunate" that the idea of "something different" should be allowed to confuse the need for clear vision on the part of the operating men to develop such types of one-man cars as are essential to meet varying traffic demands.

In the study and discussion that are going on concerning one-man car design, I do not think that those "in responsible charge of executive and operating departments" are concerned with "measuring up" by means of having equipment of their own design in service on their properties. Certainly as far as the situation in Baltimore is concerned, we have conscientiously studied the problem with the idea of providing a car best suited to handle heavy interchange traffic in this city.

If we are to "sell" the one-man car idea in toto in the large cities, we must do so by providing a car that will give adequate facilities for the loading and unloading of passengers. Why should we adhere to the present standard car if improvements can be made? Is it not inconceivable that we have reached a stage of development where initiative on the subject of car design is to stop? This is particularly true where a principle of operation is concerned.

May I repeat again that I am not desirous of entering into a controversy in the matter but endeavored dispassionately to point out what I felt and feel was a development in the design of this car which has been overlooked by the manufacturers and equipment men in their efforts to standardize on a single type of car.

We believe that the car we have just purchased for Baltimore will give higher efficiency and greater economy than the so-called standard type for the conditions we have to meet. As our general manager has recently well stated, the problem before us was that "the public of Baltimore was beginning to show a decided dislike to the safety car on account of the congestion at the entrance and exit point." Appreciating the value of the one-man idea, we decided to correct this manifestly incorrect design. At this point we suggest turning to the cut on the inside back cover of the Electric Railway Journal of July 2, 1921; we think the picture is a good ocular demonstration of just what we are trying to avoid. Here are four persons encumbered with luggage, etc., waiting to board a standard one-man car, while four passengers are ambling gracefully off. This condition is much worse in rainy weather. It is just what we are overcoming in our new design.

And now a final word in reply to my friend Walker's letter of June 15. The standard whereby car design with reference to passenger interchange facilities should be measured is not in cents per car-mile but in the volume of passenger movements in and out of the car. On a line where traffic is heavy and frequent transferring is the rule car-mile earnings do not express the density of use by the public, so that an erroneous conclusion might well be arrived at in setting a standard based on earnings per car-mile.

The proper way to determine what is the best design for given conditions is to put the several types of cars in service under identical conditions and take observations with stop watches, over a sufficient period of time to get average conditions and data, and then compare results. Any other method of arriving at a descision will not be based upon figures and results but upon judgment and opinion.

L. H. Palmer,
Assistant to President.

Metal Ceiling Used for Head Lining on Little Rock Railway

The Little Rock Railway & Light Company, Little Rock, Ark., is using metal ceiling for head lining in repairing and rebuilding some of its cars, where the head lining needs renewal. The metal ceiling, which is the same as used in buildings, comes in 24 in. x 48 in. sheets, and the metal for one car costs about $12. Labor and painting cost about $18. This total cost of $30 compares most favorably with the previous cost of $100 for replacing bird's-eye lining in kind, and the car interior presents a very satisfactory appearance.

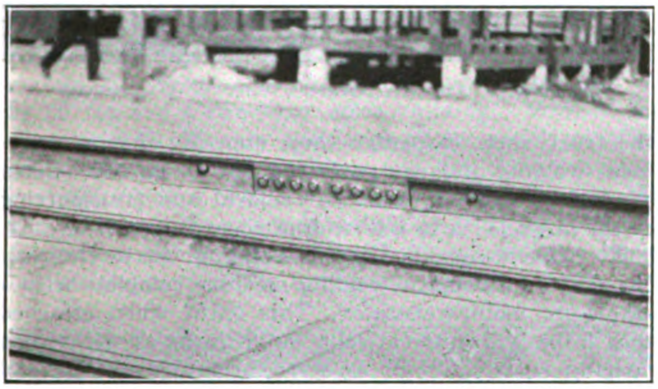
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Tracks Rebuilt on Old Ties

Creosoted Ties Set in Concrete Thirteen Years Ago Used in Place for New Rail—City Raises Street Grade 2 In. to Allow New 7-In. Rail in Place of 5-In. to Avoid Disturbing Base

WHEN the city of Memphis, Tenn., decided to repave South Florida Avenue it became necessary for the Memphis Street Railway to relay its tracks at the same time that it did its part of the paving. The old track had been 5-in. girder, which had been in place since 1908 and was badly worn. The previous paving had been brick and the new paving was to be asphalt. The standard construction of the Memphis system is now 7-in., 105-lb. girder rail for use in asphalt paved streets, and it was decided to use this rail on Florida Avenue.



Thirteen-Year Old Creosoted Ties in Concrete To Receive New Rail

When the old pavement was taken up and the original concrete base and ties uncovered it was found, upon close examination and test by boring, that the original ties were in as good condition as they were when first laid, so far as could be told. These ties were some which had been laid in 1908; they were laid in concrete which was finished off level with the upper surface of the ties. Seeing that the new rail to be put in was 7 in. in place of 5 in. the city authorities were approached with reference to raising the grade of the streets to allow the new higher rail to be put in without removing the concrete foundation and ties, which of course would prove very expensive. It happened that the raising of the grade was beneficial to the city in this case, also, as a particularly high curb had been installed in the first place, and when the grade of the street was raised a normal height of curb was obtained. More material in street paving was used, but it is understood that the electric railway took care of this part as an offset to its saving in not having to take up the old ties and put down new ones.

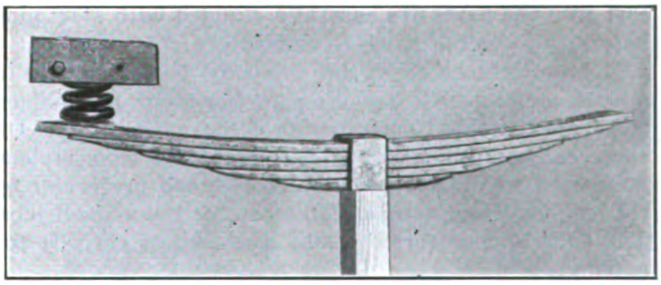
Accordingly, the pavement in the railway area was removed and track labor cleared off the concrete, leveling down to the ties smoothly, the old rail was removed and the new rail installed. Temporary crossovers were laid so that one-half of the street was done at a time. An accompanying illustration shows the appearance of the work after the rail and pavement had been laid on one side and the pavement removed on the other side. This illustration also shows the type of 8-hole joint used on the new construction.

The standard construction used in laying the new rail is to use tie plates on all ties and to use a 26-in. by 10-in. base plate under all joints. A 34-in. 8-hole angle bar is used and this is beaded along the bottom of the plate. The rail is welded to the base plate for the entire length of the base plate, a Cleveland electric welder being used for this work. Screw spikes are used at joints and cut spikes elsewhere.

Improving Riding Qualities

THE Southern Public Utilities Company, Charlotte, N. C., is an enthusiastic operator of one-man cars. claiming that they show reduced operating expenses and allow closer headways and consequently better service. During part of the day, however, these cars operate under light load, but being equipped with springs which are rigid enough to carry heavy loads successfully and heavy enough not to break under such loads, the riding qualities are not exceptionally good when they are lightly loaded.

In an effort to improve the riding qualities of the one-man cars under this condition M. F. Osborne, master mechanic, decided to install a coil spring at each body bearing point, which coil spring would carry the body at light load and would compress so as to allow the semi-elliptical spring alone to carry the body at heavy load. The Charlotte cars are arranged so that the inner end of the semi-elliptical spring is fixed and the car body borne at the four outer ends of the springs. The body formerly rested at these points on blocks of wood 4 in. thick and about 8 in. square, which in turn rested directly upon the free outer end of the springs. To install the coil springs these blocks were reduced in thickness to 3 in., a 5½-in. hole bored in each of them and a coil spring 5 in. long, consisting of five turns of ⅞-in.



Coil Spring Added to Semi-Elliptical Spring wire, placed in this hole and fitted with spring caps, which provide the actual bearing surface. The 2-in. play thus allowed is sufficient for all light loadings of the car and when the car is fully loaded the spring compresses so that the blocks come in contact with the heavier semi-elliptical springs, which thereby assume the load direct.

The improvement in the riding quality is said to have been so great that, unsolicited, patrons of the road have inquired what has been done to certain cars to make them ride better.

An accompanying illustration shows the spring arrangement which Mr. Osborne is now using.

Reclamation Department Shows Large Savings

New Welding Shop and Reclamation Department Installed by Washington Railway & Electric Company Provide Better Facilities for Carrying on This Work—Accurate Cost Records for Work Done Are Being Kept

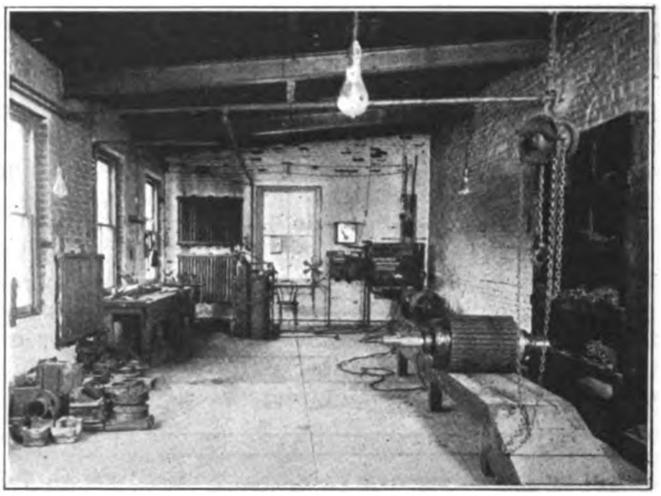
ON ACCOUNT of the rapid increase in the amount of reclamation work necessary at the shops of the Washington Railway & Electric Company, it was decided some months ago to build a larger shop to house the electric welding equipment. The interior of the new shop is shown in the accompanying illustration. It is an addition to the main shop, 34 ft. long by 18 ft. wide, built of brick and well lighted on three sides. The floor is of cement and the roof of galvanized iron provided with large ventilators. An overhead track carries a 1½-ton chain hoist for use in handling heavy parts. Convenient benches, racks, etc., together with the welding equipment, are included.

For electric welding a Wilson "plastic arc" machine that will accommodate two welders is used. In the construction of the building additional room is provided so that additional machines can be added should future needs make them necessary. Since the installation of this machine an accurate cost record has been kept for every job done in the shops and a recapitulation for the first three months of the shop's operation shows a net saving of approximately $2,000 per month with two operators working. Since that time new and different kinds of work have been constantly coming in and it has now been found necessary to increase the working force. Electric welds are made on steel, cast and wrought iron, bronze and malleable iron. In welding cast iron the parts are carefully studded with steel pins before the welding work is undertaken.

At the present time the company is testing out a special metal which has been developed by the Wilson Welder & Metals Company for cast-iron welding. On small sections of cast iron and brass the oxyacetylene method of welding is used, which is found preferable by this company and more satisfactory for these small jobs. The oxyacetylene torch is also used almost entirely for cutting.

A partial list of some of the work being done in reclaiming various parts includes building up axles and armature shafts, repair of truck frames when broken or badly worn, filling in dowel holes in brass and malleable axle-bearing shells when badly worn, building up and welding brushholders when burnt or excessively worn, filling in armature-housing bolt-holes where the threads have stripped, repairing journal boxes and axle-bearing caps, welding and straightening resistance grids when broken or warped, building up axle-bearing collars on brass shells, welding and repairing gear cases and adding metal for rethreading bolts, nuts, center bearings, motor cases, etc.

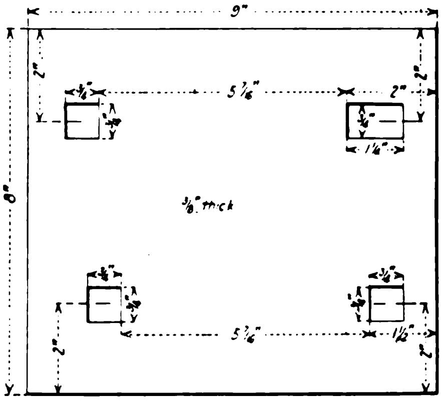
It is frequently desirable to build up or repair parts which cannot be easily transported to the welding shop. In order to take care of this work, leads have been provided from the welding machine with plug-in sockets in the truck shop, carpenter shop, etc. By this arrangement welding of large parts can be conveniently taken care of on the job, and the removal and transporting of the large parts to the welding room is avoided.


INTERIOR OF NEW RECLAMATION SHOP IN WASHINGTON

At present consideration is being given to the purchase of an automatic welding machine complete with a single-arc motor-generator. This outfit when attached to a lathe will automatically build up axles with worn bearing seats, as well as worn armature shafts, and will, in the opinion of the officials of this road, do much better and cheaper work than can be done by hand operation.

A Universal Tie Plate

THE Georgia Railway & Power Company, Atlanta, Ga., uses steel tie plates in all of its construction. Formerly three kinds of tie plates were used to suit the various kinds of rail on the system. The usual difficulties incident to a variety of tie plates, both in the storeroom and on the job, led the company to desire a single tie plate which could be used and, finding none with a spacing of holes which was exactly suitable to its conditions, designed one to fit them. The accompanying drawing shows the dimensions of the new tie plate, which of course can be furnished by any steel concern, with which any rail 5 in., 5½ in., 6 in. can be used. There are no shoulders on this tie plate, it being a plain piece of steel punched as indicated.



UNIVERSAL TIE PLATE USED IN ATLANTA

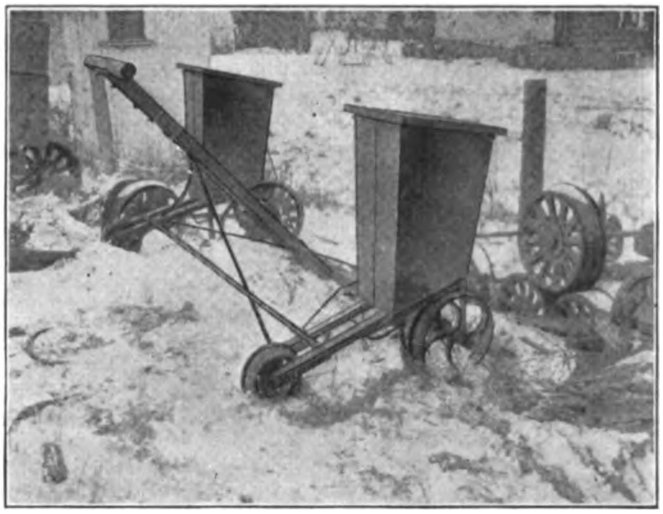
Shop Notes from Newark, N. Y.

Rochester & Syracuse Electric Railroad Has Well-Equipped Shops Where Many "Stunts" for Solving Maintenance Problems Have Been Developed

THE shops of the Rochester & Syracuse Electric Railroad, the offices of which are at Syracuse, N. Y., are at Newark, about 32 miles east of Rochester. Due to the destruction of its Newark shops by fire in 1912 the Rochester, Syracuse & Eastern Railroad, the predecessor of the present company, had the opportunity to rebuild along modern lines. New shops, similar in general plan to the then new Lakeland shops of the company near Syracuse, were constructed early the following year. They were described briefly in an article in the issue of this paper for Sept. 20, 1913, where a plan was reproduced. The views grouped on this page are typical.

These shops have proved to be admirably adapted to the demands upon them and no important changes have since been made. A number of minor improvements have, however, been introduced. Several of these were photographed by a representative of the paper on a visit to Newark several months ago.

The shop property comprises a shop building, approximately 204 ft. by 105 ft.; a carhouse about 240 ft. by 82 ft., and a two-story office building. Most of the shop work is done in one large room, which contains practically all of the machines and has three tracks at one side, two of which are partly over pits. On the side of the pits the floor is depressed 18 in. to facilitate inspection and repair work without unnecessary stooping on the part of the workmen.

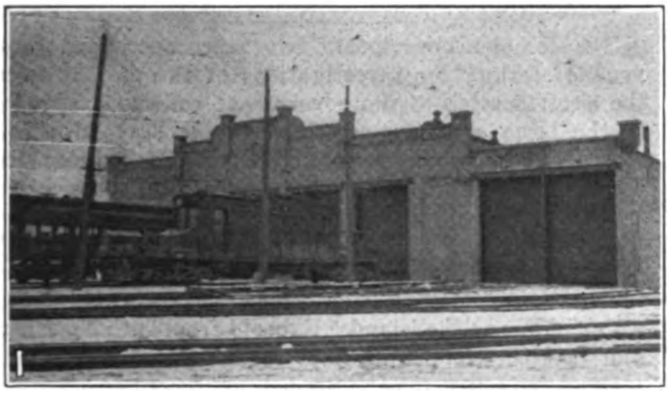


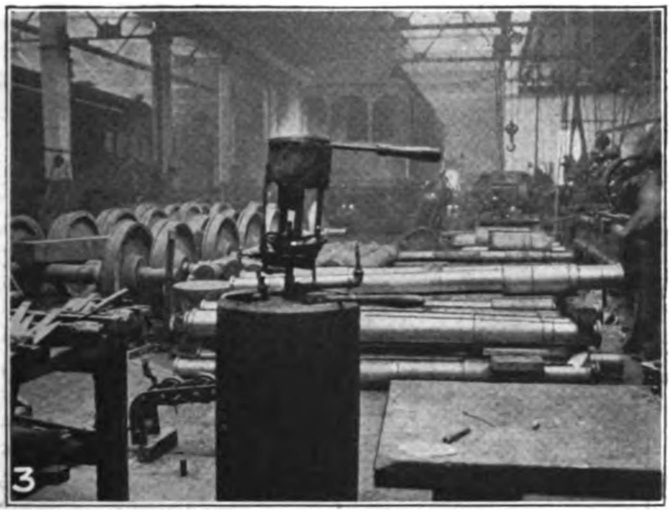
THIS MACHINE SIMULTANEOUSLY SANDS BOTH RAILS

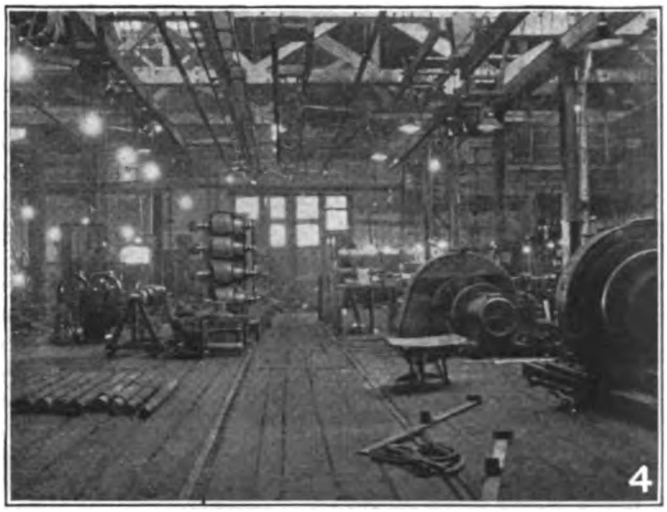
The shop is liberally equipped with labor-saving devices, such as a trolley crane, transfer table, turntable, etc.

For dipping and baking purposes, a combined tank and oven has been constructed in one corner of the machine and erecting shop, as illustrated, being built out of concrete blocks. Over the dipping and baking sections are metal-covered wood lids. A trolley crane bar runs over the two. The oven is heated by means of electric heaters, controlled by snap switches located on the wall behind the oven and visible in the picture.

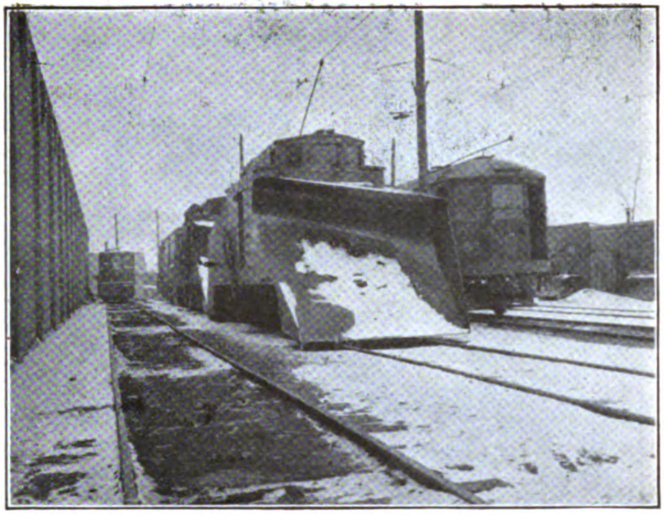
The shop contains no special welding room, but apparatus is taken as required to the work. A convenient



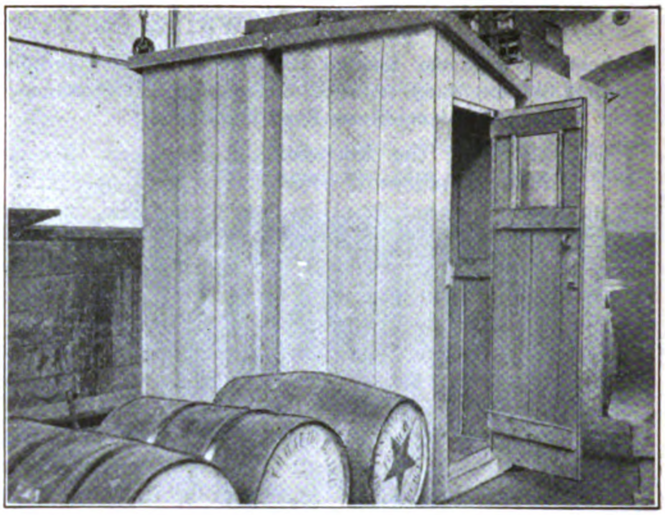




No. 1—ONE OF THE BIG INTERURBANS IN FRONT OF THE MAIN SHOP. No. 2—THE SHOP ADMINISTRATION BUILDING IS ATTRACTIVE. No. 3—A HOME-MADE SELF-CONTAINED OIL HEATER. No. 4—TYPICAL VIEW IN THE NEWARK SHOPS



A REMINISCENCE OF THE SEASON OF HEAVY SNOW



THESE SHELTERS MITIGATE THE RIGORS OF WINTER

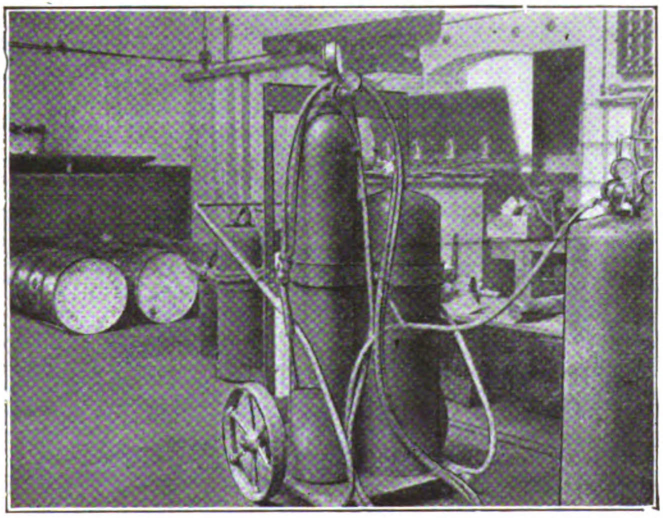
two-wheel truck for carrying a pair of gas tanks has been constructed and has given a good account of itself. As shown in one of the illustrations, it consists of a light steel frame, normally vertical, to which the tanks are held by a steel strap clamp, the weight being taken on a platform just above floor level. A ½-in. steel rod attached to the front of the platform on each side is bent backward to form an extra guide for the tanks and also a handle bar.

For heating soldering irons and solder pots, a home-made oil torch is employed. A frame such as is used with gasoline solder pots is mounted on the top of an air tank, a supply of oil is poured into the air tank and air pressure is pumped up to 60 lb. or so. The oil jet spurts up through a carbureting cylinder, where it is vaporized and ignited. One pumping up of the tank lasts for several days of intermittent work. The outfit is shown in one of the illustrations, in use for heating soldering irons for armature banding.

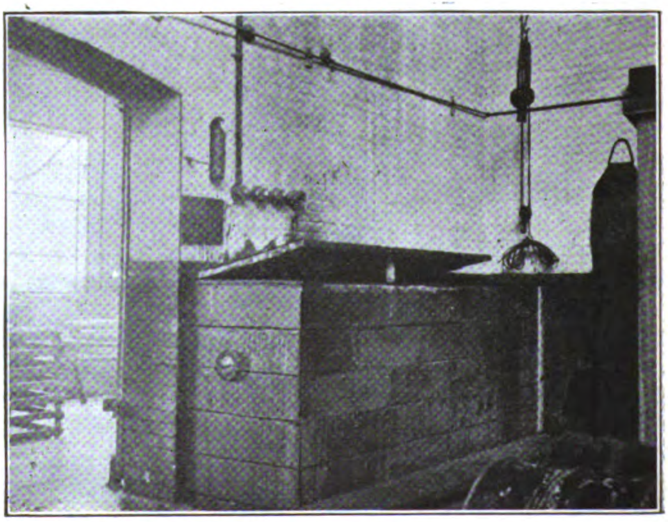
An interesting small job recently put through the shop was the construction of portable shelters for the use of flagmen and others obliged to be out on the line during severe weather. A picture of a pair of these is reproduced. The shelter is made in sections which hook together, four sides, a roof and a floor. Electric heaters are provided to be used in very severe weather. The roof has a frame around the edges which drops over the sides, thus making a watertight joint. The only window provided is in the door. A shelter like this can be taken apart, loaded on any kind of a work car, freight car or truck and quickly transported to the place needed and set up.

As the pictures indicate the writer's visit was made before the snow left the ground. He was able to snap one of the big snowplows used by the railway, alongside the carhouse. An interesting device seen in the shop yards, also, was a track-sanding apparatus, consisting of two sand boxes, mounted on a light truck, with a handle bar to assist in propelling it along the track. This equipment permits the rapid sanding of a stretch of track where there is not enough work to be done to warrant the use of a regular sand car.

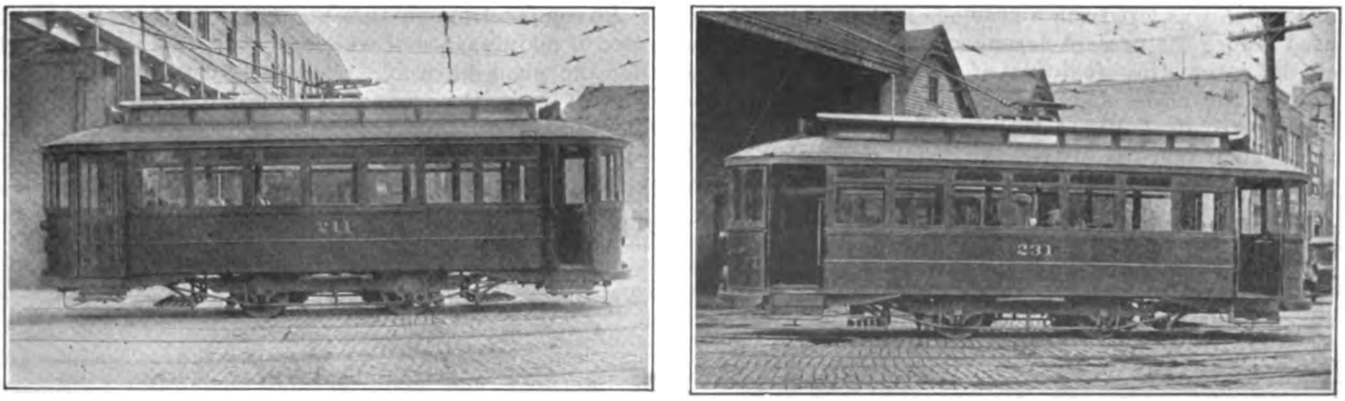
The Jamaica government two years ago voted 1,000 pounds sterling for investigations of the possibility of the electrification of the government railway, according to the issue of *Commerce Reports* for May 25. This forms the only means of transportation across the island, either for passengers or for freight, except by truck and wagon on the public roads. The lines have a total mileage of 197. Since this railroad is entirely dependent upon imported coal, which is very expensive there, the authorities have desired to make use of the water power on the island. Experts from both American and English companies have made investigations and formed estimates for the needed equipment.



PORTABLE GAS WELDING AND CUTTING OUTFIT



DIPPING AND BAKING CORNER



ATLANTA SINGLE-TRUCK CAR BEFORE AND AFTER REMODELING TO INTRODUCE P.A.Y.E. FEATURE

Remodels Single-Truck Cars

WITH about 163 single-truck, twenty-eight seat two-man cars on its hands, the Georgia Railway & Power Company, Atlanta, Ga., has been studying the best manner of applying these cars to the service requirements. They are all of one type, with open platforms and bulkhead doors and thus arranged only for inside fare collection.

The Atlanta management has not yet decided to make use of the one-man car principle, but did want to install the pay-as-you-enter feature as far as possible. At first it was decided to remodel one car only as an experiment and the following changes were made: The doors in the bulkhead were taken out and a stanchion placed at each side of the opening thus left in the bulkhead; folding doors and steps were installed on each side of each platform, the cars being arranged for double-end operation; a guard rail about 30 in. long was placed on the platform in front of the conductor's position, to assist in guiding passengers as they passed in paying fare. This experiment was closely watched by the management to see if it gave an answer as to the economical use of these single-truck cars. There was no doubt that the P.A.Y.E. feature greatly assisted in speeding up the schedule and in making operation more attractive. In fact many trainmen soon made application for the run on which this remodeled car was used.

The experiment proved so successful that the management has started on a program of changing over all the rest of the 163 cars. By July 1 some 35 were remodeled and in operation and others were being closed up at the rate of one per day.

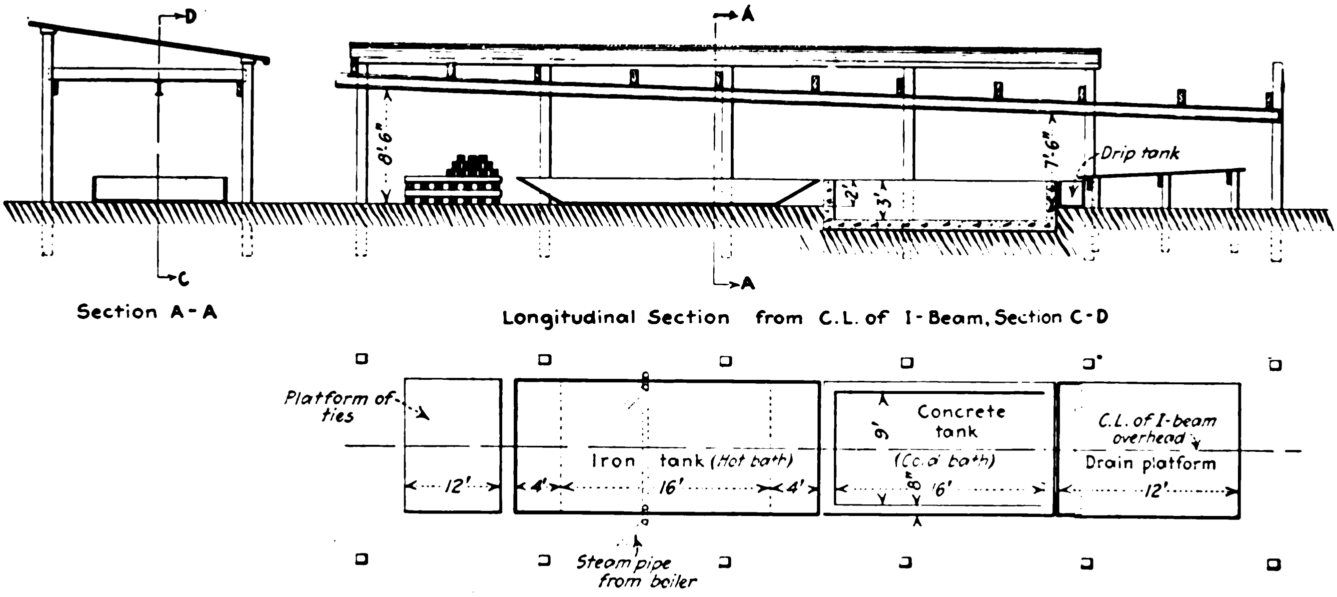
The only new equipments necessary are the door and step mechanisms which are furnished by the McGuire-Cummings Manufacturing Company, Chicago. The total cost of changing these cars as described is about $225 per car.

Chattanooga's Successful Creosote Plant

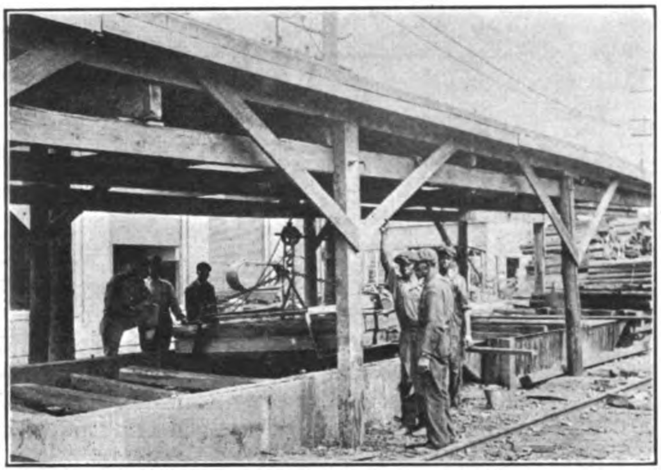
Hot and Cold Tank Application of Creosote Gives 1¼ Gal. Penetration per Tie—Ties Handled by Angle-Iron Swing Basket

THE way engineering department of the Chattanooga Railway & Light Company has been having very satisfactory results from its creosote plant, which has been running for about a year. It is a plant operated on the hot and cold immersion principle, and the average results on a 6-in. x 8-in. x 8-ft. red oak tie show a penetration of 1¼ gal. as against a desideratum or possible maximum of 1½ gal.

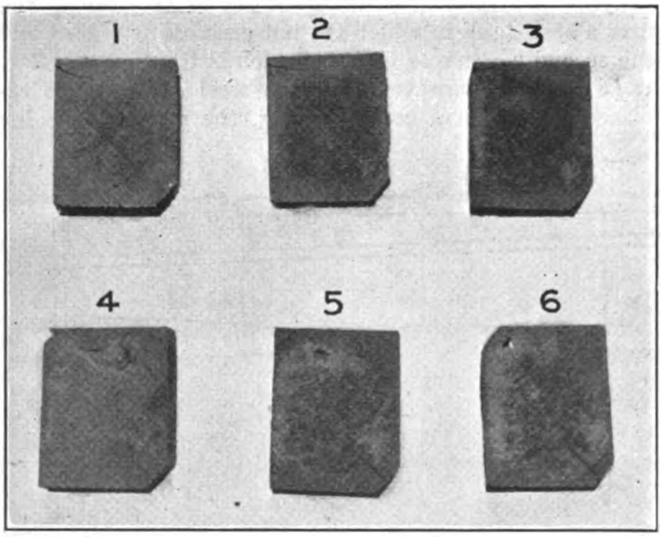
The arrangement of the plant is shown in an accompanying plan and is seen to consist of two tanks, the first a steel tank in which the hot creosote is placed and the second a concrete tank in which is the cold creosote. It is probable, however, that the steel tank will be replaced soon with a concrete tank, the steel tank being



PLAN AND ELEVATION SKETCHES OF CHATTANOOGA RAILWAY & LIGHT COMPANY'S CREOSOTE PLANT one which was left from a previous installation and was used before the present arrangement was started. One of the interesting features of this installation is the I-beam and crane and basket for the handling of the ties. As indicated on the elevation, in the accompanying sketch, there is an I-beam installed which has a 2 per cent slope in the direction in which the ties are always carried. On this I-beam is a traveling hoisting machine of 1-ton capacity made by the Brown Hoisting Machine Company of Cleveland. This is a screw-geared block and falls, from which is suspended the basket made of angle iron, shown in the accompanying view.


THE CREOSOTE PLANT IN ACTION

Seasoned red oak ties are used and are delivered at the end of the hot tank, where they are stacked. About eight ties at once can be handled in the present basket. These are then carried on the I-beam crane, which is on rollers, to the hot tank, where they are left in 150 deg. creosote for one hour. This tank is heated by means of steam coils supplied from a 5-hp. boiler, which is located at a sufficient distance to minimize the risk. The ties are then removed from the hot bath to the cold bath, where they are left for an additional hour. After coming out of this bath they are laid on the drain table, after which they are stacked and are allowed to season for at least one week before being used.



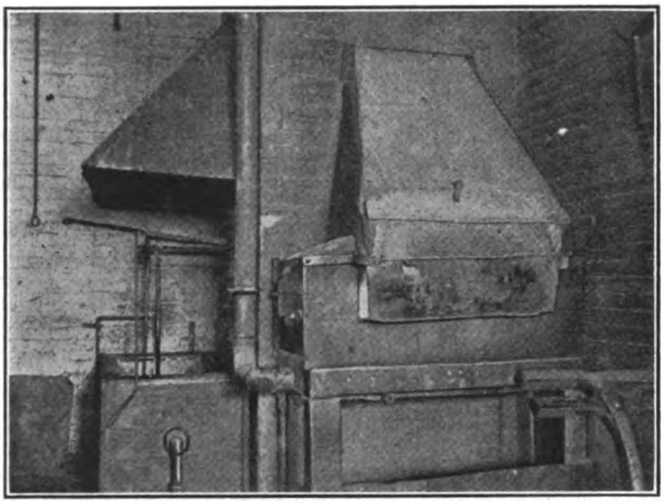
CROSS-SECTION OF ONE OF THE TIES TREATED IN CHATTANOOGA, SHOWING PENETRATION AT THE FOLLOWING DISTANCES FROM END OF TIE: No. 1, 2 IN.; No. 2, 4 IN.; No. 3, 6 IN.; No. 4, 8 IN.; No. 5, 10 IN.; No. 6, 12 IN.

In commenting on this plant, R. C. Morrison, engineer of maintenance of way, said that if he were rebuilding the plant he would place the I-beam 3 ft. higher than it is in the present installation in order to give more room to work with ties in the basket; that is, in order to give better leverage in handling the basket up and down by means of the screw-geared block and falls, which in this case should be more rapid than the present one.

The original cost of the plant was about $600. As to operating costs, labor, the records show, figures at from 4 to 5 cents per tie, and material—carbosota—at a little more than 37½ cents per tie. Figuring interest, maintenance and material and labor, the total cost is from 45 to 50 cents per tie.

Hardening Elliptic Springs

IN ITS shops at Rochester the New York State Railways has a convenient outfit in the corner of the blacksmith shop for heating and chilling complete halves of elliptic springs. The set of leaves forming a half spring are bunched together and heated in an oil-fired furnace, as shown in the accompanying illustration. This is built in an angle between the chimney and the shop wall, with a hood and flue connection to the chimney. Doors are provided on one end and one side.


SPRING HARDENING CORNER IN RAILWAY SHOP AT ROCHESTER

In the angle between the second side of the chimney and the second wall is the water-cooled oil quenching tank, also provided with a hood connected to the chimney to remove fumes. A simple lever mechanism facilitates the lowering of the hot spring into the oil from a distance sufficient to prevent scalding of the operator by oil or fumes.

The Municipal Tramways at Bradford, England, have recently added to their equipment a one-man trackless trolley bus with seats for thirty passengers. The car is equipped with one motor only. Another type of trackless car recently added is a six-wheel bus with double deck. One-half of the weight is carried on the rear axle, the other being divided equally between the two front axles, which turn together for steering purposes. The principal data of this car are: Seating capacity top deck, thirty-three; lower deck, twenty-four; over-all height, 14 ft. 7 in.; outside width, 6 ft. 10 in.; total length, 23 ft. 10 in. This gives an occupancy per seat of 2.85 sq.ft. of street surface.

Meeting of American Society for Testing Materials

Sulphur and Phosphorus Limits Raised on Structural Steel and Steel Castings—New Specifications for Cast-Iron Wheels Presented—Tests for Insulating Varnishes Agreed Upon

THE annual meeting of the A. S. T. M. was held June 20-24 at Asbury Park, N. J. At this meeting several matters were discussed which are of interest to electric railway engineers and the following is an abstract of some of the reports and papers presented:

STEEL SPECIFICATIONS

Action was taken regarding the extra point of phosphorus and sulphur which had been permitted in various standard specifications as a war measure. The note concerning this is now to be removed from all specifications. Recommendation, however, has been made to raise the sulphur content 0.01 per cent in the following specifications: Structural steel for locomotives, cars and ships and steel castings. In the car steel specification this applies to the structural grade only. The phosphorus content in acid steel castings is raised .01 per cent. This is for the reason that it is felt the extension in sulphur from 0.05 to 0.06 per cent in the three classes of structural steel must be retained due to the heavy tonnages involved and to the continued difficulty in obtaining low-sulphur fuels and melting stock. It will be noted that the sulphur extension will be removed on the materials which are to be worked hot and allowed on structural materials which are to be fabricated cold.

Report was made that the survey which was started last year of the effects of phosphorus and sulphur in steel is now well under way in the hands of a joint committee working under the chairmanship of the United States Bureau of Standards.

The specifications for carbon steel rails have been extensively revised as to form, at the same time clarifying the sections covering the nick and break test. Slight changes have also been made in specifications for quenched high carbon steel splice bars, quenched carbon-steel track bolts, steel track spikes, steel screw spikes, low carbon steel splice bars and quenched alloy steel track bolts. These changes relate chiefly to the manner of taking test specimens and making tests.

Similar changes were made in the specifications for structural steel for cars, carbon steel bars for railway springs, special silicon spring bars, silicon manganese bars for railway springs, chrome-vanadium spring bars, carbon steel and alloy steel forgings, quenched and tempered carbon steel axles, quenched and tempered alloy steel axles, cold rolled steel axles and steel castings.

The tentative specifications for welded and seamless steel pipe has been extensively revised and a new tentative specification was presented for carbon-steel rails with special quality requirements. These specifications are based entirely on the specifications recently adopted by the American Railway Engineering Association. This added specification is proposed for the reason that it is felt that the requirements of rail buyers are by no means uniform, and where the amount of traffic and general service conditions are more severe, a buyer might want to purchase rails subject to more rigid requirements than would be the case if the service conditions were less severe. Among other things the new specifications require that there shall be sheared from the end of the bloom formed from the top of the ingot sufficient metal to secure sound rails. Addition of aluminum to the molds is not permitted. Definite limits for carbon, manganese, phosphorus and silicon are set, and tests are required to determine ductility or toughness as opposed to brittleness and soundness. Physical qualities are determined by drop test in the standard A. R. E. A. drop testing machine, record being taken of the elongation of the rail under the blow. Test pieces which do not break under the drop test are marked and broken to determine whether the interior metal is sound. Rails are classified as No. 1 and No. 2; No. 1 being those that are free from injurious defects and flaws of all kinds. No. 2 rails are those which by reason of surface imperfections, or for other specified causes, vary from the specifications in a manner which does not impair their soundness and strength. It is permitted that No. 2 rails shall form 5 per cent of the order.

CAST-IRON CAR WHEELS

A new proposed tentative specification for cast-iron car wheels was presented to replace the standard specifications for cast-iron car wheels. This differs somewhat from the American Railway Association (M. C. B.) standard specification and is drawn so as to cover wheels other than M. C. B. standard wheels as well as the standard wheels themselves. The new specifications are drawn up along lines which represent present-day practice in wheel foundries.

IRON AND STEEL CHAIN

While the present specification is substantially correct with respect to test requirements, gradual changes in raw material and trade practices have made necessary a thorough revision of the section on classification and manufacture. In consequence a new proposed tentative specification was presented, in which especial attention was directed to the term "Crane Chain," which no longer represents the highest grade, the term "Dredge Chain" having superseded it. Five classes of chain are given:

Class AA for slings, cranes, hoists, steam shovels and marine uses, and where an all-iron chain is desired.

Class A for slings, cranes, hoists, steam shovels and marine use where a high quality chain is desired and sold under the trade designation "Dredge Chain."

Class B for ordinary slings and hoists and sold under the trade designation "B.B.B."

Class C for railroad cars, construction and forestry work and sold under the trade designation "B.B." or Railroad Chain.

Class D for general service and sold under the trade designation "Proof Coil" or "Common Coil Chain."

MERCHANT BAR IRON

A new proposed tentative specification for merchant bar iron is included in the report on wrought iron, it being stated that a considerable change has taken place in the process of manufacture of some of the ordinary grades of bar iron. Small sizes of mixed scrap, thoroughly reworked, are now a prominent factor and it has been thought desirable to recognize this condition in a new specification, rather than to include the material in the present standard specification for refined wrought iron bars. The new specification presents the same tensile and bend test requirements as for the refined bars, but the section on manufacture is particularly adapted to this product.

INSULATED WIRE AND CABLE

The committee states that this specification has been materially improved. While no extensive revision has been made some new material has been added. The more important changes are as follows:

1. Thickness of Insulation.—A table of recommended thicknesses of insulation for various working pressures has been added together with details of procedure for measuring the thickness, including the variation limits, rejection conditions, etc.
2. A new sub-division covering tape has been added.
3. A new sub-division covering braid has been added.

An interesting feature of the work of the committee on rubber products for the coming year is that the committee contemplates taking up the subject of specifications for weather stripping for cars.

ELECTRICAL INSULATING MATERIALS

In explanation of its work, the committee states that since its inception it has confined its work entirely to the testing of insulating materials, as the state of the art does not as yet warrant the establishing of specifications for the various materials themselves. This year a standard has been agreed upon for a method of testing insulating varnishes.

The society's tentative standard methods of testing molded insulating materials has now been in use for four years without important criticism, and it is understood that they are in more or less general use by the manufacturers of this class of insulating material. They have also been adopted to standard by the Associated Manufacturers of Electrical Supplies. They are therefore now to be advanced to standard of the A. S. T. M. with some minor changes.

Two Tests for Sheet Insulation

With regard to sheet insulation, the dielectric strength is the most important property. The apparent dielectric strength is greatly affected by the time of application of the testing potential due to the generation of heat, so that two types of test are desirable; one, to give the dielectric strength under a rapidly applied potential or so-called apparent "momentary" dielectric strength, and the other to give the strength under continuous application of potential. No agreement has been reached yet on the test.

In the testing of liquid insulations a great need has been the standardization of the electrodes and length of gap used in testing oils for high-tension transformers and switches. The committee has completed an investigation on this subject and presented its report thereon to the convention and a proposed standard method for testing transformer and switch oils. A proposed standard method was also presented for testing electrical porcelain.

Subjects to which the committee expects to give attention are:

1. Procedure for dielectric strength tests of sheet-insulating materials.
2. Procedure for a sludging test of transformer and switch oils.
3. Preparation of tests of molded insulation for high-frequency applications.
4. Pothead and splicing compounds for underground cables.
5. Dielectric losses in insulating materials.

Corrosion of Iron and Steel

The five-year test of uncoated sheets exposed in the Pittsburgh district is nearing completion and the committee states that it may definitely be concluded that copper bearing metal shows marked superiority as compared to non-copper bearing material. Iron or steel containing less than 0.15 per cent copper are classed as "non-copper bearing." It is interesting to note that no 16 gage sheet containing 0.06 per cent copper or more has failed after five months' exposure, while 65 per cent have failed of those having 0.03 or less.

In the immersion tests made the presence of copper apparently has little influence on the life of the specimen.

The Mechanical Man as a Salesman*

By E. B. Gunn

Superintendent of Transportation and Equipment Western Ohio Railway Company, Wapakoneta, Ohio.

We have found that by keeping in close contact with our employees, not only our salesmen (the conductors and motormen) but all other members of the organization as well, we are able to keep the force running much smoother and so gain better results.

It is necessary for the mechanical equipment to be kept in good condition so that passengers can get over the line smoothly and quickly; also to prevent frequent pull-offs, as the changing of cars is very objectionable to the traveling public. A failure of the mechanical equipment causes delays which often result in the passenger's missing his connection, which, of course, discourages traffic; and at this time the electric lines need all the friends they can get.

The roadway department's co-operation is just as necessary as that of any other, for a bad track causes derailments and rough riding, which makes the work of the salesmen much harder. It also causes delays and failures of the equipment which are expensive.

It is also just as necessary for the employees to work for the success of the freight department as it is for that of the passenger, with the exception, of course, of the element of personal feeling which does not enter into the freight department. It is from the freight hauling that the electric line must look for its gain, and that is the branch of service, I think, that has been overlooked more than the passenger business. Of course, the motor truck under the present conditions is a great rival of the electric line, but by having a quick, reliable service and safe handling of goods and courteous treatment from all employees the electric line, I believe, will be able to hold a great part of the freight haulage. The time is not far off when the motor trucks must be brought under the supervision of the public utilities commissions, and must file their schedules of rates the same as the electric lines are required to do. When this is done and they are required to pay their proportion for the upkeep of the roads they use, they will then be on the same basis as the electric lines; and, I believe, the selling of the products will be just as easy and the outlook for the electric roads as bright as it was a few years ago. The electric lines have a place in the traffic world and the public will not stand for them to be sidetracked.

It is a problem for us to work out, and the only way that this can be accomplished is, as Mr. Barnes has so ably shown, for all departments to co-operate and all work together. Each and every head of department must get away from the idea that his department is more important than any other, for the man who greases the track is just as necessary along his line as the executive. When the spirit of co-operation permeates the entire organization from the president to the track man, and everyone is pulling for the one and only purpose, *success*, then we will have the success that is sure to come. Let us all get over the dumps and put into the proposition the pep and enthusiasm that the proposition deserves, and that enthusiasm will be communicated to the men under our supervision and they, in turn, will do their best for the success of the electric line, and the business will just have to be successful.

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*Abstract of Discussion on Merchandising Transportation, at meeting of Central Electric Railway Association on board S. S. *South American*, Thursday, June 30, 1921.

Valuation and Rate of Return

In his paper on "Valuation and Rate of Return," presented before the joint meeting of the Iowa Electric Railway Association and the Iowa Section of the National Electric Light Association, on June 23, at Lake Okobogi, Iowa, L. B. King, appraisal engineer United Light & Railways Company, Davenport, Iowa, paid particular attention to electric lighting companies, but a few of his remarks are pertinent to railways.

After outlining the purposes of valuation he discusses inventory of property, from which discussion the following extracts are taken:

It is quite essential that every utility should have a valuation of its property, entirely distinct from the "plant and investment" account carried on its balance sheet, because without this knowledge it is impossible for the operators of the plant to know what results are being obtained in the way of net revenues applicable to paying interest charges and dividends from that particular plant.

Unless operating under a uniform classification of accounts, where two valuations have been made of the same property, one by or for the company and the other by or for the city or state, it becomes hard to compare or reconcile these valuations, and this leads to more or less confusion whether the report is presented in court or to a city council. No matter what system is adopted, after one is adopted and the property accounts are classified, later expenditures for new construction should certainly be classified under the account adopted.

The distribution system of either an electric utility or electric railway utility is the most difficult part of the property to inventory and to obtain prices on. It will very seldom be possible to obtain the exact original cost of building the pole lines, stringing the wire, etc., for many reasons, one of which is that the work is done piecemeal and not all expenditures find their way to the proper charges. It is therefore necessary to estimate the cost of poles, wire and erection to a large extent.

Mr. King then takes up the question of intangible fixed capital, in which he argues for capitalization of superseded property, of the cost of consolidation of smaller, older companies, development expense, early losses, cost of establishing business, etc.

CAPITALIZE UNFINISHED CONSTRUCTION

Mr. King also urges the capitalization of unfinished construction. Of this he says: "In the determination of the rate base there should also be included the estimated cost of completing any construction which is under way, and any construction which has been authorized and is certain to be started very soon. Inasmuch as the study of rates is for the purpose of fixing rates for the future, it is only proper that these rates should pay the proper return on additional investments which must be made." The usual account is taken of the subject of working capital.

In his discussion on rate of return, Mr. King points out that many utility commissions have excluded from the valuation the cost of financing, whether this includes the cost of interesting capital, issuing and marketing securities and brokerage fees, or also the discount at which the securities have been sold in order to market them. He then says: "The cost of selling the securities will usually amount to from 2 per cent to 3 per cent of their par value, and the discount frequently runs as high as 25 per cent of the par value. These items, if excluded from the valuation, must be considered in fixing the rate of return which should be insisted upon." With reference to rate of return and the dependent rate schedule, he said: "Certain rates of return have been approved or fixed in many rate cases, and then service rates have been established which were entirely insufficient to earn anywhere near the rate of return which had been approved. When this happens, it is a moral obligation of the regulatory body to make up the deficiency so created by further adjustment in the rate. The mere fixing of a rate of return in an ordinance or decision does not guarantee this rate to the utility, and if the theory of rate-fixing legislation is to be fair, then the deficit created must be made up by future higher rates, and this future must not be so long deferred that the patient dies during the process."

American Association News

Special Reorganization Committee Reports

Recommends J. W. Welsh as Permanent Executive Secretary—Suggests Useful Changes in Constitution and in Procedure

THE special reorganization committee appointed by President Gadsden in response to a resolution of the executive committee to make recommendations regarding reorganization of the headquarters office of the association and any other recommendations regarding the organization or operation of the entire association which it saw fit or thought advisable has now formulated its report and placed it in the hands of the members of the executive committee. The executive committee will hold a meeting which has been tentatively arranged for Aug. 5, at which this report will be considered; but meanwhile the committee decided that it would be advisable to publish an abstract of this report so that the association members might have opportunity to transmit their ideas to the executive committee, and that the executive committee, having the advantage of hearing from the industry, could formulate its program in more nearly complete form, ready for action by the association at Atlantic City in October.

Criticisms of, and suggestions with reference to, these recommendations of the reorganization committee to the executive committee will therefore be welcomed. They should reach the secretary's office not later than Aug. 3, in order to be ready for consideration by the executive committee at its meeting on Aug. 5.

The following is an abstract of the report of this committee. Many of the suggestions, in order to be incorporated in useful form, have necessitated changes in the constitution and by-laws and the committee has therefore drawn up an amended constitution and by-laws in which the following things have been accomplished:

Recognition of the interest in and necessity for study of other transportation systems, and permission under special act of the executive committee for trackless transportation companies to enter the association.

Provision for separate classification of members such as consulting engineers, management companies, investment bankers, etc.

Redefinition of the officers and membership of the executive committee as follows:

> A president, to hold office for one year, eligible to re-election.
>
> Four vice-presidents, two elected each year for two-year terms, not eligible to re-election to the executive committee, except as president.
>
> Twelve members at large, six representing manufacturing companies, six representing operating companies; two of each to be elected each year for three-year terms and not eligible to re-election to the same office.
>
> A treasurer, to hold office for one year, subject to re-election.
>
> The two junior living past-presidents, with power to vote.
>
> The four presidents of the affiliated associations.
>
> An executive secretary, who is not a member of the executive committee, but who attends its meetings. He may not be the same person as the treasurer.

Provision for regular monthly meetings of the executive committee.

A classification and amplification of the definition of duties of officers, which make ample provision for the safeguarding of the funds of the association and the issuance of checks.

Provision for a nominating committee, to be appointed early in each summer, which will make public its nominations thirty days before the annual convention. Other nominations may be made by any member at any time before the actual election.

Definite by-law provision for the mid-year conference.

Definite provision for certain standing committees of the association, such as finance, policy, subjects and meetings, publicity, publications and national relations, with the requirement that these committees make monthly reports to the executive committee. All the members of the first two committees are to be members of the executive committee, and the chairmen of the other four are ex officio members of the executive committee, without vote, unless they are already elected members.

Provision for certain other committees having to do with membership and with co-operation with sectional railway associations.

Definition of the duties of the various committees.

Provision that the dues now in the by-laws shall be maximum dues, which the executive committee may lower, but once lowered may not raise without consent of the association.

Provision that privileges of the association shall be withdrawn from members who are a year or more in arrears in dues.

Other suggestions which the committee has considered and regarding which it makes recommendations are:

That the executive committee consider in its own meeting the question of arranging for admission of municipally owned railways to membership. The executive committee has a subcommittee of its own on this subject which will present data to it.

That the executive committee make a study of the present system of dues.

That the association do not sponsor certain experts in labor, legal, technical or other special lines.

That the executive committee give closer supervision to committee work, arranging that committee reports may be made public at any time during the year whenever finished, rather than holding them to flood the annual convention.

That the executive committee create a special committee for co-operation with educational institutions of the country, to encourage the study of railway and public utility problems, and to assist in placing young engineers with railways.

That the committee codify its own regulations as a sort of executive committee by-laws.

That the executive committee consider the advisability of incorporating the association.

That due consideration be given to the geographical distribution of the executive and other committee meetings, to the selection of executive and other committee members, and that the association co-operate with various sectional associations and arrange for representation of the American Association at their meetings.

That the executive committee outline some policy to promote continuous work by committees to avoid a halt in activities for a month or two after annual association meetings, which frequently occurs. Suggestion was made of appointing committee members for a term of years, a portion of the committee retiring each year.

That the executive committee consider giving publicity through the Advertising Section to the sense of responsibility which the electric railway industry today feels in trying to provide complete transportation service to a community.

The question of *Aera* being continued as a magazine or changed to a bulletin was brought before the committee. The *Aera* advisory board was requested to make a report on this subject to the committee. This was presented by Chairman C. L. Henry of the advisory board in person. There was considerable discussion on the benefits of *Aera* as the association's official mouthpiece and as an agent to promote company section work and to reach the rank and file of the industry. There was a discussion as to how best *Aera* could co-operate and avoid unnecessary duplication with existing technical magazines in the railway field. The committee in accepting the report decided to recommend the continuation of *Aera* as a magazine in its present general form.

Finally, in response to a special request of the executive committee to suggest a name or names for the position of secretary, to fill the vacancy created by Mr. Burritt's resignation, the committee recommends that J. W. Welsh be appointed secretary, to date from July 1, 1921.

Progress on Heavy Traction Report

AT A meeting of the heavy electric traction committee, held in the association office on June 23, a draft of the committee's report was read and discussed, after which various suggestions offered by members present and by letter were considered. It was decided to include in the report news of a 60-ton Westinghouse switching locomotive of standard design and of a Butte, Anaconda & Pacific tractor truck, used for switching, as well as views of the Westinghouse and General Electric Paulista locomotives. The tabulated data on multiple-unit equipment, which are being prepared by the General Electric and Westinghouse companies, will be consolidated for presentation in the report as soon as received by the chairman.

Those who were present and participated in the discussions were Sidney Withington, chairman; C. M. Quereau, John C. Davidson, A. H. Armstrong, J. V. B. Duer, Mr. Masson, representing H. W. Cope, and Mr. Sloan.

Association Announces 1921 Convention Program

THE plans for the 1921 convention at Atlantic City of the American Electric Railway Association have advanced far enough so that the association is able now to announce the tentative program. The duration of the meeting will be as usual from Monday to Thursday inclusive, or from Oct. 3 to Oct. 6. The general subjects to be considered in formal papers, topical discussions or addresses are: (1) a paper on the influence of the electric railways in improving industrial efficiency; (2) a paper on the contrasted advantages of service-at-cost contract franchise and state regulation; (3) a paper on the comparative condition of the industry today and four years ago; (4) a topical discussion on electric railway finance; (5) an address by some public official on a subject relating to the industry.

The first subject will bring out the fact that electric railways are essential to the maintenance of community and commercial life, and that this fact should be kept before the investors and general public. The existence of a street railway has often been taken as a matter of fact, and at present there is much discussion as to whether or not surface railways will be extended. Some hold that as yet the electric lines have not had a full opportunity to demonstrate their maximum utility because of restrictions placed by state laws and franchises prohibiting the transportation of commodities, and it is possible that this view may be presented by one of the papers on this subject.

The paper on service-at-cost will take up the two methods of rate adjustments and present the advantages appertaining thereto so as to permit careful study. Some operators prefer the service-at-cost while others believe state regulation of rates and service to be more desirable.

The subject of comparative conditions divides into four parts, namely, community relationships, plant and facilities, net earnings and finances, and it is hoped that each of these will be covered.

The discussion on electric railway financing will continue that begun at the last mid-year meeting, and a basis of discussion is found in present requirements for mortgage securities, home town financing, financing by sale of capital shares and municipal aid.

The names of those who will present papers on the different topics mentioned will be made public by the secretary of the association as soon as definite arrangements along this line have been made.

The association is not yet ready to announce the name of the public official who it is expected will address the members of the association at the convention.

Committee Plans Increased Activity Organizing Company Sections

THE committee on company sections and individual membership of the association is planning a campaign to organize additional company sections among member companies.

A meeting of the committee is to be held in the immediate future, to discuss the details of the plan to place before electric railways the benefits to be derived from company section organization. The original company section committee, which consisted of Martin Schreiber, chief engineer and manager, southern division, Public Service Railway, Camden, N. J., as chairman; Charles C. Peirce, manager railway department General Electric Company, Boston, Mass., and H. H. Norris, managing editor ELECTRIC RAILWAY JOURNAL, New York, N. Y., was recently enlarged by the appointment of the following members: F. G. Buffe, general manager Kansas City (Mo.) Railways; E. F. Wickwire, sales manager Ohio Brass Company, Mansfield, Ohio; J. P. Barnes, president Louisville (Ky.) Railway; F. S. Arkwright, president Georgia Railway & Power Company, Atlanta, Ga.; and B. J. Mallon, assistant general manager Metropolitan West Side Elevated Railway. Chicago, Ill.

The idea which the committee has in mind is the revival of the interest taken in company sections. Prior to the war there were twelve organizations of this kind located at points throughout the country, each of which was maintaining considerable enthusiasm among its members and educational work pertaining to the industry.

During the war many members entered military service and company section activities were suspended. Since the close of the war two new company sections have been organized and many companies are now considering the organization of sections. The committee will be glad to co-operate in every way possible to the furtherance of such plans.

Merchandising Transportation

THE final meeting of the committee on merchandising transportation of the T. & T. Association was held at the association's headquarters on July 14. Those present were J. H. Alexander, Cleveland; H. C. Clark, Newark; G. T. Seeley, Youngstown; K. A. Simmon, for M. B. Lambert, East Pittsburgh.

Since the previous meeting the chairman had prepared in tentative form the full report and had forwarded it to all members for comment. Letters either of approval or criticism from those of the committee unable to be present and others were read, and their comments as they referred to the report were noted. The chairman will present the completed report to the executive committee next week. The report this year will detail actual means of merchandising transportation as practiced by the industry and is a supplement to the report of last year.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Suspension Contemplated

Receivers at Des Moines Appeal to Court for Permission to Shut Down All Service

The receivers for the Des Moines (Ia.) City Railway filed a petition during the week ended July 9 with Judge Martin J. Wade of the federal court asking that they be allowed completely to suspend operation of the railway system in Des Moines.

Judge Wade set July 13 as the date for hearing arguments on the motion and F. C. Chambers, operating receiver, is authority for the statement that in the event the petition is allowed service will be suspended one week from the date of Judge Wade's order.

RECEIVERS LOSE HOPE

This seemingly drastic step was taken by the receivers only after all hope had apparently disappeared of securing relief through the City Council.

M. H. McClean, representing the Harris Trust & Savings Bank, Chicago, acting for security holders of the railway, appeared before the City Council recently with a program for the solution of the railway problem. He proposed to the Council that the owners of the local plant would undertake to secure the funds necessary to secure electrical equipment to restore full service in Des Moines if the City Council would take the following action:

1. Declare the present franchise forfeited.
2. Eliminate the present destructive bus competition.
3. Initiate proceedings looking to the negotiation of a new service-at-cost franchise.
4. Declare its intent to refrain from demanding extensions or extensive reconstruction and from the levying of burdensome special assessments for paving while the company is financially unable to undertake such things.

This program apparently made little impression upon members of the Council and ultimately all four measures were killed by being received and filed. The bus measure appeared to have some chance of passage, but in a stormy session of the Council, in which bus owners and members of improvement leagues were present the ordinance was defeated on its second reading.

MAYOR REGARDS BUSES AS INSUFFICIENT

The program had the indorsement of the Corporation Counsel and received partial support from Mayor Barton. Mr. Barton's attitude with regard to ruling the buses off the street was that this measure should be taken only in the event that the railway agreed to make a substantial reduction in fares. Mayor Barton, however, addressed a letter to the Council in which he stated that the city could not hope to depend upon the buses for transportation.

As the situation now stands, apparently no real action toward a settlement is to be taken until Judge Wade rules on the petition filed with the court by the receivers.

Judge Wade on July 13 took under advisement the petition of the receivers of the Des Moines City Railway for a complete suspension of service. His ruling is expected within twenty-four hours. Just previous to the hearing the city of Des Moines filed a belated resistance to the petition and city attorneys argued for a delay in suspension.

Wage Cuts Being Negotiated in New York

Frank Hedley, president and general manager of the Interborough Rapid Transit Company, New York, N. Y., announced officially on July 12 that he had asked the employees to accept a 10 per cent cut in wages beginning July 24. The present agreement between the company and the Interborough Brotherhood expires on Dec. 31.

Mr. Hedley said that some time ago when the cost of living was rapidly rising, the company at the request of the men voluntarily increased wages, although it had a contract with the men for a fixed wage. Now that conditions are the reverse, the company has requested the men to treat it the same as the company has treated them.

The cut, if accepted, will affect some 14,500 men. Under the present scale of wages motormen are getting 86 cents an hour, guards 58 cents, laborers from 48 cents to 58 cents, and the mechanical forces from 65 to 80 cents an hour.

It is understood that the company has guaranteed that if the men accept the proposed cut, no further lowering of wages will be made until July, 1922, six months after the present agreement with the Brotherhood expires.

Negotiations are in progress between Receiver Hedges of the New York Railways and the employees of that company looking to a similar decrease in wages. The number of men affected by these negotiations is reported to be about 5,000.

As has been stated previously in the ELECTRIC RAILWAY JOURNAL negotiations are also in progress in Brooklyn looking to a cut in the pay of the men employed on the Brooklyn Rapid Transit System. The cut in wages there is expected to be made on Aug. 6 when the agreement between the men and the company expires. It is said that it will be at least 10 per cent. Receiver Garrison is understood to favor a reduction of from 12 to 15 per cent. The employees are conferring among themselves, and their representatives will in turn meet the officials of the company during the week ended July 23 to agree on the size of the decrease.

Another Brawl Started

Chicago's "City Hall" Will Endeavor to Get Five-Cent Fare—Mayor Before New Commission

Mayor Thompson on July 8 started his long promised fight for restoration of the 5-cent fare on the Chicago surface lines. This was in the shape of five petitions filed before the new Illinois Commerce Commission against the Chicago Surface Lines and its four component companies. The petitioners were the city of Chicago, Mayor Thompson and four other "citizens and taxpayers." The preliminary hearing was set for July 12.

The petitions reiterate many of the Mayor's arguments against the surface line companies, arguments which failed to stand the test before the old utilities commission or the courts. He evidently expects to get a more favorable ruling from a friendly commission, the members of which were reappointed recently by his political ally, Governor Small. The petitioners ask that the "final order" entered by the former commission on Nov. 5, 1920, be rescinded, altered or amended and that the rate of fare be reduced from 8 to 5 cents.

Contending that the contract ordinances under which the companies are operating have been abrogated by the "acceptance of a rate of fare higher than 5 cents, the petitioners ask the commission to restore the old rate regardless of the ordinance provision." This is said to be warranted by a change in conditions due to decreased cost of operation. They also ask that the $7,000,000 now in the renewal fund be applied to the reduction of fares, and that the city's share of the net receipts for the past two years be used for the same purpose or turned over to the municipality for use and occupation of the streets. This latter sum of about $3,500,000 was tendered to the city by the companies but was refused because the Mayor has insisted that an acceptance would be a recognition that the ordinances of 1907 are still in effect.

The petitioners also attack the Board of Supervising Engineers, claiming that it has no legal right to exist and that the members should not be paid out of the operating expenses of the companies. The commission also is asked to inquire into the salaries paid certain officers and lawyers employed by the companies. The unusual suggestion is made that the companies are not entitled to any return on their investment until they "comply with the law and furnish adequate service." In any event it is alleged that they should not be allowed a return greater than the 5 per cent fixed by the ordinances.

New Orleans No Nearer Settlement

The Commission Council of New Orleans, La., at the conference on July 7 wound up the discussion bearing upon a solution of the city's traction troubles without reaching a definite conclusion. The hearing was confined largely to the matter of the valuation of the railway.

Representatives of the association of commerce and the advisory committee of forty appeared and urged the members of the Commission Council to take immediate action in the matter. They insisted that the commissioners had already had enough advice.

W. S. Penick, one of the committee of forty, said he was impressed with the work of the sub-committee that fixed the valuation and that the amount named ($44,700,000) was less than some of the members present thought the property was worth.

The conference adjourned with the promise that when "the thing is whipped into shape" those interested would hear from the city.

The delay of the city has entangled it in a web of litigation which will hardly permit the commissioners to extricate themselves before winter. Up to the present time the litigation pending is as follows:

The railway has enjoined the city, in the federal court, from interfering with the receiver in the collection of an 8-cent fare.

The railway has instituted injunction proceedings against the State of Louisiana, in the Civil District Court, restraining it from interfering in the pending controversy between the city and the railway, looking to an adjustment of the city's traction troubles.

The State of Louisiana, through the Attorney-General's office, seeks to restrain the city by injunction from reaching a settlement with the railway upon any terms not in keeping with the company's franchise alleged to have been obtained from the State and not from the municipality.

Seattle Case to Be Determined on Its Merits

In a decision handed by Judge Jeremiah Neterer in the United States District Court recently, the application was granted that has been made by S. B. Asia and thirteen taxpayers of Seattle, Wash., for dismissal of the amended complaint filed by the Puget Sound Power & Light Company for a restraining order to prevent the fourteen taxpayers from interfering with the city in the payment of the interest and principal on the $15,000,000 of bonds issued by the city in payment of the railway lines now included in the system of the Seattle Municipal Railway.

The court said:

> For the reasons given in the decisions filed on April 1, and on March 12, the motion of the defendant is granted. The issue should be determined at the earliest date. The Circuit Court of Appeals convenes in this city in September and it is possible to have the action of this court reviewed at that time if the parties are so disposed, and all parties may then rest secure in the proceeding which must be adopted.

Judge Neterer handed down a decision on March 12 denying the application of the Stone & Webster interests for a temporary injunction against the fourteen taxpayers. The amended complaint upon which the appeal was handed down recently was in the nature of an appeal from that decision. At that time, the court held that the Superior Court had full jurisdiction in the case. The court held that the payment of the interest when due removed the "contingency which no doubt caused the plaintiff to move in this case and this was done without order or suggestion from this court."

Public Hearing on Question of Rehabilitation

The City Council of Portland, Ore., has adopted a resolution requesting the Public Service Commission to call a public hearing to discuss the question of whether the Portland Railway, Light & Power Company has made the expenditures for maintenance and reconstruction which it promised to make prior to the granting of the 8-cent fare. F. I. Fuller, vice-president of the company, states that his company has no objection to the investigation. He said that in the last seventeen months the company has spent $431,000 for maintenance, reconstruction and general track and roadway work. The total maintenance for this period was $1,033,793.

Highway Legislation Before Congress

There is a growing feeling in Congress that federal aid highways should not be "free from tolls of all kinds" as is provided in both the Dowell and Townsend bills now before Congress and in the existing law. This is due to the increasing tendency on the part of motor common carriers to use the public highways without making returns for the use of this facility.

It is recognized that it is frequently very difficult to require a common carrier or a contract carrier performing his service on a highway without penalizing the farmer or other producer in his efforts to get his products to market. Some are of the opinion that the federal law should contain no inhibition against tolls and that the matter better could be left to the states, since the question involved is almost always a local one.

Highway legislation marked time during the week ended July 9. Senator Townsend found it impossible to be in Washington during the week. Both the highway bills are at present under his immediate jurisdiction. The Dowell bill, which recently passed the House as a rider on the Phipps bill, was referred to Senator Townsend's committee. The Townsend bill itself is on the Senate calendar. Senator Townsend is in a position to call the bill up at nearly any time that he desires.

City Still Opposing Indianapolis Street Railway

At a conference of officials of the city and Indianapolis Street Railway recently, the traction men refused to enter negotiations for a contract which would give the city all regulatory rights over the company excepting that relating to rates.

Mayor Jewett said that Dr. Henry Jameson, chairman of the board of the utility, promised him that if the city would not use its influence against the bill to permit public utilities to surrender their franchises all the company would desire to do would be to get relief from the fare provisions of its contract with the city and would submit to city regulation in all other matters.

Dr. Jameson denied having made such a promise. He insisted that he was standing by his word.

Upon refusal of the company to enter into negotiations for the contract Corporation Counsel Samuel Ashby announced that the city will seek to have its common council pass an ordinance or ordinances granting it such regulatory powers as it desires, under authority of section 10 of the public service commission law which provides for such procedure in the case of a utility operating under an indeterminate permit.

It seems certain that the city will insist upon its right to collect $30,000 a year for the next five years and $50,000 for the seven years thereafter as a franchise tax payment to the board of park commissioners, as was guaranteed under the surrendered franchise. It also appeared probable that the city will insist that the company continue to pay both for original cost and maintenance of pavement between its tracks.

The traction men insisted that for the city to continue to require these things would constitute burdens which would either break the company's back or necessitate appeal to the Public Service Commission for higher fares. They were pessimistic about the relief to be obtained from a rate greater than 5 cents, because the recent 6-cent charge brought in less revenue than did the nickel when coupled with a charge for transfers.

Arbitrators Reduce Wages in Des Moines

Wages of the employees of the Des Moines City Railway have been reduced from a maximum of 70 cents an hour, the old scale, to a maximum of 59 cents by the findings of the board of arbiters chosen by the company and the men. The employees had sought an increase to a maximum of 80 cents, while the company asked a reduction to 57 cents. The high rate goes to men of more than nine months' service. Those serving their first three months will receive 53 cents and the men over three months and less than nine months 56 cents. The agreement fixed by the arbitrators became effective on July 1.

Jersey Value $82,000,000—Increased Charge for Transfers

The Board of Public Utility Commissioners of New Jersey at noon on July 14 filed its decision in the investigation of the rates of the Public Service Railway. The board continued the 7-cent fare, but increased the charge for transfers from 1 to 2 cents. It finds a valuation of $82,000,000 for the property, and estimates the income to be produced by the additional transfer charge, together with the company's other revenue, will afford a return of slightly more than 7 per cent on the value found.

The board's decision is voluminous, comprising more than seventy typewritten pages. It discusses in detail the different estimates of value submitted to the board, the capitalization of the company, its revenues and operating expenses. The board states that it had before it data regarding the value of the company as included in the Cooley appraisal, which was made by the company; the appraisal made by Ford, Bacon & Davis, under contract with the State Appraisal Commission; testimony of the board's own experts and that of the experts for the municipalities and historical costs of the property as developed by witnesses of the municipalities.

The principles of the valuation as declared by the New Jersey courts are referred to and applied by the board. In addition to the decision of the New Jersey courts numerous decisions of the United States Supreme Court and courts and commissions of other States are cited and the principles therein set forth are discussed.

The board found itself unable in view of the testimony presented to accept the valuation figures as presented by Ford, Bacon & Davis to the special state valuation board.

The valuation as found by Ford, Bacon & Davis for the State was $125,000,000. The valuation as found by Dean Cooley for the company was $200,000,000. The value claimed by the municipalities was $60,000,000. Other phases of the rate case are referred to elsewhere in this issue.

Interurban Will Electrify Track to Union Station

The Denver & Interurban Railroad will take steps immediately to electrify the Burlington Railway right-of-way from Utah Junction to Union Station in Denver, according to announcement made in Denver on July 9. The work will occupy about six months' time, the cars being routed over the present line via Globeville and over the Denver Tramway tracks until the project is completed.

Provision for electrification of the railway line into Denver and shortening of the route was contained in a rate increase which was given the company last fall by the state Public Utilities Commission. The estimated cut in the running time under the new system is 20 minutes with the elimination of all the attendant congestion of traffic in Denver streets over which the cars run.

Under the new plan, the electric cars will not run into the Union station proper but will have their terminus on the Colorado and Southern coach tracks to the north of the main lines. With the new system in effect no additional charge, it is understood, will be made for city fares in Denver which are now collected by the tramway company there as franchise rights. This will, under prevailing street car rates in Denver, lower the round trip fare 16 cents.

City to Make Offer for Woodward and Fort Lines

At a conference of the members of the Street Railway Commission with three representatives of the Detroit (Mich.) United Railway on July 8 it was announced that the city would soon tender an offer to the company for the lines on Fort Street and on Woodward Avenue, where the franchises have expired. It is from these streets that the courts have held that the city has the right to order the company to remove its tracks.

According to a statement by Alex Dow, speaking for the company, the company will give its answer as to whether or not it is willing to accept the figures named by the city within forty-eight hours after receiving the commission's offer. No decision was reached by the commission at the recent meeting as to what figures the city will name for the two lines.

The question of ratifying the purchase of these two lines, which will link up the new municipal system with the down-town district, will be decided at the November election. Final decision will be left to the voters and they will be asked to authorize the purchase of the lines at that time.

Some time ago the Detroit United Railway signified its willingness to sell the two lines at such time as the people desired to take them over. Although no announcement was made by company officials following the last meeting, Allan F. Edwards, vice-president of the railway, stated that the company's attitude had not changed. Both Mr. Edwards and Mr. Dow declined to make any statement at the present time except to say that the company was ready to sell these lines to the city.

Denver Plans Wage Readjustment

Negotiations will be entered into in the near future between a committee of employees' representatives and E. Stenger, receiver for the Denver Tramway, looking toward a general wage readjustment. In the meantime, the employees' representatives have notified the trainmen that Receiver Stenger will not restore the top wage of 58 cents an hour which was in effect at the time of the August, 1920, strike—a rate approximately 90 per cent of the present trainmen would have automatically received next month or soon thereafter.

Fares May Go Up in Cincinnati

There will be no reduction in fares on the lines of the Cincinnati (Ohio) Traction Company on Aug. 1. This is a direct result of activity of the citizens' committee, of which William J. Schultz is chairman. Instead there is a likelihood of fares going up on the strength of petitions filed by the committee with the city auditor. The petitions ask for a referendum on the ordinance recently passed by the City Council providing for the lowering of fares.

The filing of the petitions has the effect of suspending the operation of the new ordinance. It means, therefore, that the 1918 franchise ordinance still is in force and under its terms when the traction company suffers a deficit for two months in succession it may give notice of an increase in fares on the fifteenth of the following month, to take effect on the first day of the month thereafter.

The committee submitted 178 petitions which contain a total of 16,644 names. Less than 10,000 signatures were required. The petition seeks to submit the ordinance to the voters at the November election, thus holding up the issue until after that time. Mr. Schultz declared that if the ordinance is voted down by the citizens he will introduce an ordinance by initiative petition providing for a reduction of fares at the rate of one-half cent each month until a level of 5 cents is reached.

City officials pointed out that under the law the formal acceptance by a public utility of any franchise ordinance or an amendment is necessary before the ordinance can become effective. Such an ordinance will take care of the deficits, it was pointed out, and the traction company is not likely to accept it because of these conditions. Mr. Schultz's idea is to abolish the annual franchise tax of $350,000 paid to the city by the traction company.

Mayor John Galvin, when informed that the petitions had been filed, said it is too bad that a condition of this kind should arise.

Duluth Absconder Captured

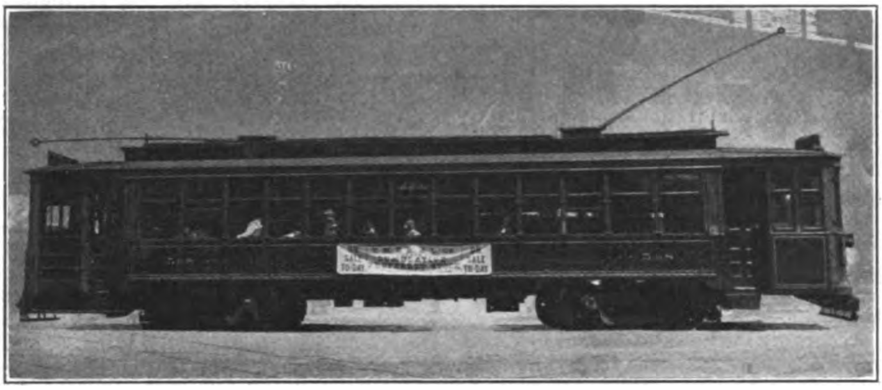
Berger T. Jager, former confidential secretary to Vice-President A. M. Robertson of the Twin City Rapid Transit Company, is in the Hennepin County jail under indictment for grand larceny. After confessing to a Cincinnati clergyman he wrote to Mr. Robertson offering to give himself up, and arrived July 9 in Minneapolis in charge of a Pinkerton man. On Jan. 29 it was discovered Jager had converted to his own use a Duluth-Superior Traction Company check for $4,825. On Jan 31 it was discovered he had taken from a safety deposit vault $127,000 in securities belonging to the Duluth company. Of these securities $116,000 were recovered on July 2. Jager had been employed fifteen years by the company before his resignation and disappearance.

Financial and Corporate

Milwaukee Sells Stock

$3,000,000 of New Issue being Placed Locally in Campaign with Several Novel Features

A novel advertising scheme has just been made use of by the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., in selling its securities direct to the public. The company is one of the pioneers in direct sales of securities. As reported in the ELECTRIC RAILWAY JOURNAL of June 11, 1921, page 1100, it recently increased its capital stock. It was decided to offer for sale in 1921 a part of the new issue of preferred stock, largely for the purpose of transforming floating debt incurred during recent years for additions to plant and property to a permanent investment basis. In order to attract attention to the sale which was to begin on June 30, 1921, all the 700 city and interurban cars of the company appeared on the morning of June 30 carrying large banners on their sides calling attention to the sale of securities. As is shown in the accompanying illustration, the banners read: "T. M. E. R. & L. Co. 8 Per Cent Cumulative Preferred Stock. On sale today. Public Service Building."

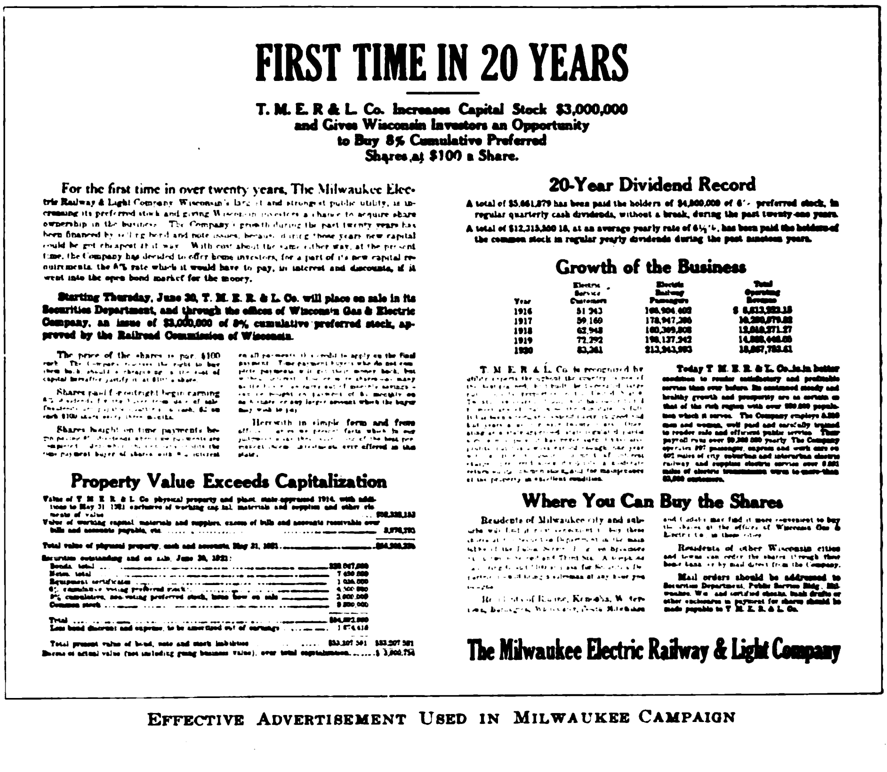

BANNER DISPLAYED ON MILWAUKEE CARS

BANNERS PRODUCE SENSATION

The banners produced something akin to a sensation since they resembled banners announcing picnics. This caused everybody to endeavor to get a good look at them. The banners were supplemented on June 30 by half-page advertisements in the principal Milwaukee daily newspapers, giving further details of the stock issue and of the sale in general. The advertising campaign is being continued, a quarter-page advertisement being used in the large dailies since July 1. Advertising will also be carried in the various Wisconsin dailies and weeklies. In addition, the company has asked the co-operation of its employees to help sell the securities. A small commission will be paid for each share of stock sold by them.

The methods employed by the Milwaukee Electric Railway & Light Company and its affiliated companies in Wisconsin in selling their securities to the public were described in some detail in the paper, "Home-Town Financing," read by S. B. Way, vice-president and general manager of the company, before the 1921 mid-year meeting of the American Electric Railway Association. This paper was printed in the ELECTRIC RAILWAY JOURNAL of Feb. 12, 1921, page 304.

The stock being sold is a $3,000 000 issue of 8 per cent cumulative non-voting preferred. It is being sold at par ($100). The issue has been approved by the Wisconsin Railroad Commission. The advertisements announcing the sale of this stock call attention to the fact that the increase in preferred stock is the first in twenty years. During the past twenty-one years, according to these advertisements, the company paid a total of $5,661,879 to holders of the $4,500,000 of 6 per cent preferred stock in regular quarterly cash dividends. The holders of the common stock have received during the past nineteen years a total of $12,315 550, or at an average yearly rate of 6½ per cent.



FIRST TIME IN 20 YEARS

T. M. E. R & L. Co. Increases Capital Stock $3,000,000
and Gives Wisconsin Investors an Opportunity
to Buy 8% Cumulative Preferred
Shares at $100 a Share.

For the first time in over twenty years, The Milwaukee Electric Railway & Light Company, Wisconsin's largest and strongest public utility, is increasing its preferred stock and giving Wisconsin investors a chance to acquire share ownership in the business. The Company's growth during the past twenty years has been financed by selling bond and note issues, because during those years new capital could be got cheapest that way. With cost about the same either way, at the present time, the Company has decided to offer home investors, for a part of its new capital requirements, the 8% rate which it would have to pay, in interest and discounts, if it went into the open bond market for the money.

Starting Thursday, June 30, T. M. E. R. & L. Co. will place on sale in its Securities Department, and through the offices of Wisconsin Gas & Electric Company, an issue of $3,000,000 of 8% cumulative preferred stock, approved by the Railroad Commission of Wisconsin.

20-Year Dividend Record

A total of $5,661,879 has been paid the holders of $4,500,000 of 6% preferred stock, in regular quarterly cash dividends, without a break, during the past twenty-one years.

A total of $12,315,550 18, at an average yearly rate of 6½%, has been paid the holders of the common stock in regular yearly dividends during the past nineteen years.

Growth of the Business

Year	Electric Service Customers	Electric Railway Passengers	Total Operating Revenue
1916	51 343	166,904,602	$ 8,813,922.18
1917	59,160	178,947,286	10,280,579.82
1918	62,948	180,369,808	12,010,271.27
1919	72,292	198,137,242	14,888,448.05
1920	83,261	213,943,993	18,067,782.61

Today T. M. E. R. & L. Co. is in better condition to render satisfactory and profitable service than ever before. Its continued steady and healthy growth and prosperity are as certain as that of the rich region with over 800,000 population which it serves. The Company employs 5,300 men and women, well paid and carefully trained to render safe and efficient public service. Their payroll runs over $9,300,000 yearly. The Company operates 997 passenger, express and work cars on 602 miles of city, suburban and interurban electric railway and supplies electric service over 2,061 miles of electric transmission wires to more than 83,000 customers.

Property Value Exceeds Capitalization

Where You Can Buy the Shares

Residents of other Wisconsin cities and towns can order the shares through their home bank, or by mail direct from the Company.

Mail orders should be addressed to Securities Department, Public Service Bldg., Milwaukee, Wis., and certified checks, bank drafts or other enclosures in payment for shares should be made payable to T. M. E. R. & L. Co.

The Milwaukee Electric Railway & Light Company

EFFECTIVE ADVERTISEMENT USED IN MILWAUKEE CAMPAIGN

Adequate Junior Financing

Practical Application of Doctrine of Bankers' Association to Be Made by Holding Company

A committee of the stockholders of the North American Company, New York, N. Y., has recommended to the stockholders a plan and agreement for the reclassification and readjustment of the capital stock of the company. The subsidiaries serve rapidly growing districts constantly demanding increased facilities with the attendant large requirements for new capital. It is explained that continued employment by subsidiaries of bonds and notes as the sole means of financing the cost of such added facilities tends in time to produce a financial set-up top-heavy in debt and to impair the credit of the parent company and its subsidiaries.

In other words, the rapid growth of the properties has required a larger amount of capital than the subsidiaries could provide and it has been necessary to make up the balance from surplus earnings, with the result that the quoted market discount on the stock of the holding company as now organized has made it impossible to meet these capital requirements from the sale of additional amounts of such stock. It thus becomes imperative that a readjustment of capitalization be effected which will make it practicable to raise new capital and permit distribution of a larger proportion of these earnings to stockholders.

The present authorized capital of the company is $30,000,000, all common, of which $29,793,300 is outstanding. It is proposed to provide an authorized capital of $60,000,000 to consist of $30,000,000 of 6 per cent cumulative preferred stock to be redeemable at 105 per cent of par and $30,000,000 of common stock. Under this plan there will be issued to each stockholder for each $100 share held at present $50 par value of 6 per cent cumulative preferred stock and $50 par value of common stock.

This will require the issuance of the same amount of stock as is now outstanding, so that upon completion of the plan recommended, the relative position of each stockholder will be maintained, unaltered as far as his proportionate interest in the assets of the company are concerned. On the other hand, however, the new plan has the advantage that the preferred stock with its fixed dividends of 6 per cent and the small proportion of the total earnings required therefor should rank as a high-grade investment stock.

Since the return on one-half the capitalization will be limited to 6 per cent, all remaining earnings will be applicable to the common stock. The larger sum thus left available for this issue, it is hoped, will warrant this stock enjoying a market from time to time at par or above. In this way it is expected provision can be made for financing the capital requirements of the subsidiaries, thus permitting the release for dividends of a larger percentage of the subsidiaries' earnings.

The matter of a readjustment of the capitalization of the company was first considered in 1917. Prior to the annual meeting of the stockholders in 1920 a plan was submitted and received the approval of a majority of the stockholders. It was later withdrawn, however, for further consideration. The directors believe that the plan now offered obviates the only objection which was offered to the plan of 1920.

Future Encouraging

Increased Traffic on London Railways Fails to Offset Increase in Operating Expenses

In the 1920 comparative statement of the operations of the five companies, which became parties to the agreement made under the London Electric Railway Facilities Act of 1915, there is shown an increase in traffic receipts of £1,924,388, or 20 per cent over 1919. At the same time the operating expenses increased £2,199,249, or 26.9 per cent over the preceding year.

Allowing for an increase in the miscellaneous receipts of more than £130,000, the net income for 1920 was £141,895 less than in 1919. The statement of the London General Omnibus Company is more encouraging than in 1919, the net income being a deficit of only £1,942 or a gain of £137,062. The reason, therefore, for the total decrease in net income over 1919 was due to the large decreases of the London Electric Railway of £167,607, the City & South London Company £41,275, and the Central London Railway £84,668.

Some idea of the rapid growth of the service rendered by the London underground Electric Railways may be obtained by the fact that 98,309,320 more passengers were carried than in 1919, an increase of 5.7 per cent. During the same period the total car miles increased 17,751,663, or 11.9 per cent.

During the year the London General Omnibus Company placed an order for 500 "K" type motor omnibuses, making together with those ordered the previous year 1,000 in all, of which 547 had been put into service up to Dec. 31, 1920. Another order has been placed for an improved bus known as the "S" type. The company will then have omnibuses of the "B" type seating thirty-four passengers, the "K" type seating forty-six passengers, and the "S" type seating fifty-four passengers.

A bill which was promoted by the four railway companies for an increase in rates received the Royal assent on August 16, 1920. The new fare was put into operation on Sept. 26, by which ordinary fares were increased about 30 per cent, and workmen's fares and season tickets were also increased. On the same date a new schedule of rates was introduced by the London General Omnibus Company. The results of the increase thus far are up to expectations.

STATISTICAL INFORMATION OF ROADS IN LONDON FOR YEAR 1920

	Metropolitan District Railway	London Electric Railway	City and South London Railway	Central London Railway	London General Omnibus Company	Total
Mileage—first track	27.825	24.137	7.325	6.825	....	....
second track	26.887	23.775	7.325	6.764	....	....
Total single track	70.800	57.613	15.680	21.375	( )577	....
Train-miles—active	5,109,101	6,717,301	....	....	....	....
idle	142,620	119,055	....	....	....	....
Total train-miles operated	5,251,721	6,836,354	....	....	....	....
Total car-miles operated	19,562,491	27,862,463	7,391,809	8,069,045	85,843,092	148,728,900
Revenue passengers carried:						
Ordinary (cash)	(a)95,320,179	112,703,726	26,443,739	39,328,973	767,953,649	1,041,750,266
Workmen	(a)24,338,296	32,946,156	12,011,225	4,536,672	....	73,832,349
Season	(a)28,040,865	18,940,220	2,683,928	6,454,240	....	56,119,253
Total passengers	(a)147,699,340	164,590,102	41,138,892	50,319,885	767,953,649	1,171,701,868
Gross passenger revenue	£1,533,000	£1,716,476	£353,104	£525,083	£6,533,951	£10,661,614
Average fare per passenger (pence)	2.49	2.49	2.06	2.46	2.04	2.18
Statistics per car-mile:	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Traffic receipts	1 9.67	1 2.78	0 11.47	1 3.63	1 6.27	1 6.72
Operating expenses	1 6.53	0 11.94	0 10.45	1 2.43	1 6.64	1 4.74
Net income	0 10.30	0 1.53	0 0.45	0 1.76	( )0 0.005	0 1.76
Passenger traffic	.. 7.55	.. 5.91	.. 5.57	.. 6.23	.. 8.94	.. 7.88

(a) Estimated. ( ) Deficit. (c) Miles of street on which buses operate, of which 222 miles are over tramway tracks.

INCOME STATEMENT OF ROADS IN LONDON FOR YEAR 1920

	Metropolitan District Railway	London Electric Railway	City and South London Railway	Central London Railway	London General Omnibus Company	Total
Traffic receipts	(a) £2,472,614	£1,716,476	£353,104	£525,083	£6,533,951	£11,601,228
Operating expenses	1,509,272	1,387,294	321,911	485,132	6,675,238	10,378,847
Net receipts	£963,342	£329,182	£31,193	£39,951	* £141,287	£1,222,381
Miscellaneous receipts (net)	205,508	134,936	32,309	73,317	247,928	693,998
Gross income	£1,168,850	£464,118	£63,502	£113,268	£106,641	£1,916,379
Interest, rentals and other fixed charges	327,371	286,266	49,619	54,071	108,583	825,910
Net income	£841,479	£177,852	£13,883	£59,197	£1,942	£1,090,469
Reserve for contingencies and renewals	45,000	45,000	25,000	20,000	285,000	420,000
Dividend on guaranteed and preference stocks	( )124,930	126,947	42,500	21,600	....	315,977
Total deductions	£169,930	£171,947	£67,500	£41,600	£285,000	£735,977
Surplus paid into or drawn from common fund	£671,549	£5,905	(c) £53,617	£17,597	(c) £286,942	£354,492
Amount received from common fund	42,539	106,348	21,270	70,898	113,437	354,492
Per cent of total	12	30	6	20	32	100
Add balance from last year's accounts	22,098	20,942	19,750	11,762	59,726	134,278
Total amount available for dividends and further reserves	£64,637	£127,290	£41,020	£82,660	£173,163	£488,770
Dividends	44,100	104,940	22,200	67,500	114,320	353,060
Balance carried to next year's account	£20,537	£22,350	£18,820	£15,160	£58,843	£135,710

(a) Including $705,347 from Government compensation after providing for adjustments.
( ) Exclusive of dividend on second preference stock.
(c) Deficit met out of common fund.

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* Deficit.

Hartford & Springfield Road Doing Better

The committee representing the holders of bonds of the Hartford & Springfield Street Railway, Hartford, Conn., has expressed great satisfaction over the much-improved physical condition of the property and its present financial status, and has urged the continuation of the receivership. The members further suggested that bondholders refrain from sending in for payment the $600,000 of first mortgage 5s due on July 1.

The bondholders received a statement of operation from Receiver Harrison B. Freeman under date of June 10, 1921. In this report Mr. Freeman expressed the belief that the railway "can be made to earn its operating expenses, taxes and something to apply on bond interest as soon as the industrial depression has passed and there has been a readjustment so that operating expenses can be reduced."

The Hartford & Springfield Division went into receiver's hands in October, 1918. At that time it owed more than $50,000 in open accounts and had failed to pay interest on its bonds. Money had to be borrowed to keep the road going, but the company, despite the severe conditions imposed by the influenza epidemic and the coal shortage, weathered the gale so that now all notes have been paid and all bills up to June 1 have been met. Considerable money has been spent in replacement and more than $20,000 has been expended within the last two years in rolling stock. These various expenditures, together with a 50 per cent wage advance, have eaten pretty well into the company's finances, even though a flat 10-cent rate for each zone went into effect on April 1, 1920, instead of the 7-cent fare. The advance in rates helped materially at first to swell the gross receipts, but this favorable development was only temporary due to the present industrial depression. State taxes and assessments for highway improvements to the amount of $29,653 accrued from Oct. 1, 1918, to Jan. 1, 1921.

The accompanying statement shows the operating results of the receivership from Oct. 1, 1918, to May 1, 1921.

Hartford & Springfield Division

	Gross Receipts	Operating Expense
Oct., 1918-1919...........	$245,675	$235,942
Oct., 1919-1920...........	255,140	265,131
Seven months to May, 1921	151,301	157,984

Hartford Division

	Gross Receipts	Operating Expense
July 1, 1920-May 1, 1921..	$152,450	$130,422
Total system 31 mos.......	804,566	789,479

Deficit of $150,000 Accumulated Since 1913

The New Jersey & Pennsylvania Traction Company, Trenton, N. J., announces a deficit of more than $150,000 in operating its line from Trenton to Princeton since 1913, according to figures submitted by the company in the hearing of the application for a 10-cent fare before the Board of Public Utility Commissioners. It was shown that the company's property was valued by the commission in 1913 at $500,000 and again in 1916 at $575,000. Both sides agreed that the 1916 valuation would hold for the proceedings in the present case. The 6 per cent net return on this valuation, which the commission authorized, would mount to $34,000 a year. A deficit amounting to from $11,000 to $50,000 a year has accumulated since 1913. Last December the commission rejected the application to raise the fare from 7 to 8 cents and advised the company that an increased rate would be unlikely to solve its financial problems.

Toledo Going Behind Steadily

With the stabilizing fund of the Community Traction Company, Toledo, Ohio, down to $183,333 after five months of operation it has been necessary to raise fares to 7 cents with tickets at eight for 50 cents or possibly six for 40 cents.

The report for the month of June made by Commissioner Wilfred E. Cann indicates a deficit of $32,963 after providing for operating expenses and allowances for various funds. This is a decrease of $1,406 from the previous month. The total accrued deficits so far amount to $313,634.

This sum will have to be made up by fare increases and savings in operations. The fare raise will not take effect before Aug. 1 because of a special provision in the ordinance which allows six months operation without a fare change.

A decrease in gross revenue from all sources of $13,663 is accounted for by the fact that riding has fallen off about 18 per cent and that June had one day less of operation than the previous month.

OPERATING RATIO 85.47 PER CENT

There was a greatly increased expenditure on ways and structures during the month of June. A total of $49,811 was paid out for that work during the month. The ratio of operating expense to income fell to 85.47 per cent during the month, a decline of 2.01 per cent.

The commissioners are not pessimistic over the status of the operation of the lines. They believe that the restriction of buses which will soon be effective will divert about $16,000 revenue to the railway and that the decrease in power rate will net a saving of between $10,000 and $20,000 a month.

The bus ordinance is now in litigation. The Common Pleas Court was upheld during the week ended July 9 by the Court of Appeals and further action was expected on July 13 to bring the matter before the Supreme Court of the State for the final effort to set the measure aside.

Financial News Notes

Wants to Issue Bonds.—The Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., has petitioned the State Public Utilities Commission for permission to issue $500,000 of 7 per cent secured sinking fund gold bonds and $98,400 of first mortgage bonds.

$525,000 Sought to Be Recovered.—Two suits seeking a total of $525,000 from the Ohio Traction Company and the Cincinnati Street Railway for franchise tax have been filed in the Hamilton County Common Pleas Court by Attorney Robert S. Alcorn as a taxpayer.

Haytian-American Corporation in Difficulties.—A petition in bankruptcy has been filed against the Haytian-American Corporation. The corporation has concessions from the Haytian government for the operation of railway and electric lines, electric light and power companies and a large sugar plantation in Hayti. James N. Rosenberg was appointed receiver in equity for the corporation last April.

Overtures Made to Continue Line.—The Lake Shore Electric Railway has been asked by citizens to abandon its plan of removing service on the Soldiers' Home and West Monroe Street lines in Sandusky. The service will be continued according to company officials provided a 10-cent fare is permitted to be charged on the Soldiers' Home line and a 7-cent fare on the West Monroe Street line. The present fare on other lines is 6 cents with five-for-a-quarter tickets.

$1,000,000 of Transit Bonds Sold.—The city of Cincinnati, Ohio, has sold to a syndicate composed of Halsey, Stuart & Company, the Guarantee Trust Company, the Bankers Trust Company, Stacy & Braun, the Fifth-Third National Bank and Ames, Emerich & Company, $1,000,000 of Cincinnati Rapid Transit Railway Construction 5¾ per cent bonds. They are a direct obligation of the city, mature Jan. 2, 1967 (optional 1942), and are being offered at 103.50 and interest, yielding 5½ per cent.

"Let Your Service Pay You Dividends."—The Public Service Corporation of New Jersey, Newark, N. J., reported on July 5 that its "Customer Ownership" campaign or its offering of 8 per cent cumulative preferred stock had aggregated subscriptions in the first four weeks of more than $1,000,000. The campaign was started on May 23. In the first four days 612 new partners were secured, and in the first four weeks this number was increased to more than 4,000. A detailed account of this offering was given in the ELECTRIC RAILWAY JOURNAL for June 4.

Traffic and Transportation

Jersey Case Carried Up

Public Service Commission Appeals From Court Ruling Holding Present Fare Inadequate

The Board of Public Utility Commissioners of New Jersey has appealed from the decision of the Supreme Court of New Jersey in the 10-cent fare petition of the Public Service Railway. It will be recalled that the opinion of Justice Bergen in this case declared that the course followed by the commission was not warranted by the evidence. The commission now replies to the strictures by the Supreme Court upon its action in the 10 cent case.

ORDER NOT WARRANTED

The commission says that the order of the Supreme Court was not warranted by law. Furthermore, the commission holds that the order of the court was in effect the legalizing of "all the bond issues of the Public Service Railway and all the rentals paid to subsidiary companies under lease," the valuations of which have never been determined by commission or court.

The third point made by the commission in its comment upon the Supreme Court decision is that the appeal to the Court of Errors will determine whether the fixing of a just and reasonable rate is a judicial or legislative function. It was expected that the board would announce by July 14 what it considered a just and reasonable permanent fare for the railway.

The commission sought immediate action on its appeal, but Chancellor Edwin Robert Walker declined to convene the Court of Errors and Appeals in special session to stay the judgment of the Supreme Court directing the commission to grant a higher rate of fare than 7 cents to the railway. L. Edward Herrmann appeared before the chancellor at the direction of the Utility Board. The chancellor stated that it would not be possible at this time, upon such short notice, to secure a quorum of the sixteen Errors Court members, as many of the judges are away.

VALUATION BRIEF FILED

In a brief filed with the Public Utilities Commission on July 11 in the Public Service Railway valuation case, George L. Record, representing Jersey City, repeats his stand for the continuance of the 7-cent fare and asks that the Public Service be warned that if it wants greater return on its investment it must rely upon greater efficiency and economy in management. Mr. Record contended:

> The evidence shows that the Public Service is not entitled to any increase of fare, and that on the contrary the rapid fall in the price of labor and material will soon put the company where a reduction in the present 7-cent rate should be ordered.
>
> It is not fair that this company should be able to exact from the people who ride in the cars a tribute of $1,500,000 annually to pay interest upon securities that represent no invested value. The injustice of taxing forever people who are mostly poor in order to provide an unearned income to security holders who are mostly rich, is intolerable and in the long run can not in the nature of things continue.

The Cooley appraisal of the Public Service property is called "fanciful" and "absurd" by Mr. Record and the one made for the state by Ford, Bason & Davis fails also, he declares, because it is built up upon the same fanciful theory and because the value found depends entirely upon what rate the board should allow. Mr. Record contends for the $60,000,000 value offered by the municipalities.

Six Cents Upheld

State Supreme Court Reverses Lower Court Decision and Dismisses Attorney's Suit

The State Supreme Court of Louisiana in a recent decision ruled that Shreveport citizens must continue to pay a 6-cent fare until Dec. 31, 1923. This finding by Justice Provosty reversed the Caddo District Court and dismissed the suit of Huey P. Long, Jr., against the Shreveport Traction Company, asking that the 6-cent fare ordinance be declared illegal.

The Shreveport fare controversy dates back to May 18, 1920, when an election was held and a majority of votes cast favored the increase in fare from 5 to 6 cents.

The increase was contested by H. P. Long, an attorney at Shreveport and a member of the Louisiana State Railroad Commission. Having failed in his efforts to defeat the proposition on the day of the election, Mr. Long filed suit to annul the election, alleging certain irregularities in the proceedings of the Mayor and Council in calling the vote. The case was tried in February, 1921, and the District Judge sustained the contention that the irregularities were sufficient for an annulment. Mr. Long came out in public print advising people to pay only 5 cents. The railway advised the people that an appeal would be taken to the Supreme Court and that the fare would be 6 cents until such time as the Supreme Court should pass upon the matter.

In the course of a few weeks the number of patrons who insisted on paying only 5 cents grew to such proportions that the railway instructed its conductors to eject any passenger who failed to pay the full fare. As a result there was considerable confusion and the company compromised the matter by agreeing to issue coupons for 1 cent in case the higher court should sustain the lower court.

The case was argued before the Supreme Court on April 11 and decision was rendered on June 30 in favor of the railway.

More Jitney Decisions

Connecticut Commission in New Findings Reiterates Stand Taken in Hartford-Manchester Case

The jitneys heretofore operating in New Haven, Conn., have been denied certificates of convenience and necessity by the Connecticut Public Utilities Commission with the exception of three buses operating on a route that serves territory intervening between two car lines. This decision also largely prohibits jitney operation to surrounding towns either on account of adequate rail service or because permits have already been granted to other jitney operators.

In denying the applications between Branford and New Haven the commission suggests that the Connecticut Company establish a motor bus service in connection with its trolley lines to serve territory between East Haven and Branford, formerly fed by jitneys and now without other means of transportation.

With regard to the applications for permits to run to Bridgeport and Hartford the commission denied the petitions, holding that in each case there was adequate steam road service and that the routes were intended principally for through traffic and would only serve intermediate territory to a limited extent. However, on the New Haven-Bridgeport route the commission suggested that the Connecticut Company might operate a motor bus from New Haven via Milford to Devon and Allingtown over the main trunk highway, there being no other existing means of transportation, nor any application for this territory. In connection with the route to Hartford, over which large touring cars were run, the commission held the train service was adequate and further that inasmuch as the automobiles with reasonable safe speed took at least thirty minutes longer than the train, the duplicate service was not warranted.

The commission allowed the application for a bus route from New Haven to Waterbury via Bethany on the grounds of inadequate train service, but denied the through route to Waterbury via Ansonia and Derby. This last-named route is co-extensive with or parallels street railway service supplying intermediate points over its entire length. The route to Waterbury via Bethany, it was held, was the quickest, most direct and uncongested for through travel and for that reason the commission denied the applications for another through route via Derby.

Business Men Ask for Cheaper Fares.—At the monthly meeting of the Allied Boards of Trade of Pittsburgh, Pa., on June 15 constituent organizations through their delegates reported that they had approved resolutions adopted last month by the Allied Boards, calling for a lowering of railway fares in Pittsburgh. The committee on better service was instructed to bring this matter before City Council and the Public Service Commission.

More Municipal Buses

Hylan Administration in New York Establishes Routes Over Grand Concourse

The Emergency Bus System, so-called, of the Department of Plant and Structures, New York, started operation on Sunday, July 3, over an 8-mile line for a 5-cent fare along the Grand Concourse in the Harlem and Bronx districts of upper New York City. Nine two-man doubledeck buses, seating fifty passengers each and mounted on Diamond-T chassis, comprised the original fleet put into service. Eleven more buses are soon to be added. Five of these will be of the same design while the other six will be mounted on a Packard chassis with body patterned after that of the London bus.

ORIGINAL ROUTE EXTENDED

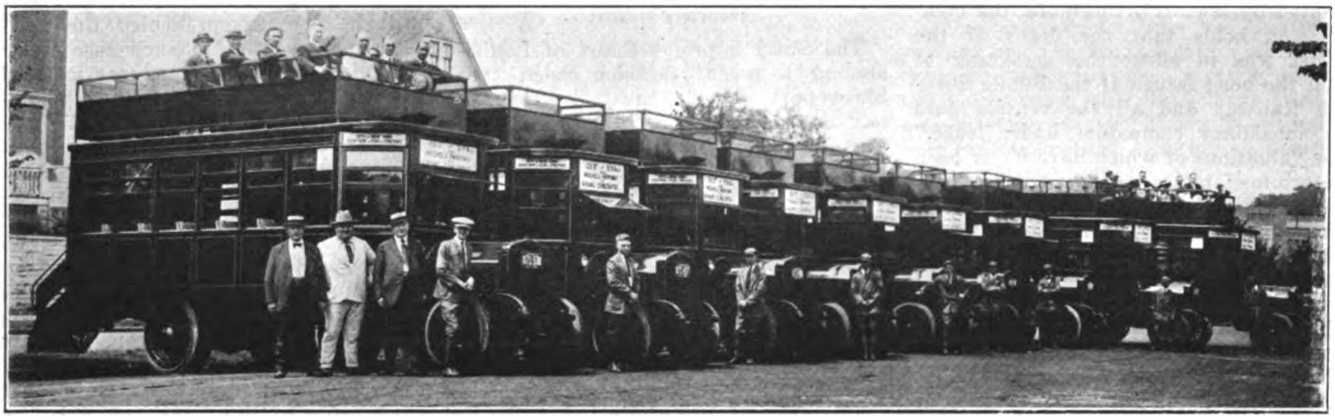
The original bus route extends from 110th Street and Fifth Avenue north via Fifth Avenue, Morris Parkway, Madison Avenue, Mott Avenue, and the Grand Concourse to Mosholu Parkway at 207th Street, a distance of 8.3 miles. The buses are run on a ten-minute headway so far as possible. As soon as additional equipment is received, it is planned to open up another route from Fort Lee Ferry thence via 126th Street to Fifth Avenue and to sandwich in with the first-named route so as to give a five-minute schedule over the Concourse. These routes do not operate except for about a half mile on streets occupied by trolley car tracks and then only to cross the Madison Avenue Bridge.

This bus system is the result of action taken by the Board of Estimate on July 1, 1921, granting to Emil Leindorf, owner of the Concourse Bus Line, Inc., permits to use the above streets for motor bus traffic. Operation is under the direction of the City Department of Plant and Structures, and that department furnishes starters and police to man the queue loading areas established at the bus terminals.

The actual running time for a one-way trip took fifty-one minutes, without including any loading time at the terminals. Under the plan of operation all buses must unload before starting on the return trip so as to give those waiting in the queue a chance to get aboard in their turn according to the number of seats operated. Stops per mile will vary from six to eight. This gives an average speed of 9.75 m.p.h.

The streets over which the buses operate could not be better so far as the paving is concerned. There is less than a mile of granite block paving, some of which is grouted, while the balance is either asphalt or bitulithic macadam. The amount of vehicular traffic which the buses have to contend with is heavy inasmuch as the major portion of the route passes over one of the main arteries for automobile traffic out of New York City for points north and east. This, however, is not as slow moving as the buses themselves for the Concourse has two one-way traffic lanes each wide enough to accommodate three traffic streams without difficulty and the speed limit is not strictly enforced.

The traffic handled during the first few days of operation averaged from 15,000 to 20,000 a day of nineteen hours. Buses for the most part were filled to capacity and it was with difficulty that the no-standing rule was enforced.



FLEET OF BUSES SERVING TERRITORY NOW WITHOUT RAILWAY FACILITIES

Three-Cent Fare Advocated

Councilman Oliver T. Erickson of Seattle, Wash., is sponsor for a 3-cent fare initiative ordinance to be introduced at the spring election next year. Mr. Erickson's proposal is to charge a fare on the Seattle Municipal Railway sufficient to pay interest and redemption charges on the $15,000,000 of bonds issued to Stone & Webster in payment for the lines bought by the city two years ago, and then meet the cost of maintenance and operation of the lines out of taxation.

City officials have joined with business men in condemning the measure. Mayor Hugh M. Caldwell stated:

> I have never thought favorably of the 3-cent fare plan. I think it would hurt the city.

Councilmen John E. Carroll and A. Lou Cohen have gone on record as flatly opposing it, and other members of the Council have similarly expressed themselves. Others hold it would ruin the credit of the city.

Birmingham Case Closed

Commission Expected to Rule Within Thirty Days on Eight-Cent Fare Plea

Hearings on the application of Lee C. Bradley, receiver for the Birmingham Railway, Light & Power Company, Birmingham, Ala., for an 8-cent fare with a 2-cent transfer charge and an application to keep the present electric light schedules in effect, eliminating an automatic reduction in rates, were held before the Alabama Public Service Commission on July 7 and 8.

Testimony before the commission was completed on the night of July 8 and the case was taken under advisement pending the filing of a budget for the last half of the year by J. S. Pevear, president of the company, and general manager of the property under the receiver. Mr. Pevear is also to file estimates of the receipts of the property for the last half of the year based on the present rate and on the advanced rate. Similar estimates are to be furnished by I. W. Ross, consulting engineer for the city of Birmingham. Efforts of the receiver to secure the advance in fares were strongly contested by the city.

Mr. Pevear for the company stated that the increase was necessary in order that the company continue to operate and render proper service. I. W. Ross, witness for the city, maintained that the present 7-cent fare is adequate and that by making a traffic survey, rerouting and effecting certain economies the condition of the property can be improved. In the arguments Mr. Bradley, the receiver, declared that the raise must be granted or the property will have definitely turned back toward the conditions of 1918 when there was an almost total break down in the service. Mr. Johnston maintained that the company should be re-organized and that the additional money needed should be supplied by the stockholders. He contended that about $2,000,000 in new money should be put into the property and stated that a large part of the heavy expenditures of the receiver represent deferred maintenance and capital investments which should not be gotten from the people in increased fares.

Mr. Pevear outlined the improvements made by the receiver. Twenty-five new one-man cars were bought, 144 motors were installed in old cars which were rebuilt. Trailers were bought and the work of rehabilitating the track was begun. During the receivership, he testified, only the preferred creditors have been paid and all other money has been put back into the property. He stated that the receiver has spent approximately $2,297,000 in rehabilitation.

Testimony was given to the effect that the number of revenue passengers now using the railway is about the same as in 1913. An exhibit was filed showing that for 1920 there was an increase in comparison with 1913 of 287 per cent in current sold, 115 per cent in gas, and 32 per cent in the number of revenue passengers handled. In May, 1921, the comparison with May, 1913, shows a 253 per cent increase in current, 150 per cent increase in gas, and a 5 per cent increase in the number of revenue passengers handled. Mr. Pevear testified that railway mileage is the same as in 1915, more cars are in operation and better service is being given, but no more people are riding.

An exhibit was filed showing that in May, 1921, a total of 110,500 revenue passengers were handled as against 140,500 in May, 1920. Exhibits were also filed showing that since 1913 the average wage of the company has increased from $64 a month to $120. Operating costs of the street railway were shown by another exhibit to have been reduced from 23 cents per car mile in January to 20.1 cents per car mile in May, 1921. This compares with 21.4 cents per car mile in May, 1920. Other exhibits filed showed economies effected and savings made in the shops and a general financial statement.

Cross examination of Mr. Pevear by Mr. Johnston lasted for practically a whole day. Mr. Pevear testified that the property was in fair condition in 1913 and 1914 and that it went down to a point of practical collapse during the war. The property he testified has now been put in good condition. The common stock had not paid a dividend in years and the preferred has paid only 9 or 10 per cent where 42 per cent is due.

Mr. Ross was put on the stand for the city. The most salient features of his testimony were strong recommendation for a traffic survey and rerouting of lines in the business district. He stated that the introduction of an express service to suburbs with local cars for the nearer in traffic would effect a saving. He also recommended the abandonment of a portion of the Tidewater tracks and a rerouting of a portion of that line. He expressed the opinion that a 7-cent fare is adequate in Birmingham. He filed a lengthy statement in the form of an exhibit showing the results of his study of the property which has covered several months.

Following the close of the testimony the commission indicated that it would probably rule within thirty days.

Wants Five-Cent Fare Restored

It was recently stated by Corporation Counsel Lewis that the City of Syracuse would take steps immediately after Nov. 1 for a return of the 5-cent fare on the lines of the New York State Railways in that city. On that date the time will expire in which the city was prevented by the former Public Service Commission from filing a demand for a 5-cent fare.

The reduction will be asked on the ground that the company has installed changes which have greatly reduced the cost of operation and also that the 8-cent fare was not justifiable from the evidence submitted. Mr. Lewis will also petition the Public Service Commission to act on the one-man car issue. He wants a survey by a state expert as many complaints have been made about this method of operation in Syracuse.

Commission Grants Fare Increase

In a decision handed down June 25, 1921, the Wisconsin Railroad Commission granted permission to the Wisconsin Traction, Light, Heat & Power Company operating an interurban electric railway between Neenah and Kaukauna and a street railway in Appleton, to increase its city and interurban electric railway fares. The application for an increase was filed in October, 1920, on the ground that the increases in operating costs has been so large that a fair return on the property was not being earned. The case was heard by the commission in November, 1920, but action on the application was withheld by the commission, until the company made substantial progress towards bettering its gas service.

On Jan. 7, 1921, satisfactory evidence as to progress towards better gas service having been shown, the commission proceeded with the consideration of the case with the result that an increase in railway fares was granted. The cash fare within the city fare limits of Appleton, Neenah-Menasha and Kaukauna was increased from 5 cents to 7 cents; children 3 to 10 years who used to pay half-fare or 2½ cents will now pay 4 cents. The following ticket rates were established: eight tickets for 50 cents good for any 7-cent fare on system; twelve tickets for $1, good for any 10-cent fare on system; books of twenty-five tickets for $4, each ticket good for any 20-cent fare on the system and in addition good for transportation between Neenah and Appleton or between Kaukauna and Appleton with transfer privilege to and from city cars in Appleton. The company was also granted increases in interurban cash rates of fare.

Wants Interstate Rate Raised.—The Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has petitioned the Public Service Commission of Indiana for an increase in its Indiana rates to the Illinois-Indiana interstate rate level.

Transportation News Notes

Print Transfers for Car Changes.—Rerouting the street car lines at Memphis made necessary an initial order for 16,240,000 transfer tickets, requiring twelve tons of paper, according to E. W. Ford, general superintendent of the Memphis Street Railway. For each of the twenty-three lines on which the routing has been changed a new transfer ticket must be provided. Mr. Ford said that the date for starting the new routing awaits the completion of track work.

Nashville Survey Expected Soon.—The traffic survey of the city of Nashville which is being made by Ross Harris, traffic engineer for the city and the Nashville Railway & Light Company, is expected to be completed within the next month. A preliminary report has been published showing statistics of the city but no recommendations will be made until the survey is complete. At present the main thoroughfares of the city are very much congested during the rush hours. One-way traffic is in force on a great many of the principal streets.

Supreme Court to Decide Jitney Issue.—Jitney operators of Atlantic City, barred from driving machines unless they are owners of the cars, will carry the new ordinance which went into effect on June 13 into the New Jersey Supreme Court on a writ of certiorari in an effort to prove it unconstitutional. Under the provisions of the act before the present amendment, the city issued 125 licenses to operators, giving ex-service men first call. It has been charged by the city that scores of drivers were reckless in operating cars. Repeated warnings failed to break up this condition and the law was amended to permit only owners to drive. Many jitneymen were thrown out of employment by the new ordinance.

Discrimination Charged in Utah.—The Salt Lake & Utah Railroad, Salt Lake City, Utah, complainant against the Utah Railroad, has filed its brief with the Public Utilities Commission of Utah, in which it is alleged that the acts of the defendant violate sections of the compiled laws of Utah of 1917 and sections of the public utilities act. These acts, it is alleged, constitute a discrimination against the Salt Lake & Utah Railroad and shippers in that a greater amount is charged by defendant's tariffs for carriage of coal via the Salt Lake & Utah road than is charged for identical service via the Salt Lake route. The Utah Railroad has ten days in which to file its brief with the commission, the case having been presented on May 4, and taken under advisement by the commission, both parties to submit briefs in the matter.

Personal Mention

Newspaper Man in Charge of Utility Information Service

Linton K. Starr, assistant city editor of the *Atlanta Journal*, announced his resignation recently to become executive secretary of the newly formed Georgia Committee on Public Utility Information. He will have direction of the committee's activities, which, it was announced, will be to develop friendlier relationship between the public and corporations serving it by acquainting the one with the problems and purposes of the other.

Mr. Starr undertakes the work of the committee with the advantage of a wide experience, not only in the newspaper profession, but in publicity and public relations work of all kinds. A native Georgian, a graduate of Emory University and a former student of Johns Hopkins University, he has lived practically all his life in Georgia and has been familiar from boyhood with the state and its people.

Mr. Starr has been a close student of public relations for many years. During the war he conducted an extensive campaign for the government to arouse interest in and encourage the support of the selective service law in Georgia. His other work has included publicity for Emory University, various conventions and a number of business enterprises. He is an experienced advertising writer.

In its initial statement the committee expressed its views and intentions by saying that "We believe that the utilities have reached a period demanding, first, the highest possible standard of service to the public; and, second, the full understanding by the public of the problems of utilities, which, after all, are the problems of the public."

A. LeRoy Hodges Promoted on the Brooklyn City Railroad

A. LeRoy Hodges was recently appointed assistant secretary and assistant treasurer of the Brooklyn (N. Y.) City Railroad, where, until this promotion, he had been in charge of the statistical work in connection with the operation of the surface lines.

Mr. Hodges' first railway connection was with the Westchester, Kennett & Wilmington Railway, Kennett Square, Pa., as secretary to the general manager, a position he took after a business education in Albany, N. Y. Leaving this property in 1908, he was employed by the General Electric Company as secretary to the assistant manager of the switchboard department. In 1911 Mr. Hodges left Schenectady to accept an appointment as secretary to A. W. McLimont, then vice-president and general manager of the Michigan United Railways, Jackson, Mich.

Upon the leasing of this property to the Commonwealth Power, Railway & Light Company he was appointed chief clerk to C. E. Morgan, general superintendent of the Michigan Railway, and continued in this capacity until Nov. 1, 1919.

J. W. Welsh Secretary

Special Reorganization Committee Recommends that A. E. R. A. Engineer Be Made Secretary

As is indicated elsewhere in this issue, J. W. Welsh, special engineer of the American Electric Railway Association, and acting secretary since the resignation of E. B. Burritt in March of this year, has been recommended by the special reorganization committee as the permanent secretary. For the past two years as special engineer of the association, Mr. Welsh has conducted studies and investigations of special subjects and has had charge of the information service of the association. Under his direction the Bureau of Information and Service has rendered valuable aid to the industry.

J. W. WELSH

It is the function of this bureau to compile information concerning all phases of electric railway operation. By means of it members of the association are kept informed of the latest developments in the fare situation throughout the country, wages and working conditions, trend of regulation, valuation, franchise requirements, operating methods, operating economies, effect of increased rating of fare, developments in the operation of safety cars, etc. In addition to this direct service to the member companies, the bureau has also prepared statistical data for and otherwise has assisted the various standing committees of the association, *Aera*, and the publicity department.

During each of the past two years Mr. Welsh, as a special lecturer of Yale University, has given a series of lectures on electric railway problems to Yale graduate engineering students.

Until his appointment as engineer of the association, Mr. Welsh was in Washington, D. C., associated with A. Merritt Taylor, manager of the passenger transportation of the Emergency Fleet Corporation of the United States Shipping Board. Mr. Welsh, who served on Mr. Taylor's staff, assisted in providing transportation facilities to the various shipyards on the Atlantic and the Pacific Coast as well as correcting existing shortcomings where they were present. Previously Mr. Welsh was electrical engineer and traffic agent of the Pittsburgh (Pa.) Railways, with which he became associated in 1906 as assistant electrician. In 1910 he was made electrical engineer and in 1913 took charge of the traffic department. Some of his earlier electrical engineering experience was gained in the employ of the National Tube Company, Wheeling, W. Va., and also in the Westinghouse Electric & Manufacturing Company at East Pittsburgh.

Mr. Welsh was graduated from Wittenberg College in 1900, Harvard University in 1901, and Massachusetts Institute of Technology in 1903.

J. V. Granger has been elected vice-president of the Tidewater Power Company, Wilmington, Del., in which office he succeeds H. C. McQueen.

R. Knecht has recently become master mechanic of the Indiana (Pa.) County Street Railways, succeeding William Kinter.

S. G. Shaw, supervisor of safety on the Denver & Intermountain Railroad, Denver, Col., was recently appointed claim agent. W. C. Simonds has joined the staff of the property with the title of purchasing agent. This position was formerly held by W. S. Brackett. The two first-mentioned men hold like positions respectively with the Denver Tramways Company.

Obituary

Francis B. Crocker, founder of the Crocker-Wheeler Company, died on July 9 at the age of sixty-one. His most important contribution to the electrical industry was work done in making the electric motor a commercial success. His teaching as founder and head of the school of electrical engineering of Columbia University contributed much to the growth and importance of the electrical development of this country. It was his aim to bring about standardization in the electrical industry and as the first chairman of the standardization committee of the American Institute of Electrical Engineers, his painstaking work earned for him much commendation. He was a past-president of the American Institute of Electrical Engineers, the Electric Power Club and the New York Electrical Society.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Improvement Expected in Track Material

Market for First Half Year Has Been Very Quiet—Deliveries Are Immediate

The market for track material such as spikes, bolts and nuts should show improvement in the fall months, according to the opinion of producers. It is generally conceded that present buying is no better than the poor demand existent all the first half of this year. There are some inquiries out from steam roads as though they were feeling out the market, but actual orders are scarce.

Electric railway business is flat, but some of the lines in the Middle West have inquiries on the market for creosoting ties, which may be the first step in track construction work. Both steam and electric roads have been out of the market for so long that it seems conditions of demand cannot help but improve. The chief retarding factor, it is felt, has been high labor costs, and this now seems to be on the road to being remedied. Export sales are dead, and prospects there are uncertain as this market is largely contingent upon large world affairs.

Jobbers of this class of material are buying from hand to mouth and generally have low stocks. Manufacturers, however, still have considerable supplies of cancelled material on their hands and are able to make immediate shipments, though manufacturing operation is at a very low point. Some producers who make only bolts and nuts are closed down entirely, though as recently as late last summer production was two to three months behind on spikes and as long as six months on bolts and nuts.

The current base price on standard railroad spikes and track bolts has receded about ¼ cent in view of the recent drop in steel. In car lots spikes are now quoted at 2.90 cents to 3 cents per pound and track bolts at 3.80 to 4 cents. These price reductions are generally expected to improve buying.

Brill Has Built 2,961 Safety Cars to Date

The J. G. Brill Company and its subsidiary companies, the American Car Company and Wason Manufacturing Company, have received orders to date for a total of 2.961 Birney safety cars, according to the June, 1921, issue of the *Brill Magazine*. With the exception of those still in the course of construction, shipments of these cars have been made to 168 street railways in the United States, Canada, Mexico, South America, New Zealand and Holland. Indications are, it is stated, that light-weight, ore-man-operated safety cars will very rapidly be installed in service in practically every country in the world. Up to the first of this year a total of 4,193 safety cars had been ordered by companies in this country and Canada, statistics compiled by the Electric Railway Journal show. This total covers the five-year period previous to the present year as this type of car was practically unknown before 1916, when 187 safety cars were purchased.

Steel Cut Brings Price Drop in Electrical Items

Conduit, Outlet and Switch Boxes and Locknuts and Bushings Are Reduced This Month

Following general reductions in the price of steel products that were made recently, lower quotations have resulted on a number of electrical steel products. Effective July 7 the U. S. Steel Corporation reduced the price of standard steel pipe from the discounts shown on its April 13 card as follows: ¼-in. and ⅜-in., 1 point or $2 per ton; ½-in. to 6-in., 2 points or $4 per ton; and 7-in. to 12-in., 3 points amounting to $6 per ton.

Effective July 11 a number of leading manufacturers of electrical conduit also reduced prices by increasing the discount allowed distributers, at the same time advancing the number of their base card by one. The decrease amounted to 9 points on black and galvanized conduit in some instances and 5 points in others. The difference of 4 points is accounted for by earlier price reductions on the part of those who at this time dropped the least, so that base prices are said to be approximately on the same level. Sizeable stocks are reported by manufacturers, with keen competition for orders and generally quiet conditions of demand.

In line with the drop in the price of base sheets, outlet box quotations have been generally reduced 11 per cent on black and 10 per cent on galvanized. The drop became effective on various dates ranging from June 27 to July 11, and was made by increasing the discount 5 points in each case.

Locknuts and bushings were reduced approximately 29 per cent by manufacturers during the same period as the price decrease noted above. The discount to jobbers in standard packages was increased 10 points.

Switch box prices are also down, the drop in several instances there becoming effective around the first of the month. The amount of the decrease varied with different manufacturers, ranging from 11 to 35 per cent.

Secretary Hoover Optimistic on Trade Situation

Although Exports Are Lower in Value, He Foresees Slow Increase Under Better Economic Operation

In an address in Boston on July 12 Herbert Hoover, Secretary of Commerce, in discussing the foreign and domestic business situation, said that although our exports and imports had dropped nearly 50 per cent in value from the high water mark of a year ago, more of this decrease was due to the fall in prices than to a decrease in volume, and that with Russia not exporting food he saw no reason why we should not continue to export approximately the same volume of foodstuffs that we have shipped abroad during the past six months. This item alone, he said, even at present prices would be triple our pre-war food exports and would represent the equal of more than 60 per cent of our whole pre-war export trade. He thought also that the demand for our raw materials would slowly increase toward pre-war amounts and that our manufacturers should be able to hold special fields for repetitive production and ingenuity. He expected we would have to make an effort to hold the market for manufactured goods wherever we come more directly into competition with the European manufacturer, but that we can do it if we will work and apply our brains to it.

On the financial side of our situation he expressed the belief that our world credit situation is not so serious as to require extraordinary solution. The real cure for this depression as all other depressions is courage and applied intelligence, and the return to primary virtues of hard, conscientious toil and economy in living. On every side there is evidence that the vast majority of our nation is making a gain in effort in those directions equaled only by that of 1918, and the day some months ago when we entered this effort we fundamentally turned the corner of this depression. While our recovery may be slower than some may expect nothing can prevent the prosperity of a country where the people have enlightenment, wish to work, wish to produce and wish to do right by their neighbors.

New York Retail Cement Price Down to $3

Producers Hold Sufficient Stock to Make Prompt Shipments, Though Production Is Low

Activity in the market for cement continues on the same quiet level as heretofore. Electric railways are buying very little and demand from other sources, such as steam railroads or the building trade, has not picked up appreciably. Early this year, in view of the low production of cement, it seemed possible that deliveries might become pushed if building work started up as was expected. At present there seems little chance of a shortage developing, however, despite the fact that production is still down very low. Dealers are existing from hand to mouth but producers have a fair surplus quantity, which insures immediate deliveries. Manufacturers apparently believe that the situation will drift along on its present quiet plane for a few months, with some activity in the field of residential construction work but very little in other classes of building.

Producers' prices have held steady since last April, when a cut of 60 cents per barrel was made, but meanwhile retail quotations have continued to drop. At the time producers lowered prices last April New York dealers were quoting $3.50 per barrel. This has since dropped to a nominal price of $3.20 per barrel, but at the same time prices are being cut to $3, though some interests refuse to sell as low as that. The peak price of cement was $5.20 per barrel, New York, in effect last November.

Rolling Stock

Tampa Electric Company, Tampa, Fla., has placed an order for twelve more Birney safety cars for the Tampa service to be delivered in time for the next tourist season, General Manager Thomas J. Hanlon, Jr., announces. The company placed a previous order for eight safety cars with J. G. Brill Company in February, 1920.

Pacific Electric Railway Company, Los Angeles, Cal., received ten new all-steel, multiple-unit, interurban motor cars in Los Angeles on July 5. These cars, which were described on page 393 of the August 21, 1920, issue, are the first installment of thirty ordered in July, 1920, from the Pullman Company. Delivery was delayed by two fires in the Pullman works, which destroyed a large amount of construction material. Twenty of the cars are equipped with four motors of 150 hp. each, the cost of the motor cars being $46,000 each. The remaining ten cars are trailers, costing $25,000. The ten motor cars yet undelivered are expected to arrive within a few weeks, followed by the trailers. The new cars, which weigh 57 tons each, will be distributed on the Long Beach San Bernardino and other lines of the company where traffic is heavy, the intention being to transfer the cars now in use to other divisions of the system.

Detroit (Mich.) Municipal Railway, mentioned in the June 18 issue as asking for bids on 100 safety cars and fifty Peter Witt cars, has this week placed orders for these. Information just issued on the Peter Witt cars is given below. Specifications on the safety cars are as shown below:

Number of cars ordered	50
Date of order	July 12, 1921
Delivery	November
Builder	G. C. Kuhlman Car Company
Type of car	Peter-Witt, Detroit Safety Type
Seating capacity	56
Weight, total	36,000 lb.
Length over all	48 ft. 1 in.
Truck wheelbase	5 ft. 2 in.
Width over all	8 ft. 2 in.
Height, rail to trolley base	11 ft.
Body	Steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	G.E. C.P. 27
Axles	4½-in. A.E.R.A. Standard
Bumpers	Hedley Anti-climber
Car signal system	Faraday Buzzers
Car trimmings	Statuary Bronze
Center and side bearings	Perry-Hartman
Control	K-3562, with door contacts and line switch
Couplers	Metropolitan
Curtain fixtures	Curtain Supply No. 88
Curtain material	O'Bannon D.C., No. 076
Designation signs	Keystone
Door operating mechanism	National Pneumatic at center doors
Fare boxes	Johnson
Fenders or wheelguards	H.B.
Gears and pinions	G.E. Long Adendum tooth, solid
Hand brakes	Peacock
Heater equipment	Cutler-Hammer
Headlights	Golden Glow, No. 96
Journal boxes	M.C.B.
Lightning arresters	G.E.
Motors	G.E. 265—35-hp., 4 per car, inside hung
Paint	Sherwin-Williams, Old Dutch, enamel
Registers	International R-7, air-operated
Sanders	Osgood-Bradley sand traps
Sash fixtures	O. M. Edwards Company, 13½ D1
Seats	Brill
Seating material	Rattan
Step treads	Feralun
Trolley catchers or retrievers	Ohio Brass Company
Trolley base	Ohio Brass Company
Trolley wheels or shoes	Ideal, 4½ in.
Trucks	Brill, 77 E1
Ventilators	Garland
Wheels	Steel, 26 in.
Special devices, etc.	Nichols-Lintern Tail Light, Duplex Safety Car Devices Equipment like that used on safety cars, controlling front door and interlocking center doors.

Track and Roadway

Southern Pacific Company, San Francisco, Cal., received bids in the office of the purchasing agent up to July 14 for track bolts and spikes.

Tampa (Fla.) Electric Company is planning to double-track about 2 miles of its line.

East St. Louis & Suburban Railway, East St. Louis, Ill., will not be able to make the improvement as requested by the city of Belleville, O. W. H. Sawyer, president, stated that $30,000 had been appropriated for maintenance in the city during the year and that this amount would not cover extended enlargements demanded. Members of the Belleville Council will consider paving West Main Street by assessment and will compel the railway to install double tracks between the Public Square and the Southern Railway crossing.

Indiana Service Corporation, Fort Wayne, Ind.—Owing to poor business conditions the proposed big truck plant which is to be erected just east of Fort Wayne, Ind., by the International Harvester Company has been postponed for about a year. But the Greater Fort Wayne Development Company—a million dollar concern—which was formed among Fort Wayne business men to build homes, etc., is going ahead with plans already formed for putting in streets for the plant. One of the things which the development company is pushing right along is the extension of the car lines of the Indiana Service Corporation to the plant. Recently a remonstrance was filed by residents of Pontiac Street against the double tracking of that street, so another route to the plant east of the city is being considered.

The Public Service Railway, Newark, N. J., will shortly begin to lay Belgian blocks along the tracks from Bordentown, N. J., to Black's Creek.

Cincinnati (Ohio) Street Railway, has submitted proposals to the Cincinnati Traction Company for a loan of $650,000 to finance improvements which will include the proposed extension of the Warsaw Avenue line. Director of Street Railways, William Jerome Kuertz, disclosed this fact recently to a delegation of citizens who called on him for information in regard to the above mentioned extension.

Power Houses, Shops and Buildings

Boston (Mass.) Elevated Railway has signed a lease with the Boston Transit Commission for the construction and operation of an underground tunnel station at Maverick Square, East Boston, the end of the East Boston tunnel. At present the cars run up an incline and radiate to the various surface lines. When the new station is constructed train service will be operated through the tunnel and passengers will change to surface cars at this point. The estimated cost of this station will be $1,650,000.

Hudson & Manhattan Railroad is purchasing all its energy from the New York Edison Company. This company took over the power plant located at Washington and Bay Streets, Jersey City, New Jersey. It contains four turbo-generators with a total capacity of 8,000 kw. The plant was built in 1910.

Professional Note

Ford, Bacon & Davis, consulting engineers, New York, have opened an office at 1421 Chestnut Street, Philadelphia. At this office the firm is prepared to render services in the way of making valuations, engineering reports, superintending construction, conducting management of public utilities and industrial properties and preparing financial programs. The office in Philadelphia is in addition to the offices at 115 Broadway, New York, and at 58 Sutter Street, San Francisco.

Trade Notes

The Esterline-Angus Company, Indianapolis, Ind., has developed a portable concentration meter for showing the degree of concentration of chemical salts in water.

W. H. Bloss of the executive sales department of the Ohio Brass Company at its main office, Mansfield, Ohio, died at his home in that city on June 22. Mr. Bloss had been with the company continuously since 1906 and for the past year had been in charge of steam railroad electrification for the company. Previous to that he was in charge of sales for the central district.

The Mica Insulator Company, 68 Church Street, New York City, has developed a flexible oiled cotton tube for withstanding high temperature in electrical machine and instrument winding.

J. R. Crawford, general sales manager of the Union Carbide Sales Company, has succeeded N. C. Catabish as general sales manager of the National Carbon Company, Inc., Cleveland, Ohio.

P. L. Laughlin, assistant district sales manager of the Verona Tool Works, Chicago, has been made district sales manager, succeeding John B. Seymour, who assumed the office of sales manager Superior Supply Company, Chicago, last month.

Jeffrey Manufacturing Company, Columbus, Ohio, manufacturer of conveying, elevating, crushing machinery, etc., has moved its New York office from 50 Dey Street to 30 Church Street. Harold B. Wood has been made district sales manager, succeeding F. C. Ayers, who has left the company.

The International Register Company, Chicago, Ill., through its sales agent the Electric Service Supplies Company, has leased 112 International portable hand registers to the Third Avenue Railway Company, New York City. These registers are attached to the fare box and used as an additional check on fares. About 250 of them were also placed with the Public Service Railway Company, Newark, N. J., earlier this year, for use on its safety cars.

The Worcester Electric Tool Corporation, Worcester, Mass., has recently been organized to take over the business of the Stenman Electric Valve Grinder Company, Inc., the Stenman Electric Tool Company and the Consolidated Machine Tool Company, all of Worcester. The principal products of the company for the present will be the "HusKee" three-in-one combination service tool and the "HusKee" service drills. These tools have been on the market in a small way for the past six months and are the result of over two years' development work. The officers of the company are: H. P. Gleason, president; A. G. Sandberg, treasurer; J. J. Kelleher, sales manager, and Harold Raine, advertising and service manager.

New Advertising Literature

Pneumatic Tool Accessories.—Ingersoll-Rand Company, 11 Broadway, New York City, has issued a twenty-four-page booklet illustrating and describing its line of "Little David" pneumatic tool accessories.

Fire Fighting Equipment.—The Oil Conservation Engineering Company, Cleveland, Ohio, has issued a pamphlet on "Electric Light and Power Plant Fire Protection," which describes the "Oceco" 10-gal., non-freezing fire extinguisher.

Track Equipment.—A. C. Callon, Portland, Ore., dealer in cars, rails and other railway equipment, has issued No. 117 of "Callons Bulletin," dated June 1921, which lists various quantities of new and relaying rails, frogs, switch points, track bolts, spikes and other equipment.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
DONALD F. HINE, Editorial Representative GEORGE BUSHFIELD, Editorial Representative
L. W. W. MORROW, Special Editorial Representative G. J. MACMURRAY, News Editor

Volume 58 New York, Saturday, July 23, 1921 *Number* 4

Avoiding Losses as Important as Increasing Earnings

TO LOWER the operating ratio is the particular concern of every interurban manager at this time. This is leading to an energetic search for new business to counteract the falling off in normal regular business, but another equally important pursuit to the same end is the curtailment of the outgo of money earned.

An example of unavoidable expenditure is the payment of lost and damage claims on merchandise handled. Some figures presented on the Central Electric Railway Association boat trip and published in this paper show that in 1920 thirty-four out of sixty-six interurban member companies of the Central Association paid out $142,744 in freight claims. This association has taken steps to start a campaign of education among employees who handle freight and among the shippers to secure better marking, packing, billing, loading and handling. A similar campaign conducted by the American Railway Express Company has brought remarkable results, and gives promise of marked savings for the effort on the electric lines. The companies in the Central territory should give full measure of co-operation in making this campaign effective, and the idea is well worth emulation by groups of companies or individual companies in other sections. If expenditures such as these, which are purely waste, can be eliminated, the results will be helpful on the general showing of the individual companies and of the industry as a whole.

Making the Most of the Public's Representatives

ONE of the major reasons for whatever success has been had with the Tayler franchise in Cleveland is embodied in the habit of John J. Stanley to secure the personal friendship and respect of the city councilmen, particularly those who serve on the local transportation committee. This is not incidental with Mr. Stanley; it is his first order of business. He gives these matters his personal attention and sits in all meetings in which the company is concerned so that he may be on hand to answer any questions, or to explain away any misconceptions of the street railway business that may arise. When he is sitting across the table from an alderman, whom he addresses by his front name and who, in turn, knows Mr. Stanley as "John," there will hardly be a disposition on the part of that public representative to take action without full and fair discussion, and that is the way it has worked out. Probably because it is the easier way, many railway executives hold themselves aloof from the meetings and particularly from the personal friendship of the public officials. They are busy with other things and send some one down in the organization to listen in at the meeting (not take part in it), and report back what the committee or Council did. How much better it is to have the final authority of the company present as an active participant. It is human nature for aldermen to appreciate the attentions of no lesser person than the chief official of the company. And if he is just "John" to them, the company's interests, while fair and right, are not likely to suffer severely.

Plan How to Remove Fare Discriminations and Inconsistencies

DURING the period when rates were advancing, the simplest method of making the change from a lower to a higher rate of fare was usually a horizontal increase, as from 5 cents to 6, 7 or 8 cents. The reason for this is not far to seek. No matter how thoroughly a community recognized the need of the railway for more money and became reconciled to a higher fare, the change could never be a particularly popular one. The public was willing to accept it, but one reason which made acquiescence easier was the knowledge that the burden fell on all equally.

With a material reduction in wages and in cost of materials, there will be popular demands for reductions in fare. Railways should be as interested in reducing the cost of living as other industries, and doubtless there may be places where reductions in the basic fare will actually gain for the railways an increase in both gross and net, but modifications of rates of fare which will reduce the net receipts of the companies are not warranted until the credit of the railways is restored and they have an opportunity to carry out deferred maintenance and build up some surplus. Nevertheless, it is not premature to consider the ways in which a reduction in fare might best be made when the time comes to put them in force.

It is to be hoped that the method used when the rates were increased will not be followed when the rates are reduced, that is to say, that there will be a horizontal reduction, unless the conditions are such as to make such a step the best possible solution of the problem. Usually this will not be the case. On most systems the fare limits are an inheritance from the ordinances of early days or from ancient franchises, and it is obvious that they are not the best which can now be drawn. This, then, is the time when each management ought to be considering seriously what fare system is best adapted to its particular property. Then when the time comes that reductions in fare are made, these reductions can be such as to bring about a logical fare system.

Such a system need not, by any means, be the same in every city. Thus, with a system like that in Boston with an inner area provided with expensive subways and surrounded by separate communities furnished with surface traction only, a reduction in fare for a local community ride may be the most logical plan to follow when a reduction is made. On the other hand, in a city where all cars radiate from a central point, as in Cleveland, it may be that the reduction should first be made in a central zone as a means of building up short-haul traffic. In still another city, the most desirable plan might be to expand the central unit fare zone in some or all directions or to correct glaring inconsistencies in the fare limits where there is more than one zone. In another case, where all the fare limits seem to be consistently arranged, they can remain the same, but a reduced rate ticket or weekly pass can be installed. In other localities, the introduction of a basic fare for the shortest ride, with some means of charging more for the longer ride, such as pay-enter for the first part of the ride and pay-leave for the latter part, may be the most fitting plan.

In fact, there is a multitude of ways of making reductions and no set rule can be laid down. But this at least can be said. The present is an excellent time for the study of this question of straightening out inconsistencies and discriminations in fare limits. Most managers know where these points are on their own systems. Reforms of this kind can probably be made more easily at a time of general fare reduction than at any other time and much more easily than when fares are increased.

A Mile a Day When You Have Your Way

THE article on municipal track construction at Detroit, in this issue, serves to bring out the salient feature of the job, viz.: the large amount of track completed daily. The task of constructing a mile of paved track a day in paved city streets is one of some magnitude, especially when it is noted that the existing asphalt pavement must be torn up. To a large extent the work is a problem involving the utmost possible use of machinery, and the Detroit municipal engineers have assembled a plant which has enabled them to build track on a record-making scale. To a certain extent, also, the type of track as laid this year is of some assistance, since surfacing and lining are at a minimum where the type of steel ties selected is installed, while the "compressed concrete" or Hassam pavement may readily be constructed in a wholesale manner.

Another and essential factor of the speed at which the work is being carried on is the control which the city has over the streets. Probably no private enterprise would be permitted to open streets for such long distances, much less to open them practically over their entire width between curbs or to block entrances to homes and business houses at will. In some instances the only access to private property on the Detroit work has been by way of the sidewalks, and these have been used by automobiles and delivery wagons for block after block. The engineer for any private company who even suggested such a construction procedure doubtless would be forcibly ejected from his home town.

The Detroit work is notable for the adherence to the standards and recommendations of the American Electric Railway Engineering Association in such matters as rails and drainage provisions. Especial attention has been given to the latter. It should not be understood from this that the Engineering Association has recommended the rigid type of construction which has been adopted for the work done this year. Neither has the association recommended the use of the concrete pavement.

Another feature of the work is the adoption of the metallic electrode type of seam-weld rail joints as standard. In view of the discussion which seam-weld joints are receiving at the hands of track engineers, it will be worth while to watch the performance of the Detroit installation because its extent is sufficient to give the joint an ideal service test. In fact, the entire track installation should afford opportunities for study of the performance of a type of track construction which constantly has been gaining headway. The attention paid to the return circuit is to be marked because exceptional steps have been taken to assure a return of large capacity and one which cannot readily be disrupted.

The entire enterprise gives evidence of careful preliminary study in an attempt to build tracks which will stand up under the poor soil conditions for which Detroit is noted.

Store Door Delivery by Railway and Truck Co-operation

THERE have been many proponents of store door delivery as a means of reducing total transportation costs and of speeding up service, but little actual progress has been made in putting the idea into practice. The opponents or doubters of such a plan should be given food for thought, at least, by the experience in Chicago, related in this issue.

That an increase in rate equal to the delivery charge of independent trucking concerns is not used is to be expected. On an independent basis, then, the delivery will not pay. But that very fact is a part of the reason for increased business. More important, however, is the idea of the service given. It is service which the railway has to sell to its freight customers, and the fact that the customers appreciate this new service in Chicago is attested, according to the data, by so large an increase in volume that the total profits have been favorably augmented.

An articulation of various transporting agencies is a much-needed development today, and the success attending the intelligent use and co-ordination of motor trucks by an electric railway management should encourage others to adopt similar programs.

It is good business for the railway, for the truck and for the public.

"In Business as a Conductor," Not "Working for the Railway Company"

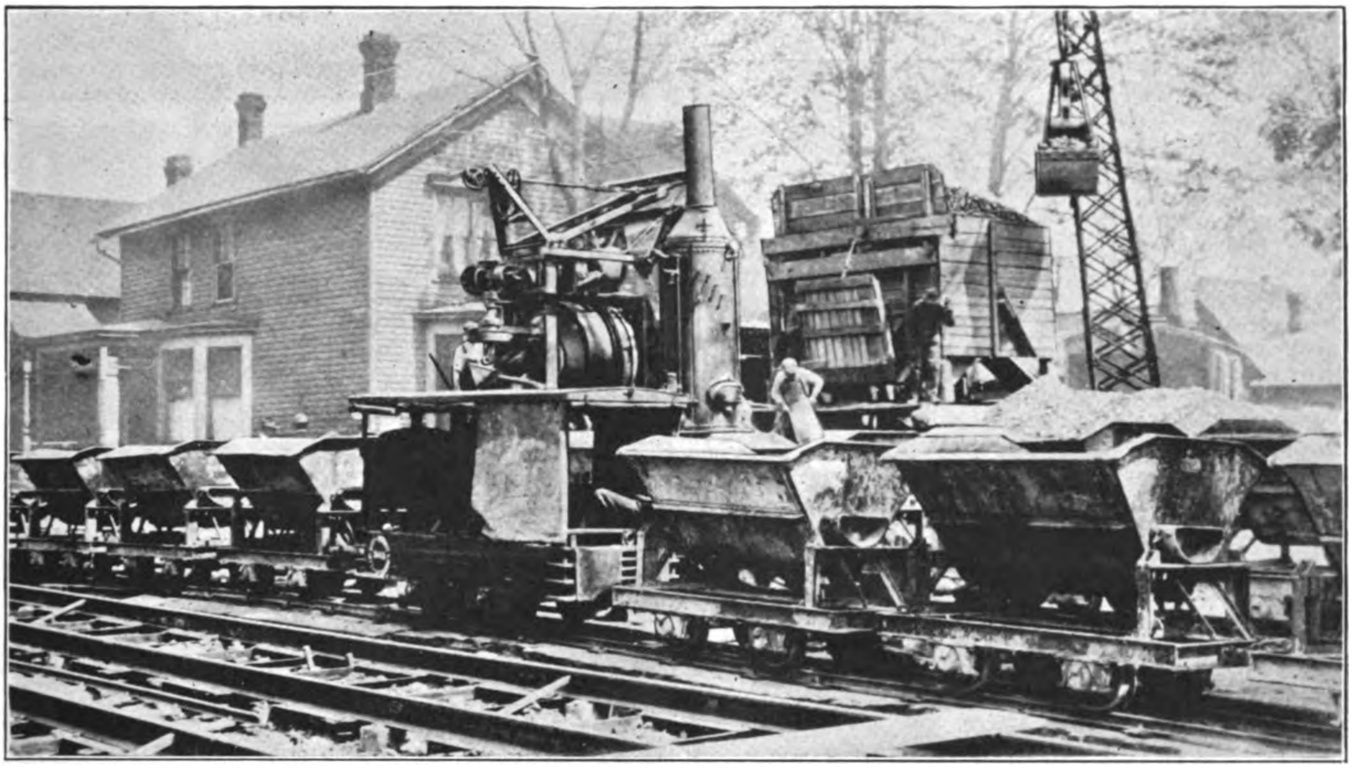
MAY NOT the first aim of all employee training and much organization and personnel work be epitomized in the statement that what is being attempted is to put each employee "In business as a railway man" rather than merely "working for the company"?

The real end desired is that the employee have a knowledge of the business; that he understand something of costs and revenue; that he realize that profits, including his own wages, must be earned and are obtainable only from the difference between revenue and expense; that he is a producer and a salesman—one of a large group all in one kind of business, mutually helpful and organized for greatest efficiency, and that he is "in business as a railway man" as much as the general manager, only in a different capacity.

It seems worth while to suggest this phrase, which really carries its own significance, as a motto or slogan to have in mind in dealing with employees. When every employee feels himself "in business" in his particular job, rather than selling his time, "working for the company," many problems are automatically solved.

A Mile of Paved Track a Day

Eighty-two Miles of Track to Be Built by Detroit Municipal Railway This Summer—Rigid Type Construction, with Heavy Plain Girder Rail, Seam-Welded Joints and Steel Ties, Is Used—Unusual Methods Employed to Expedite Construction Program



CONCRETE MIXING PLANT AND TRAIN USED IN DISTRIBUTING 1,000-FT. EITHER WAY

WHETHER the city of Detroit is in earnest about going into the street railway business, the reader may judge for himself after learning from what follows of the magnitude and nature of the construction work now going on there. Besides those franchiseless Detroit United Railway lines which the city plans to add to its system by purchase this year, it is expected that 82 miles of single-track equivalent line will be completed before the winter sets in, so that by the end of 1921 the city may have a railway system of some importance. The construction is soon to be carried on at the rate of a mile of single track a working day. Already the scale of work has reached a magnitude nearing this schedule. The outstanding features are the extensive use of labor-saving devices, the adherence to American Electric Railway Association standards, the permanence of the construction and the ends to which the officials have gone to secure good drainage and good negative return circuit.

During the working week from May 2 to May 7 27,676 cu.ft. of trackway excavation was made, 11,496 ft. of rail laid and 12,117 ft. of concreting and paving done. On one of these days 360 truckloads of excavation of 6 and 7 cu.yd. each were hauled from various locations to the lower end of Belle Isle and dumped to fill in and enlarge the island. Up to May 7 the work completed this season includes 111,823 cu.ft. of trackway excavation, 59,133 ft. of rail laid and 27,250 ft. of concreting and paving. Forty to fifty carloads of materials of all kinds are being received daily.

The construction equipment purchased includes, among other things, twelve Erie steam shovels for excavating the trackway and breaking up existing pavement, six Erie cranes for handling aggregate at the mixer plants and in the storage yard, three Rex and three Lakewood 14-cu.ft. concrete mixers, ninety Lakewood three-bucket cars, six 4-ton Burton kerosene locomotives for pulling the concrete trains, 4 miles of industrial track, two tractors for snaking rail, two Winthrop Truck Company tractor earth-boring machines and pole setters, twelve Wilson plastic-arc, two-electrode welding machines, and other labor-saving devices. For hauling excavated earth and transporting the various materials to the job 200 motor trucks are being rented.

The total number of employees is 1,800, of whom the great majority are engaged as construction forces. All work is being done by the railway department itself rather than on contract. The trackwork is being done under the direction of H. P. Hevenor, who is retained as consulting and construction engineer, with W. R. Dunham, Jr., formerly engineer of way the Connecticut Company, as principal assistant. The overhead construction, described in an article to follow, and the track bonding and welding are being done under the direction of H. M. Gould, electrical engineer and formerly electrical and signal engineer of the Connecticut Company.

PRESENT STATUS OF DETROIT SITUATION

These last few paragraphs will give an idea of the extent of the railway construction activities of the city now in progress. A comprehensive understanding

Aggressive Tactics Used in Excavating for and Laying the Track

1. Machine used for breaking up paving for track excavation.

2. Appearance of warm asphalt after breaking up. Note chiseled line marking edge of excavation. In background asphalt has been removed for reclaiming and materials stored along trackway for new construction.

3. A better example of how the breaker leaves the paving.

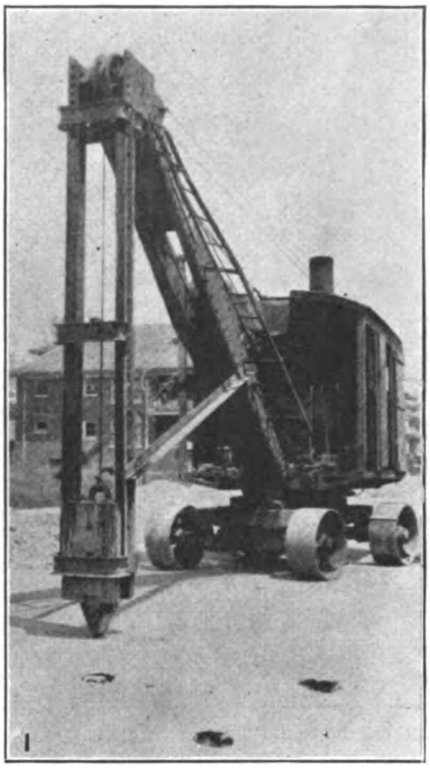
4. Steam shovel digging excavation for track and loading paving and earth into motor trucks.

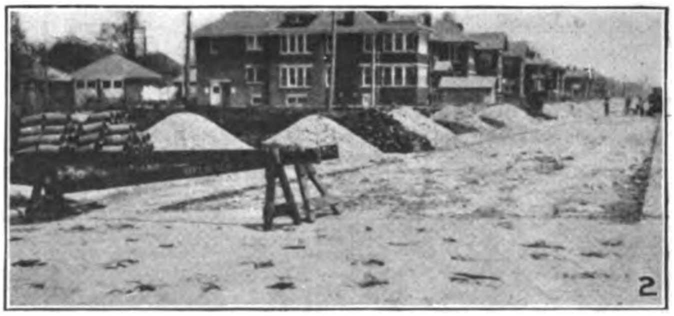
5. The heavy clay soil encountered necessitates special drainage provision.

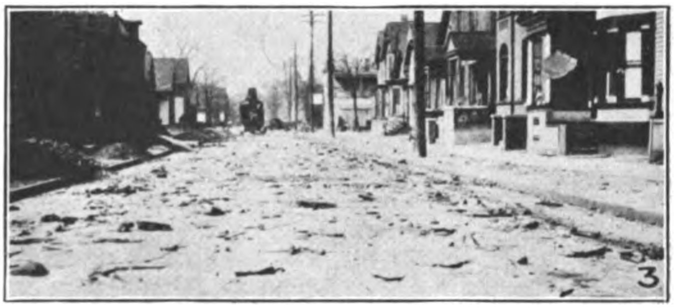
6. Ordinary field tile are used for drainage and the trench filled in with broken slag.

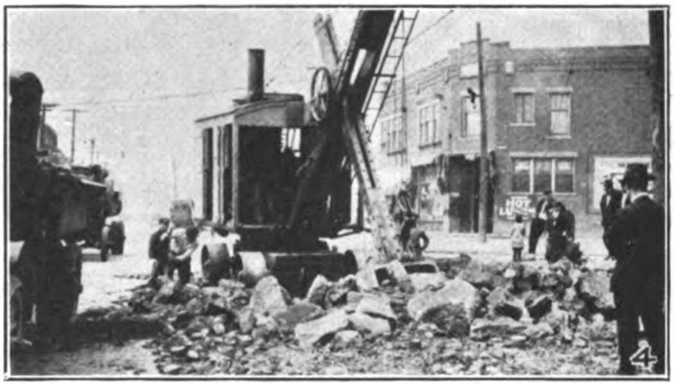
7. A layer of slag is spread over the track trench and rolled.

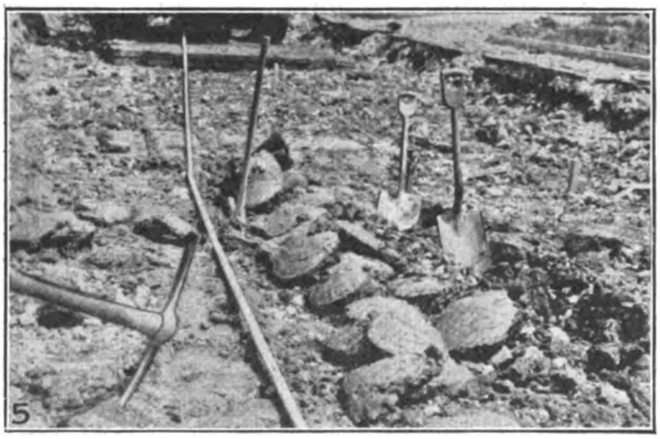
8. Rails and ties are assembled and blocked and wedged to grade and alignment.

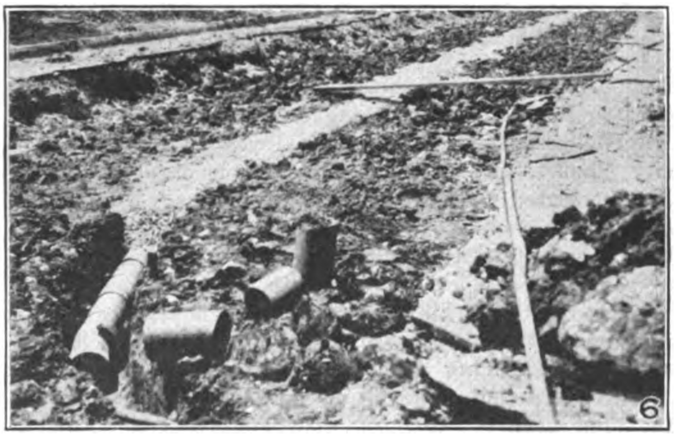


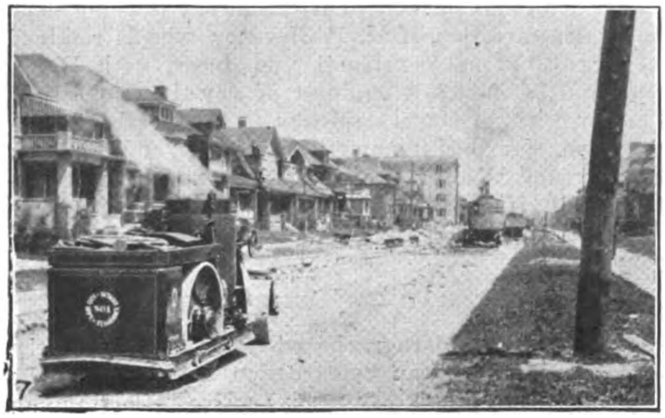


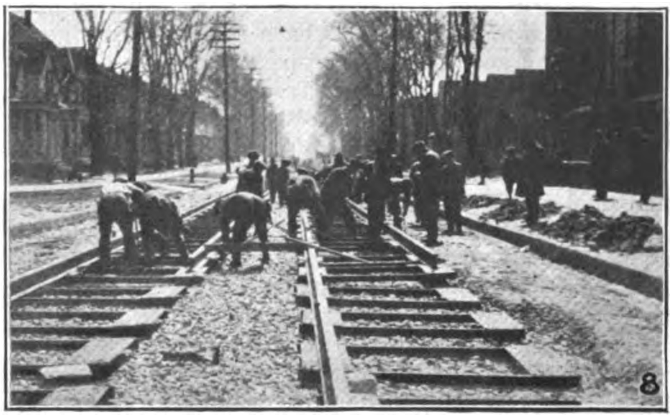








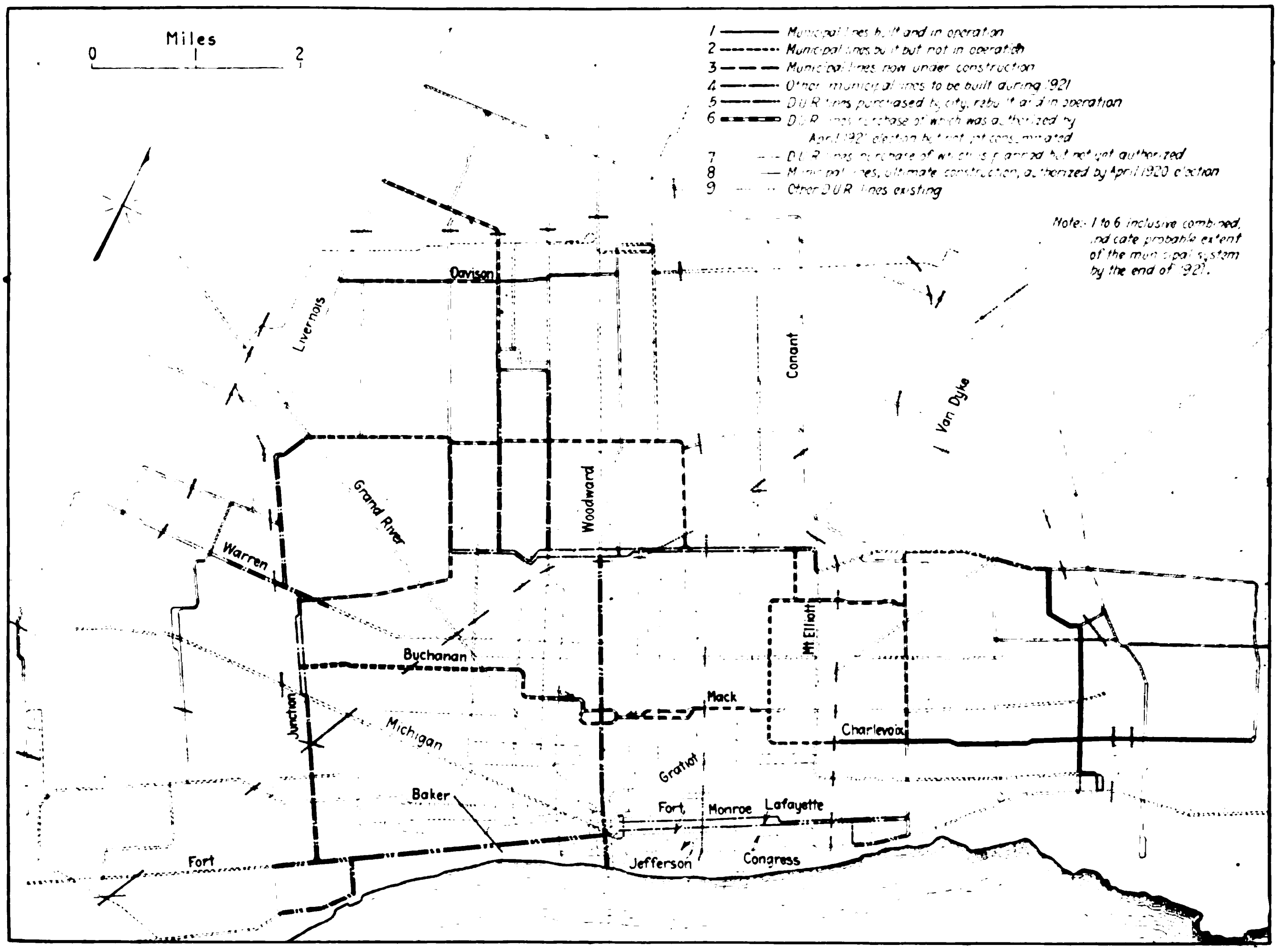




of the present status of the whole traction situation in Detroit can best be gained from a study of the maps especially prepared for this purpose and reproduced herewith. The map on page 124 shows the franchise situation of the Detroit United Railway as understood by the city authorities. The lines are divided into three classes: Those on which the franchises have several years to run before expiration; those lines being operated without franchises, and those on which the franchises have expired and operation is continued on a day-to-day agreement. The expiration of a franchise, of course, places the city in a position of advantage in negotiating piecemeal purchases.

The map below shows the municipal lines built and in operation; the lines built but not being operated; the lines now under construction; the additional lines to be constructed this year; those D. U. R. lines already purchased; those D. U. R. lines the purchase of which has been authorized; those D. U. R. lines which the city plans later to purchase though the bonds are not yet authorized, and, finally, the existing D. U. R. lines and the ultimate municipal lines, construction of which was authorized at the April, 1920, election. By taking the first six groups together, these lines being indicated on the map by the several heavy-line legends, an idea may be gained of what the municipal system will comprise by the end of 1921 if present intentions are carried out, and the relation of this to the D. U. R. system and to the proposed further city construction.

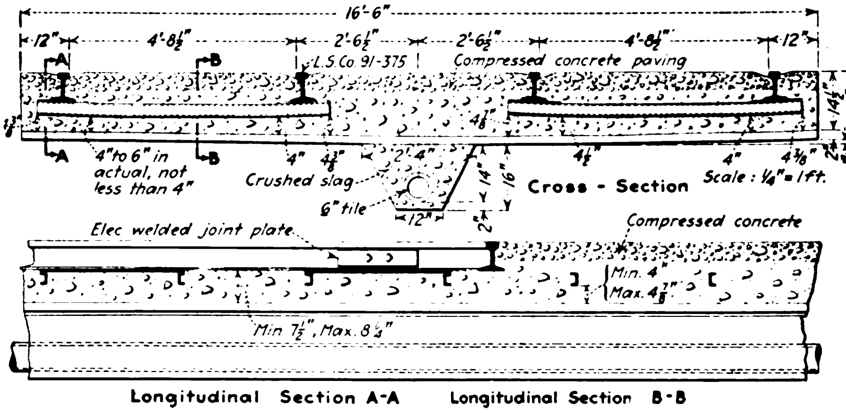
Last year the city built eighteen of the 67.1 miles of track planned as the first year's work. The uncompleted remainder, added to the lines planned for construction in 1921 (33.65 miles), gives the total of 82.75 miles to be built this year in order to catch up with the original promises made to the voters. By the end of 1921, if the present schedule is accomplished, the city will have constructed 100.75 miles of single track. In addition, it will have acquired by purchase roughly 28 miles, making a total system by the end of 1921 comprising in the neighborhood of 130 miles. At the time of this writing plans had been nearly completed for a new shop capable of handling 500 cars, a new carhouse and open storage for 200 cars and a large office building, all of which are to be built this summer. Twenty-five cars are in operation and 100 more on order.


Miles
0
1
2
1 Municipal lines built and in operation
2 Municipal lines built but not in operation
3 Municipal lines now under construction
4 Other municipal lines to be built during 1921
5 D U R lines purchased by city, rebuilt and in operation
6 D U R lines purchase of which was authorized by April 1921 election but not yet consummated
7 D U R lines purchase of which city is planned but not yet authorized
8 Municipal lines, ultimate construction, authorized by April 1920 election
9 Other D U R lines existing
Note:- 1 to 6 inclusive combined, indicate probable extent of the municipal system by the end of 1921.
Davison
Livernois
Conant
Van Dyke
Grand River
Woodward
Warren
Mt Elliott
Buchanan
Mack
Charlevoix
Junction
Michigan
Gratiot
Baker
Fort
Monroe
Lafayette
Jefferson
Congress
Fort

THIS MAP WAS DRAFTED BY THE MUNICIPAL RAILWAY AUTHORITIES TO SHOW THE CONDITION OF THEIR LINES IN ABOUT MAY OF THIS YEAR WITH THE PRIVATE LINES WHICH THE CITY HOPED TO TAKE OVER

Of the first 18 miles of track built in 1920 two intersecting lines on Charlevoix and St. Jean Streets, as seen on the map and comprising about 13 miles of single track, are being operated in a district not otherwise served, in which there are several important factories and scattered residences. During six hours a day twenty-two cars are operated to give rush-hour service and eleven cars all day. J. S. Goodwin, general manager, formerly Bridgeport manager for the Connecticut Company, reports that the earnings of these lines under conditions obviously unfavorable with only a piece of a system, are just about breaking even with expenses now.

During 1920 the track construction was done by contract. The type of construction employed then is somewhat similar to the standard of the D. U. R. This included a trench 22 in. deep in which a separate 8-in. slab of 1:3:5 concrete was poured under each track and permitted to set. Over this a 1-in. layer of 1:4 dry mix of sand and cement was placed and the track assembled on top of this and concreted in. This upper pouring of concrete was brought up to the level of the rails and floated and brushed to form the paving. Wood ties, 6 in. x 10 in. x 6 ft. 8 in., and 91-lb. 7-in. standard A.E.R.A. plain girder (or high T) rail were used, the joints being electrically welded. Steel ties were substituted for the wood ties on 22,600 ft. of double track built last year on Buchanan Street.


16'-6"
12"
4'-8½"
2'-6½"
2'-6½"
4'-8½"
12"
A
B
L.S.Co 91-375
Compressed concrete paving
A
B
4" to 6" in actual, not less than 4"
4"
4⅜"
2'-4"
4⅛"
4½"
4"
4⅜"
14½"
17½"
Crushed slag
6" tile
12"
14"
16"
2"
Cross - Section
Scale: ¼" = 1 ft.
Elec welded joint plate
Compressed concrete
Min. 4"
Max. 4⅞"
Min 7½", Max. 8½"
Longitudinal Section A-A
Longitudinal Section B-B

Sectional Drawings of Track Under Construction by the Detroit Municipal System on June 1

TYPE OF CONSTRUCTION NOW BEING USED

Beginning this year, the department of street railways decided to do its own construction work and to adopt a monolithic type of rigid track construction, employing International steel twin ties altogether, except under special work. By virtue of this change the depth of trench required was reduced to 17½ in. and, according to Mr. Goodwin, $30,000 per mile saved on the cost of construction as compared to the cost of the type of construction used last year embodying wood ties.

This new type of construction consists first of 2 in. of rolled slag on the bottom of the trench, with a 1:2:4 mix of concrete poured from the slag up over the ties and base of the rails. After this has hardened, the remainder of the trench up to the level of the rails is filled in with 2¼ to 3 in. crushed Wisconsin granite. This is rolled and then filled in with 1:2 grout and rolled again, forming what is termed "compressed concrete pavement." The rail used is either A.E.R.A. 7-in. 91 or 93-lb. plain girder or A. R. A. (which is also a standard of A.E.R.A.) 100-lb. 6-in. standard section rail, both sections being supplied by the Lorain Steel Company. The 93-lb. rail is identical with the 91-lb. except that the thickness of the web just beneath the rail head has been increased to ⅞ in., tapering to the standard thickness of rail web, 9/16 in., to a point between the rail head and the top of the bolt hole. The heavier section is used on those streets on which greatest density of traffic is expected, and it not only reduces the amount of concrete required by a depth of 1 in. but the price per ton is also less. The 100-lb. rail comes in 66-ft. lengths, while the 91 and 93-lb. sections come in 60-ft. lengths.

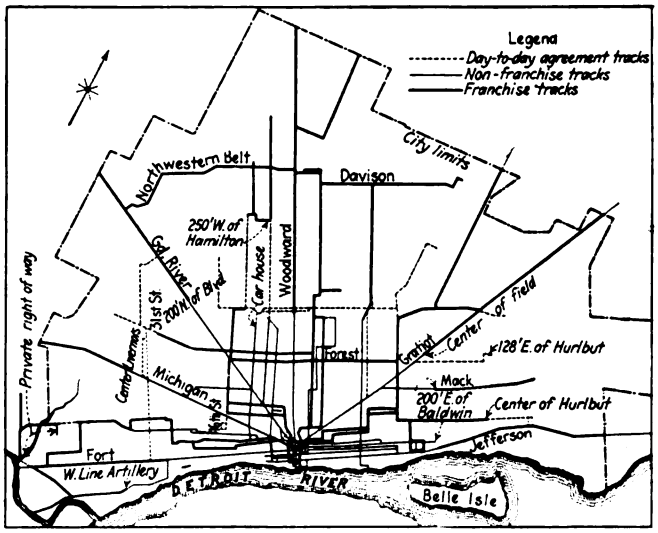
The steel ties are spaced 5 ft. 6 in. average centers and have the ends bent upward to give a cant of 1 to 25, thus providing for an inward tilting of the rails by the same amount.

The rail joints are made by using two 20-in. x ¾-in. plates which are held in place by two 1-in. bolts and electrically welded along the top and bottom. The head and nut of each of the bolts are welded to the rail and the nut to the bolt. This welding is done by the short arc or metallic electrode process, using Wilson Welder & Metals Company two-arc, gasoline engine-driven welding machines. This welding work will be treated more fully later on.

CONSTRUCTION METHODS AND ENGINEERING

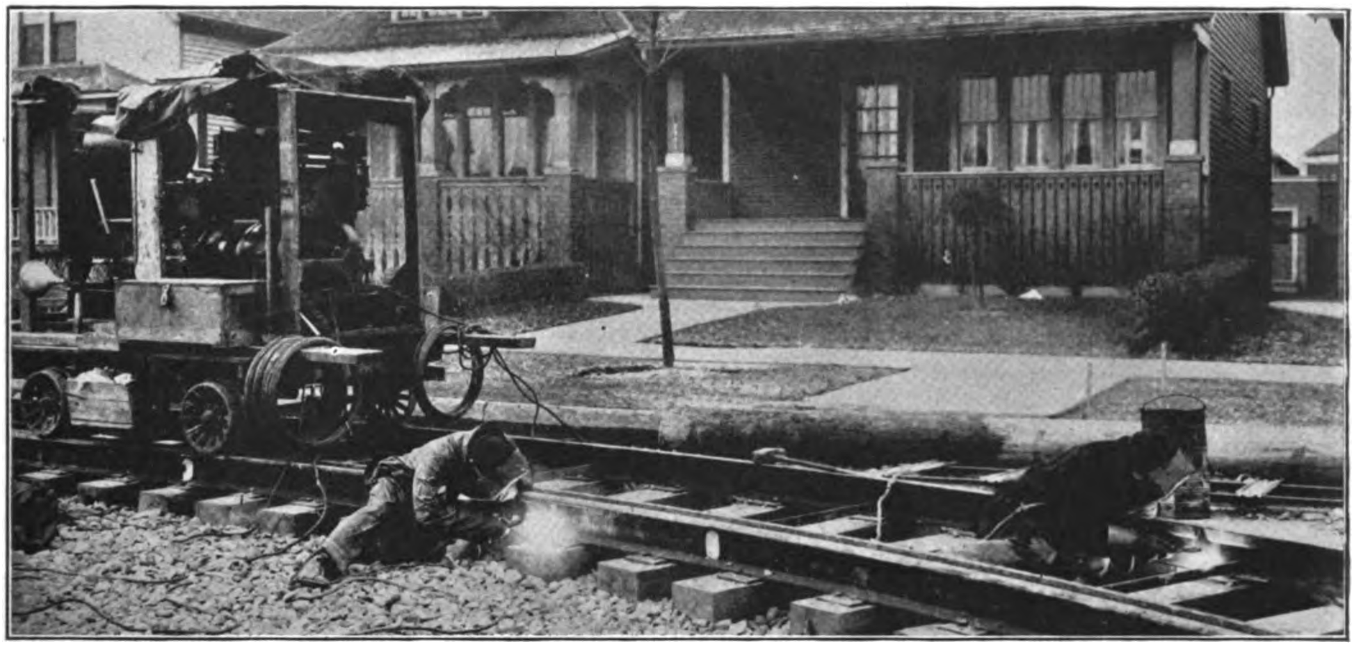
Where a new street-car line is to be constructed on a street already paved, the first operation is to cut a line with hand chisel and sledges to mark the side lines of the track excavation. A pavement breaker consisting of an Erie steam shovel equipped with guides and a 2,000-lb. weight, which is raised and dropped, is then used to break and shatter the asphalt and concrete foundation. If the asphalt surface is good, it is removed and reclaimed by the Department of Public Works. This breaker and the manner in which it shatters the pavement are shown in the accompanying pictures.

The next step is the use of a ¾-yd. Erie steam shovel to dig up the broken concrete and earth and dump it into motor trucks for removal. After this is done, a drainage trench 16 in. deep is dug by hand along the center of the trackway and common 6-in. field tile installed to insure thorough drainage underneath the track structure. The problem of drainage is particularly severe in Detroit on account of the heavy clay soil which offers practically no natural drainage. Hence unless provision is made for carrying away any accumulation of water, the clay soil and extremely flat topography result in a working of the entire track structure on a watery bed, under traffic conditions, producing a rapid deterioration. Hence a great effort has been


Legend
Day-to-day agreement tracks
Non-franchise tracks
Franchise tracks
City limits
Northwestern Belt
Davison
250'W. of Hamilton
Gd. River
Car house
Woodward
200'N. of Blvd
31st St.
Private right of way
Center Livernois
Michigan
Forest
Gratiot
Center of field
128'E. of Hurlbut
Mack
200'E. of Baldwin
Center of Hurlbut
Jefferson
Fort
W. Line Artillery
DETROIT RIVER
Belle Isle

Present Franchise Status of the D. U. R. City Lines as Understood by the Detroit Authorities made to seal the track from above, to provide good surface drainage, and to drain it thoroughly from below. It is considered that if this drainage problem is solved, the most difficult phase of track construction in Detroit is mastered. An accompanying picture shows very clearly the nature of the subsoil on which the track structure must be placed. Another paragraph dealing with surface drainage appears later in this article.

With the drainage tile in place, the trench is filled with ½-in to ¾-in. broken slag and then a 2-in. layer of slag (or cinders when slag cannot be secured) spread over the entire track trench and compressed with an 8-ton roller. The steel ties and rails are then assembled and blocked up approximately to grade by means of concrete blocks made for this special purpose during the past winter. An effort is made to bring the rails as near to grade and alignment as possible before welding, but it is necessary to make the final adjustment after the welding has been completed, and just prior to pouring the concrete foundation.



GASOLINE ENGINE-DRIVEN WELDING MACHINE USED

The welding work is usually carried on by placing a Wilson welding machine on each track and assigning an operator to each rail. The use of gasoline engine-driven generators was necessitated because of the absence of power in many locations and because the overhead construction has for the most part been erected after completion of the trackwork. The joint plates are welded to the head and base of the rail along their entire length and the bolt heads and nuts welded as already mentioned. The operator also welds the two rails together at the base where the two ends abut, and then welds the base of the rail to the plate of the steel tie. The rail joints are staggered and both sides of the base of the rail opposite a joint are also welded to the tie plate. This is done on both sides of the rail. Also, beginning at the joint, every other tie is welded to the base of the rail and on one tie per rail length located midway between joints the two tie plates are each spot welded at the four corners to the cross channels (making eight spot welds) as well as to both sides of the bases of the two rails. This insures a perfect cross bond between rails and makes it practically an impossibility for an open circuit to occur in the negative return. If every joint were broken down there would still be an electrical by-pass around the joints through the intermediate welded ties and opposite rail.

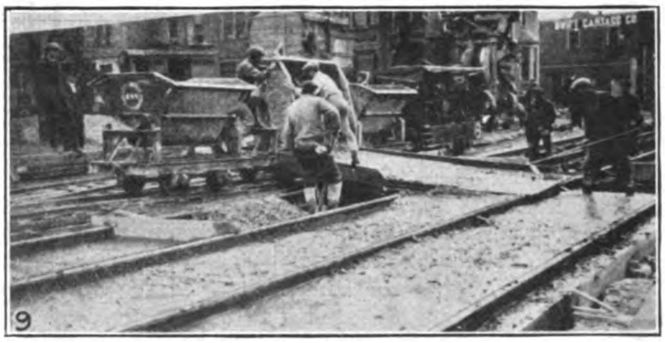
To accomplish this extensive welding work twelve Wilson welding machines were purchased. Even with this number of machines it is necessary at times to work two shifts a day in order to keep ahead of the concreters. This is avoided if possible, however, as the noise of the engine and the flashing of the arc annoy the residents at night. Some little difficulty was had in training welders to handle this plastic arc welding. Most of the experienced welders were accustomed to other machines using a longer arc. Whenever an arc over ⅛ in. long is drawn with this machine the current is automatically cut off. Hence except for those men who had previously had experience in handling the short arc the best results were obtained by breaking in entirely inexperienced men. These Wilson welders have a capacity of 300 amp. at 35 volts using approximately 20 volts at the arc. Under the very heavy service to which they have been subjected they have worked out very well. Two Ohio Brass Company resistance-type welders have also been used at locations where current was available. All joints are finally finished off with a reciprocating grinder after the track is entirely completed.

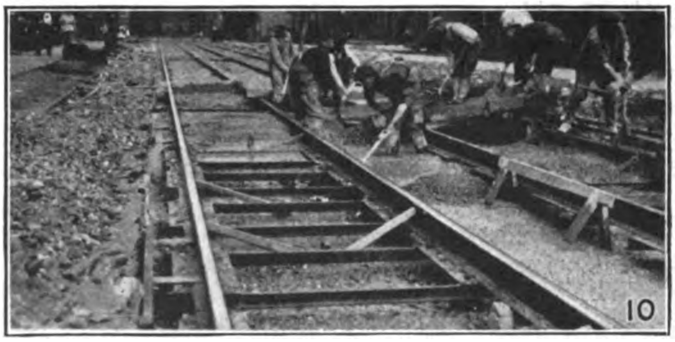
CONCRETING METHODS AND EQUIPMENT

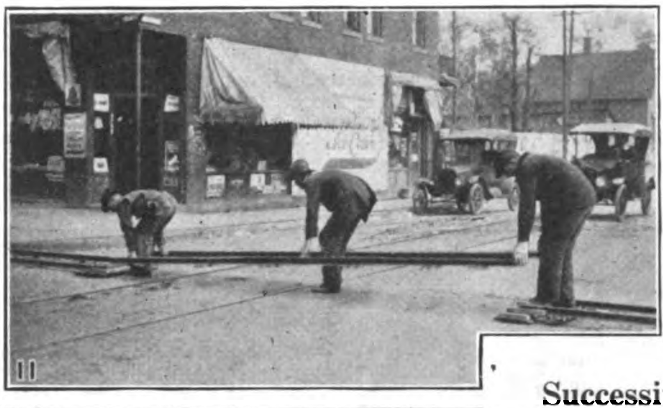
After the track is assembled and welded and wedged and blocked to grade and alignment the concrete for the base is poured as a rather large scale operation. The concrete is prepared at a central mixing plant and distributed 1,000 ft. either way by means of side dump cars which are hauled over a narrow-gage track by means of kerosene engine locomotives supplied by the Burton Engine & Machine Company, Cincinnati. After a 2,000-ft. stretch of track is concreted the mixing plant is moved to the middle point of the next 2,000-ft. section and again erected.

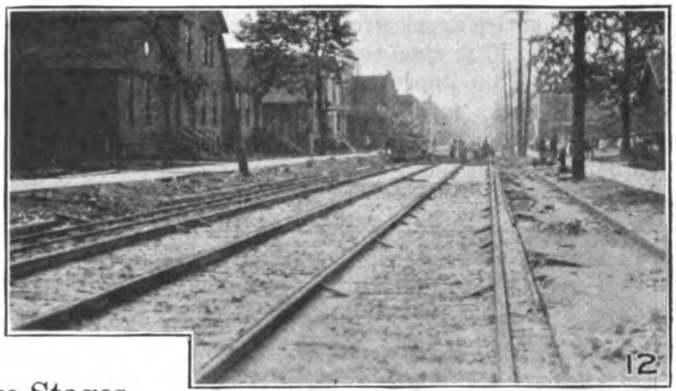
These mixing plants are usually located in a street intersecting the line under construction. The concrete materials are brought by truck and unloaded in the street adjacent to the plant. From here they are picked

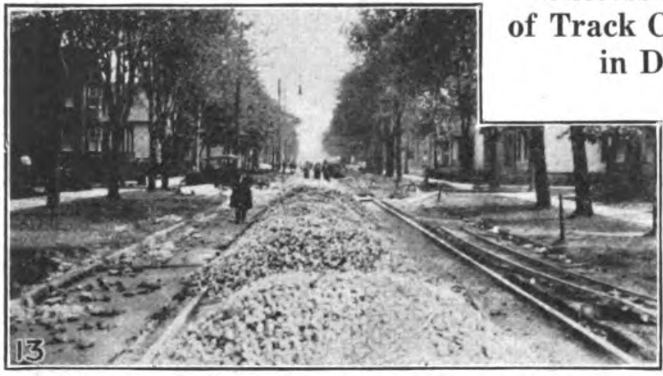
Successive Stages of Track Construction in Detroit

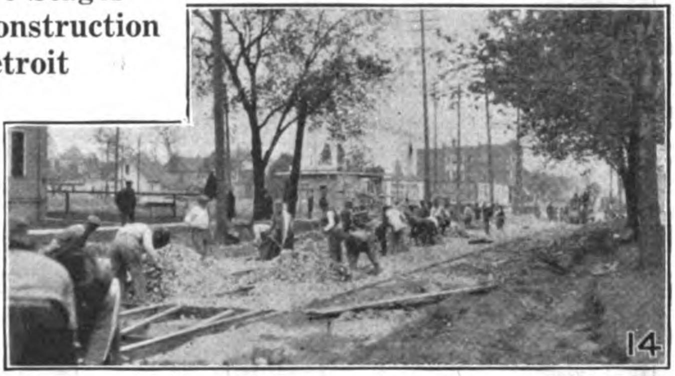


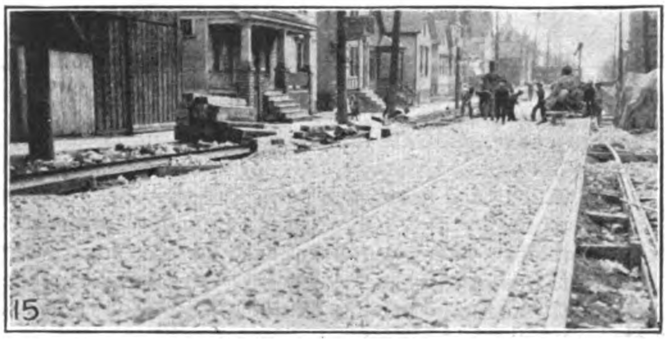


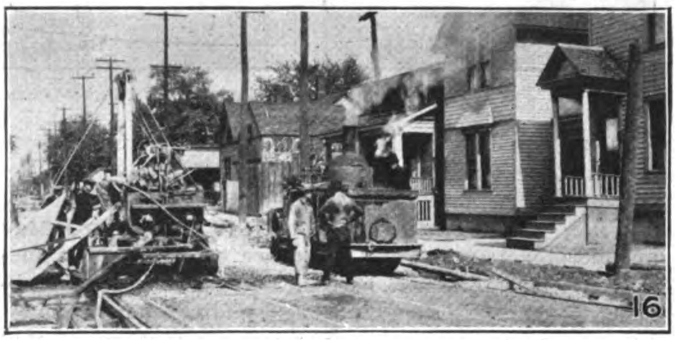


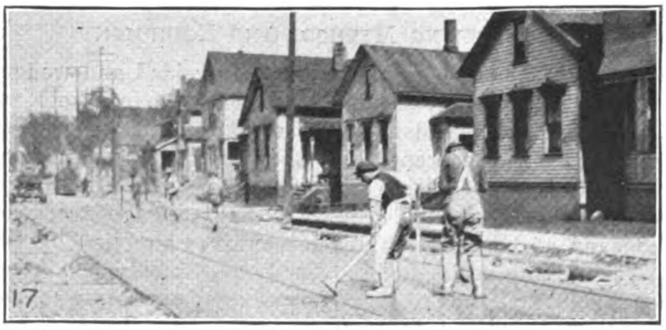


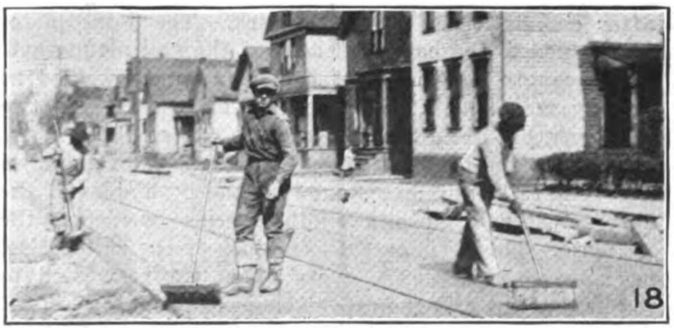












9. Dumping concrete from cars into pan and pouring to make track foundation.

10. Another pouring scene showing how care is taken to get complete bearing under ties and rails.

11. "Lift bridge" used for operating concrete trains across existing car tracks.

12. Concrete foundation completed and surface roughed up to secure binding with paving concrete.

13. Crushed granite is dumped by truck loads on the track after the base has hardened.

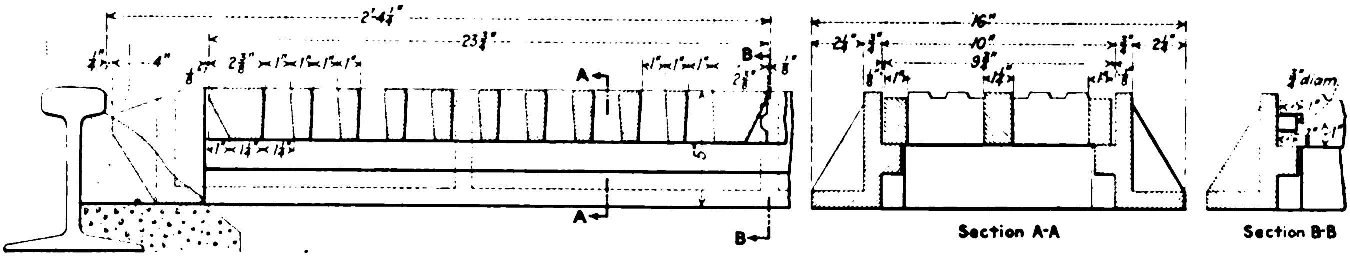
14. Distributing the granite to a level slightly above the rail ready for rolling.

15. Appearance of track after spreading the layer of granite and before rolling.

16. Grouting machine. The stone is rolled both before and after grouting to form "compressed concrete paving."

17. After final rolling, hand-tampers remove any irregularities and smooth up the flangeway.

18. The final operation is to distribute surplus grout and cross-brush the surface.



Cross-Sectional Views of Track Drain, Showing Cover Construction

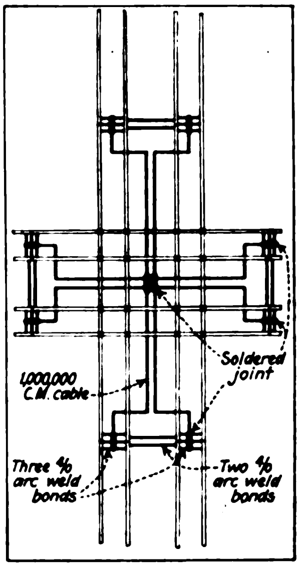
up by an Erie crane and clamshell bucket and dumped into an elevated bin from which they are discharged by gravity into the charging skip of the mixer. The cement is emptied from bags by hand into this skip. When the charge is made up the chute from the overhead bin is raised so that the skip may be elevated and the materials discharged into the 14-cu.ft. steam-driven mixer. The mixer discharges directly into the narrow-gage dump cars. The aggregate used is made up of 25 per cent ¾-in. to 2½-in. slag to neutralize the excessive amount of sand in the local gravel.

One locomotive and three five-car trains serve each mixer. Three trains are required in order to facilitate the movement of the cars, the plan followed requiring only a single track with a short double-end siding at the mixer plant. Five cars stand idle on this side track while the locomotive is taking five other cars to the pouring point and return and the third five cars are being filled at the mixer. The scheme is this: The locomotive pushes the loaded train to the pouring point and pulls it back after the cars are dumped. When it returns it takes the siding, couples with the five idle cars and uncouples from the five cars which it has just brought back. The five cars just picked up are then pushed through the opposite end of the siding and then pulled back on the track immediately in front of the mixer. The locomotive is then uncoupled from these empty cars and coupled to the five loaded cars and the cycle is repeated. While the engine is gone the five cars on the mixer track are moved up one at a time by hand and filled, moved on beyond the mixer and coupled up ready for handling by the locomotive. It takes a lot of words to tell about this but the operation is very simple and quick, the locomotives coupling and uncoupling practically without stopping except to reverse direction.

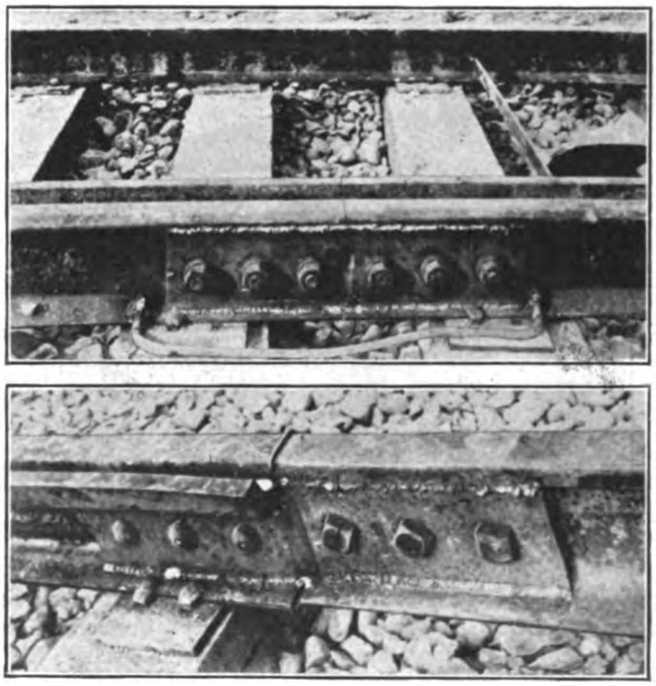
At the pouring point the cars are dumped in a large steel pan from which the concrete is shoveled and hoed into the track and shoveled and tamped underneath ties, and underneath rails between ties, so that a complete bearing is secured. As the concrete is carried up 2 in. over the base of the rail, embedding and gripping the ties and base of the rail, the construction is spoken of as being monolithic, though the paving is put on as a separate layer. An effort is made to secure a good union between the paving layer and the base concrete by roughing up the surface of the latter before it sets.

Building the Compressed Concrete Paving

After the base is poured, the concrete is allowed to set three or four days until trucks can be driven over it. Crushed Wisconsin granite in 2½ to 3-in. sizes is then dumped on the track by truck loads so distributed as to require minimum handling. From these piles the granite is spread with forks and this is the only part of the work where a large number of men are seen to be engaged in one operation. The stone is spread over the trackway, level with the top of the rails or slightly above, and is then rolled with an 8-ton roller, which just fits in between the rails, until the pieces of stone are thoroughly welded together and a compact mass of stone obtained. A 1:2 grout is then poured into the stone, filling the joints until flush with the top. The roller is again applied, squeezing out all the air and securing a complete penetration. The rolling is continued until there ceases to be a wave of grout ahead of the roller, thus forming a granite-concrete pavement of extreme hardness and presumably having much of the resistance to wear that is characteristic of Wisconsin granite block paving. The grout mixer consists of a sheet-iron tank with straight sides and a curved bottom mounted on heavy steel wheels with the platform about three feet above the ground. A steel shaft to which mixing blades are fastened runs longitudinally through the tank. This shaft is rotated by a small gasoline motor which also operates a loading hopper. The grout

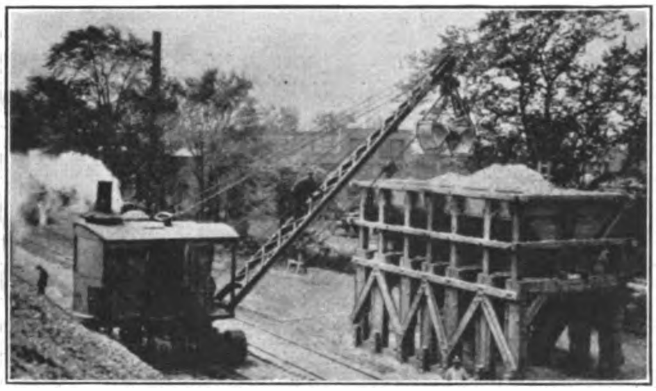


Sketch of Bonding Around Special Work Layout



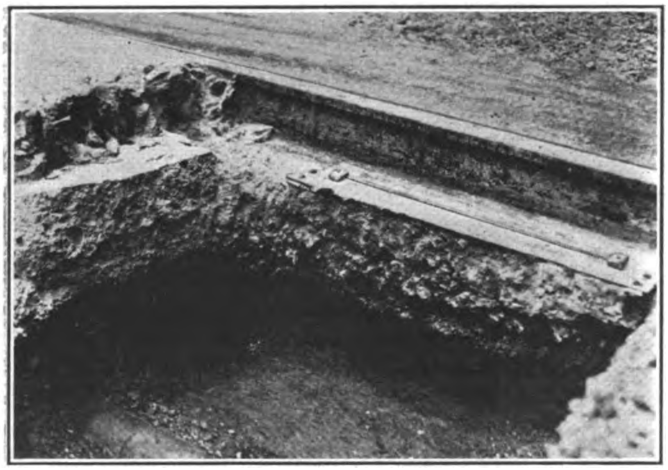
At Top, Type of Mechanical and Electrical Joints Used in Track Special Work. At Bottom, Bolted and Welded Compromise Joints Between Special Work and Standard Section is delivered from the bottom of the tank through two galvanized iron telescopic swinging spouts, which terminate in cylindrical perforated heads about 12 in. in diameter. These spout heads are moved over the work to distribute the grout equally. One of these units will lay about 900 sq.yd. of grouted cement, 6 in. in depth, per eight-hour day.

Just before the grout rolling is begun provision is made for forming the flangeway along each rail by laying down, adjacent to the rail, flange forms consisting of a 4-in. steel strip on top, to which is riveted a 3-in. strip underneath, with a wood filler between the two in such manner as to give a triangular cross-section. As these forms are laid in place the base of the triangle is adjacent to the rail and the hypotenuse down. As the grouted stone is rolled these forms are pressed into the structure, forming a flangeway in the concrete. They are removed after the rolling has been completed.



A CRANE AND CLAMSHELL BUCKET AND OVERHEAD BUNKER GREATLY FACILITATE HANDLING OF MATERIALS AND LOADING TRUCKS AT STORAGE YARD

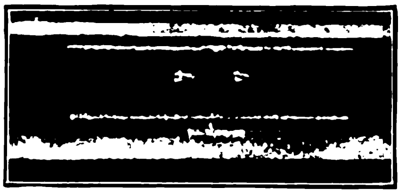
A group of men follow along after the rolling is completed and tamp down any irregularities in the surface and trim up the flangeway. These men are followed by another group equipped with brooms who distribute any surplus grout and complete the paving surface with a cross-brushed finish. This type of paving is called "compressed concrete paving" in Detroit, but the more common name for it is stone paving. It is being used quite commonly in highway construction and has been used to a limited extent by New England traction companies. The amount of stone used with this compressed process is from 8 to 10 per cent more than in ordinary concrete. The advantages claimed for this particular type of concrete pavement are as follows: It is more dense and homogeneous than ordinary mixed concrete. It is free from pockets of sand and fine aggregate. As the stone is placed and then grouted, large-sized stone can be used so that all wear is directly on the stone instead of on the cement mortar and the pavement thus has greater resistance to abrasion, the mortar cementing the stone together. A smooth surface comparable with asphalt is obtained. This type of concrete pavement holds up better under traffic and is less likely to crack and chip than ordinary concrete. Excavations through it for underground structures are repaired in the same manner as in ordinary concrete pavement.



TEXTURE OF DETROIT COMPRESSED CONCRETE PAVING AND FOUNDATION CONCRETE AS REVEALED BY TEST OPENING

SPECIAL WORK CONSTRUCTION AND BONDING

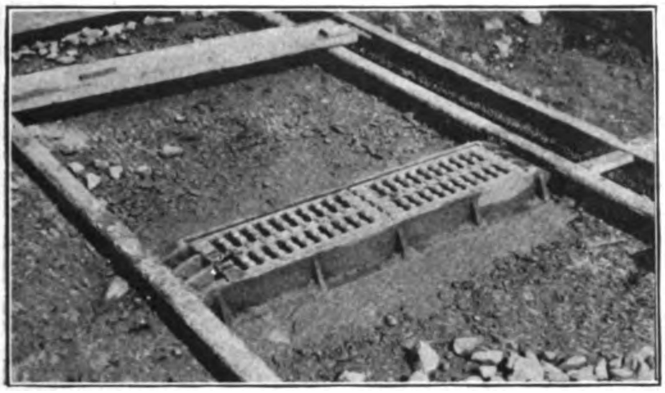
At all special work locations wood ties, tie plates and tie rods and granite block paving are being used, otherwise the construction is the same as on tangent track. The special work is of the manganese insert type using tadpole switches entirely, all special work being of Lorain manufacture. All joints in special work are made with six-bolt fishplates which are also welded along the top and bottom, including the compromise joints between the special work and standard section. The electrical circuit of these joints is further insured by the use of one No. 0000 arc-welded bond attached to the base of the rail on either side of the 26-in. joint plate. In close work where there is not room to attach this bond outside the fish plate a short U-bond is used instead and welded to the base of the rail. This extra bond is used as a safety measure, since the joint in a curve or other special work is more likely to break down than in tangent track, and the expense involved in doing this, when the welding machine is right there, is of small consequence as compared to the value of the extra surety of the negative circuit. Another reason given for the use of this extra bond is that by this means about the same electrical capacity is provided through the special work where wood ties are used as exists where the steel ties are used on tangent track. The nuts of every third tie rod used in special work and wherever wood ties are employed are spot welded to the rail and to the tie rod. On tangent track, a No. 0000 arc-weld cross bond between the two rails of each track is installed every 500 ft., or every 1,000 ft. in outlying sections. At the approach to guard rail curves two such cross bonds are installed and also two between tracks.

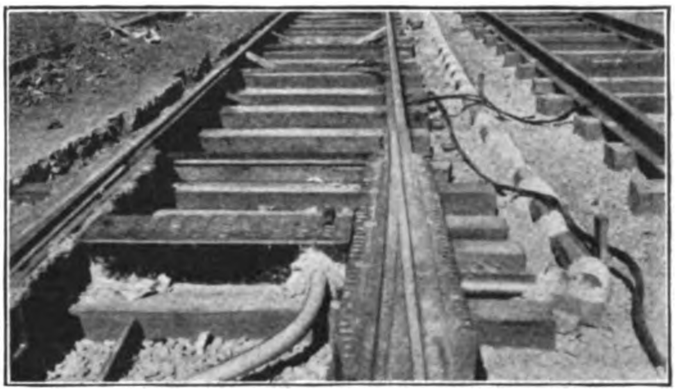


APPEARANCE OF COMPLETED JOINT AFTER WELDING

The thoroughness with which intersection special work layouts have been bonded is of particular interest. In addition to the complete bonding of the rail joints as noted above, the entire layout is shunted by an unusual amount of copper. For example, at a double-track intersection with a double track the two rails of each of the eight tracks approaching the intersection are bonded together with three No. 0000 standard copper arc-weld bonds. The inner rails of the two tracks at the four approaches are similarly bonded with two No. 0000 arc-welded bonds. The midpoint of the three bonds between the rails of each track is then connected to the similar cross bonds of the same track at the opposite side of the special work by a 1,000,000 circ.mil stranded bare copper cable, the connection being made with soldered joints which are painted with black insulating paint and wrapped. The entire cables and cross bonds are also painted. There are thus four of these 1,000,000 circ.mil cables, two in each direction, intersecting at the center of the special work layout, and they are all tied together at this point in a soldered joint. These cross cables are laid in the devil strip in a wood trough filled with a mixture of 75 per cent pitch and 25 per cent tar and a small amount of fine gravel. At outlying points the same system of bonding special work layouts is used except that the size of the cross cables is reduced. A sketch of this bonding scheme is reproduced herewith, from which an understanding of the scheme can be more quickly obtained than from the description. It makes it possible to lift out an entire layout without disturbing the return circuit.

Another interesting feature of the special work construction is the installation of a track switch box at every switch point, including the 2-in. galvanized iron pipe or conduit leading up an adjacent pole. These boxes are installed whether or not there is any expectation of installing an electric switch at this point, the theory being that to carry the investment on the box is a small expense compared to the cost of later tearing up the concrete paving to install a box, in case an electric switch were desired at that point. All these switch boxes are drained by tile connection to the sewer, so that there will not be any spattering of water when the switch is thrown.





At Top, a Special Work Layout Going Into Place. At Left, Type of Track Drain Used to Handle Surface Water. At Right, Drained Switchboxes Installed at Every Switch Point Ready for Future Installation of Magnets

SURFACE DRAINAGE

It will be apparent from what has already been said that the track is completely sealed against penetration of water through the structure. In addition to this means of keeping the water out, the surface drainage is made effective by the use of cross-drains extending from rail to rail and by virtue of the pavement grade established by the Department of Public Works to which the car tracks naturally conform. On account of the very flat topography of Detroit, the Public Works Department has established a substantial pitch from the center of every block toward the corners in either direction, providing for a very quick runoff. This presumably gives good drainage but results in a peculiarly wavy appearance of the car tracks as one looks any distance along a street. The cross drain has been substituted for the round type of drain used in the first track built, because it affords a drain of greater capacity and makes a smooth surface for vehicles to drive over. The particular cross drain used was designed by Mr. Dunham and the features of it are that it provides particularly well for draining the run of water in the flangeway and that it is equipped with a type of cover which cannot flop out of place. This latter feature is accomplished by dividing the cover into two halves, the inside end of each half being cast with a semi-circular groove at each side which fits around and under a round lug on the base casting. This inner end can therefore not fly upward when a truck wheel passes over the outer end or be lifted upward until the outer end has been raised slightly and pulled outwardly. A drawing of this track drain is reproduced herewith.

In addition to the labor-saving devices already mentioned, the facilities for handling materials in the storage yards are also of interest. For example, the loading of the crushed granite used in the paving is expedited by a crane and ¾-yd. clamshell bucket which picks up the stone from the storage pile or from cars run in on the adjacent track and dumps it into an elevated bin. These facilities are seen in an accompanying picture. This bin has sufficient capacity to load six motor trucks, each holding 6 to 7 cu.yd.

There are two outlets from the bottom of this and the trucks drive in between the supporting timbers and are loaded by gravity, two minutes to the truck. This bin has been built so that it can easily be taken down and transferred to other storage yards located nearer to other construction points. The crane travels along on planks and is, of course, used to unload stone from cars to storage pile as well as to keep the bin filled, and to handle other materials.

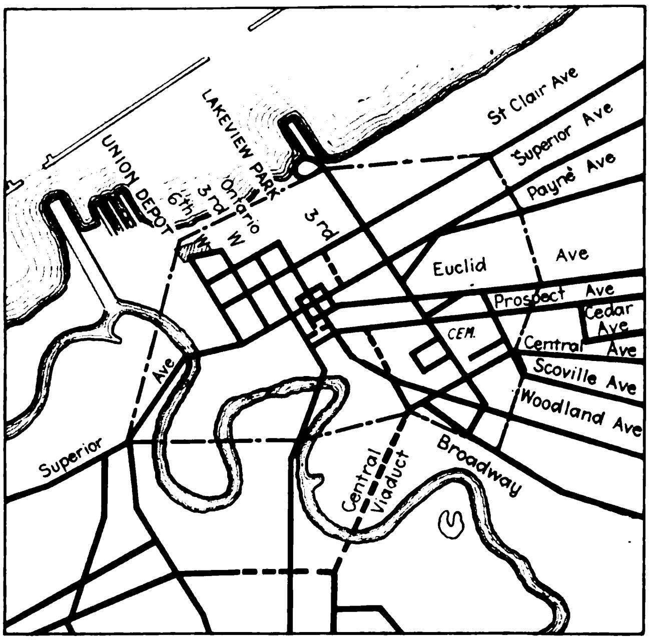
A second article on the new municipal system in Detroit and treating the overhead construction will be published in an early issue.

Reduced Fare in Cleveland

On July 10 the Cleveland Railway Began a Thirty-Day Experiment with a 2½-Cent Ticket Fare and 3-Cent Cash Fare for Downtown Riders

CLEVELAND is now in the midst of an experiment with its street railway system that may bring an answer to this question: "How much effect has a low rate of fare on the street car riding habit?" The experiment was begun on Sunday, July 10, when the Cleveland Railway put into operation a 3-cent cash or 2½-cent ticket rate of fare within a limited zone in the downtown section of the city.

The experiment was originated by the Cleveland Railway officials and Fielder Sanders, city street railway commissioner, and was authorized by the City Council for a thirty-day period because of a steady diminution in the number of car riders. Passenger traffic in Cleveland began to decrease almost immediately after Nov. 14 last year when the company put into effect the maximum rate of fare provided under the franchise, namely, 6 cents cash or nine tickets for 50 cents, with a 1-cent charge for a transfer and no rebate.



Map of Central Part of Cleveland Showing 2½-Cent Fare Zone

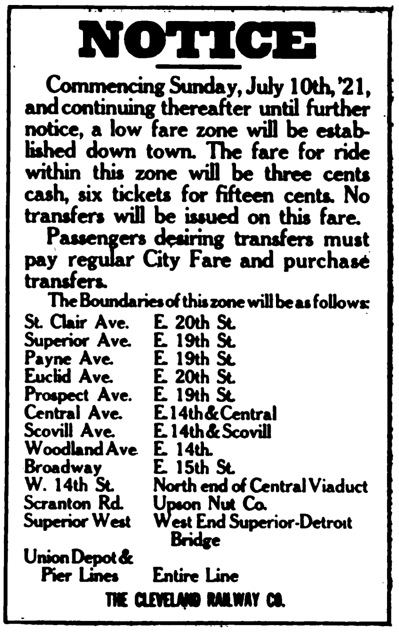
Officials Cannot Estimate Percentage of Increase in Passenger Traffic

The company's officers frankly admitted that they were unable to tell in advance the extent of the business which would be attracted by the reduced fare. "A low rate of fare has always been looked upon as a stimulus to street car traffic," said John J. Stanley, president of the company. "Whether it will prove such in this case remains to be seen, but we are always ready in Cleveland to try out any plan that promises increased service to our patrons when it doesn't mean increased expense, or to attempt anything that will bolster up the revenues of the company." Fielder Sanders, city street railway commissioner, said: "I am very hopeful that placing the cost of a ride in the downtown district as low as 2½ cents will bring back the riding habit, that it will increase to some extent the revenues of the company, that it will offer an increased convenience to a large number of car riders and that it will lessen the congestion on our sidewalks in the downtown district."

On Monday, July 11, the first business day during which the low fare zone was in actual operation, 8,710 passengers purchased the tickets which are in strips of six for 15 cents, while 8,216 others paid the 3-cent cash fare. The data for the next five days follow:

Date	Number of 2½-Cent Ticket Purchasers	Number of 3-Cent Cash Fare Riders	Total
July 11	8,710	8,216	16,926
July 12	10,145	8,499	18,644
July 13	10,040	8,115	18,155
July 14	11,104	7,645	18,749
July 15	10,374	7,944	18,318

"These figures indicate the experiment is not meeting with the success that had been expected by those who were optimistic that it would stimulate the car riding habit in the downtown district," said Paul E. Wilson, assistant secretary of the Cleveland Railway. The Union Depot and Pier lines, which operate exclusively in the downtown district, have shown an increased number of riders since the low fare zone was established, but the loss in revenue for the company by reason of the payment of the 2½-cent ticket or 3-cent cash instead of 6-cent fare is more than offset in the increased number of riders. Cleveland is unusually well adapted for the low-fare zone experiment in the downtown section because all the cars have been operated on the pay-as-you-enter plan when bound toward the Public Square and on the pay-as-you-leave plan when outbound from the square. This has made it unnecessary to give identification slips or tickets for passengers entitled to the special low rate of fare. The only complication came in the operation of the Peter Witt front-entrance, center-exit type of car. This was cared for by using the entrance door for exit only in the downtown section—that is to say, the cars have been operated as center-entrance, front-exit cars.



NOTICE

Commencing Sunday, July 10th, '21, and continuing thereafter until further notice, a low fare zone will be established down town. The fare for ride within this zone will be three cents cash, six tickets for fifteen cents. No transfers will be issued on this fare.

Passengers desiring transfers must pay regular City Fare and purchase transfers.

The Boundaries of this zone will be as follows:

St. Clair Ave.	E. 20th St.
Superior Ave.	E. 19th St.
Payne Ave.	E. 19th St.
Euclid Ave.	E. 20th St.
Prospect Ave.	E. 19th St.
Central Ave.	E. 14th & Central
Scovill Ave.	E. 14th & Scovill
Woodland Ave	E. 14th.
Broadway	E. 15th St.
W. 14th St.	North end of Central Viaduct
Scranton Rd.	Upson Nut Co.
Superior West	West End Superior-Detroit Bridge
Union Depot & Pier Lines	Entire Line

THE CLEVELAND RAILWAY CO.

Poster Used in Cleveland

The trainmen have been better instructed in arranging for the installation of the experiment than they have been for almost any other change ever effected in Cleveland. This has resulted in there being very little, if any, confusion and has also encouraged the use of the low-fare rate cars in the downtown section. One rule which has helped is that conductors are not obliged to give any change to a 3-cent rider who has no change smaller than a nickel. Such a passenger is obliged to drop the nickel in the fare box.

The following table, showing how the number of car riders has been continually decreasing since the middle of November last year, tells more graphically and forcibly than any words could one of the potent reasons for the installation of the low-fare zone:

Month	Number of Car Riders	Per Cent Increase or Decrease Over Previous Year
1920		
June	37,807,197	13.9
July	38,865,614	21.1
August	38,623,226	10.3
September	37,317,656	9
October	38,726,694	6.7
November	36,241,205	2.9
December	36,824,277	2.2†
1921		
January	35,598,783	4.17†
February	32,585,727	4.21†
March	35,900,733	7.04†
April	34,339,336	9.33†
May	34,646,310	10.86†
June*	33,500,000	13†

* June, 1921, figures estimated. †Indicates decrease.

A map accompanying this article indicates the territory included in the low-fare zone. A copy of the bulletin posted in the cars is also reproduced.

It seems likely that unless the traffic increases materially within the next two weeks, the experiment will be discontinued at the end of the thirty-day test.

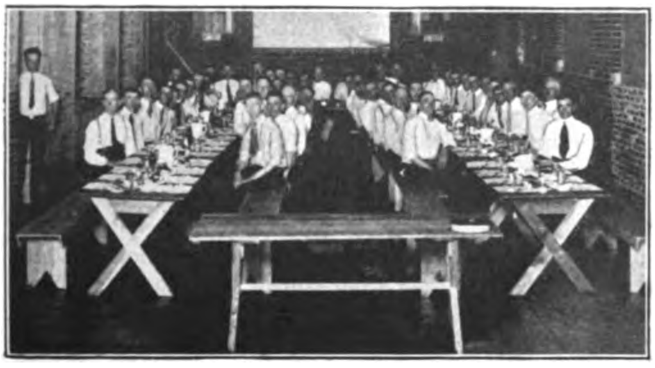
Prizes for Accident Reduction

Louisville Railway Gives Dinner and Entertainment to the Men at the Carhouse Having the Largest Number of Car-Miles Per Accident

THE two illustrations on this page show the result of a competition being conducted on the Louisville Railway in the interests of accident reduction. This competition began with a challenge from one of the carhouses of the company to all of the others to operate a greater number of car-miles per accident. This challenge came out about the time the Louisville Railway Safety Council was organized, and recognizing the value of that kind of competition the company offered as a prize a dinner to the winning carhouse.

The competition was started in April of this year, and Chestnut Street carhouse was the winner, operating an average of 3,960 car-miles per accident. The employees of this carhouse held their dinner on May 17. In May the employees of Highland carhouse won the contest, operating 4,700 miles per accident, and held their dinner on June 22. Chestnut Street carhouse won again during the month of June, operating 3,745 miles per accident, and held its dinner on July 19.

Although the function of the dinner is accident prevention, and that topic is touched upon by the speaker of the evening, the affair is primarily in the nature of a good time for the diners, with an evening of entertainment, all educational features and accident prevention propaganda being subordinated. The speaker is usually some one outside the company organization.



CHESTNUT STREET CARHOUSE WAS THE PRIZE WINNER IN APRIL

Merchandising Transportation

In This Article, the Third in the Series, the Author Discusses Service as Secured Through Department Heads and Records

BY W. H. BOYCE

General Manager Beaver Valley Traction Company

SERVICE *is not all dollars and cents. It is human. Cater to your car rider's mind—not alone his pocketbook.*

THE extent to which proper service adds to the sale of transportation is a large one, and proper service, as we view the matter, is service from each and every employee. In the carhouse it means proper equipment and careful, conscientious workmen, who must be trained to do their work properly, rather than to give an explanation to their superior officer later on as to why the work was improperly done. This will result in a decreased number of car failures and better service to the public.

Messrs. MARSHALL, Chief Dispatcher
MEYER, Master Mechanic
KELBAUGH, Barn Foreman
McDADE, Assistant Dispatcher
McDANEL, Assistant Dispatcher
ALLISON, Safety Engineer
HUME, Chief of Police
LOGAN, Night Receiver

I want better service for myself and for our public. Stop! Do some real hard thinking. Are all the men in your department doing their best to render better service, to which our traveling public is justly entitled? I am not unselfish in this, for better service will result in increased car riders. Increased car riders mean increased revenue. Increased revenue means that the possibility of a decrease in wages for all employees will be deferred. It also means additional modern equipment and appliances. Additional modern equipment and appliances should mean further increased and better service and consequently a further increase in revenue. I want you to bear in mind that an increase or decrease in revenue will surely affect your condition here.

W. H. BOYCE, G. M.

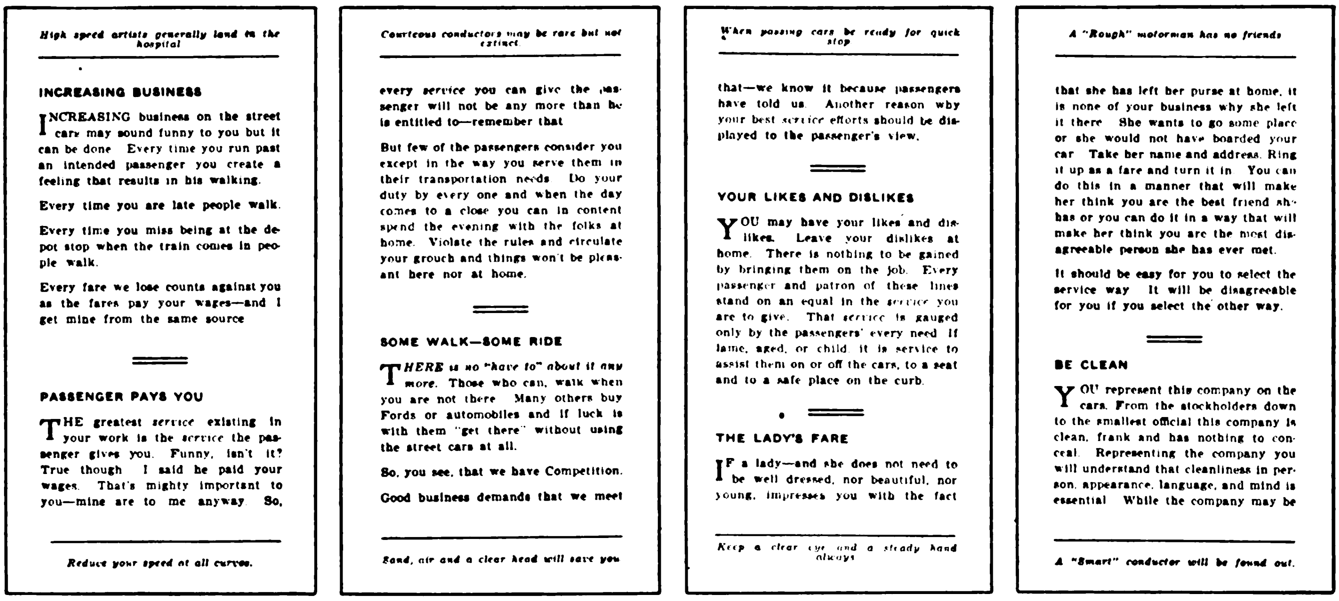
SAMPLE OF GENERAL NOTICE TO FOREMEN

Cars must be well maintained and have their seats comfortable and interior—as well as exterior—pleasing to the eye. It is just as essential that the trucks and electric equipment be in proper operating condition.

More frequent headways, with the same number of cars, may be obtained in numerous instances by eliminating lay-over time and shortening the running time.

A speed as high as is consistent with safe operation is very desirable, because today our patrons do want speed. If they cannot get it on the street cars they will get it from privately owned automobiles or jit-

HIGHLAND CARHOUSE MEN AT THEIR PRIZE DINNER, JUNE 22



High speed artists generally land in the hospital

INCREASING BUSINESS

INCREASING business on the street cars may sound funny to you but it can be done Every time you run past an intended passenger you create a feeling that results in his walking.

Every time you are late people walk.

Every time you miss being at the depot stop when the train comes in people walk.

Every fare we lose counts against you as the fares pay your wages—and I get mine from the same source

PASSENGER PAYS YOU

THE greatest *service* existing in your work is the *service* the passenger gives you. Funny, isn't it? True though I said he paid your wages. That's mighty important to you—mine are to me anyway So,

Reduce your speed at all curves.

Courteous conductors may be rare but not extinct.

every *service* you can give the passenger will not be any more than he is entitled to—remember that

But few of the passengers consider you except in the way you serve them in their transportation needs Do your duty by every one and when the day comes to a close you can in content spend the evening with the folks at home. Violate the rules and circulate your grouch and things won't be pleasant here nor at home.

SOME WALK—SOME RIDE

T*HERE is no "have to" about it any more.* Those who can, walk when you are not there Many others buy Fords or automobiles and if luck is with them "get there" without using the street cars at all.

So, you see, that we have Competition.

Good business demands that we meet

Sand, air and a clear head will save you

When passing cars be ready for quick stop

that—we know it because passengers have told us. Another reason why your best *service* efforts should be displayed to the passenger's view.

YOUR LIKES AND DISLIKES

YOU may have your likes and dislikes. Leave your dislikes at home. There is nothing to be gained by bringing them on the job. Every passenger and patron of these lines stand on an equal in the *service* you are to give. That *service* is gauged only by the passengers' every need If lame, aged, or child it is service to assist them on or off the cars, to a seat and to a safe place on the curb.

THE LADY'S FARE

IF a lady—and she does not need to be well dressed, nor beautiful, nor young, impresses you with the fact

Keep a clear eye and a steady hand always

A "Rough" motorman has no friends

that she has left her purse at home, it is none of your business why she left it there She wants to go some place or she would not have boarded your car Take her name and address. Ring it up as a fare and turn it in You can do this in a manner that will make her think you are the best friend she has or you can do it in a way that will make her think you are the most disagreeable person she has ever met.

It should be easy for you to select the service way It will be disagreeable for you if you select the other way.

BE CLEAN

YOU represent this company on the cars. From the stockholders down to the smallest official this company is clean, frank and has nothing to conceal. Representing the company you will understand that cleanliness in person, appearance, language, and mind is essential While the company may be

A "Smart" conductor will be found out.

PAGES FROM A HAND BOOK ON SERVICE, ISSUED TO EMPLOYEES OF BEAVER VALLEY TRACTION COMPANY

neys. In many cases the schedules may be slowed down or speeded up to take care of the rush hour or the off-peak traffic. Operating expenses may be decreased and the public better served by a close study of your scheduled speeds. Why use the same running time for off-peak riding that you use during the rush hours, holidays or during stormy weather or when atmospheric conditions make a bad rail? If the running time is fitted for one condition it is quite likely to be wrong for the other.

New Brighton, Pa.,..............................192......

MR. W. H. BOYCE, General Manager:

Report of inspection made of..

on......................Street, between.......................and......................

within the limits of..

	Inspected Number	Repaired Number	Repaired Cause	Replaced Number	Replaced Cause
Poles..............	....	....	....	....	....
Feed wire........	....	....	....	....	....
Span wires......	....	....	....	....	....
Trolley wire....	....	....	....	....	....
Ears..................	....	....	....	....	....
Caps, cones and hangers	....	....	....	....	....
Frogs...............	....	....	....	....	....
Crossings.........	....	....	....	....	....
Circuit breakers......	....	....	....	....	....
Switches..........	....	....	....	....	....

Methods employed inspecting line work..

....

Methods employed inspecting poles ....

....

Time consumed inspecting..........................Hrs...........Min..........

....

Time consumed inspecting...........................Hrs...........Min........

Time consumed repairing.............................Hrs...........Min........

Remarks:..

....

State explicitly if repairs or renewals were caused by an accident, with nature of same, cause, etc.

....Line Foreman.

TYPICAL INSPECTION REPORT TO GENERAL MANAGER

You cannot furnish service from the shop regardless of the personnel and equipment without reliable, up-to-the-minute records. If your car failures are increasing you should be able to determine from your records the causes of the increased failures. To depend on your memory and thus form the idea that the trouble is brakes, armatures or hot journals will not do. You must know absolutely the cause. Records, coupled with frequent meetings with department heads—individually and collectively—will bring out the cause.

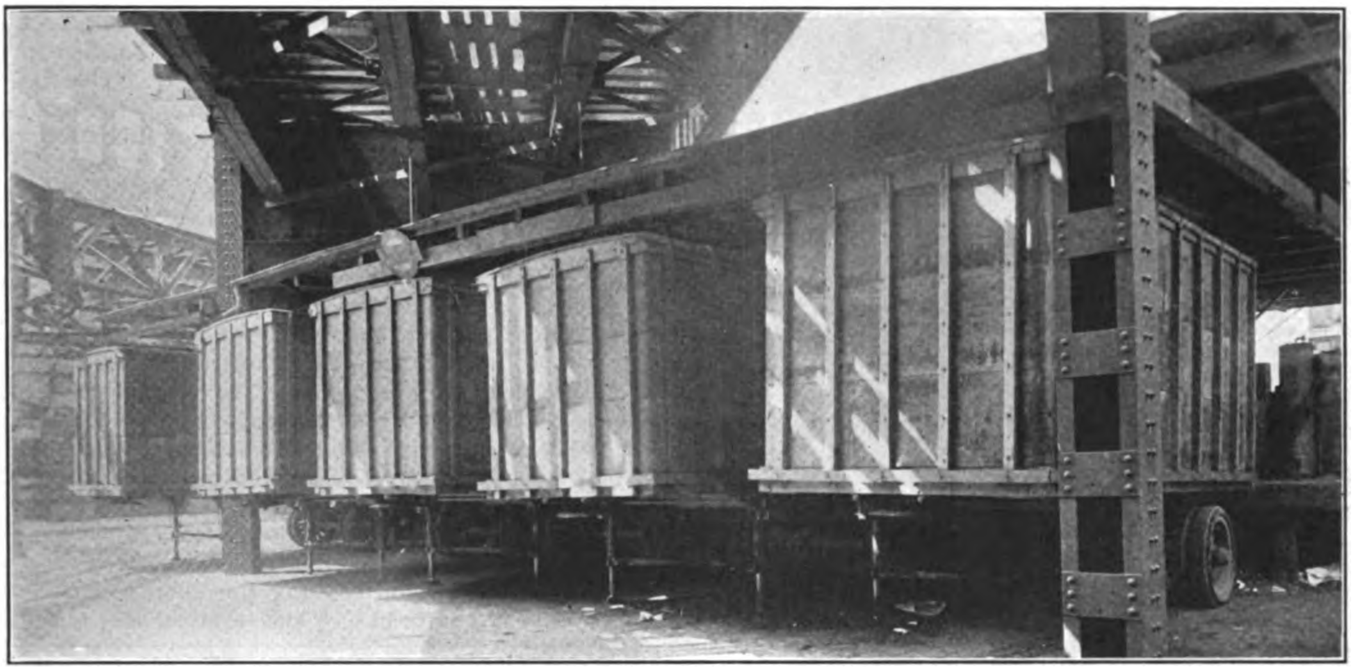
To lull yourself into a sense of security because you have ordered such and such a thing done regularly will not do. Daily and weekly reports should form a basis for checking up on each department head. If things are not going as they should that does not give you an excuse to interfere in the department, but it does give you the information necessary for you to aid in making the department head make good or form the basis for his removal.

Where one man tries to run the details, or near details, of each department service cannot obtain. Sooner or later the alleged "system" breaks down.

Not only let but make department heads run their respective departments. Accurate, reliable, immediate records will let them, keep them, make them make good. If they make good you will make good by furnishing the proper service to the public.

Employment Data for June, 1921

THE U. S. Department of Labor through the Bureau of Labor Statistics received and tabulated reports concerning the volume of employment in June, 1921, from representative establishments in thirteen selected manufacturing industries and in bituminous coal mining. When the figures of June, 1921, are compared with those of identical establishments for June, 1920, it appears that there were decreases in the number of persons employed in all industries except woolen, which shows an increase of 3.9 per cent. The most important decreases are 41.6 per cent in car building and repairing, 39.6 per cent in iron and steel, and 37.5 per cent in automobiles.



TRAILERS BEING LOADED AT DOWNTOWN MERCHANDISE DELIVERY AND RECEIVING STATION LOCATED UNDERNEATH "L" STRUCTURE

Motor Truck Haulage in Chicago

North Shore Line Has Receiving Station Close to Chicago Loop and Hauls Merchandise on Trucks to Rail Terminal—Study Shows Service to Be Costly Taken by Itself, but Valuable as Business Producer

BEGINNING in September, 1920, Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad, inaugurated a downtown receiving and delivery station for the convenience of merchandise dispatch patrons and arranged to haul this merchandise by motor trucks between the terminal of the railroad and this downtown station. The latter was located on a piece of property over which the elevated structure is built at the corner of Franklin Street and Austin Avenue, only a few blocks from the Loop and very convenient to the large shippers in the central distrct. For hauling the merchandise shipments three large White tractors and ten two-wheel "highway" trailers were purchased. A folding support attached underneath each trailer at the forward end is used to lift the trailer body off the tractor and support it while it is being loaded and unloaded. This support consists essentially of two screw jacks operated simultaneously by a hand crank. The scheme makes it possible to keep the tractors working almost continuously while the merchandise is being placed in or removed from the trailers.

The Chicago merchandise dispatch terminal of the railroad is at Montrose Avenue, which is 6.3 miles north of the downtown or Franklin Street and Austin Avenue station.

Prior to the installation of this downtown station, an effort was made to give the shippers a service which would offset the disadvantage of their having to haul merchandise out to Montrose Avenue, as compared to delivering it to a steam road close at hand, and a contract was made by the railroad with a trucking company to pick up the merchandise at the shippers' premises and deliver it to the Montrose terminal, and also to deliver shipments from the Montrose terminal to the premises of the consignee. Three different trucking companies with which the railway contracted for this service at a flat rate of 18 cents a hundred pounds went broke. Furthermore, because of their financial troubles, they were unable to give satisfactory service, and there was endless trouble because of the divided responsibility between the trucking company and the railway company. In consequence the latter received numerous complaints for which it was not responsible. Difficulties of this kind led Mr. Budd to determine that the only way that these downtown shippers would be satisfied and their business retained was for the railway company to handle it itself. Accordingly, the facilities already mentioned were provided, and as a result it has been possible for the company to secure and handle satisfactorily an increasing volume of business which undoubtedly would have gone to the steam roads except for the convenience and speed of the service provided.

From Sept. 1, 1920, until March 15, 1921, the company made a charge of 10 cents per 100 lb. for hauling merchandise between Austin and Franklin and Montrose stations. This charge was simply added to the mileage charge between the Montrose terminal and any point on the railroad. With the great increase in competition since the first of the year, due to the material falling off in business available to all carriers, the company on March 15 issued a new tariff which made the Franklin and Austin station a regular railroad shipping point, for which the same rate in effect between rail points applied. On this basis, the gross charge on first-class shipments between the Montrose and the Franklin and Austin stations, as handled by motor trucks and including the extra handling at the downtown terminal, is 1.5 cents per hundredweight.

Franklin and Austin Station Loading Platform and Rear End of Trailers Showing Gates Used

A recent study on the actual cost of this service made for Mr. Budd by H. A. Johnson, organization engineer, developed some very interesting information which confirmed fairly accurately the estimates made prior to the installation as to the cost of securing the business which comes as the result of the downtown terminal. Exclusive of the cost of the operation of the station at Franklin and Austin, and the cost of loading and unloading trucks at this station, the cost of operating the trucks alone is shown in Table I.

The total business handled during the four months period named above, September to December, 1920, was 14,708.75 tons, and the mileage operated was 36,018. The average tonnage of merchandise per trip figures out to be 2.86. On the basis of these figures for four months, it is estimated that the company would handle during the year a ton-mileage of 103,011.48, from which a cost per ton-mile of merchandise handled of 33.2 cents is obtained, or the cost of handling 100 lb. of merchandise between the Franklin and Austin and the Montrose stations is 10.5 cents. Detail figures covering the actual operation of the motor trucks during the four months considered are given in an accompanying table.

The cost of operating the Franklin and Austin station for the seven months ended Jan. 31, 1921, is detailed in an accompanying tabulation. From this table it is seen that the average station cost for the seven months was $1.33 per ton of merchandise handled or an average of 6.6 cents per hundredweight. This includes the cost of operating the station and the labor cost of loading or unloading the trailers at this station—the one extra handling involved.

If the station cost is added to the transportation cost between the downtown and Montrose stations by motor trucks (10.5 cents per hundredweight), a total cost of 17.1 cents per hundredweight is found. Against this cost, the company formerly received 10 cents per hundredweight and now 1.5 cents per hundredweight.

Upon first thought this would appear to indicate a loss on the downtown terminal of 7.1 cents per hundredweight on the old basis, or 15.6 cents on the present tariff. The management believes, however, that this terminal must be considered from a broader point of view, as it is true that the cost of operating any terminal, if taken by itself, would show a loss. The broad question involved is whether the revenue derived from the entire service performed for the shipper by the railroad is sufficient to absorb the terminal and transportation costs and leave a profit. In the particular case of the North Shore Line, there is also the question of whether the downtown terminal brings to the company enough business that would otherwise not be

TABLE I—EXPENSES OF TRACTOR OPERATION

Charges independent of the amount of business done

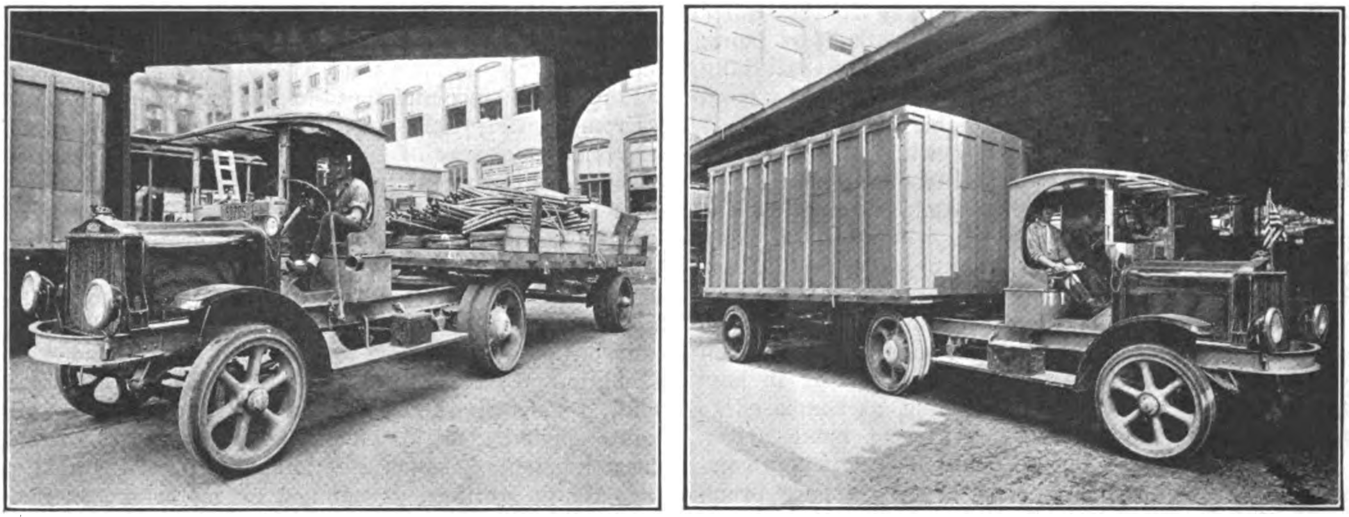
	Per Year
Depreciation on three tractors based on 20 per cent of their cost, less tires	$2,451.03
Depreciation on ten trailers based on 20 per cent of their cost, less tires	3,155.40
Interest on the investment at 6 per cent	1,898.64
Garage rent at $100 per month	1,200.00
Salary of superintendent of trucks and drivers	2,220.00
Insurance premiums	1,739.28
State and municipal taxes	395.55
State and city licenses	240.00
Cost of painting trucks and trailers once during their life, prorated	260.00
	$13,559.90

Expenses Varying with the Amount of Business

(Based upon the mileage made, the tons of freight handled and the costs of operation during the four months of September to December, 1920.)

	Per Year
Wages for drivers	$11,310.00
Tire renewals	3,601.80
Cost of gasoline	2,932.23
Cost of repairs (estimated)	1,188.00
Cost of oil	649.08
Cost of grease	62.40
Reserve for losses and damages	882.53
	$20,626.04

This makes a total cost of operation for one year of $34,185.94.



Types of Tractor and Trailers Used to Haul Merchandise Between Rail Terminal and Downtown Station—Note Trailer Supports Folded Back for Clearance on Road

TABLE II—COST OF TRANSPORTATION BY MOTOR TRUCK, CHICAGO, MILWAUKEE & NORTH SHORE RAILROAD

	Sept., 1920 Individual Truck Performances			Oct., 1920 Individual Truck Performances			Nov., 1920 Individual Truck Performances			Dec., 1920 Individual Truck Performances			Total for 3 tractors for 4 months	Estimated total for 3 tractors for 1 year
Number of trips	96	132	132	102	182	166	92	182	188	112	154	176	1,714	5,142
Miles operated	812	852	858	861	1,195	1,096	701	1,236	1,280	937	1,016	1,162	12,006	36,018
Oil used—quarts	50	52	51	89	90	94	98	99	99	58	181	96	1,057	3,171
Gas used—gallons	175	270	250	245	320	335	245	325	358	320	350	390	3,583	10,749
Tons of freight carried	188	474	353.25	255	484.5	534.25	194.75	518.50	596.00	219.50	423.50	515.00	4,936.25	14,708.75
Miles per gallon—gas	4.32	3.155	3.43	3.51	3.73	3.27	2.86	3.80	3.58	2.93	2.90	2.98	3.351	3.351
Miles per quart—oil	16.24	16.38	16.81	9.67	13.16	11.66	6.23	12.50	12.90	16.18	5.61	12.10	11.34	11.34
Tons per trip	1.958	3.59	4.04	2.50	2.662	3.218	2.117	2.840	3.170	1.96	2.75	2.925	2.86	2.86
Cost of gas at 27c. gal	$47.25	$72.90	$77.50	66.15	86.40	90.45	66.15	87.75	96.66	86.40	94.50	105.30	$977.41	$2,932.23
Cost of oil at 81c. per gal	$10.125	$10.53	$10.32	18.02	18.25	19.03	19.85	20.05	20.05	11.54	39.15	19.44	$216.36	$649.08

secured to justify the expense. While there is no way of telling just how much of the business handled through the Franklin and Austin station would be received anyway without this station and the trucking service, the officials of the company are satisfied that the downtown terminal does bring the company a great deal of business which would otherwise not be received. By virtue of this downtown delivery service in Chicago it is possible, for example, to induce some Milwaukee shippers to use the electric route, and after their patronage for Chicago is obtained other business which does not involve this expensive terminal handling and otherwise would probably have been given to the steam competitor is secured from them.

There is also the consideration that the present investment has provided facilities capable of handling a much larger volume of business with only slight increase in operating expense. Hence with increasing volume, the cost per hundredweight handled would lessen and the terminal cost be thus more easily absorbed, leaving a better profit on the total business. During 1920, with an investment of a little over half a million dollars devoted exclusively to the merchandise dispatch business, the traffic of this kind netted the C., N. S. & M. R. R. a surplus which amounted to 3.5 per cent on this investment after deducting operating expenses, interest, taxes and depreciation.

Among other things, this study has brought out the fact that if the company was contracting with an outside trucking concern for this service, including the maintenance of a warehouse by the trucking company and transportation between this and the Montrose terminal, it would cost that company at least 17 cents per hundredweight without figuring any profit for itself.

The Franklin and Austin station is also being used similarly as a downtown terminal for the Chicago & Interurban Traction Company, of which Mr. Budd is also president. The rail terminal of this Chicago-Kankakee (Ill.) line is at Eighty-eighth Street and Vincennes Avenue, south a distance of about 12 miles from the downtown station. About 10 per cent additional merchandise, above the tonnage shown in the accompanying tables, II and III, has been handled at Franklin and Austin station and hauled to or from Eighty-eighth Street. The cost of this service, however, was segregated from the figures given in these tables.

Direction of Fibers Affects Strength of Fiber Boxes

Where Fiber Is Used for Equipment Parts Its Strength to Rupture Can Be Increased by Attention to Direction of the Grain in the Material

THE direction in which the fibers run in fiberboard boxes has been found to have a considerable effect upon the serviceability of the boxes. Fiber board does not tear as easily across the grain as with the grain; it may have two or three times as much strength in one direction as in the other, the difference varying with manufacturing conditions. This excess strength may be advantageously used to reinforce the weakest points of the box and so to produce a better balanced construction.

The weakest parts of fiber boxes are the scores or folds forming the edges of the box. It is impossible to have the fibers running perpendicular to every score, but usually they might be made to run perpendicular to the scores which receive the hardest punishment, or which tend to break open first. The location of the scores most liable to failure, of course, varies with the shape of the box and the nature of the contents, and can best be determined by test. The following comments and deductions are for boxes whose depth is less than their width.

In tests at the U. S. Forest Products Laboratory, on fiber boxes, it was found that the first break nearly always occurred in the horizontal end scores. By making up the boxes so that the fibers ran vertically instead of horizontally in the sides and ends, the first break throughout the length of a horizontal end score was retarded about 85 per cent. Through the same change, the horizontal side scores, which received the next hardest punishment, were strengthened so that the first break never occurred in them.

The gain in strength of the horizontal scores was, of course, accompanied by a weakening of the vertical scores. But since the upright scores do not ordinarily receive as great stress as the horizontal scores, and in these particular tests were not as likely to come in contact with sharp edges, they were able to stand a reduction in strength and yet not become the point of first failure.

TABLE III—COST OF OPERATION OF FRANKLIN AND AUSTIN AVENUE MERCHANDISE STATION FOR SEVEN MONTHS ENDED JAN. 31, 1921

Month and Year	Tonnage Handled	Cost of Personnel	Rent per Month	Depreciation on Building	Insurance per Month	Light	Heat	Total Cost	Cost per Ton for Station
July '20	1,503	$1,832.76	$15.00	$24.25	$1.39	$12.90	$0.00	$1,886.30	$1.255
Aug. '20	1,090	1,935.29	15.00	24.25	1.39	13.10	0.00	1,989.03	1.816
Sept. '20	1,104	1,703.51	15.00	24.25	1.39	13.60	0.00	1,767.75	1.601
Oct. '20	1,249	1,493.74	15.00	24.25	1.39	15.80	17.35	1,567.53	1.255
Nov. '20	1,286	1,299.38	15.00	24.25	1.39	17.49	22.10	1,379.61	1.073
Dec. '20	1,124	1,283.17	15.00	24.25	1.39	15.18	28.40	1,367.39	1.216
Jan. '21	1,218	....	15.00	24.25	1.39	16.10	27.20	1,454.76	1.194

Average cost per ton for station, $1.332. Average cost per cwt. for station, $0.066.

Electric Railway Publicity

Devoted to How to Tell the Story

Publicity Must Be Temperate

Successful Business Man, Discussing Utility Public Relations, Advises Against Scolding the Public—He Finds Analogy in Parent-Child Relation

BUSINESS men in a certain large city have been puzzling their minds with efforts to analyze the reasons for the obvious public favor extended to one utility and the disfavor in which another finds itself. There are no radical differences in the merits of the two utilities or in their rights to the good feeling of the public. Indeed, the local critics of utilities have said almost exactly the same things against both in the usual course of recrimination. Yet there is a widespread and vociferous antagonism to the one and complacency to the other.

A business man made the following comment on the situation, extending his remarks into philosophical observations on human nature and children:

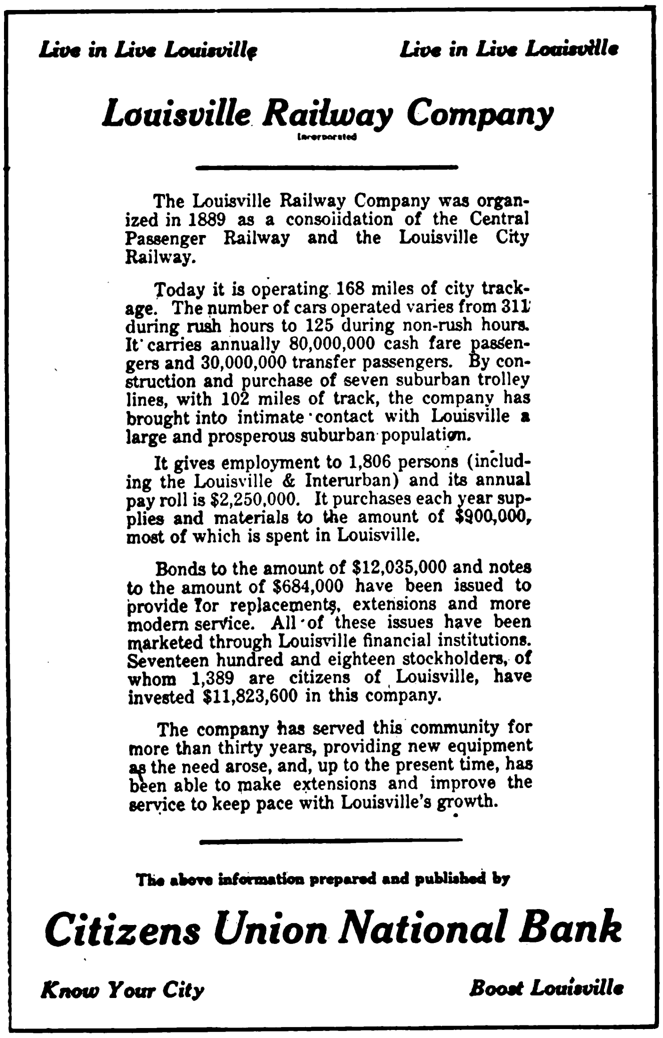
The solution of the problem can be found in the general managers. "A," manager of the "X" company, has tried hard to win public favor for his company and failed. "B," manager of the "Y" company, seemingly has made no effort to educate the public on the claims of his company to public sentiment. "A" has tried too hard; he has spent a great deal of time arguing with business men, giving out interviews and making statements, to show that the critics of the company were wrong. He has fought back and has kept alive all the antagonism that ever existed. He has not allowed the public to forget that the company was hated in some quarters. He may have convinced most of the citizens that the company was right and that it should have the co-operation of the public to secure the best results in service, but nevertheless the hostility has increased rather than diminished. It seems to me that his remarks are nearly always accepted as "propaganda," being therefore vitiated. The public estimates, far below their value, the remarkable accomplishments of this manager in the maintenance and improvement of service.

Now, "B" seldom addresses a public gathering and has never argued in behalf of his company. On a few occasions he has spoken very plainly regarding the co-operation which a community should extend to its utilities, but he has spoken goodnaturedly, without criticism of anybody or anything, and without intimation that criticisms had ever got under his skin. He has assumed all along that he and his company have no enemies; that the public is growing in appreciation of the service rendered and the larger service possible. Once in a while there is a flare against his company, a violent controversy over some element of service or rates; but nobody seems to be able to get up much enthusiasm for a sustained warfare. The manager allows the incident to wear itself out, without aggressive interposition from himself, and it does wear itself out in a few days and is forgotten.

I have been intensely interested in observing the different methods of these two managers, for the two methods are analogous to the methods of managers in private business and the methods of parents in the management of their families.

A factory or office manager, a superintendent or foreman may possess extraordinary qualities as a planner and director but fail in management because he does not know how to handle men. He may adopt aggressive tactics which keep his plant in a turmoil, arguing, exploding, commanding, criticising, until in course of time nearly every employee has acquired a secret grouch against him. However highly the employees may respect his technical skill, they cannot bring themselves to hearty co-operation with him. Another manager may not be so obviously the dictator in his plant, yet a quiet word from him may produce instant response, of the exact kind that results in the most efficient operations, an intelligent and loyal response.

A father may rule with a firm hand, punishing and scolding and reminding constantly of errors and improper habits, yet his family circle may present a far different picture than that which he had conceived and which his diligent attention might have reasonably been expected to produce. Another father, quite as ambitious and intelligently thoughtful for the development of his children, may seldom scold or punish, and yet may lead his children into harmonious and fairly complete compliance with his designs.



Live in Live Louisville *Live in Live Louisville*

Louisville Railway Company

Incorporated

The Louisville Railway Company was organized in 1889 as a consolidation of the Central Passenger Railway and the Louisville City Railway.

Today it is operating 168 miles of city trackage. The number of cars operated varies from 311 during rush hours to 125 during non-rush hours. It carries annually 80,000,000 cash fare passengers and 30,000,000 transfer passengers. By construction and purchase of seven suburban trolley lines, with 102 miles of track, the company has brought into intimate contact with Louisville a large and prosperous suburban population.

It gives employment to 1,806 persons (including the Louisville & Interurban) and its annual pay roll is $2,250,000. It purchases each year supplies and materials to the amount of $900,000, most of which is spent in Louisville.

Bonds to the amount of $12,035,000 and notes to the amount of $684,000 have been issued to provide for replacements, extensions and more modern service. All of these issues have been marketed through Louisville financial institutions. Seventeen hundred and eighteen stockholders, of whom 1,389 are citizens of Louisville, have invested $11,823,600 in this company.

The company has served this community for more than thirty years, providing new equipment as the need arose, and, up to the present time, has been able to make extensions and improve the service to keep pace with Louisville's growth.

The above information prepared and published by

Citizens Union National Bank

Know Your City *Boost Louisville*

Another Bank Comes Up to Scratch

The fact that more than twice as many passengers were carried by the local traction systems of New York City than were transported by all the steam roads of the United States is being given publicity in the July number of the *Elevated Express*, published by the Interborough Rapid Transit Company, to allow a realization of the enormous demands being made upon New York's traction systems. The actual number of passengers carried during 1920 is given as 2,356,000,000.

Speaking of Noses

Cutting Off Utility Noses Ruins Community Faces—Friendship, Not Feuds, Needed to Secure Progress—Railway Official Talks Out in Meeting

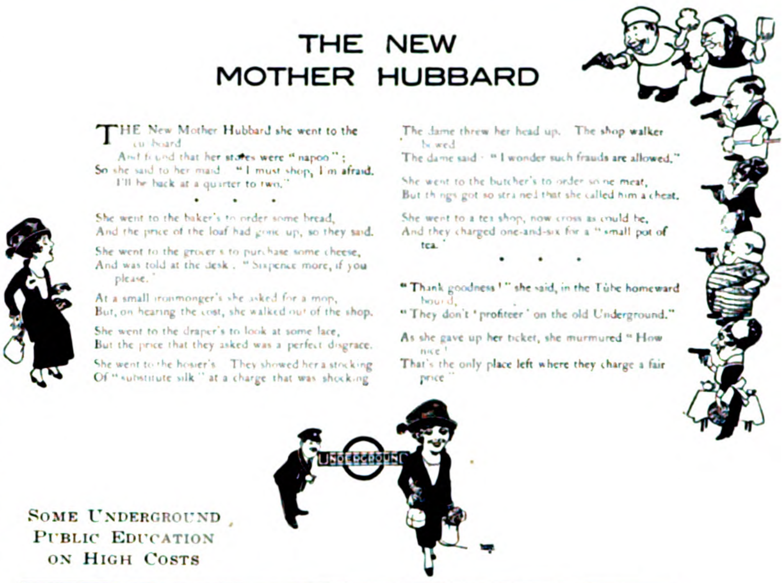
P. S. ARKWRIGHT, president of the Georgia Railway & Power Company, Atlanta, Ga., recently gave an address before the Lion's Club of Atlanta. His remarks were so pertinent to the general utility situation that they are abstracted below. It is understood that this address will soon be available in pamphlet form. It has already been widely quoted in Georgia papers:

A lot of us are not entirely pleased with our faces. Some of us may even have a spite against them. Cutting off our noses will certainly ruin our faces However, we won't let anybody persuade us that we can thus avenge ourselves and escape all injury. But, figuratively, many of us do this very thing time after time.

We did it with the steam railroads. We permitted our resentment to be aroused against them. We became violently prejudiced. We created an attitude of general hostility to them. There is no doubt of the fact that we injured them. We certainly succeeded in keeping them from operating profitably. We regulated them most stringently. We soaked them in damages whenever we got on the jury. We elected every public official who ran on the platform of antagonism to the railroads. We destroyed the confidence of the investing public in the safety of their securities. We kept them from getting new capital.

Now we have gone hunting for new game. There were the local public utilities—electric railways, gas, electric light and power and telephones. These services at first were small, but they developed rapidly. There were almost daily improvements in the supply and application of these services. Street railways were being electrified, consolidated into a system covering the areas of towns, spreading out into suburban districts, making possible the growth and expansion of cities. So with gas, electric light and power. All this was done in an atmosphere of friendliness and co-operation, resulting in fair treatment and just consideration of the utilities and of the public they served.

In the process the companies were of necessity becoming larger and larger; the amounts of money involved going up into the millions. The necessary capital, not being able to be obtained in the locality, was being drawn in from the outside. Increasing numbers of the population were becoming each day more and more dependent upon the services performed by these companies. They became shining marks. They were foreign owned. They were monopolies—necessary or natural monopolies, it is true, but abhorrent nevertheless. It was so easy to teach people to hate them. They came into more intimate contact with more members of the public than any other enterprise that does business with them. More people ride on the street car systems every day than the entire population of the city it serves. These people are of all kinds and dispositions. Some of them are apt to lose their self-control and to take offense or to give offense. The railway vehicles are operated as public vehicles, and each individual in using them has to give up some of his separate individual convenience in order that they may be kept capable of serving the general convenience. Customers had to submit to rules, and rules always irritate. We all go to business practically at the same time and return home at the same time. Naturally we can't all get a seat. Their properties of necessity occupy the public highways. They impede other travel; they are noisy; they have accidents. These companies furnish only service. We don't like to pay for service, nor can we stand for any delay in service or any slackness in service, no matter what the cause is. We get on the car and get off, and we have got no more than we had when we got on. We switch on the light and when we switch it off it's gone, with



THE NEW MOTHER HUBBARD

THE New Mother Hubbard she went to the cupboard
And found that her stores were "napoo";
So she said to her maid "I must shop, I'm afraid.
I'll be back at a quarter to two."

• • •

She went to the baker's to order some bread,
And the price of the loaf had gone up, so they said.

She went to the grocer's to purchase some cheese,
And was told at the desk: "Sixpence more, if you please."

At a small ironmonger's she asked for a mop,
But, on hearing the cost, she walked out of the shop.

She went to the draper's to look at some lace,
But the price that they asked was a perfect disgrace.

She went to the hosier's. They showed her a stocking
Of "substitute silk" at a charge that was shocking

The dame threw her head up. The shop walker bowed
The dame said: "I wonder such frauds are allowed."

She went to the butcher's to order some meat,
But things got so strained that she called him a cheat.

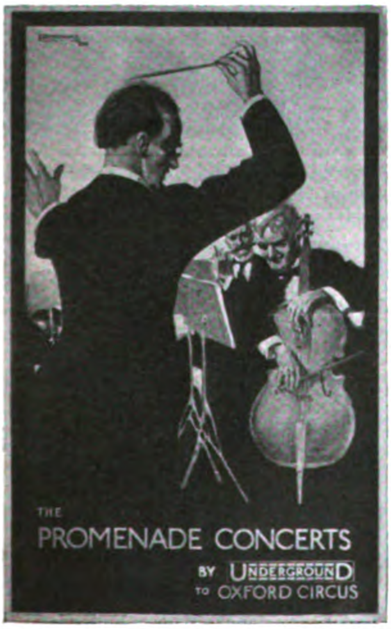
She went to a tea shop, now cross as could be,
And they charged one-and-six for a "small pot of tea."

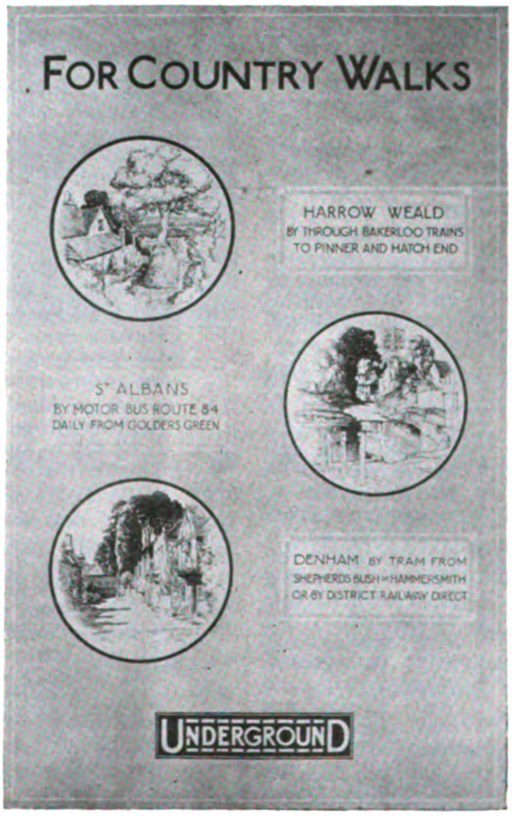
• • •

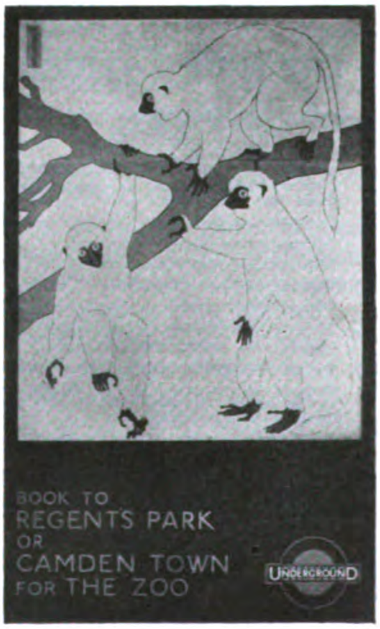
"Thank goodness!" she said, in the Tube homeward bound,
"They don't 'profiteer' on the old Underground."

As she gave up her ticket, she murmured "How nice!
That's the only place left where they charge a fair price."

SOME UNDERGROUND PUBLIC EDUCATION ON HIGH COSTS







"UNDERGROUND" PUBLICITY IS OF A HIGH QUALITY AND THERE IS A GREAT DEAL OF IT nothing left. We turn out the gas and it is as if it wasn't there. We have got to have this service immediately when we want it and of the quality that we need. We can't wait for our light, or our power, or our heat, or our transportation. If the service is postponed it is no longer needed.

We are billed for it monthly in terms of quantity that we don't understand; measured by an instrument that we don't know anything about. The service is easily wasted. We are not willing to admit our own faults, so naturally we blame the service, but the fault may lie in our own extravagance or in the extravagance of our household.

Under these circumstances, it would be strange if, through a period of years, there was a single individual who had not at some time had a fault to find with the public utilities. The utility is therefore an ever-present, ready-to-hand, easily and usually successfully employed platform for the advancement of personal, political ambition.

I can understand people following a leader of that kind if they get any benefit from him. If abusing a public utility or taking out a spite on it brought lower fares, or better service, or nicer cars, or firmer tracks, or more extended facilities, probably the methods used could be justified in the ends achieved. It passes understanding, however, why any community should approve such methods when it not only brings no gain or benefit to the community but inevitably results in harm and injury.

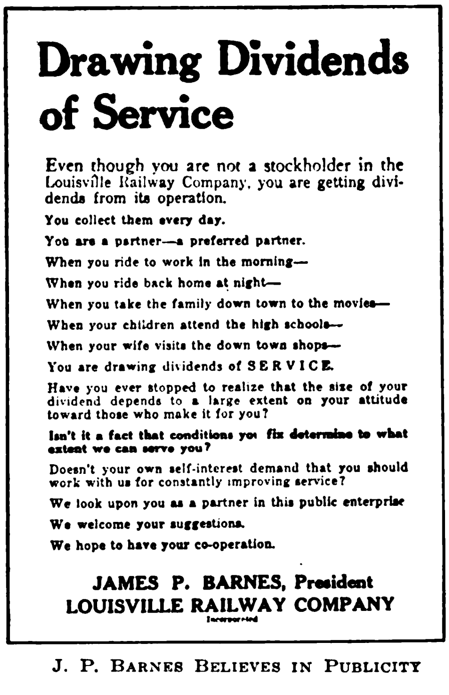
You are familiar, and unfortunately all the world is familiar, with the attitude of antagonism to the Atlanta utilities which has been engendered in this community during the past three years or so. What has been the result of this official attitude?

It has injured the company unquestionably; it has created a spirit of enmity among many of the people; it has made it difficult—practically impossible—to raise additional capital for the improvement of the service and the expansion of the utilities. It has increased the cost of such money as has been obtained. It has entirely reduced the efficiency of the employees and even on occasions almost demoralized them. It has greatly enlarged the cost of operation; it has retarded extension; it has impaired the quality of the service, and it has resulted necessarily in increased prices. All of which has injured the company, of course. But at what cost to the community?

It hasn't resulted in lower fares or rates. Notwithstanding the assaults, the fares and rates have increased because of necessity they must have increased under the conditions existing.

The service has not improved as a result of these attacks. This method hasn't been responsible for the repairing of a single new car or the laying of a foot of track or any improvement in quantity or quality of the gas or electric supply.

As a matter of fact, because of this attitude, it has been impossible to carry on the developments and improvement the company had planned, and among other things it forced the suspension of a hydro-electric development on which practically half the cost had already been spent. Can there be any question of the injury to the community?



Drawing Dividends of Service

Even though you are not a stockholder in the Louisville Railway Company, you are getting dividends from its operation.

You collect them every day.

You are a partner—a preferred partner.

When you ride to work in the morning—

When you ride back home at night—

When you take the family down town to the movies—

When your children attend the high schools—

When your wife visits the down town shops—

You are drawing dividends of SERVICE.

Have you ever stopped to realize that the size of your dividend depends to a large extent on your attitude toward those who make it for you?

Isn't it a fact that conditions you fix determine to what extent we can serve you?

Doesn't your own self-interest demand that you should work with us for constantly improving service?

We look upon you as a partner in this public enterprise

We welcome your suggestions.

We hope to have your co-operation.

JAMES P. BARNES, President
LOUISVILLE RAILWAY COMPANY
Incorporated

J. P. BARNES BELIEVES IN PUBLICITY

The interests of the community and its utilities are interdependent. Our properties are planted here and here they have got to stay. They can't be taken up and moved away. So we have got to make our success right here and it is dependent on the continued growth of this community. So with the community; its growth, prosperity and well being are dependent upon the character and quality of its public utility service, and anything that impairs that service or impedes an extension of it injuriously affects the community. My judgment is that the public utilities in Atlanta would have been developed 50 per cent more than they have been but for the official attitude of enmity and ill will toward them.

Atlanta has no ocean or great lakes or majestic river or navigable water. It has no iron, coal, copper, oil or other useful mineral deposits. It has no stupendous manufacturing plants or one overshadowing industry. Its natural advantages are location, accessibility and climate. No one locality has any monopoly of these advantages. So to make a city grow here requires effort, teamwork and co-operation. Atlanta could never have reached its present position as a financial, transportation and commercial headquarters of the Southwest with this dissension and discord among her people.

Let's apply this treatment of co-operation to our public utilities. It would be too much to hope that we should never quarrel with them, but let's stop having a feud with them.

This Speaks for Itself

THE Third Avenue Railway system in New York extends from the old Post Office in lower Manhattan to beyond the city of Yonkers on the north and the city of New Rochelle on the northeast. The lines below were drafted for use on the Third Avenue Division, which is the main stem and has headquarters at Sixty-fifth Street and Third Avenue, Manhattan.

THIRD AVENUE RAILWAY SYSTEM
COMMENDATIONS

"C" is for controllers, now under close watch.
To see if they're fed as they should—notch by notch.
So cut out your fast feeding and running between
Notches, resistance—you know what I mean—

"O" is for Observance; observe every rule.
Don't forget them the moment you leave Harlem School.
Keep them in mind and it's a safe guarantee.
You'll bring credit to yourself, the Division and me.

"M" is for Motorman; both the new and the old.
This little lecture to you I'll unfold.
"Do right all the time and commendations are yours.
Do wrong—well, you know we punish wrongdoers."

"M" is for Motto; let our Motto be,
To practice efficiency in the highest degree.
Avoid accidents—operating with care.
Be courteous to passengers, treat them all fair.

"E" is for Economy, daily practiced and preached.
We'll not relinquish a trifle 'til the highest standard's reached,
So let's all club together with vim and with pep.
And uphold what is known as "Third Avenue's Rep."

"N" is for Nickel, representing one fare,
We need all the nickels; the public's our payer.
Our duty, therefore, is to be courteous and kind.
Don't be grouchy or gruff and don't leave them behind.

"D" is for Danger; when you see it around
Have a care, watch your step or else you'll be found
On your back on a cot with kind hands on your brow.
Or perhaps you'll adorn the noted "Hoose-gow."

"A" is for Accidents, which mean heavy expense
Paid out in our hard-earned dollars and cents.
Let's try to avoid them I ask you again.
They're the source of much suffering, sorrow and pain.

"T" is for Troubles; our troubles are rare.
We're not hounded or pounded if we work on the square.
We're treated like white men, our worries are small,
In fact, it's up to ourselves to have any at all.

"I" is for Ireland and Italy too,
A good combination when mixed with the Jew.
All well represented on this road, I will say,
And strongly backed by the old U. S. A.

"O" is for Only; there's only one road.
And that's in Manhattan and right well we know it.
We plug all day long traveling uphill and down
Carrying patrons with safety all over the town.

"N" is for Never: We must never grow stale,
Whether running on dry or on slippery rail.
We must operate right Commendations to gain.
If we don't do what's right the Boss will raise "Cain."

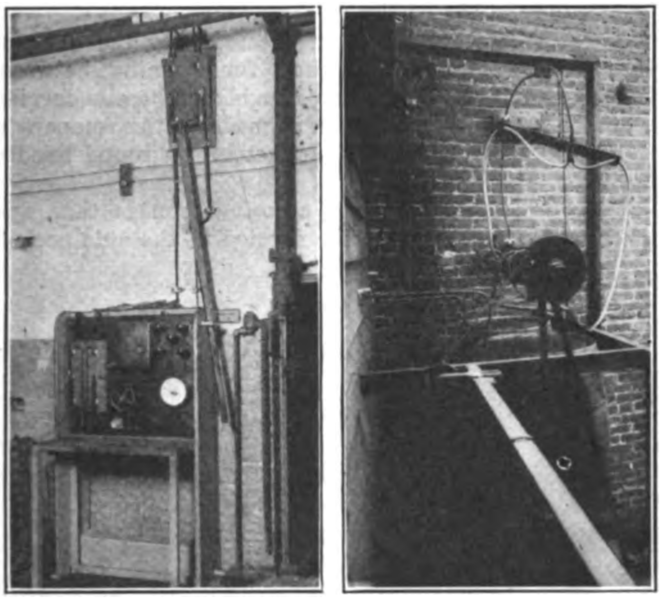
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Plow and Circuit-Breaker Testing in Washington

The Overload Current Testing of Plows Used on the Underground Conduit System of the Washington Railway & Electric Company Plays an Important Part in Preventing Trouble in Service

FOR proper calibration of circuit breakers and current test on current-collector plows which are used on the cars of the Washington Railway & Electric Company the switchboard and water rheostat shown in the accompanying illustration were erected close to the place where these pieces of apparatus are repaired.


At Left, Switchboard for Circuit Breaker and Plow Test; At Right, Water Rheostat with Testing Equipment

The switchboard has a slate base and is mounted at a distance from the floor convenient for the operator. The double-pole switch shown mounted on the wall above the switchboard is an isolating switch which cuts off all current from that point when the switch is out. This is easily operated by a long wooden handle. As a caution to the operator, when this switch is in and the board is "alive" a five-light circuit of red lamps burns on the board. These are shown in the upper right-hand corner. The double-pole, double-throw switch at the left of the board is for the purpose of adjusting polarity changes of the circuit which frequently occur on this road with the metallic return circuit. The circuit breaker in the center of the board is set at 800 amp. and a 0-to-800-amp. ammeter shows the current taken.

The water rheostat for regulating the value of the testing current is located outside the building and operated through a shaft by the wheel shown in the center of the switchboard. The movable terminals of the rheostat are raised or lowered through ropes which operate over sheaves mounted on this shaft. The rheostat is made up of two old oil barrels with the circuits connected to them in parallel so as to reduce the heating of the brine as much as possible. The arrangement of the barrels, operating equipment, shafts, counterweights, etc., is readily seen in the illustration, and a window to the left of the switchboard furnishes a convenient means of watching the operating of the rheostat from the inside of the building, while its location on the outside insures that no obnoxious fumes will interfere with other work.

Large Automobile Interests Enter Motor Bus Field

THE Republic Truck Company, one of the John N. Willys subsidiary companies, enters the motor bus field with a specially designed single-deck motor bus equipped with the Knight sleeve-valve motor. The company plans to co-operate with the railway companies in the development of the motor bus field and Col. Frank Smith, first vice-president and general manager of the Republic company, has created a public utilities division under the direction of Ralph M. Sparks, formerly of the Bay State System, Boston, who has been appointed manager of this division.

The Republic company has made a comprehensive study of motor bus operation as it exists in the United States and abroad and believes, with most experienced bus operators, that the ordinary truck chassis is not suitable for passenger transportation. A specially designed unit is now being built. Particular attention has been paid to spring suspension, body overhang, tread of wheels, etc., to insure comfortable riding under varying loads. The type of motor used is the same as that which has been adopted as standard by the Fifth Avenue Coach Company in New York.

The all-steel body is hung so that the floor level above the ground is approximately 24 in. With a folding two-panel door of good dimensions and low steps, passenger interchange can be accomplished with a minimum of delay. A form of cushion wheel and tire is used. To insure further comfort to passengers and at the same time cut down maintenance, an electric gear shift is used. In addition to the electrical attachment there is a regulation hand control, which is used only in emergency. Cross seats are used in the bus, which has a seating capacity of twenty-five passengers, except over the rear wheels, where longitudinal seats are necessary because of the low-floor feature. A fare box is conveniently located in the front.

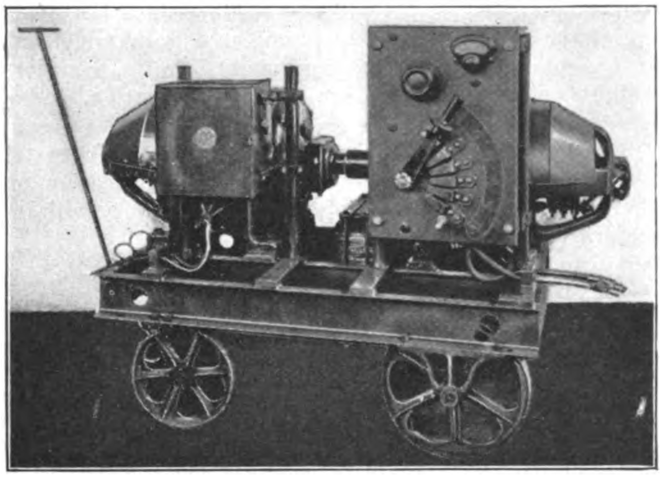
A completed bus will be presented for inspection of the railway companies some time the early part of August.

New Variable Voltage Welding Set

THE General Electric Company has recently placed on the market a new type of electric arc-welding equipment for operation from variable-voltage, direct-current trolley circuits.

The equipment consists of a standard type WD-9 4-kw., 60/20-volt, 200-amp., self-excited arc-welding generator direct connected to a type RF-10-A constant-speed, variable-voltage, direct-current motor. The motor is designed to maintain practically constant speed on voltages varying momentarily from 400 to 650 and is provided with compensating pole-faced windings as well as commutating poles.

The generator is designed so that at constant speed the energy delivered at the arc is practically constant. Since the voltage and current follow the momentary variations in the arc conditions practically instantaneously, the lag which causes defects in the weld is eliminated. By the adjustment of the dial switch on the panel, the current may be adjusted from 200 to 75 amperes in 25-amp. steps. Intermediate steps are provided for by adjustment of the field rheostat.



VARIABLE-VOLTAGE, DIRECT-CURRENT WELDER

The sets are assembled complete with generator panel, motor starting equipment and stabilizing reactor, all mounted on a structural steel base. The equipment may be made portable by the addition of running gear.

Greasing and Cleaning Tracks

THE maintenance department of the Seattle Municipal Street Railway has systematized its track greasing and switch cleaning. The trackage of the system is divided into routes of an average of 12 miles each, with a track greaser assigned to each route and a relief man to take the place of each regular greaser. This relief man also takes the place of the oiler on the cable line four days in each month, and by this arrangement each man has two days a month off. A foreman reporting direct to the maintenance engineer has charge of the men.

The schedule of greasing requires that each route should be covered at least twice daily and in some special cases three times daily. The various parts of the track greaser's outfit are shown in an accompanying illustration and consist of a grease bucket, a switch cleaning iron, a copper oil can, a grease swab and a deck broom.

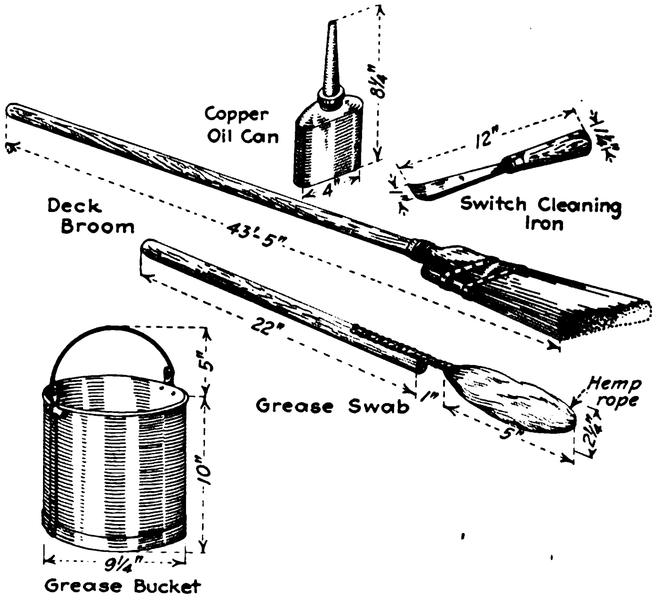
The galvanized iron grease bucket holds 12 qt. and has straight sides with a rim around the bottom ¾ in. wide, made by turning up the bottom onto the sides and firmly soldering the edges together. This gives a substantial rim for the bucket to rest on and the bottom of the bucket rests on the inside of this rim. The top rim is made of 3/16-in. wire.

TRACK GREASER WITH EQUIPMENT FOR WORK

The greaser uses a swab which has a wire framework composed of four pieces of wire each about 20 in. long, crossed at the bottom, through which are drawn strands of either hemp or manila rope 3½ in. long. After the swab is filled to the required height and dressed down to the required shape with shears the wires are drawn together and twisted tight at the top. This is then attached to a wooden handle to make it of convenient length for the use of the greaser.

A No. 8 deck broom is also carried by the greaser for cleaning out switches and for cleaning between the guard and running rails. In addition he also carries a switch cleaning iron which is made in the company's shops and is about 9¼ in. long, set into a round handle 2½ in.

The total length of this cleaning iron is thus approximately 1 ft. and can be carried in the side pocket in the man's overalls. A small copper oil can is also carried with switch oil to be used on the switches.



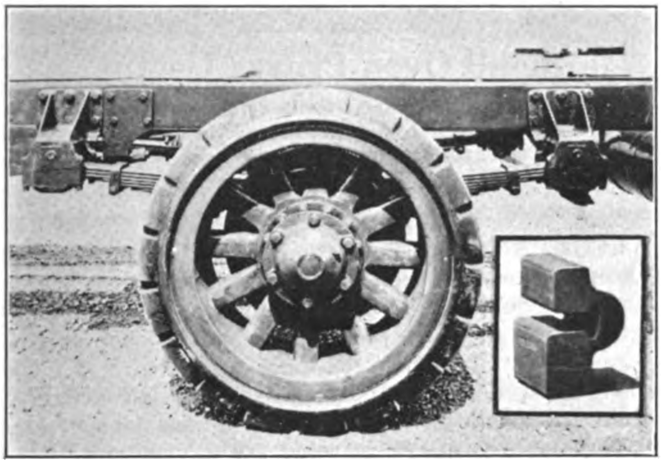
TRACK GREASER'S OUTFIT OF THE SEATTLE MUNICIPAL STREET RAILWAY

In addition to the regular work of cleaning and oiling, the track greaser also reports all defects that he may find in either tracks or switches. This information is given direct to the office so that emergency men may be sent out immediately to make any necessary repairs.

Rubber Spring Blocks Improve Riding Qualities of Bus

THE International Motor Company has developed and applied to several of its Model A B Mack chassis in motor bus service a novel easy-riding device. A rubber spring block, so called, acts very much like a shock absorber of the cushion type, although in this case the device which takes the blow is in compression whether the load is up or down.

These rubber spring blocks do away with the usual spring shackles. They are held fast in a housing that is bolted or riveted to the chassis frame. In order that the springs may function properly in carrying their share of the load, lipped plates are riveted to the ends of the two top spring leaves, which then fit into the mouth of the spring block inclosing the lips and holding the upper and lower members of the block in compression at 100 lb. per square inch when bolted up.



VIEW OF REAR SPRING SUSPENSION SHOWING HOUSING SURROUNDING RUBBER SPRING BLOCK—INSERT, RUBBER SPRING BLOCK ITSELF

Road tests that have been run by the motor company indicate the life of the spring block is about 30,000 miles. It will take but a small percentage of time to renew these rubber blocks as compared to replacing bushings, pins, etc., in the ordinary form of spring suspension. The truck manufacturers claim this can be done in an hour.

The illustrations show the details of the method employed to fasten the spring block housing to the truck frame as well as the shape and design of the rubber blocks.

Freight Locomotive for New York Municipal Railway

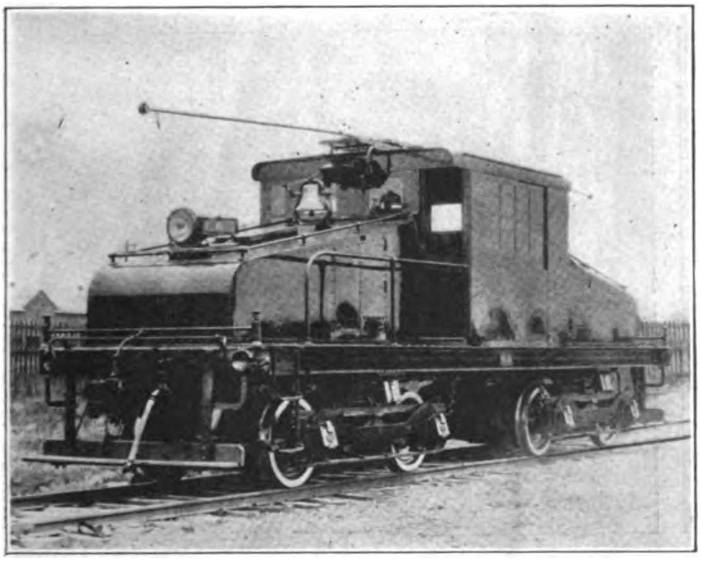
THE New York Municipal Railway has recently placed in operation an additional 50-ton, 600-volt electric locomotive for handling freight service. At the one-hour rating the new locomotive will develop a tractive effort of 16,500 lb. running at a speed of 13.8 m.p.h., and will haul an 800-ton train on a level track at 15 m.p.h.

The locomotive is designated class 404-E-100-4GE248 and carries all of its weight on drivers. The cab is of the sloping end, steeple type of construction and extends practically the whole length of the underframe. The central portion contains the master controllers, air brake operating valves and similar equipment adjacent to the operator's positions. The underframe consists of four heavy steel channels extending the entire length of the platform and tied together by heavy end-frame box girder castings and bolster plates. Each channel is riveted to the webs of the end-frame casting and to the top and bottom bolster plates. The bolsters are built up of 1-in. steel plates, 18 in. in width, riveted to all four longitudinal sills.

The draw-head castings are bolted to the center sills, which in turn are riveted to the end frames. The draft gear consists of MCB couplers with 5 in. x 7 in. shank and standard twin springs and follower plates. The whole platform is floored and braced by heavy steel plates running the width of the locomotive and riveted to the longitudinal sills. The usual wood floor is used in the cab.

The side frames of the two four-wheel trucks are built of heavy rolled bars for top and bottom members with cast steel pedestals. The bolster or center transom is bolted rigidly to the side frames and the entire weight of the truck is supported by semi-elliptic springs hung by links to the double side equalizer bars, which in turn rest on the journal box. The journals are of standard design with MCB bearings and wedges. The wheels are solid rolled steel, 34¼ in. in diameter, with MCB treads and flanges.

The locomotive is driven by four 600-volt box frame



NEW FREIGHT LOCOMOTIVE FOR BROOKLYN

OPERATING EQUIPMENT IN CAB

ventilated railway motors of the same general design as those used on the subway cars of this company. Each motor is geared to the axle through single reduction with a gear ratio of 3.88. The control equipment is type M arranged to give three motor combinations, series, series-parallel and parallel. There are seven steps in the first position, six in the second and five in the third. The motor rheostats and various parts of the control equipment are housed under the sloping end cabs, conveniently arranged for inspection and repairs. Current may be collected either through third rail shoes or overhead pole trolleys. On account of the local conditions there are some limiting clearances which require a very low over-all height. This locomotive is arranged to operate under a minimum clearance of 12 ft. 2 in. over the trolley retracted. A change-over switch is provided to isolate the third rail shoes when the trolley is being used, thus eliminating the danger from exposed live parts. The trolleys are isolated in a like manner, when the switch is thrown to take current from the third rail.

Total weight	100,000 lb.
Length over buffers	37 ft. 4 in.
Width over all	8 ft. 7 in.
Height over trolley retracted	12 ft. 2 in.
Total wheelbase	25 ft. 7 in.
Rigid wheelbase	7 ft. 4 in.
Diameter of wheels	34½ in.
Total hp. one-hour rating	600
Tractive effort at one-hour rating	16,500 lb.
Speed at this rating	13.8 m.p.h.

Thermal Stresses in Steel Car Wheels

THE Bureau of Standards announces in Technical News Bulletin No. 51 that results obtained from tensile tests on material taken from cast-iron and rolled-steel car wheels and thermal expansion data obtained on similar materials has enabled computations to be made of the stresses set up by heating the tread of various steel wheels. It was found that the stresses on the outside of the wheel were in compression near the tread and in tension near the hub, the maximum value being in each case greater than the proportional limit of the material. This distribution is similar to that previously found in the single-plate cast-iron wheel. In order to analyze further the stress distribution in the wheels, some of them are being prepared in such a way that stress measurements can be taken on the back and also in a circumferential as well as a radial direction.

New Combination Stop Sign and Strain Insulator

THE Technical Products Company, Pittsburgh, Pa., is marketing a strain insulator sign designed by C. Fred Sauereisen of Pittsburgh. This sign is made from the same material as high-voltage insulators. It is white with black letters which are burned into the sign making it acidproof. It is mechanically strong and not affected by the weather, and the rain will wash off all dirt. This insulator is intended for use on guy wires and offers a uniform design for signs as danger signals and to designate car stops, line voltage, and other similar variables.

Small Oven Proves Useful

Omaha & Council Bluffs Street Railway Makes Small Portable Coil-Winding Oven for Armature Coils, Which Makes Them Easier to Handle and Less Subject to Damage

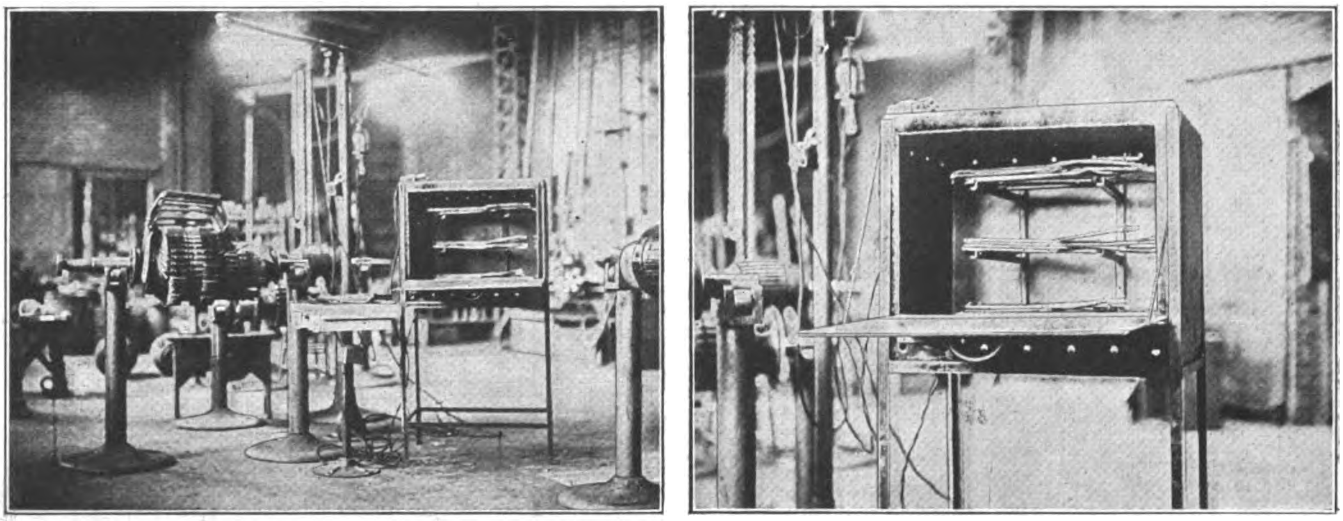
BY O. A. NORENE

Assistant Master Mechanic Omaha & Council Bluffs Street Railway

ACCOMPANYING illustrations show a small portable oven which has been constructed in the shops of the Omaha & Council Bluffs Street Railway for use in connection with armature coils. The oven is made of No. 24 gage sheet steel mounted on legs of 1 in. x 1 in. x ⅛ in. angle iron, so that the oven itself is at a convenient height for armature winders. The dimensions of the body of the oven are 28 in. wide, 20 in. deep and 24 in. high. The sheet steel door is hung on common spring screen hinges. The heater element is wound of No. 24 gage Nichrome wire with a resistance of 200 ohms and is mounted on standard porcelain heater tubes. Connections for the line are made through Crouse-Hinds R.Q.K. receptacles and plugs to outlets which are available near the different winding stands.

These ovens have been found to be of great value in winding armatures, as the armature coils which lie in storage for any length of time become hard and can be easily damaged when they are being installed on the armatures by the armature winders. By putting the coils into the oven for a few minutes they become pliable and easy to handle and so much less subject to damage by handling.

Another convenience of this oven is that on account of the light materials used in its construction it is easily moved about as needed.



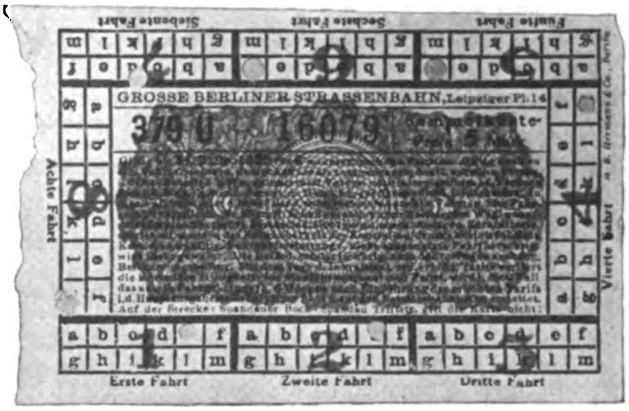
TWO VIEWS OF PORTABLE OVEN BUILT IN OMAHA SHOPS

Berlin's Eight-Ride Punch Ticket

THE purchasing power of the mark has declined so greatly within Germany itself that the electric railways of that country are compelled to charge fares as high as 1 M or ten times the usual pre-war fare (10 pfennig) in unit-fare cities. The Grosse Berliner Strassenbahn at last accounts is charging 70 pfennig, which at the pre-war rate of exchange would mean a 14-cent fare instead of its old 2½-cent fare.

To temper the wind for the regular rider, the management sells an eight-ride ticket for 5 M (500 pfennig), whereas eight individual rides would cost 5.6 M (560 pfennig), the reduction being 12 per cent. The particular ticket reproduced is marked as good for eight rides taken before Dec. 31, 1920, either for one rider at a time or for several who make use of the ticket in common. The conductor makes a perforation in one of the lettered sections in the group marked "First trip," "Second trip," etc. There are twelve letters in each section, and the conductor selects for punching any letter he wishes in each trip.

Among the interesting regulations printed on this ticket are the following: Animal and baggage charges may be paid for by punchings on the ticket; tickets so crumpled, folded or mutilated as to make inspection difficult are void; no refund is made for unused trips except in case of a fare increase, when payment will be made within six weeks thereafter, either at the headquarters or the operating carhouses. The last provision clearly prevents the presentation of old tickets for new and higher fares.



EIGHT-RIDE TICKET OF BERLIN STREET RAILWAYS SOLD AT 12 PER CENT DISCOUNT OVER CASH

Warnings on Coal

Washington Officials Suggest Its Purchase Now to Avoid Possibility of Its Shortage Later

TWO warnings have come to the joint fuel committee of the national public utility associations that it would be very desirable for the utilities to bunker coal at this time when it can easily be obtained. One of these warnings was sent on June 24 by Edgar E. Clark, chairman Interstate Commerce Commission, to G. W. Elliott, secretary of the national committee on gas and electric service, and reads in part as follows:

> As you doubtless know, the production and shipment of bituminous coal has been and is disappointingly low. You, of course, recall the difficulties of last year during the late summer and fall which grew out of the fact that there had been a general disinclination to buy and provide necessary supplies earlier in the season.
>
> In the interest of avoiding a repetition of those circumstances the commission has requested me to write you suggesting the importance, as we see it, of securing as promptly as possible a reasonable reserve against the difficulties that will be presented if later we get into a sustained period of so-called car shortage, and to request that you bring the matter actively to the attention of the members of your association.
>
> We appreciate, of course, that it is impracticable to put into storage an entire winter's supply. What we are suggesting is the accumulation now while transportation is easy and cars are idle of a reasonable reserve supply which will help out greatly if and when the pinch comes.

A second letter was sent by Secretary Hoover of the Department of Commerce on July 8 to J. W. Lieb, chairman of the joint fuel committee of the national utility associations. Mr. Hoover says:

> I would like to call the attention of your association to the bituminous coal outlook. There is every indication that there has been an undue slackness in the purchase of coal which may accumulate to large demands in the autumn. I am convinced that due to the general depression the price of bituminous coal at the mines is not too high at the present time. This is, I think proved by the fact that numbers of operating coal companies are making no profit whatever. If there should be a recovery of business activities in the autumn, taken in conjunction with the large increase in percentage of disabled cars (from 5 per cent to 16 per cent during the past six months) and the inability of the railways to finance their maintenance there are possibilities of development of a most serious situation as regards coal movement.
>
> I cannot but feel that the Interstate Commerce Commission in the face of warnings it has sent out would not be disposed to give any priority in such an event. It seems to me, therefore, to be obvious that the public utilities companies, both in their own interests and the protection of the public, should make early provision for stocks of coal sufficient to carry them over a critical period.

Mr. Lieb, in acknowledging these letters, said that he appreciated the timely suggestions and that he would send copies to the three associations.

American Association News

T. & T. Executive Committee Meets

ON JULY 20 the executive committee of the Transportation & Traffic Association met at headquarters to pass on several committee reports that have been prepared for presentation at the coming Atlantic City convention. Those present were R. P. Stevens, Pennsylvania-Ohio Electric Company; President A. Gaboury, Montreal Tramways; L. H. Palmer, United Railways & Electric Company, Baltimore; R. E. McDougall, New York & Harlem Traction Lines.

Reports of the committees on safety work, traffic regulations, personnel and training of employees and economics of schedules were approved, subject to minor changes and corrections. Other reports are to be approved by letter when received.

A tentative convention program was mapped out and a list prepared of those who are to be asked to discuss the various reports.

The personnel of the committee on subjects for next year's work was also discussed. This anticipates having the report of the committee available for the first executive committee meeting following the close of the convention.

Resolutions on the Death of William Bloss

"BILL" BLOSS was a much-beloved character in the ranks of the Central Electric Railway Association, and he did much to add life and spirit to its meetings and activities. It was singularly fitting, therefore, that the association should pay tribute to his memory on the recent boat trip, where his absence was felt most keenly.

The association at this meeting adopted an appropriate resolution which recounted the many ways in which Mr. Bloss had been a vital factor in the association's success and had endeared himself in the hearts of the various members. His untimely death was deeply regretted.

Executive Committee Will Meet August 5

THE meeting of the executive committee of the American Association which was tentatively arranged for Aug. 5 has been definitely set for that date. The business before the committee will be consideration of the report of the special reorganization committee, an abstract being printed in last week's issue of this paper.

As was mentioned at that time, the executive committee, through President Gadsden, has requested the membership at large to make suggestions or criticisms which will help the committee in its deliberations.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Suspension Seems Probable

Court Has Under Consideration Ordering Des Moines City Railroad to Withdraw All Service Aug. 1

Unless further objections are offered Judge Martin J. Wade of the federal court will order a complete suspension of service by the Des Moines City Railway in Des Moines on Aug. 1. In an order of court filed July 15 Judge Wade made clear his intention to authorize the shut down unless some solution of the difficulties is found before the date set. Judge Wade has fixed July 21 as the date for filing final objections.

In the order filed Judge Wade indicated that the fifteen days' respite was granted in order to allow the trustee for the bondholders time in which to offer more urgent objections and suggest an alternative. The order specifically directs that the trustees be notified of the court's intention and grants until July 21 for objections to be filed. In so far as the trustees for the bondholders and the owners, who are represented by operating receiver F. C. Chambers, are practically identical there is little question that the plea filed by the receivers will meet objection from the trustees.

In making his order Judge Wade makes clear that in the event suspension is ordered on the final hearing it will be the end and that the entire question will be disposed of by a sale of the property by the receiver without waiting for foreclosure proceedings by the bondholders. The court said:

> I do not feel at liberty to make a final order at this time with reference to operation, because I feel that the bondholders and the general creditors should be consulted with reference to the suggestions of the court that the whole matter should be disposed of not through foreclosure, but by direct sale by the receivers. I am advised that such sale may be with the franchise, or if an acceptable purchaser is not thus found, that the property may be sold separate from the franchise.

Judge Wade serves notice on every one concerned and particularly to the citizens of Des Moines:

> That he cannot force the backers of the railway to advance another cent to keep the road in operation.
>
> That in his opinion the city by allowing bus competition has violated the car franchise as vitally as the company did by increasing fares.
>
> That further deferring the end will serve no good purpose.

The judge points out that the Harris interests already have sunk $500,000 in the system, "not one cent of which they were required to furnish under the terms of the franchise, or under any personal obligation of the company."

The order definitely upholds the contention made by Corporation Counsel Miller in his letter to the City Council that the fare section of the franchise was null, and characterizes the franchise as one that is "physically impossible to be complied with even with the highest fare that the traffic will bear."

The fare section of the franchise is handled thus in the order made by Judge Wade:

> It has been recently held by the Supreme Court of the United States that a fixed, arbitrary fare in a franchise is contrary to law and public policy, and therefore not binding. This holding, I as well as every private citizen must respect.
>
> In connection with the demand that the court compel the owners to operate under the terms of the franchise, it is well to bear in mind that the city itself violated the spirit and purpose of the franchise admitting to the streets in direct competition with the street railway a system of buses which reduced the income of the railway, operating at full capacity to the extent of $2,000 a day.
>
> A careful investigation satisfied me that if the bus competition was not brought into Des Moines and things had continued as they were going last January the equipment which was removed could have been retained and the fare at the present time would be reduced to 7 cents, with full and adequate service.

Aside from Judge Wade's order the most important development of the week was the opening of negotiations with the City Council by the street car men's union for a service-at-cost franchise.

No definite statement as regards the service-at-cost plan has been made by representatives of the Des Moines City Railway, but Attorney Gamble for the company stated that the company would be willing to "meet the men half way."

Judge George Wilson, representing owners of the company, directed a letter to Mayor Barton, in reply to one from the city head asking for a further proposal on the part of the company, in which he said that the company had made its "rock bottom" offer.

Memphis Would Cut Wages

The employees of the Memphis (Tenn.) Street Railway have lined up against a proposed cut in wages of 12 cents an hour, notice of which was served on them on July 2. A preliminary conference between representatives of the company and the executive board of the union has been held in an effort to clarify the situation. They are still discussing the problem. The contract between the railway and its employees expires on July 31. The proposal of T. H. Tutwiler and F. S. Elgin, receivers, to cut wages is preliminary to their entering into a new contract with the employees. The men on their side have asked for minor changes in working conditions, but have made no demand for any increase of wages.

The present wage scale is 47 cents an hour for first-year employees, 52 cents for second-year employees and 57 cents an hour for employees of two or more years' service. In the event of failure to reach an agreement under the terms of the contract now in force, the matter goes to arbitration.

Electrification Proposed

Western Railroads Again Have Engineering Expert at Work on Program —Rate Fight Being Waged

It is stated that the bitter fight now being waged on the Pacific Coast between steam railroads and steamship lines growing out of rate reductions may result in the electrification of the steam lines on the Pacific Coast. This rate slashing fight started during the past winter when the steamship lines plying between Eastern seaboard points and Pacific Coast points via the Panama Canal began cutting their rates and obtained a large share of the freight haul on citrus fruits and other products from the West to the East; also, a similar cutting of freight rates by the steamship lines took place in coastwise freight business on the Pacific Coast.

RATE-CUTTING WAR

That this cutting of rates by the steamship lines may bring about electrification of the steam roads was indicated in a communication from the Federal power commission. According to O. C. Merrill, executive secretary of the commission, the Western railroads now have experts at work on computations and engineering problems looking into the electrification of the steam lines. Electric power at five-eighths of a cent a kilowatt-hour is so much cheaper than either coal or oil that the use of electricity in itself would bring about a reduction in freight rates, Mr. Merrill asserts. He said further:

> Another effect of electrification that would bring about lower rates is that 30 per cent of the traffic on both coal and oil burning roads is used in carrying fuel for their own locomotives. The electrified carrier sends its fuel by wire and uses the rolling stock thus released for "cash customers."

The five-eighths of a cent cost for power is based on the cost to the Chicago, Milwaukee & St. Paul for its electrified lines. According to Mr. Merrill that road over its electrified lines forwards twice as many cars at the double speed, thus effecting a very large saving. Mr. Merrill's report was made to Senator Shortridge of California.

All Night Service in Albany

Officials of the United Traction Company, Albany, N. Y., hinted on July 16, at a resumption of all night service on Albany lines within a few days. Saturday marked the renewal of all night service on the red and blue lines, between Troy and Waterford and Cohoes, and the white line, between Albia and Cohoes. All night service has been discontinued on the Albany lines since Jan. 29, when the strike was called. Company officials declare the situation is now about normal.

Traffic Suspended Three Months in Wage Controversy

Traffic on the entire system of the Scranton, Montrose & Binghamton Railway between Scranton, Montrose and Lake Winola, Pa., was expected on July 9 to be resumed within three or four days as a result of action by the platform and maintenance employees in accepting a reduction in wages. The readjustment in the pay is to virtually the same scale rejected repeatedly by the men since the road was tied up on April 18 last.

The settlement involves a cut of approximately 12½ per cent with minor concessions granted by the company. The reduction for trainmen is from 51-60 cents an hour to 49-53 cents an hour. One of the contentions with the employees was over the right to operate one-man cars. The old working agreement called for a full crew. This point was finally conceded by the employees. The closed shop was also contested. This point was also conceded by the employees. The road is to resume on the open shop basis.

It was announced on July 9 that every effort would be made to resume operation at once. It was impossible at that time, however, to say just when this would be, because the line, machinery and cars have all been idle since April 18 and must be put back into shape.

The former employees of the company will be reinstated with their priority rights wherever possible and none of those who participated in any way in the suspension will be punished. Trackmen will enjoy seniority rights under the new agreement and they will be furnished rubber coats by the company. The trainmen who have completed their runs will receive pay at the rate of time and one-half for all overtime. Every man who reports and is not assigned to a run will be credited with an allowance of 2½ hours' time.

During the suspension the employees asked for arbitration. This was refused by the company. Officials of the road insisted that a reduction in wages was essential if the road were to be able to operate on a paying basis.

Pittsburgh Men Accept 10 per Cent Cut

On July 14 84 per cent of the platform men of the Pittsburgh (Pa.) Railways voted in favor of a 10 per cent cut in wages as recently proposed by the receivers. This announcement was made by P. J. McGrath, international vice-president of Amalgamated Association.

In accordance with the statement made recently by Charles A. Fagan, receiver of company, fares may soon return to the scale existing last May when wages were advanced from the scale prescribed in the agreement under which the employees are now working. Mr. Fagan's statement urged that if fares are to be reduced the cut should not be made until three months after the decreased wage scale was accepted as the increase in fares did not take effect until three months after the increase in wages.

Under the terms of the new scale the men now receive 54, 58 and 60 cents an hour instead of 64, 68 and 70 cents an hour as formerly. The new wage scale will be in effect for the next ten months or until May 21, 1922.

All other employees have also been reduced in pay.

Strike as Protest Against One-Man Cars

Trainmen of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., struck a few days ago in protest against the operation of one-man cars in city service. The strike lasted three days, the men agreeing to return to work and operate the cars after Aug. 1, claiming that they had not had sufficient time in which properly to break in and become familiar with one-man operation. As the matter stands, they return to work under the same conditions as existed previous to the strike, except that the company has agreed to defer the operation of one-man cars for another two weeks to give the men an opportunity better to prepare themselves for one-man operation. The cars which are being used by the company in one-man operation are of the pay-as-you-enter type.

Commission Has Reached No Finding

Many guesses have been made recently in the daily papers of New York City in regard to the probable recommendations of the new Transit Commission for solving the transit problem. According to Commissioner Harkness the statements so far made are unauthorized. On July 18 he said:

> The statements which have been made are entirely unauthorized by the commission, and in the opinion of the commission no good purpose is served by speculation as to what the commission is likely to do. Just as soon as it is possible to do so, the commission will make an official statement.

The published reports complained of were that the commission would seek to relieve the traction companies of all local taxes on the theory that this would make unnecessary any increase in fare.

Wages of Suburban Men Cut

The New Jersey & Pennsylvania Traction Company, Trenton, N. J., has announced a reduction in wages for all employees to become effective on July 21. Failure to meet operating expenses and taxes and the long delay of the Public Service Commission of Pennsylvania in deciding the application for increased rates made necessary the reduction of wages. Under the new scale, motormen and conductors on double-truck cars will be cut 8 cents an hour. They now receive 50 cents. Operators of one-man cars will also be reduced 8 cents, from 55 to 47 cents. Office employees will also have to stand a cut.

Engineers' Wages Fixed

The dispute between the Cincinnati (Ohio) Traction Company and its engineers which resulted in the latter going out on a strike recently and later the naming of an arbitration board to settle the difference has been brought to a close. The board has handed down an award naming the rates of pay for the men. The award made the rate of pay for the Pendleton and Depot Street Stations men 80 cents an hour and for the Chester Park and Hartwell Stations men, 75 cents an hour. The Chester Park and Hartwell men have been receiving 85 cents an hour and the Pendleton and Depot Street Stations men 90 cents an hour. The traction company had requested that the Chester Park and Hartwell men be reduced to 65 cents an hour and the Pendleton and Depot Street Stations men to 70 cents an hour.

Service at Cost Proposed in Houston

Following the notification by the general manager of the Houston (Tex.) Electric Company that his company was ready to open negotiations with the City Council looking to the granting of a new franchise, City Attorney Sewell Myer has prepared a new ordinance recently read before the Council. The company has been operating under a temporary arrangement for some time. The new ordinance is along lines similar to the measure recently negotiated between the city and the Houston Lighting & Power Company.

As an incentive to economical management on the part of the company the ordinance provides that the company shall be permitted to earn ½ to 1 per cent above the fixed return minimum when it reduces fares ½ cent. The company at the start will be permitted to charge a 7-cent fare for adults and a 3½-cent fare for school children.

A., E. & C. Renews Contract

The employees of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., voted on July 12, 372 to 93, to accept the terms of a new contract which is practically a continuation of the one in effect during the past year. The only reduction in wages included is a change from 46 cents an hour to 40 cents and 35 cents for track labor. The old wages of 67 cents maximum on the third-rail division, 56 cents on the city lines, and 58 and 60 cents on the trolley interurban lines is continued.

The right is reserved to the receiver, however, to reopen the agreement on a thirty day notice at any time after Sept. 1.

The main difference in the new contract from the old one is that the company is relieved from paying time and one-half for that work in the nature of regular routine in keeping the roads running on Sundays and holidays. The small amount of labor required in this connection, will hereafter be paid for on straight time basis.

$17,000 a Mile Offered by Municipal Line for Private Property

The Detroit Street Railway Commission has named $388,000 as the sum the city is willing to pay the Detroit United Railway for the parts of Fort Street and Woodward Avenue lines where franchises have expired. The company, on the other hand, has refused the offer as wholly inadequate.

According to the letter addressed to Vice-President Edwards of the Detroit United Railway, the report of the engineers indicated the condition of the tracks and pavement in a great many places was such as to compel the commission to consider the trackage as a liability rather than of value. It is necessary, the commission states, to rebuild the greater part of these lines.

The total trackage involved is approximately 23½ miles, making the price set by the city less than $17,000 per mile. The Detroit United Railway has contended that the type of construction on these lines cost approximately $100,000 per mile.

Mayor Couzens has announced that the next step will be to start ouster proceedings to force the Detroit United Railway to remove its tracks from Fort Street and Woodward Avenue unless the company's attitude is changed relative to the offer for these lines. Under the court ruling in the Fort Street case, the city can force the company to remove its tracks where franchises have expired, after having given ninety days' notice.

Service-at-Cost Legislation Approved

Governor J. J. Blaine of Wisconsin has signed the Arnold bill empowering the city of Milwaukee to enter into a service-at-cost contract with the Milwaukee Electric Railway & Light Company for the operation of the company's city railway lines. Under the provisions of the bill, the contract must be negotiated by the Common Council, then approved by the Railroad Commission, and finally submitted to a referendum of the voters before becoming effective.

The bill was introduced at the request of the Milwaukee City Council following recommendations made by the public utilities acquisition committee, a commission appointed about a year ago to investigate the feasibility and desirability of municipal ownership of the electric railway and the electric light and power facilities of Milwaukee.

The bill is intended to empower the city of Milwaukee to carry out the recommendations which the public utilities acquisition committee is expected to make in a report to be submitted in the very near future. The bill provides for the usual service-at-cost agreement plus a feature which will make it possible for the city gradually to become the owner of the utility property. The company, under the proposed service-at-cost agreement, would be removed from the jurisdiction of the State Railroad Commission except in certain minor matters. Under the plan the city will also extend its credit to the company to finance extensions and improvements at a lower rate of interest than the company now has to pay.

Interurbans Insist Upon 25 per Cent Wage Cut

For the first time in many years it appears that the Rochester & Syracuse Railway and the Empire State Railways, Syracuse, N. Y., are unwilling to follow the lead of the New York State Railways in regard to a wage agreement with their employees.

It was generally conceded that these two companies would agree to accept the decision of the New York State Railways and Amalgamated union arbitrators, that a reduction of 11.7 per cent from the wage scale in force prior to May 1 was the proper scale in view of the reduction in living costs. Officials of the Rochester & Syracuse Railway, however, stuck to their original proposition that the reduction would be 25 per cent retroactive from May 1.

Arbitration was accordingly resorted to and evidence submitted by both factions. The company contends that in view of the fact that many operatives live in communities where living costs have been reduced in greater proportion than in the cities the men can afford to accept a 25 per cent reduction. As the complete evidence for both sides has been submitted to the board, it is expected that a settlement will be made very shortly.

Facing a like situation, the Empire State Railways is making an attempt to settle the difficulty without arbitration.

News Notes

Wages Cut in Erie.—The wages of employees of the Buffalo & Lake Erie Traction Company, Erie, Pa., were recently cut by a board of arbitrators. The cut amounts to 16⅔ per cent.

Wage Cut in Reading.—The Reading Transit & Light Company, Reading, Pa., has reduced the wages of its motormen and conductors 4 cents an hour. The maximum pay is now 50 cents an hour.

Pay of Electrical Workers Cut.—Electrical workers employed by the Toledo Railways & Light Company have approved a new wage contract taking a 20 per cent cut in wages, elimination of two weeks' vacation, and making the new scale retroactive to June 16. Nearly 450 men are affected by the cut. Platform men were cut 10 cents an hour recently.

Boulder Watching Trackless Trolley.—In view of extensive paving work being done in Boulder, Col., the Western Light & Power Company had considered the trackless trolley as a substitute. The substitution was found not to be possible in time to meet the requirements of the company so it is going ahead with its present system, but is watching closely the development of the trackless trolley.

Coinage Legislation Unlikely.—Indications are that the committee on coinage, weights and measures of the House of Representatives is thoroughly convinced that small coins in new size will make for needless expenditures on the part of electric railways and others using fare boxes or coin devices. As a consequence it is anticipated that no legislation along those lines is likely to be recommended at this session of Congress.

Arbitrators Must Decide Wage Scale.—An arbitration board will decide the wage controversy between the Auburn & Syracuse Railroad, Auburn, N. Y., and its union employees. This agreement was made after Lawrence Lippitt, acting manager of the road, and Henry Barrett, president of the union, had failed to reach a settlement. The men are seeking a nine-hour working day and 53 cents an hour for two-man cars and 58 cents for operators of one-man cars. The present wage scale is 45 cents an hour on all city lines and 47 cents on the interurban.

Program of Meeting

New England Street Railway Club

The annual outing of the New England Street Railway Club will be held on Thursday, July 28, at Mt. Tom, Holyoke, Mass. The start from Holyoke for Mt. Tom will be made at 10 a.m., daylight saving time. A stop will be made at 10:30 at Aldrich Lake. Here the annual ball game between the railway and supply members will be staged, and the silver-mounted bat presented to the winning side. Other sports will also be on the program. Luncheon will be served at 12:30. At 1:30 the party will leave Aldrich Lake for Mt. Park via Amherst, Hadley and Northampton. At 3 p.m. there will be a theater party, with high-class vaudeville by Keith's circuit players. At 5 p.m. the party will leave Mt. Park for the top of Mt. Tom via the inclined railway. Dinner will be served at 6 p.m. at the spacious summer house, more than 1,200 ft. above sea level. Those who desire hotel accommodations should make reservations direct to T. J. Behan, manager, Hotel Nonotuck, Holyoke, Mass. Special prices have been made by the hotel to those planning to attend the outing, and it is requested by the club that those who apply for reservations make it known that they are attending the club outing. Suitable arrangements have been made to take care of those who prefer to go to the outing in their own automobiles.

Financial and Corporate

Municipal Road Claims Profit

$4,359 Net Said to Have Been Earned on a Five-Cent Fare Line on Staten Island

Grover A. Whalen, commissioner of plant and structures of New York City, on July 18 filed a report with the Board of Estimate and Apportionment on the operation by the city of the Staten Island Midland Railway for the period of seven months ended June 30, 1921. According to Mr. Whalen the report shows that the road has been operated successfully and profitably at a 5-cent fare. He explains that the conditions during the period of operation covered have by no means been ideal and that great difficulties have arisen at times. Nevertheless, according to him, operation has been covered by receipts, and a small profit has been made even above interest and depreciation for the period ended June 30, which included all the lean months of the year. It is Mr. Whalen's opinion that the full year of operating ending Nov. 30 will realize a very substantial profit above all costs of operation. He says:

> I have the honor to submit herewith a report of the operations, by this department, of the Staten Island Midland Railway under the agreement between the city and the receiver dated Nov. 5, 1920, for the period from Dec. 1, 1920, to June 30, 1921.
>
> The total revenue from operation during this period amounted to $205,604. Operating expenses, including maintenance, operation and administrative expenses amounted to $183,314, leaving a net balance after all operating expenses were paid of $22,289. Deducting the special franchise tax and tax on real estate used in operation of the road of $9,977 leaves a net operating revenue of $12,311.
>
> The exact determination of the interest charges on the moneys so far expended by the city for equipment cannot be made at this time. After consideration it was determined that interest at 5 per cent would be nearly correct in view of the interest due on daily balances, not yet determined, which on June 30 amounted to $21,120 exclusive of the revolving fund of $50,000, which has not yet been encroached upon in the payment of actual operating expenses. Deducting therefore an interest charge of $3,152 leaves a credit balance of $8,859.
>
> It is difficult to determine, at this time, what the exact depreciation will be on equipment now in use and now under purchase. Approximating, however, depreciation on equipment in use during this period, gives an amount of $1,500; which deducted from the previous balance leaves a final net balance of $4,359.
>
> Important items of cost entering into operation of this road have not yet been fully determined, but I am firmly of the opinion that when these costs are finally determined, there will be an additional credit balance to be added to the one above quoted for the period ended June 30.
>
> Revenues are increasing at a satisfactory rate, having increased from an average per day of $794 in December, to an average per day of $1,558 in July. The revenue from operation for the month of December was $24,631, while for the first thirteen days of July it amounted to $20,266.
>
> It should be pointed out that this period ended June 30 included the months of minimum revenue and maximum expense, namely, December, January and February and that it included only one month of real good business, namely, June, and that the five months still remaining in the operating year will include the months of maximum traffic, namely July and August, while September will be as good as June; October and November equivalent or better than April and May as the road will be better equipped to handle increased traffic during the five months to come.
>
> It is therefore firmly believed that at the conclusion of the operating year a substantial profit will have been earned from the operation of this road and that its division with the receiver under the agreement will make available substantial sums to cover the cost of rental for the use of the company's property.
>
> Substantial sums have also been expended in the improvement of the road in accordance with paragraph of the agreement. It should also be stated at this time that if the city was generating its own power further substantial earning would, it is firmly believed, have been made.
>
> Certain facts are to be borne in mind in connection with this operation, namely:
>
> That the city has given better service on these lines than was ever given under private ownership and operation.
>
> That the resumption of service on these trolley lines has made areas of Richmond Borough accessible, has stimulated development, resulting in the erection of additional buildings and helping to solve the city's housing problem.

Good Year for Municipal Railway

The receipts for the San Francisco Municipal Railway Lines for the year ended June 30, 1921, were $2,900,636, an increase of 6.3 per cent over the earnings for the previous year. Operating expenses approximate $2,090,000, an increase of about 3 per cent. The net operating revenue shows an increase of about 18 per cent. The amount set aside for depreciation will aggregate about $550,000, which is the largest in the history of the road. Bond payments are made out of the depreciation reserves and already $900,000 bonds have been redeemed since the road commenced operation. The net revenue will more than pay interest on bonds and transfers, leaving a surplus for the year's operations.

Gross Increase 17 per Cent

339 Roads Earned $943,996,914 Gross in 1920, an Increase of $136,831,929 Over 1919

The annual compilation of the gross and net earnings of the electric railways of the United States, made by the *Commercial & Financial Chronicle*, appears in the issue of that paper for July 9. The figures on gross are made up from the reports of 333 roads, making returns for the calendar year 1920 and 1919, and for six roads reporting for the fiscal year ended June 30. The figures on net are for the same roads except for five roads, mostly small properties, whose net was not reported. In these cases the same operating ratio was assumed as for the other properties reporting for the same period. The figures as given by the *Chronicle* for the past seventeen years follow. In commenting on these figures the *Chronicle* says:

> The fact that notwithstanding the heavy augmentation in expense (labor and coal were considerably higher for the greater part of the year than in 1919) net earnings registered some improvement over the previous year, moderate though it be, cannot be regarded as otherwise than encouraging.

Attention is also called to the fact that the increase in gross does not necessarily indicate a growth in traffic, but it undoubtedly reflects increases in fares. The *Chronicle* also points out that the tables do not indicate the aggregate of the gross and net earnings of all of the street and electric railway undertakings in the country. They simply make use of all the figures at hand, and there are many companies, including some large properties, whose figures are not available. In some cases also, the figures include the receipts from the sale of electricity for lighting and power, but where it has been possible to separate the figures, the railway figures only have been used.

GROSS EARNINGS OF ROADS REPORTING TO "CHRONICLE"

Period—	Current Year	Previous Year	Increase	Per Cent
1905 compared with 1904	$306,067,145	$281,608,936	$24,458,209	8.68
1906 compared with 1905	300,567,453	269,595,551	30,971,902	11.49
1907 compared with 1906	306,266,315	280,139,044	26,127,271	9.33
1908 compared with 1907	351,402,164	348,137,240	3,264,924	0.94
1909 compared with 1908	374,305,027	345,006,370	29,298,657	7.49
1910 compared with 1909	435,461,232	405,010,045	30,451,187	7.51
1911 compared with 1910	455,746,306	428,631,259	27,115,047	6.33
1912 compared with 1911	486,225,094	457,146,070	29,079,024	6.36
1913 compared with 1912	529,997,522	500,252,430	29,745,092	5.94
1914 compared with 1913	553,095,464	548,296,520	4,798,944	0.87
1915 compared with 1914	567,901,652	569,471,260	*1,569,608	0.28
1916 compared with 1915	626,840,449	574,382,899	52,457,550	9.13
1917 compared with 1916	670,309,709	618,529,309	51,780,400	8.37
1918 compared with 1917	696,066,585	649,550,990	46,515,595	7.16
1919 compared with 1918	783,514,781	663,572,571	119,942,210	18.08
1920 compared with 1919	943,996,914	807,164,985	136,831,929	16.95

NET EARNINGS OF ROADS REPORTING TO "CHRONICLE"

Period—	Current Year	Previous Year	Increase	Per Cent
1905 compared with 1904	$130,884,923	$118,221,741	$12,663,182	10.71
1906 compared with 1905	126,580,195	114,024,076	12,556,119	11.01
1907 compared with 1906	126,002,304	121,050,703	4,951,601	4.09
1908 compared with 1907	142,262,417	141,144,213	1,118,204	0.79
1909 compared with 1908	160,394,765	140,647,906	19,746,859	14.03
1910 compared with 1909	178,037,379	167,100,351	10,937,028	6.54
1911 compared with 1910	186,001,439	175,527,542	10,473,897	5.96
1912 compared with 1911	194,309,873	179,915,760	14,394,113	8.00
1913 compared with 1912	204,422,429	193,393,045	11,029,384	5.70
1914 compared with 1913	211,020,088	212,146,403	*1,126,315	0.53
1915 compared with 1914	214,319,303	217,440,533	*3,121,230	1.43
1916 compared with 1915	234,402,450	215,917,573	18,484,877	8.56
1917 compared with 1916	221,090,740	228,585,929	*7,495,189	3.28
1918 compared with 1917	178,226,716	212,570,930	*34,344,214	16.16
1919 compared with 1918	185,077,301	168,770,930	16,306,371	9.66
1920 compared with 1919	192,360,849	186,248,269	6,112,580	3.28

* Decrease.

$550,253 Earned by Boston Elevated

Ten-Cent Fare Gradually Making Headway Against Accumulated Deficit of $5,415,500—Five-Cent Lines an Experiment

Operating receipts of the Boston (Mass.) Elevated Railway for the year just closed, the third of public control, exceeded the costs of operation by $550,253. This has made it possible to pay off the deficit of $435,348 carried over from the first year of operation and to leave a balance of $114,905. This added to the balance of last year makes a total of $131,985 as the first payment made in restoration of the reserve fund.

THESE results have been obtained without impairment of the service or interruption in the five-year program originally adopted for reconstruction of track, replacement of obsolete and worn out rolling stock and improvement of power plant. The financial history of operations during the three years is shown in the accompanying table.

In July, 1919, at the end of the first year of public management the operating receipts under a 5-, then a 7- and finally an 8-cent fare had failed to meet the operating costs of the year by $5,415,500. Of this amount $3,980,151 was assessed, as provided by law, upon the cities and towns served by the railways. Of the remaining amount $1,000,000 was met from the reserve fund established under the statute, which was thereby exhausted. The balance of $435,348, representing an increase in wages applicable to May and June under a retroactive award in the latter part of July, could not be made a part of the deficit assessed upon these communities.

In July, 1920, at the end of the second year of public control operating receipts under a 10-cent fare, which had been put in force at the beginning of the year, had exceeded operating costs for the year by $17,079.

The trustees say that the attempt to answer the question as to reduction of the 10-cent fare finds as the first barrier the provision of law which requires the restoration to the exhausted reserve fund of $1,000,000, and the repayment to cities and towns of the $3,980,151 advanced by them to meet the deficit of 1919 before any reduction can be made in that fare. This means that several years may elapse before the excess of receipts over expenditures can be applied in lessening the cost of transportation to the car rider, unless the relation between the rider and the taxpayer is readjusted by some legislative action. A statement of the situation will appear as a part of the annual report of the trustees to be filed at the State House in January.

In commenting on the introduction of the 5-cent fare for short-haul riders the trustees say this is still an experiment and may remain such for a considerable time. If a reasonable test proves that either singly or collectively this limited cheap service invades or seriously threatens an invasion of the net revenue of the railway the trustees will be forced by the statute to advance the local fare or abandon the experiment. The trustees say:

> The paramount requirement under the Statute for the operation of this railway upon its theory of a service-at-cost is the necessity for securing and preserving a revenue that will maintain it upon a self supporting basis. This is the all important consideration both as a matter of law and of common sense. If in the test of this local cheap and limited service it is found that the net revenue of the system is materially invaded through competition with the 10-cent fare, the experiment fails. Nor can this service be permitted to continue if it interferes with or delays an otherwise possible reduction of the basic flat fare for travel throughout the system.
>
> The outcome is as yet problematical. Even though the experiment does not add enough in the way of new patronage to increase net revenue, if its effect is to restore lost patronage without imposing any substantial burden upon those who use the rest of the system this result might well justify the continuance of the service as one that increases the usefulness of the railway, a most important reason for its existence.

ACTUAL RECEIPTS AND COST OF SERVICE OF BOSTON ELEVATED RAILWAY DURING THREE YEARS OF PUBLIC CONTROL

RECEIPTS	Year Ended June 30, 1921	Year Ended June 30, 1920	Year Ended June 30, 1919
From fares	$33,122,199	$31,899,320	$24,472,430
From operation of special cars, mail pouch service, express and service cars	88,519	105,554	115,624
From advertising in cars, on transfers, privileges at stations, etc	303,047	297,037	293,079
From other railway companies for their use of tracks and facilities	30,024	47,637	48,815
From rent of land and buildings	115,809	87,259	73,099
From sale of power, etc	121,566	115,188	125,534
Total "receipts" from direct operation of the road	$33,781,164	$32,551,994	$25,128,581
Interest on deposits, income from securities, etc	419,122	119,521	96,994
Total receipts	$34,200,286	$32,671,515	$25,225,575
Profit and loss, delayed items	23,863	17,685	_*2,080_
	$34,224,149	$32,689,200	$25,223,495
COST OF SERVICE			
Operating expenses:			
Maintaining track, line equipment and buildings	$2,516,331	$3,524,507	$3,583,057
Maintaining cars, shop equipment, etc	2,857,115	2,736,249	2,519,485
Power	3,390,704	2,930,268	2,809,632
Depreciation	2,004,000	2,004,000	2,004,000
Transportation expenses	11,506,157	10,781,788	9,293,160
Salaries of administrative officers	79,749	83,761	94,060
Law expenses, injuries and damages, and insurance	1,158,094	1,107,005	1,162,547
Other general expenses	1,106,881	963,643	896,232
Back pay	65,527	200,000	....
Total operating expenses	$24,684,558	$24,331,221	$22,362,171
Taxes—Federal, State and Municipal	$1,306,736	$1,075,497	$941,612
Rent for leased roads	2,673,166	2,607,566	2,587,130
Proportion of rent of subways and tunnels, paid to the city of Boston	1,543,324	1,531,474	1,491,999
Proportion of rent of Cambridge Subway, paid to Commonwealth of Massachusetts	404,639	59,850	....
Interest on Boston Elevated bonds, notes and bills	1,483,625	1,593,258	1,423,143
Miscellaneous items	54,479	69,285	37,373
Proportion of dividend rental under acts of 1918	1,523,367	1,403,970	1,360,220
Total cost of service	$33,673,896	$32,672,120	$30,203,647
Net profit or loss	550,253	17,079	_*4,980,151_
Back pay applying to May and June, 1919, which had not been determined at time deficit was assessed	....	....	_*435,349_
			_*$5,415,500_
Revenue passengers carried	337,381,994	324,192,374	331,348,124

* Figures in italics denote deductions or deficits.

West End Lines at Pittsburgh May Be Foreclosed

Judge Charles P. Orr of the United States Court on July 14 granted all contentions of the Union Trust Company in the two-year-old litigation of the $4,000,000 debt of the Pittsburgh Railways subsidiary matured by interest default. This judgment was on a mortagage held against the Pittsburgh & West End Passenger Raiiway and included foreclosure proceedings against lines operating mainly through the West End. It was granted in favor of the Union Trust Company, Pittsburgh. Unless appeal from the decision is taken these lines will probably be sold next September or October to satisfy the mortgage. The receivers of the Pittsburgh Railways state no appeal will be made.

The Union Trust Company is trustee under a mortgage executed by the Southern Traction Company to secure bonds under a mortgage dated Oct. 1, 1900. The name of the mortgagor later was changed to the Pittsburgh Railways. The mortgage was given to secure payment of $4,000,000 within fifty years from Oct. 1, 1900, with interest at 5 per cent per annum, payable semi-annually.

The mortgage contains a provision that in case of default in the payment of interest for a period of thirty days the whole principal sum of bonds secured by the mortgage forthwith becomes due and payable. The railways defaulted in the payment of interest due on Oct. 1, 1918, after which the Union Trust Company declared the principal due. Suit was instituted two years ago for permission to foreclose on the mortgage at that time. Judge Orr granted the company the right to enter foreclosure proceedings. An answer was filed by the railways and the decree on July 14 is the decision of the court.

Bill Permitting Track Abandonment Vetoed

Governor J. J. Blaine of Wisconsin has vetoed the Morris Bill authorizing the Wisconsin Railroad Commission to permit electric railways, city or interurban, to abandon portions of their line which they could show were being operated at a loss.

In vetoing the bill Governor Blaine is reported to have said in part:

> An interurban or suburban street railway under our law is entitled to a fare that is reasonably compensatory. Suburban communities have been established in and about the larger cities, and the city together with those communities constitute an area that should be served by the transportation companies operating within that area. In considering the rates of fare, therefore, the area should and is taken into consideration in fixing a reasonable compensation, or fare.
>
> Theoretically, there can be no loss to the utility under the law, and it is for the Railroad Commission, and then in the courts to establish a rate that will give the utility a reasonable return. Large communities have been built up around the larger cities, and people have been induced to purchase property and make improvements and establish municipal government, and in fact large investments have been made by individuals and municipalities, inducements for which was in the first instance the presence of transportation company furnishing a convenient service to the city of which such communities are suburbs. Sound public policy can not justify the possibility of the abandonment of a suburban electric line, under the conditions I have described.

City Will Value Ottawa Electric Railway

At the request of the City Council of Ottawa, Ont., the Hydro-Electric Power Commission of Ontario will value the property of the Ottawa Electric Railway. T. U. Fairlie, head of the railway and bridge department of the commission, is to undertake the work. Mayor Plant has announced that Mr. Fairlie will, in all probability, make two separate and distinct valuations of the property.

The first valuation will be based on the original cost of the road less depreciation, and the second one will be a valuation based on the cost of reproduction of the road at the present time, less depreciation.

Another Electric Line Emerges from Receivership

The Denver & Interurban Railroad, operating from Denver, Col., to Boulder and Eldorado Springs, has emerged from the receivership brought about in 1918 by the conditions of government control of the railroads.

The Denver & Interurban Railroad is a subsidiary of the Colorado & Southern, but when the government took over the Colorado & Southern, along with other railroad lines, the electric line was not taken over, but was thrown on its own resources.

Then followed suit for defaulted interest by the holders of the bonds, resulting in the appointment by Federal Judge Robert E. Lewis of W. H. Edmunds, manager, as receiver.

Under the federal receivership the fares were increased to compare with the rates on steam lines to the same points. This enabled the company to better its earnings. With the return of the railroads to private ownership, the Colorado & Southern was enabled to resume its former guardianship of the electric line, hence the discharge of the receiver and the return of the property to its owners.

Mr. Edmunds, discharged as receiver, will continue to operate the property under his former title of manager.

Eureka Votes to Buy Railway

By practically a unanimous vote of the people on June 20 the city of Eureka, Cal., has been authorized to issue bonds for the purchase of the Humboldt Transit Company, which operates in that city. Railroad Commissioner Loveland recently brought out the fact that the testimony of the chief engineer and the general manager of the property agreed in the opinion that not even operating expenses could be made in the future, and that if the city should decide not to buy the railway, service would have to be discontinued and the property scrapped. The Railroad Commission valued the property at $100,000, but the attorney for the Humboldt National Bank, which represents the bondholders of the railway, announced later that the bank had been authorized to submit $75,000 as the valuation of the lines.

Twin City Finances May Be Readjusted

As part of the plan for complete financial readjustment of the Twin City Rapid Transit Company and its subsidiaries, the Minneapolis Street Railway and the St. Paul City Railway, the company will ask permission from the Minnesota Railroad & Warehouse Commission to sell $3,300,000 of new securities. Of this amount $1,730,000 will be utilized for reconstruction and paving ordered in St. Paul and $84,370 for extensions; $991,750 for reconstruction in Minneapolis and $528,970 for extensions.

Horace Lowry, president of the company, says the financial rearrangements will be brought before the commission when that body is asked to make a complete valuation of Twin City Rapid Transit properties subsequent to action on the application for a temporary fare increase made to the commission on June 21 and now pending.

Mr. Lowry said:

> There is no mystery in the relationship between these two companies. Financially they touch at two points. The Twin City Rapid Transit Company owns all the capital stock of each company, $5,000,000 in each case. This is one point. The other is a $10,000,000 bond issue which will mature in 1928 and which constitutes a mortgage on the property of both the Minneapolis Street Railway and the St. Paul City Railway.

He said he was unable to answer a question as to whether the Twin City Rapid Transit Company might be liquidated, or another as to whether the present holding company and its two twin city subsidiaries might be integrated, as a single corporation.

Financial News Notes

Interest Defaulted at Des Moines.—Interest due on July 1 on the $4,821,000 of general and refunded mortgage 5-per cent bonds of the Des Moines (Ia.) City Railway having been defaulted, the holders have been requested by the committee to deposit their bonds with the Harris Trust & Savings Bank, Chicago.

P. R. T. Earns $191,561 in June.—For the first six months of 1921 the Philadelphia (Pa.) Rapid Transit Company reports a net income of $1,016,408 against $354,970 for the same period a year ago. Out of this amount a 5 per cent return on P. R. T. capital is to be met. The deficit has been reduced from $1,117,935 as of Dec. 31, 1920, to $851,526 for the eighteen months' period to June 30, 1921.

Receiver Asked for Municipal Road.—The Taunton Coal Company at Taunton, Mass., has asked for the appointment of a receiver for the municipally-owned Norton, Taunton & Attleboro Street Railway. The coal company alleges that the road owes it $4,294 in payment for coal purchased. The railway is owned by the cities of Attleboro and Taunton and by the towns of Sandfield and Norton. The board of directors is composed of representatives of the four municipalities. The president of the road is Mayor Leo H. Coughlin of Taunton.

Minneapolis Seeks Valuation Expert.—Although deadlocked through 150 ballots on organization of the new City Council the likelihood is that the conservatives and the radicals in the City Council of Minneapolis, Minn., will unite on the selection of an expert for the valuation of the property of the railway. They have asked the city attorney to write several experts who have proferred their services for the work. A socialist Alderman has moved for a test of the law which puts the rate-making power into the hands of the State Railroad & Warehouse Commission and this motion will be considered in a committee of the whole.

Deficit Being Piled Up in Memphis.—The gross income of the Memphis (Tenn.) Street Railway for June was $17,508 below the income for June of a year ago. The month's operations added $15,056 to the deficit, which has been piling up since July 1, 1919, bringing the accumulated deficit to $179,759. More than 930,000 fewer passengers were carried than during June, 1920. For June the gross income was $251,724 as compared with $269,232 for the same month last year. Operating expenses were reduced from $177,823 last year to $156,638 for June this year. The total cost of the service for the month was $266,780. For June, 1920, it was $287,402.

Traffic and Transportation

Mayor Promises Relief from Jitneys

Mayor Charles W. Jewett has issued a statement pronouncing himself in favor of legislation by the City Council designed to eliminate the jitney bus as a competitor of the Indianapolis Street Railway.

His statement was issued after he had received a copy of a letter sent by Dr. Henry Jameson, chairman of the board of the railway, to Russell Willson, president of the City Council, saying that the company's loss of revenue as a result of the operation of jitney buses has made imperative the need of a city ordinance to regulate the jitneys. Dr. Jameson said railway service on certain streets of the city must be abandoned or the fares increased if an effective jitney bus ordinance is not enacted.

The Mayor said in part:

> The regulation of jitneys is purely a legislative matter, and the power to curb jitney bus business rests solely with the Common Council. However, I am of the opinion that jitney bus business is a serious menace to our railway, and if the Council will pass stringent laws prohibiting the activities of the jitney buses in competition with the street car company, I will sign the ordinance. Unless the jitney bus is eliminated, irreparable harm will come to the city through the destruction of our transportation system. I am opposed to an increased fare above 5 cents.

Dr. Jameson said the number of jitneys operating in the city has increased steadily the last few weeks until now the number is more than 600. These, he said, carry an average of 20,000 passengers a day.

Mr. Willson said that he did not believe the city should take steps granting to the company the requested relief from jitneys until it is seen what attitude the company will take toward the city administration in regard to the proposed new franchise ordinance.

Company Wins Fight for Ten-Cent Fare

By a recent ruling of the Public Service Commission the Buffalo & Lackawanna Traction Company, Buffalo, N. Y., which has the franchise for the line operated by the Buffalo & Lake Erie Traction Company, Erie, Pa., through the south side of Buffalo, has been authorized to charge a 10-cent fare without transfers.

Under franchise provisions the railway was limited to a 5-cent fare and was required to issue tranfers on the lines of the International Railway and to accept transfers from that line. One result of the decision is that passengers on the Buffalo & Lake Erie line and those who transfer to the International Railway will have to pay 17 cents or 16¼ cents ticket rate.

Colonel Pooley, the Buffalo member of the commission, said in his finding that it was absolutely impossible for the company to make operating expenses on a 5-cent rate. Under a decision of the court of appeals the commission lacked the power to declare these franchise provisions null, but under the reorganization act the commission was able to effect these changes.

Washington Rates Debated

Civic Associations Making Determined Stand in Fare Reduction—Each Company Should Stand Alone

Unusual interest was manifested in the hearings conducted by the Public Utility Commissioners of the District of Columbia in the matter of railway fares. The hearing was characterized by a very determined drive on the part of the citizens' associations looking to a material reduction in rates. One of the contentions of the Washington Railway & Electric Company, which owns the Potomac Electric Power Company, was that the fare on its cars could be reduced to 7 cents if the commission would permit an increase in electric light rates from 8½ to 10 cents a kilowatt-hour.

The contention of the Capital Traction Company was that a 6-cent fare would give that company a return of 6.32 per cent on its investment. That company contended that each company should stand alone, and that the Washington Railway & Electric Company should be allowed such rate of fare as was justified regardless of what might be justifiable for the Capital Traction Company.

The proposal to establish zones outside of which an extra fare would be collected is being combated vigorously by the citizens' associations on the ground that it would discourage suburban development and make for greater congestion in the first zone. It also was contended that suburbs had been developed on the understanding that there would be one fare within the District of Columbia.

No Funds for Rerouting

Plans for extensive rerouting of railway lines in downtown Indianapolis, involving an expenditure of from $50,000 to $60,000, were outlined at a conference recently of the City Council committee on rerouting and its subcommittee. The chief feature of the scheme would require some cars to be routed around the eight block loop downtown while others would be turned on a series of smaller loops, touching the main loop at some point.

Officers of the Indianapolis Street Railway have informed city officials that no plan of rerouting which would involve the expenditure of money could be carried out by the company until its financial condition is improved.

Motor Bus Men Offer to Furnish Service

The Des Moines Motor Bus Association made a proposal to the City Council during the week ended July 16 for giving the city transportation service in the event of suspension of service by the Des Moines City Railway. In brief the proposal is as follows:

> That the City Council grant to motor bus operators five-year permits to operate, subject to city service and routes.
>
> That the license be granted on a line-company unit plan under which a single organization would be held responsible for service on each passenger route of travel.
>
> That bus companies with preferred lines be forced to provide service on lines that are not so profitable.
>
> That the basic fare be 5 cents.
>
> That free transfers be issued if operating experience shows that they can be given profitably; if not a 1- or 2-cent transfer charge.
>
> That 200 buses be provided within a reasonable time after car service is suspended and 250 if it is discovered that that number is needed to handle the rush-hour service.
>
> That owl service be supplied at a 10-cent fare.
>
> That power be reserved by the Council to suspend permits for failure to perform.

Consolidation of all bus companies would be the ultimate object, but at first the Council is asked to grant permits on a line-company unit. This will exclude individual owners.

In order to give the Council power to provide service on lean lines the bus men propose that in securing permits to operate on heavy lines the operators must guarantee to take over certain lean lines.

The bus men propose to accept a tax considerably higher than the present one, namely, $25, but that they will oppose a wheel tax. Rather than jeopardize their entire offer, however, they are willing to accept a wheel tax.

No guarantee of service is offered except the right reserved to the City Council to revoke permits in the event of unsatisfactory service.

No action was taken by the Council on the offer other than to receive and file it. The proposition probably will not receive serious consideration until something definite is worked out in connection with the service-at-cost plan submitted by the railway men's union.

Buses Active in Toledo

A dozen applications to operate motor buses under Toledo's new bus regulatory ordinance were taken out after court efforts of the busmen's organization failed to get a review of the case before the Supreme Court.

The city won its fight in the lower courts against the buses. The police were ready to enforce the ordinance on July 13.

According to the plan of regulation bus owners were forced to take out licenses both for their machines and drivers and then post indemnity bonds or insurance. They had to file routes and schedules with the safety director and have his approval.

Several chose to operate parallel to railway lines, but the congestion of traffic on St. Clair Street forced them to leave their favorite loading places. It is thought many will be driven to operate new lines.

Connecticut Jitney Developments

Bridgeport Jitneys Greatly Reduced in Number—Railway Must Make Good—Legal Fight on Company—Connecticut Company Starts Bus Operation

Jitney events in Connecticut have been fast and furious the past ten days. Bridgeport has been denied most of her jitneys, the jitneymen have attacked the constitutionality of the new law, the insurance companies have taken a hand, and the Connecticut Company has started bus operation.

In one of the last orders which it issued before the new law became effective on July 15 the Connecticut Public Utilities Commission ruled all but seventy-one jitneys off the streets of Bridgeport. Eight routes, including four suburban, have received permits to continue in operation, utilizing seventeen fewer buses than were recommended by the Common Council to the commission. About a year ago Bridgeport was trolleyless. Under the commission ruling Bridgeport will now become practically jitneyless.

In its report the commission calls attention to the fact that the jitney problem in Bridgeport was more complicated than in any other section of the State.

The commission points out that the inadequacy of the trolley service occasioned the large development of jitney service. It finds the necessity for trolley service in Bridgeport to be without question, but says that the operation of jitneys in Bridgeport exists to an extent not only to prevent the successful operation of the trolley, but to jeopardize the successful operation of the jitneys themselves by reason of the excessive competition.

In speaking of the routes which have been approved for operation, the commission says that "while in many instances these routes parallel street railway tracks over portions of the way, they supply a necessary service from such territory into the center of the city."

In denying the right to operate over certain roads, the commission finds that the street railway tracks and facilities are sufficient and that the company claims to be willing and able to increase its service and to supply adequate service to care for the traffic.

In some cases where the routes compete directly with the steam railroad as between Bridgeport and Norwalk, also connected by trolley, the commission denied applications.

In analyzing and passing upon the Bridgeport situation, the commission feels that the number of routes should be limited and that it is better at the present time to have too few routes and add to them later if it becomes necessary than to make the mistake of approving unnecessary routes and later find that such routes should be discontinued. An opportunity has been afforded the railway to fulfill its charter obligations and to demonstrate its ability to supply adequate service.

VALIDITY OF JITNEY LAW ATTACKED

An attack on the constitutionality of the jitney law has been launched in Hartford in behalf of Edward P. French of New Britain, whose petition for five jitney routes in that city was denied bv the Public Utilities Commission. In New Haven the jitney bus owners banded together and appeared before Judge John E. Keeler in the Superior Court in Bridgeport and asked for a temporary injunction restraining the city of New Haven, the State of Connecticut, the Connecticut Company, and other municipalities from interfering with the operation of jitneys over routes heretofore operated. In both places it is contended that the law runs contrary to the Fourteenth Amendment of the Federal Constitution and that the public convenience and necessity are served by the existing jitney routes, etc. As far as the commission is concerned, Chairman R. T. Higgins said that the decision would stand until the courts decide whether or not the law is constitutional or find errors in individual cases. An error in an individual case would affect only the individual concerned. If the courts decide against the jitneymen a test case will probably be carried to the Supreme Court, but whether the law would be in force meanwhile is in doubt. But there is another law—the general motor vehicle law—to be considered. This law states specifically that the motor vehicle commissioner shall not license any jitney car until the latter has secured a certificate from the utilities commission; it also renders futile any appeal to the courts for release.

As a further deterrent to jitney operators, it is understood that various insurance companies have notified them that they cannot continue to carry liability insurance on any public service vehicle which does not have the certificate from the utilities commission if it is a jitney, and the correct license and marker under the vehicle law in any case.

Following the restrictions of motor buses which created certain gaps in transportation service the Connecticut Company, under its new authority, placed several buses in operation on Friday, July 15.

The service instituted is as follows:

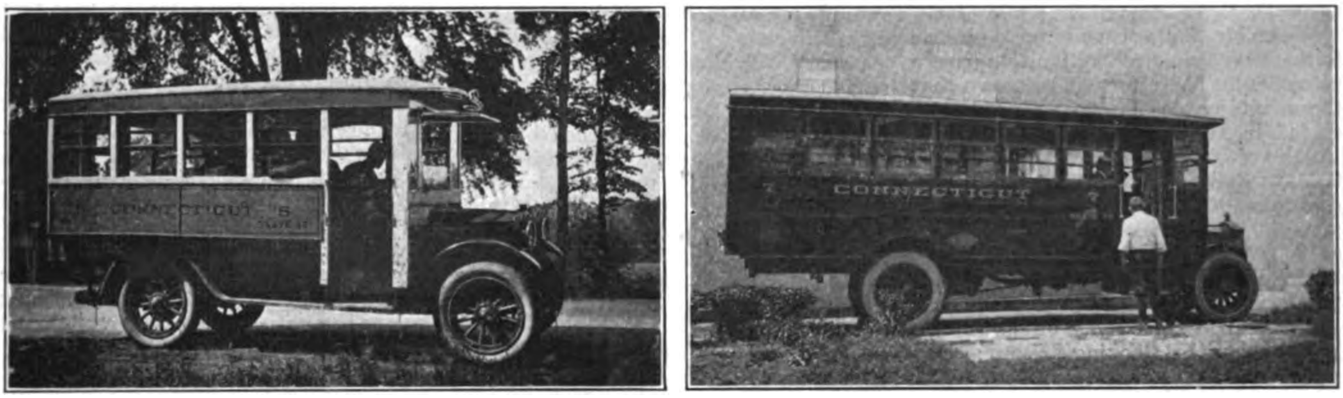
1. From East Haven to and through Branford. This is a cut-off, as the company has a rail route from New Haven to East Haven to Branford, which follows the shore of Long Island Sound between the last two cities.
2. From New Haven through Milford to Devon. This is also a cut-off on that part of the New-Haven-Bridgeport line that follows the shore from New Haven, through Milford to Devon.
3. A suburban route near Danielson, in northeastern Connecticut, to serve a section formerly unserved.
4. From Atlantic Square, Stamford, to Glenbrook.

On all routes the same fare is charged on the bus as on the car between the same points and transfers are issued to and from the buses. Schedules are arranged for buses and trolleys to meet.

On routes 1 and 3 the buses used are Reo chassis with Paterson twelve-seat bodies; on route 2 Packard chassis and Paterson twenty-seven-seat bodies.

As to how far the Connecticut Company will ultimately develop its bus service it is too early to state.

The company did some excellent work to provide the service at the time the jitney restrictions became effective, purchasing chassis, driving them to Paterson, N. J., having them fitted with bodies, getting them back to Connecticut in some forty-eight hours, painting them, licensing them, insuring, lettering and numbering them and having them in service a few hours later.



REO AND PACKARD BUSES IN THE SERVICE OF THE CONNECTICUT COMPANY

Another Survey and Valuation at New Orleans

The Commission Council of New Orleans, La., has yielded to the request of Commissioner Maloney, of the Department of Public Utilities, and has engaged F. W. Ballard, consulting engineer, Cleveland, Ohio, to make another survey and valuation of the property of the New Orleans Railway & Light Company. This is an admission on the part of members of the Council, after the frank avowal of Commissioner Maloney, that they are unequal to the task, due to inexperience, of passing satisfactorily upon the merits and demerits of the vexatious railway problem of the Crescent City.

Mr. Ballard's previous valuation, the lowest of several estimates submitted under the old city administration, was $32,000,000. His new valuation, it is assumed, will be in excess of his previous estimate. This belief is based upon a communication written quite recently by Mr. Ballard in which he declared in effect that intangible assets of public utilities should be considered where valuation, strictly speaking, was an issue.

While Mr. Ballard made no reference to the New Orleans Traction Company's valuation in his letters, it is known that these intangible assets were not included in his previous estimate of the worth of the property of the New Orleans Railway & Light Company. The decisions of the courts bear out this view in recent litigation affecting the value of public utilities.

Mr. Ballard's duties as a utility expert will be to assist the city authorities in their consideration of the various plans submitted looking to an adjustment of the pending troubles, for the purpose of reaching an amicable settlement without recourse to the courts. He will also act as the city's expert representative in preparing the case instituted by the city and now pending in the Federal District Court against the railways to restrain the collection of an 8-cent fare.

Three Cheers for Fifth Avenue Bus

The splendid co-operation and generosity of the Fifth Avenue Coach Company, New York, N. Y., in the work of making wounded soldiers' lives a little brighter is told by Alfred C. Bennett, a member of the Committee for the Sick and Wounded Soldiers, American Legion Air Service, Post 501, who called upon various organizations to assist in extending free pleasures to the men. On June 7 a bus with three attendants called at the Polyclinic Hospital, 50th Street and Ninth Avenue, took the men to the Polo Grounds, where they witnessed the base-ball game, and waited to transport the men back to the hospital. Mr. Bennett said that he asked the company for free transportation for the men once a month, but that the company informed him a bus would call once a week, suggesting that it would therefore take less time to go the rounds. The management informed Mr. Bennett further that it was a rare opportunity for the bus company to do something to bring cheer to the wounded men and to co-operate in a worthy work of this kind.

Louisville Decision Expected Soon

The Federal Circuit Court of Appeals is expected to render a decision soon in the case of the City of Louisville against the Louisville Railway. News to this effect has developed the evil of speculation in receipts issued by the company for the extra fare collected under the order of the injunction granted by Federal Judge Evans. This order restrained the city from interfering with the collection of a 7-cent fare which the company obtained last February.

Five tickets to a strip are sold for 35 cents. In the event the city wins its case the receipts attached to the strips will be worth 10 cents. The "market" price of the receipts now stands at 1 cent for five receipts. Few "sales" are reported, however, as citizens holding receipts seem to be confident that the city will win. Those who think the company will win did not bother about saving their receipts.

The decision of the Circuit Court of Appeals, however, is regarded by both sides in the case as a mere formality to be observed in bringing the case before the United States Supreme Court. Both parties have announced their intention to appeal.

Buses Bridge Traction Gap

The 30-mile gap in traction service between Louisville and the Bluegrass section of Kentucky has been bridged by the Capitol Motor Coach Transit Company, which has established a motorbus line between Shelbyville, 30 miles east of Louisville, and Frankfort, which is 60 miles east of Louisville. Three round trips are made daily by the buses of the company. Stops are made at all points between the two cities. The establishment of the bus line connects Louisville and Shelbyville on the west with Frankfort, Lexington, Nicholasville, Georgetown and Paris on the east.

Ambiguities Removed

The Ontario Legislature, in order to remove doubts as to the meaning of a paragraph relating to the "award, conditions, tender and bylaw" in the agreement between the City Council of Toronto and the Toronto Railway, has passed an act declaring that the value of the company's real and personal property to be taken over by the city shall be determined by three arbitrators, as provided in the Municipal Act, secs. 335 and 336. Sir Adam Beck has been appointed by the City Council, and Sir Thomas White by the company, and Hume Cronyn, M.P., of London, Ont., has been chosen by them as the third arbitrator.

City Seeks to Compel Fare Reduction

Suit to compel the Cincinnati (Ohio) Traction Company to publish a reduction in fares from the present rate of 8½ cents to 8 cents on Aug 1 has been filed in the Superior Court by Saul Zielonka, city solicitor. The city will base its plea on the purported agreement made by the company on July 14 to abide by an ordinance passed a month before, amending the service-at-cost franchise.

According to the petition the gross receipts of the company during the months of May and June have been in excess of the amount needed to meet payments and accruals and that under the terms of the amended franchise the city is entitled to a reduction in fares. The company, however, failed to carry out its agreement and grant the reduction, it is charged by the city.

Reasons given by the company for this action, the petition asserts, were that a citizens' committee sent a petition to the city auditor demanding a referendum election on the ordinance amending the franchise. The petition says the traction company contends that the ordinance is not effective until voted favorably by the people. The city holds, according to the suit, that the ordinance being an amendment to the original franchise is not a legislative act, authorized by the General Assembly of Ohio, and therefore does not have to be submitted to the electors at a referendum election. The referendum petition, according to the city solicitor, is of no value because it seeks a referendum on an amendment to an ordinance passed before the initiative and referendum act was adopted by the Ohio Legislature.

New Rate in Effect in Knoxville

Six-cent fares are now in effect in Knoxville, Tenn., without a court fight on the part of the Knoxville Railway & Light Company, as was predicted when the Public Utilities Commission granted the increase from 5 cents.

The city had announced its intention of fighting the increase on the grounds that the company is operating a commercial lighting department from which it derives a good return. The city of Knoxville, through its attorneys, now announces, however, that the order increasing the fare will not be appealed to the Supreme Court.

From revenues derived from the increased fare the Traction company is planning some improvements, including extension of its lines, additional service and a faster schedule.

Ordinance Against One-Man Cars.—The City Council of Steubenville, Ohio, has passed an ordinance making it a punishable offense for any traction company to operate a one-man car within the corporation limits. The action followed the announcement of the intention of the Wheeling Traction Company to place one-man cars in operation in Steubenville.

Seven Cents in Nashville

The Nashville Railway & Light Company, Nashville, Tenn., has been allowed to charge a straight fare of 7 cents. This order was issued recently by the Tennessee Public Utilities Commission.

When the company at Nashville was granted an increased fare about two years ago the commission stipulated that the company could sell tickets at the rate of four for 25 cents, or for 6¼ cents each. The company appealed to the commission that it could not get-by and sell tickets at that rate. The order was, thereupon, modified and the fare of 7 cents straight was authorized.

Seven Cents in Toledo

Notices have been posted in the cars operated by the Community Traction Company, Toledo, of a fare increase from 6 to 7 cents with tickets at a rate of eight for 50 cents. The change will become effective on Aug. 1.

Transportation News Notes

Agrees to Lower Fares.—By agreement between the city of Pottsville, Pa., and the Eastern Pennsylvania Railways operating in that city fares will be lowered from 10 cents to 8⅓ cents. Twelve tokens will be sold for $1. This arrangement will be in effect for three months at the end of which time if not satisfactory a valuation of the property will be made.

Wants Fare Case Reconsidered.—The Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., has filed a petition with the Indiana Public Service Commission asking that its request for a 10-cent fare within the city of Indianapolis be taken up again. The present fare is 5 cents. The case was considered by the commission last December, but no action was taken.

City to Fight for Five-Cent Fare.—Mayor Rosson, of Frankfort, Ky., has announced that the city will institute legal steps to have the fare reduced from 6 cents to 5 cents. The 1-cent increase was granted by a city ordinance which provided that the 5-cent fare should be restored when peace had been declared with Germany. This has been done, the Mayor states, but the company is still collecting 6 cents.

Relieving Congestion in Tampa.—Safety zones for passengers getting on and off street cars at the corner of Lafayette and Franklin Streets and the corner of Lafayette and Tampa Streets, Tampa, Fla., have been suggested by T. J. Hanlon, Jr., manager of the Tampa Electric Company, as a means for relieving the congestion of traffic at these two busy corners. The zones are to be marked on the pavement.

Ten-Cent Rate in Effect.—The North Carolina Public Service Company, Salisbury, N. C., put into effect a 10-cent cash fare in Concord on July 11. No tickets are used. The State Corporation Commission authorized the increase on June 25. This fare supersedes the 8-cent fare which has been in effect since October 1, and which was allowed by the Local Board of Aldermen without the necessity of going before the commission.

Interurban Rates Advanced. — The South Carolina State Railroad Commission recently granted permission to the South Carolina Light, Power & Railways Company, Spartanburg, S. C., to increase its railway fares in the interurban territory. The old rate was 7 cents and it is now 10 cents in each of three zones, making an increase from 21 cents to 30 cents for approximately ten miles. The new order became effective July 3.

Eight-Cent Rate Continued.—The Indiana Public Service Commission recently approved the petition of the Hammond, Whiting & East Chicago Railway, operating between Hammond and East Chicago, for an extension of its 8-cent fare. When the company appeared before the commission it was brought out that in the first five months of the year 343,843 fewer passengers were carried on the Hammond-East Chicago line than in the corresponding period of 1920.

Wants to Run Buses.—C. H. Bosler, president of the Tulsa (Okla.) Street Railway, recently applied for a franchise to establish motor bus lines when a new ordinance was proposed by the city attorney regulating the present jitney lines and permitting jitneys to operate on streets where there are now railway lines. Mr. Bosler added further that his receipts were $200 a month less than they were a few months ago and that a wage cut would have to be put into effect within a short time. The matter was taken under advisement.

Authorizes Increased Rate. — The South Carolina Railroad Commission recently granted permission to the Charleston Consolidated Railway & Lighting Company to increase its fare on the interurban line from Charleston to the navy yard. The company petitioned for a 7-cent fare with a ticket rate of four for 25 cents from the incorporated limits to the Navy Yard and from the Navy Yard to North Charleston 5 cents with three tickets for 10 cents. The old fare to the yard was 5 cents.

Will Punish Violators of Motor Laws.—Local authorities in Louisville, Ky., have started a strong crusade against violators of the motor laws, and are especially strong in prosecution of motorists who pass standing street cars. There have been so many accidents of late that an effort was made to give motorists jail sentences when fines failed to do much good. One man was given a five-day jail sentence, but brought habeas corpus proceedings and his attorney showed that the present state laws do not contain a jail sentence. The courts retaliated by making the minimum fine $100 for each speeder, and arrest on the spot, instead of notifying them to appear in court.

Intrastate Rates Equalized on North Shore Road.—A recent order of the Interstate Commerce Commission fixed the rate of fare for intrastate travel within Illinois; on the Chicago, North Shore & Milwaukee Railroad at 3 cents a mile. Heretofore, while this has been the rate for interstate travel, a rate of 2 cents a mile prevailed for local travel in Illinois, and 2.7 cents a mile for local travel in Wisconsin. An order of the commission on June 14 increased the Wisconsin fare to equal the interstate rate and a subsequent order on July 2 raised the rate in Illinois to the same basis. The cash fare on trains is now 3.6 cents a mile with a minimum of 10 cents. The ticket fare is 3 cents a mile with a 7-cent minimum, and the twenty-five ride ticket is sold at 2.5 cents a mile, except to Chicago.

Compromise Effected in Springfield.—Friction between jitney operators and the Springfield Street Railway, Springfield, Mass., culminated recently in a ruling effective on Aug. 1 barring jitneys from Main Street. The transportation committee of the City Council voted to accept the seven new routes submitted by Attorney Cowett, representing the jitneymen's association with the modification that jitneys shall be barred from Main Street between the station arch and State Street. The settlement allowing four jitney operators on the State Street route and three on each of the others amounts to a compromise between the railway management and the jitney men. President Clark, of the Springfield Street Railway, asked that jitneys be taken off all streets on which trolleys operate, as the receipts in Springfield had been greatly decreased in comparison with last year.

Collection of Ten-Cent Fare Deferred.—Invoking authority of a 1921 law permitting more than one suspension of a proposed increase in trolley rates, the Board of Public Utility Commissioners on July 12 served notice on the New Jersey & Pennsylvania Traction Company, Trenton, N. J., that the inauguration of a 10-cent fare by the company on its Princeton branch is withheld until Oct. 12. The 10-cent fare was to become effective on April 12 last, but the board suspended the increase until July 12. Unable to determine whether the increase sought is just and reasonable, the board decided to order another three months' suspension. During that time an opinion in the case must be written. The board specified that the second suspension would last until the case was decided. In its petition the company asked permission to charge a fare of 10 cents in each of its four zones between Trenton and Princeton, authority to issue commutation strip tickets containing eleven tickets for $1 and also school children's strips containing forty trips for $2.

Personal Mention

W. S. Finlay, Jr., Heads Metropolitan Section of A. S. M. E.

W. S. Finlay, Jr., a vice-president of the American Water Works & Electric Company, New York, has been elected chairman of the Metropolitan Section, the largest of the local sections of the American Society of Mechanical Engineers. This section embraces a membership of more than 3,000 in the metropolitan district. G. I. Rhodes of Ford, Bacon & Davis, secretary, and Robert B. Wolf of R. B. Wolf & Company, treasurer, with A. E. Allen, Westinghouse Electric & Manufacturing Company, constitute the executive committee. The Metropolitan Section, organized in 1910, under which are held public forums on engineering topics, has sub-committees on power engineering, industrial relations, educational, manufacturing, production engineering and legislation.

Mr. Finlay, before his present connection with the American Water Works & Electric Company, was the superintendent of motive power of the Interborough Rapid Transit Company, New York, having been the successor to the late H. G. Stott, who was recognized as the most able power plant designer and operator in this country. Mr. Finlay entered the employ of the Interborough Rapid Transit soon after his graduation from Cornell in 1904. He was born in Hoboken, N. J., in 1882 and received his preliminary training in the public schools of Brooklyn, N. Y.

Promotions as Well as Reassignments on the Eastern Massachusetts

Among the numerous changes that took place recently on the Eastern Massachusetts Street Railway in the way of reassigning the managers to the various divisions, as was announced in the ELECTRIC RAILWAY JOURNAL for June 25, there were several to whom the changes came as promotions. This was true in the case of Charles E. Whalen, who has been made superintendent of the Lowell district, and Francis J. O'Donoghue, who has assumed the position of manager of the Haverhill district. The appointments became effective on July 6.

Mr. Whalen has been in the employ of the Eastern Massachusetts Company for the past seven years. He was formerly a motorman at Milton and later was brought into the office of the transportation department to assist in the work of equalizing the cars among the different districts. These duties involved the allocating to the carhouses in the various divisions of a sufficient number of cars to furnish the service as determined by their schedules. On a system composed of twelve divisions on which schedule revisions and reroutings are continually being made, proper car distribution forms an important link in efficient operation.

Mr. O'Donoghue, up to the time of his appointment as manager in Haverhill, was superintendent of the Brockton Division. Prior to that he also was employed in the transportation department engaged in the same sort of work. G. F. Chase, formerly local manager in Haverhill, has gone to Lawrence as the superintendent of that division.

Changes on Tri-City Railways

J. G. Huntoon, who has been vice-president and general manager of the group of properties operated by the Tri-City Railway & Light Company, Davenport, Iowa, has resigned as general manager, but will retain the office of vice-president. T. C. Roderick has been appointed general manager of the Tri-City Railway of Illinois. R. J. Smith has been made general manager of the Tri-City Railway of Iowa. Clark G. Anderson was appointed general manager of the interurban lines of the Clinton, Davenport & Muscatine Railway. E. L. Fischer was appointed general manager of the Muscatine city lines of the Clinton, Davenport & Muscatine Railway.

Mr. Roderick has been assistant general manager of the Tri-City Railway of Illinois and of Iowa and was formerly chief engineer of the Grand Rapids (Mich.) Railway. Mr. Smith has been engineer of way and structures of the United Light & Railways Company and will continue to act in this capacity. Mr. Anderson has been assistant general manager of the Clinton, Davenport & Muscatine Railway and prior to coming with this company in 1914, was Commissioner of Public Works for the city of Moline. E. L. Fischer is also general manager of the Muscatine Lighting Company and under the new arrangement is merely taking over the additional duties of looking after the local street car lines.

London Transportation Men Visit American Properties

H. E. Blain, C. B. E.; C. S. Louch and J. L. B. Lindsay, of the London Underground Railways and Omnibus Group, who have been in this country for about six weeks, returned to England on July 16. During their stay they visited a number of cities in this country and Canada and extended their trip as far west as Colorado Springs. They found many matters to interest them and expressed themselves before leaving as highly pleased with the results of the trip and appreciative of the courtesies extended to them by the officials of the railway properties in the cities visited. On July 14 they gave a dinner at the Lotos Club to some of the railway men in New York. Among those present were: Frank Hedley, H. H. Vreeland and E. F. J. Gaynor, Interborough Rapid Transit Company; J. A. Ritchie and G. A. Green, Fifth Avenue Coach Company; E. C. Faber, Barron G. Collier Company; J. H. Pardee, J. G. White Company; C. B. Buchanan, Virginia Railway & Power Company; B. A. Hegeman, Jr., H. A. Hegeman, C. C. Castle and H. L. Howell, National Railway Appliance Company.

A. J. Purinton Succeeds the Late Charles Evans on Atlantic City Road

Election of officers and directors of the three Atlantic City trolley companies took place recently. A. J. Purinton, of the Atlantic City and Shore Railroad Company, was elected a director and vice-president, succeeding the late Charles Evans. Other officers elected were I. H. Silverman, president; A. W. From, treasurer; J. M. Campbell, secretary. The executive committee is made up of H. Silverman, Harry E. Kohn and A. J. Purinton, while the board of directors is composed of I. H. Kohn, Clarence L. Smith, H. R. Coulomb, Penrose Fleisher and Rolia L. Smith.

The officers and directors of the Atlantic and Suburban Railway are L. R. Isenthal, president; Irving B. Woods, vice-president; J. M. Campbell, secretary, and A. W. From, treasurer. The directors are L. R. Isenthal, R. A. Cale, Harry E. Kohn, J. M. Campbell and Irving B. Wood.

The Central Passenger Railway officers are A. J. Purinton, president; J. M. Campbell, secretary, and A. W. From, treasurer. Those appointed to the committee are I. H. Silverman, A. J. Purinton, L. R. Isenthal. Directors, J. M. Campbell, A. W. From and H. R. Coulomb.

A. Born is the successor of E. F. Gould as vice-president of the Western Ohio Railway, Lima, Ohio.

H. J. Meyer is no longer in the employ of the Pittsburgh & Beaver Street Railway, Pittsburgh, Pa., as master mechanic.

D. W. Hanson is now the auditor of the Northwestern Pennsylvania Railway, Erie, Pa., having succeeded A. Shiel in this capacity.

J. H. Reed has been elected vice-president of the Pittsburgh & Beaver Street Railway, Pittsburgh, Pa., to succeed J. D. Callery, Jr.

R. L. Swittenberg is the successor of R. T. Long as superintendent of plants and line department of the Southern Public Utilities Company, Anderson, S. C.

W. M. Krise, assistant superintendent of the Chambersburg, Greencastle & Waynesboro Street Railway, Waynesboro, Pa., has severed his connection with the company.

George E. Carson has been named engineer of overhead construction on the Ephrata & Lebanon Traction Company, Lebanon, Pa. S. H. Suter had previously held this position.

D. L. Reisinger, master mechanic of the Gallipolis & Northern Traction Company, Gallipolis, Ohio, has severed his connection with the company and his place is now filled by Homer Walters.

Reuel O. Launey, resigned on July 15 as auditor of the Birmingham Railway, Light & Power Company, Birmingham, Ala. He has gone to Brooklyn, N. Y., where he has assumed duties as auditor of the Brooklyn Edison Company. Entering the service of the Birmingham Railway, Light & Power Company in April, 1904, as earnings clerk in the railway department, he held with credit practically every position in the auditing department and was appointed auditor January 1, 1913. On April 1, 1917, he was appointed auditor of the southern properties of the United Gas & Electric Engineering Corporation in addition to his other duties, which position he held until May 5, 1919, when that corporation withdrew from the control of the southern properties. Since January, 1917, Mr. Launey has been editor of the *Buzzer*, a paper published weekly in the interest of the employees of the company. His ideas are responsible for its reaching and maintaining its high standard and for the place it holds among the employees.

Obituary

E. E. Hudson, president of the Waterbury Battery Company, Waterbury, Conn., died on June 27.

Edward J. Ronan, representative of the Gold Car Heating & Lighting Company, Brooklyn, N. Y., died on July 3. Mr. Ronan had been connected with the company for a period of twenty-one years.

Jacob Scott, who had served as president of the Susquehanna Traction Company for twenty-five years, died on June 11 in Lock Haven, Pa., where he was the most extensive property owner and president of the Lock Haven Safe and Trust Deposit Company. He was eighty-one years old.

Frank L. Doolittle, one of the projectors of Huntington's original traction line, and for many years one of the most prominent figures in the business life of Huntington, died recently at Falls Church, Va. He and others organized the original street car company which secured a franchise for the operation of horse-drawn cars in Huntington. This company was the predecessor of the Consolidated Light & Railway Company, which operated one of the first electric railway systems in this country.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER. SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Tubular Steel Pole Prices Are Reduced

Recent Steel Cut Passed on to Finished Product—Demand Is Light as Buyers Still Hold Off

Prices on tubular steel line poles have been reduced in line with lower costs on steel. The recent general cut of the United States Steel Corporation included a drop of $4 per ton on skelp, from which line poles are made. Therefore prices may be said to have receded in about the same amount on the date this decrease was made, namely, July 7. One of the large pole manufacturers has only recently passed on this price drop, however, as effective the first of this week a reduction of slightly less than 5 per cent has been announced. This is the second decrease that has been made since the first of the year. In the above instance the previous drop, made last February, amounted to $15 per ton.

The general attitude of buyers in this field seems to be to await further price reductions. Demand has consistently remained quiet the greater part of this year and, judging from the inquiries received, it is reported that interest among electric railways is not increasing materially. Producers have only fair stocks on hand as production is down to a minimum. With many tube mills of the steel producers closed down entirely it is sometimes difficult for pole manufacturers to replenish their material and, because of this, shipments occasionally range as long as thirty to sixty days.

New City Railway in Sydney, Australia

Plans are under way for the construction of a new city railway in Sydney, Australia, partly underground, to cost about £8,000,000. In addition to this the suburban railways will be equipped for electrical operation and extended so that a loop will be formed around the city. From the extension lines will lead to the eastern and western suburbs.

Price Reduction of 10 per Cent Applied to Motors

A general reduction in prices of motors of 10 per cent was made by manufacturers during the week end of July 9 to 12, and some further changes have just been announced as of July 19. The change affected direct-current motors and polyphase alternating-current motors and motor starting and control apparatus, but did not touch fractional horsepower motors. Single-phase motors of certain manufacturers were also included in the list, but this change was not general. Synchronous motors have been excepted from the cut. This is the second motor price cut this year, the previous one of 10 per cent having taken place early in February.

In addition one prominent manufacturer reports a 10 per cent reduction on transformers of 500-kva. capacity and above. Another prominent manufacturer has taken 10 per cent off all direct-current generators and motor-generators.

Signaling Apparatus for Australian Railways

Tenders will be received by the Victorian Government Railways Commissioners, Melbourne, Australia, until Aug. 10 for 250 impedance bonds for power signaling (Contract 34,130) and 56 miles of insulated copper wire (Contract 34,131). Tenders will also be received until Aug. 17 for renewals for 3,000 sets of caustic-soda primary cells (Contract 34,145). Specifications may be seen at the Department of Overseas Trade, 35 Old Queen Street, London, S. W. 1, England.

Two Sizable Girder Rail Orders Placed Recently

Although two sizable orders for girder rails have recently been placed with the leading producing interests, these orders apparently are not indicative of a general improvement in this market, for on the whole conditions are quiet.

The Chicago Surface Lines placed an order a few days ago for 4,000 tons of 129-lb., No. 403, 9-in. girder rail with the Lorain Steel Company. This is the first order for rails placed by the Surface Lines since before the war. Replacement requirements in the meantime have been supplied from a stock of 20,000 tons purchased in 1915, when the price was less than one-half what it is now, although the present level of girder rail prices has receded considerably from its peak. The second recent order is one from the Toronto (Canada) Transportation Commission for 4,000 tons of girder rails and 500 tons of T-rails. It goes to the Bethlehem Steel Company.

Ten per Cent Reduction on Trolley Poles

Lower prices on trolley poles apparently have had little or no effect in the way of stimulating demand. The second price drop since the first of the year has been made, yet sales are still light. With lower prices on pipe as announced recently, manufacturers of both seamless and lap-welded trolley poles have lowered quotations. The general drop has been about 10 per cent and was made on different dates during the early part of July.

A previous drop of approximately 20 per cent was put into effect on seamless-steel trolley poles during the latter part of last February. A fair number of poles are carried in stock at the present time and on standard poles, style A, virtually stock shipments can be made. Style B poles, which are heavier, require a slightly longer time, and deliveries range up to thirty days on some sizes, especially the long lengths.

Insulator Prices Decline

Second Cut This Year Comes at Time When Orders Show Falling Off

Effective July 15 and 18 in different instances several manufacturers of high-tension porcelain insulators have announced lower prices. On suspension types the cut amounts to 5 per cent, while on all others it is 10 per cent. Included in this drop are some of the insulator hardware items. Standard wiring porcelain was also reduced, in a representative instance the discount being increased 8½ points, except on short tubes, where it was 3½ points.

This is the second price decrease to be made on high-tension insulators. The first, amounting to 10 per cent, occurred during the last half of February, but it did not cover single-part pin-type insulators. Demand shows considerable falling off since the first of the year, it is stated. At the present time, though there are a fair number of orders being received from central stations, they are small in size, and both the foreign and domestic markets shape up as quiet. Electric railways up to the present time have taken little or no interest in the market.

Pole Line Hardware Prices Again Reduced

Prices on pole-line hardware are again down. This time the cut ranges from about 2½ to 7½ per cent in a number of instances, and was made on varying dates from the first to the fifteenth of July. Lower costs on steel are said to be responsible for this latest drop. At least three other general price reductions have been reported in the galvanized line hardware field since the first of the year, and in some instances four decreases. The first cut of 5 to 15 per cent was made in late December and early January, the second of 5 to 7½ per cent occurred on Feb. 15, and the third reduction, amounting to 7½ to 10 per cent, was effective on April 11. Early in June at least one manufacturer and a manufacturer's distributer made a fourth decrease of 5 per cent, so that with this latest drop prices are well down. Demand has just recently started to show a slight improvement, it is reported, though factory stocks are still quite large.

A representative distributer's prices on various items per 100, f.o.b. Chicago, are as follows: carriage bolts, ⅜ in. x 4½ in., $1.93; crossarm braces, 1¼ in. x ¼ in. x 28 in., $13.19; lag screws, ½ in. x 4 in., $3.33, and machine bolts, ⅝ in. x 12 in., $8.95.

Rolling Stock

El Paso (Texas) Electric Company, through Stone & Webster, Inc., has placed an order for ten safety cars with the St. Louis Car Company.

The Denver (Col.) Tramway is considering a plan to purchase twenty-seven new Peter-Witt motor cars and to rebuild forty of its present double-truck cars along the lines of the Peter-Witt design.

Columbus (Ga.) Railroad Company has ordered four safety cars. These were placed through Stone & Webster, Inc., with the St. Louis Car Company.

Fonda, Johnstown & Gloversville Railroad Company, Gloversville, N. Y., advises that it is changing over its pay-as-you-enter type cars to permit of one-man operation. They will be put into service on August 1.

Tampa Electric Company, Tampa, Fla., which recently ordered twelve Birney safety cars, as noted in last week's issue, placed this order with the St. Louis Car Company.

The City of New York, N. Y., has awarded a contract for eight trackless trollibuses to the Atlas Truck Company York, Pa. The contract went to the latter company, it is stated, because it uses structural steel throughout in the construction of the body frame. The cars are intended for use in connection with the municipal line operated on Staten Island. Since the experimental vehicle was put into operation at Richmond, Va., a number of weeks ago, the Atlas company has received many inquiries.

Detroit (Mich.) Municipal Railway was mentioned in the June 18 and July 16 issues as ordering fifty Peter Witt and 100 safety cars. With this latest order the number of cars bought by the city since last fall totals 250, placed as follows: Nov. 16, 1920, twenty-five safety, Osgood-Bradley; April 15, 1921, twenty-five safety, Osgood-Bradley; on May 4, 100 safety, J. G. Brill; July 12, fifty Peter-Witt, Kuhlman; July 12, 100 safety, divided among McGuire-Cummings twenty-five; St. Louis Car Company, fifty, and Osgood-Bradley, twenty-five. Besides these orders the city will probably ask for bids on fifty trackless trolleys, as stated in the July 2nd issue. Specifications on the 100 safety cars will be printed in an early issue.

Track and Roadway

Intercity Terminal Railway, Argenta, Ark., will provide double tracks on the bridge connecting Little Rock and North Little Rock as soon as the free new bridge is completed. Cars of North Little Rock will then connect with Little Rock cars according to P. C. Warren, of the Intercity Terminal Company.

Wilmington & Philadelphia Traction Company, Wilmington, Del., is doing a great deal of work necessary for the new street paving operations. The company has finished its new track work on East Ninth Street and has finished the Shellpot loop. New tracks have been laid on Lancaster Avenue from Union Street to Woodlawn Avenue and new rails have been installed in Washington Street. On Eighth Street new rails are being installed and these are being laid from Van Buren to Broome Streets. Other work is in prospect.

Public Service Railway, Camden, N. J., has started its reconstruction work on Westfield Avenue between Dudley Tower and Forty-second Street. The tracks will be shifted from the side to the middle of the street. Work will also start shortly on Haddon Avenue, Collingswood.

Pittsburgh (Pa.) Railways have been authorized to construct a loop in the East Liberty district. The loop will run from Penn Avenue along Euclid Avenue to Mignonette and St. Clair Streets. The receivers received permission to spend not more than $40,000 in this construction which was necessary in view of the heavy traffic in this district.

Dallas (Texas) Railway., will at once connect its tracks on Masten Street with the tracks on St. Paul, according to Richard Meriwether, vice president and general manager. This connection is made possible by the removal of the tracks of the Texas & Pacific Railway on Pacific Avenue. The traction company several weeks ago completed its Masten Street line to the edge of Pacific Avenue, but work was then stopped until the tracks of the steam railway had been removed. Building of a double track line of St. Paul Street from Elm to Commerce to make possible the desired routing of cross-town lines, is being urged by the Dallas Safety Council. Such a line would greatly relieve the congestion in the business district, it is pointed out.

Trade Notes

The Arrow Pump Company, with general sales offices in the Buhl Building, Detroit, announces that it is now prepared to manufacture centrifugal and other rotating types of pumps in which there will be incorporated a unique design of packing gland with ring oiling principle.

Tool Steel Gear & Pinion Company, Cincinnati, Ohio, announces that Richard H. Worcester, 408 Boston Building, Honolulu, T. H., now represents the company there. Two new salesmen have been added to the company's sales force, and the factory space has been enlarged approximately 8,617 sq.ft.

Automatic Register Company, 4117 Washington Boulevard, St. Louis, Mo., manufacturer of automatic fare registers, announces that at its recent annual meeting A. D. Branham was re-elected president, William P. Launtz, vice-president, and George S. Darrow secretary and treasurer. C. H. Wilson was also made vice-president, succeeding M. J. Hopkins.

Track Specialties Company, 29 Broadway, New York City, announces that it has recently appointed the following representatives: The Busch Corporation, 1130 Collins Street, St. Louis; P. W. Wood, 811 Canal Bank Building, New Orleans; R. J. Glendinning & Company, 1102 Newhouse Building, Salt Lake City, and C. H. Small, Monadnock Building, San Francisco.

The M. J. Dougherty Company has completed and moved into its new quarters which occupy the block from Twenty-fourth to Twenty-fifth Street at Washington Avenue in Philadelphia. These increased facilities for the fabrication of piping of every design, the company says, enable it to offer prices and deliveries which had never before been possible with its smaller factory.

Union Switch & Signal Company, Swissvale, Pa., has received an order from the Boston Elevated Railway for the necessary materials for the installation of an alternating-current electro-pneumatic interlocking at Forest Hills. The principal features of this installation will consist of a model 14 interlocking machine made up of thirteen levers for forty-one signals and sixteen stops, fourteen levers for fourteen single switches and three double slips, and five traffic levers, making a total of thirty-two working levers in a thirty-five-lever frame.

New Advertising Literature

Conveyors. — Conveyors Corporation of America, Chicago, has issued a booklet entitled, "The Proof of the Pudding," which reproduces seventy letters received from users of the company's ash-handling equipment.

Fuse Cutout.—Schweitzer & Conrad, Inc., Chicago, have put on the market a new 2,200/6,600-volt primary fuse cutout under the trade name Type E ejector cutout. It is described in their bulletin 103-A.

Excavator Crane—Bulletin 6-X describes the Pawling & Harnischfeger Company, Milwaukee, newly developed No. 206 excavator-crane which can be used in coal and ash handling and with a lifting magnet.

Welding.—Rail Welding & Bonding Company, Cleveland, Ohio, has just issued its "Welding Instruction Manual," which deals particularly with the Lincoln carbon arc process of welding rail joints. Another portion is devoted to metal electrode welding of especial interest to the engineer in building up car wheels and other shop welding work.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
DONALD F. HINE, Editorial Representative GEORGE BUSHFIELD, Editorial Representative
L. W. W. MORROW, Special Editorial Representative G. J. MACMURRAY, News Editor

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Eliminate Waste in the Electric Railway Business

IT MIGHT have been expected that the first work of the Federated American Engineering Societies, after Mr. Hoover was elected its president last fall, would be a study of the reduction possible in waste. When Mr. Hoover was called upon during the war to act as food director, not only of the United States but of a considerable part of the world, the question of waste was one which particularly attracted his attention. With his training as an engineer he recognized that waste represents not only energy which is lost but energy which would be productive if properly applied. In consequence, as food director he declared war against waste in food by issuing his famous "clean platter" and other regulations, which were gladly followed by the people during the period of food scarcity. A study of industrial waste offers a much broader opportunity for saving than even waste in food. The electric railway industry was not one of those especially studied by the committee, but many of the conclusions reached in the report just completed apply with almost equal force to electric railways.

Fortunately electric railways are largely free from very great seasonal variations in their business. With the exception of roads serving summer resorts, the business throughout the year has a fair regularity, but it is possible that something might be done more than at present toward a definite plan of supply of men to help out the forces of the summer roads and toward adjusting the work of the track forces on an eight months' if not a twelve months' basis. A more fruitful opportunity for waste reduction probably lies in the lessening of the turnover percentage. The report estimates the annual avoidable labor turnover in the metal trades at 100 per cent and the cost of each "separation" as from $50 to $250 each. If the first figure in the electric railway industry is taken as only 50 per cent and the cost of training is taken as only $50, the cost of annual turnover in the electric railway industry would amount to $6,000,000 a year. Probably 50 per cent is too large an estimate now, though it probably would not have been five years ago. However, much can be accomplished along these lines. Standardization is another point to which the report calls particular attention, and it even mentions the electric railways as possibly being able to do more than they are now doing in car standardization.

There are undoubtedly other ways in which waste and duplication, which is the same as waste, can be reduced on electric railway properties. Each manager might well consider what he can do on his own property, as he not only serves his own company but increases the community wealth in any saving which he may be able to effect.

One practice, insignificant perhaps in the amount of money involved as compared with some of those mentioned in the report but nevertheless involving the same principle, is common in the industry and might be mentioned here. This is the plan followed by some companies of circularizing the industry for information which is already available, either in the reports of commissions, the data on file in the office of the association or through existing publications. Railway companies realize that when information of this kind is solicited by this paper the material is published, so that it is available for everybody and the company should be relieved from other requests for similar data. Hence, requests for duplication of this information really come under the ban of Mr. Hoover's principle against waste. In fact, a good principle to follow is that work which is being well done by one existing agency need not be duplicated by another.

A Study in Wage Readjustment

REDUCTIONS in wages commensurate with the reduced cost of living are to go into effect in New York as a result of negotiations between management and men. In the case of the Interborough Rapid Transit Company the saving is estimated at $2,600,000 for the year. This is a sum whose beneficial effect is likely to be overestimated. In consequence the management of the company has found it necessary to issue a warning as to the probable effect of this saving. The solution of the transit problems in New York lies in making the investment of the company and the city self-supporting, so that, as President Hedley of the Interborough says, the capital required by the city's growing transit needs may be commanded. The wage reduction now brought about cannot possibly have such effect. The same comment also holds true of the savings effected through the cut in wages on the Brooklyn Rapid Transit System. In the case of that property, however, no statements appear to have been bandied about by self-seeking politicians in regard to the probable effect of the saving there.

These are the purely monetary aspects of the matter. There is another side to this question, however, that is more significant in its way than the help these savings in dollars and cents will be to the companies still battling against the odds imposed by the 5-cent fare. That side is the way in which the readjustment downward was brought about. The negotiations were conducted by the companies direct with committees of their own men. No rancor as to means or methods attended the conferences in either case. The companies put the decrease before the employees in the spirit of give and take, the same that prompted the companies to disregard wage agreements in the period of advancing prices when the helping hand was extended to the men. The employees, on their part, met the companies in the same spirit. As Vice-President Porter of the Brooklyn City Railroad said, the spirit in which the negotiations were conducted was most gratifying and showed a keen appreciation of actual conditions. Moreover, they are significant of what men and management can accomplish under the plan of employee representation in which both sides are free to proceed without being embarrassed by interference from outside sources.

Clear Analysis of the Duties of a Common Carrier

A CLEAR analysis of the duties of a common carrier is contained in the decision rendered on July 21 by Judge John E. Keeler of the Connecticut Superior Court in the case of some of the jitney bus drivers who could not understand why they should be stopped from operating. The case came up through the plea for an injunction restraining the Public Service Commission from carrying out certain laws enacted at the last session of the Legislature. In deciding this question adversely Judge Keeler answered two kinds of arguments commonly heard in cases of this kind. One of these is from those citizens who find it difficult to understand why an added transportation facility should be abolished.

"If it was not a good thing," they argue, "people would not patronize it. Competition ought to be desirable. It will keep each transportation agency up to the mark." The other line of argument often put forward in cases of this kind is based on the question of personal liberty and runs somewhat as follows: "Why should not the public carrier business be open to all? And why can a man be ruled off the highway because he runs the bus, but be free to use it if he runs a truck or private car? Why should a commission give a license to operate on the streets to a trolley company and refuse the same permission to a bus company? This is arbitrary power exercised in violation of constitutional rights."

Now all these questions can be answered very easily and simply if the nature of the common carrier business is understood. It is not like an ordinary mercantile business where the proprietor can open or close his shop whenever he likes, keep what goods he wants and sell for any price he chooses. A common carrier cannot do any of these things. He must agree to provide a service at times both when it is not profitable to do so as well as when a profit can be earned, and he is limited as to the charges which he can make for that service. His is not a private business. It is a quasi-public undertaking though conducted as a private corporation for profit, and as the nature of the business is such that it can be given much more cheaply if carried on by one concern than by a number, the authorities are acting in the interests of the public when they confine the service to one company and require it to do the thing right. Hence, action by a commission in favoring one concern and forbidding another is not an arbitrary exercise of power, except to the extent that any decision between individuals as to appointment to do certain work is arbitrary. The state requires the commission to make a decision of this kind. Finally, action by a commission in a case of this kind is in the interests of the public as a whole, so that it is a legitimate exercise by the state of its admitted police power.

Elements in Connecticut with a stake in the jitneys are naturally lambasting the Public Service Commission over the law which Judge Keeler was asked to construe. In this assault they are aided by all the avowed enemies of the Connecticut Company. As a matter of fact, the law is harder on the Connecticut Company than it is on the jitneys. The commission has ruled that where railway service is adequate or can be made adequate to the needs for transportation, there is no room for the jitney. It has also declared, at least in effect, that where the trolley furnishes the transportation, it must make good or go down in defeat. The railway knows then that it is fighting for its life as never before, as witnessed by the heroic efforts which it is making to increase its trolley service and to supply bus facilities where the commission has indicated that this is what is expected of it.

The situation is, in fact, fraught with greater danger to the Connecticut Company, with its vast investment in immovable assets, than it is to the bus owners, whose property can quickly be converted to other uses. In an excess of zeal to guard what seem to them to be their own best interests, the jitney operators appear to have lost sight entirely of this fact.

Due Process of Law Impossible in Public Rate Decision

"THERE is no way in the world for a public utility to be heard before the mass of the public who are going to vote to fix rates, and that is a part of due process."

A United States District judge is quoted as using these words in summing up, in a recent case, the inequity of settling by popular vote the matter of public utility rates. Whether it formed part of the formal decision or not, the statement quoted is undoubtedly true. The futility of submitting a question of this kind to popular vote has been almost universal. There have been only two or three instances in which approval has been granted. Hence, appeal to the courts based directly on guarantees of the Constitution has been quite frequent.

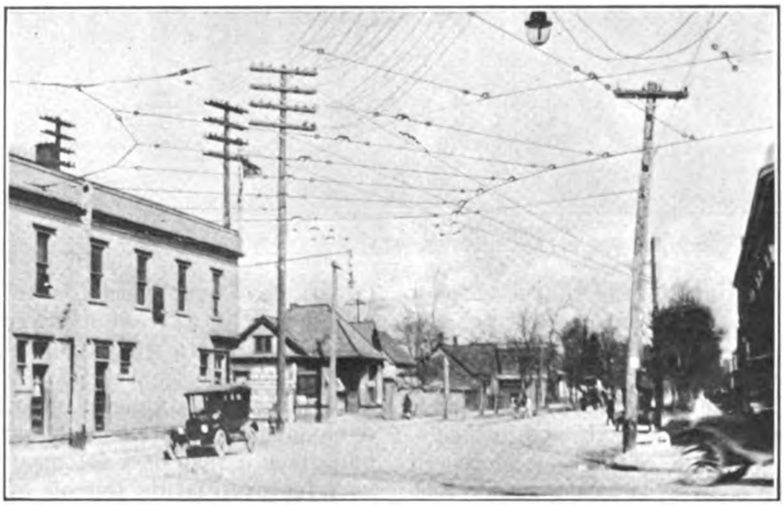
While the courts have very clearly stated the law regarding the confiscation of property, none of the decisions that have come to our attention has referred to the difficulty of obtaining a public-wide hearing. Those railway companies that have attempted to gain public approval of an increase at the polls have in many cases utilized every known means of getting an understanding of their case to every one. Yet the result was the usual disappointment. This can only be explained by the fact which is outlined clearly in the expression quoted above.

Publicity of a constructive and pleasing nature undoubtedly can be made to accomplish much in improving the general attitude toward a traction company, but history has demonstrated that the public will not readily vote to pay increased utility rates in response to the somewhat intangible plea that the utility will thereby be able to improve its service. This points to the desirability, in drawing up future franchises, of avoiding any condition on fare changes requiring popular approval at the polls, and of declining to acquiesce in the proposal of any city council, where it has full authority in itself to raise fares, to sidestep responsibility by passing the question on to a vote of the people.

Even in those sections of the country committed to the principle of the referendum, this argument would still apply. A rate of fare is a business proposition, and not of the nature of laws for the referring of which to the general public there may be many reasons not applicable to utility rate questions.

Constructing the Overhead in Detroit

Equipment Employed Is Largely of Standard Design—Earth-Boring Machine Speeds Up Work of Digging Holes and Setting Poles—Backbone Construction Used on All Curves—Special Strain Anchors on Trolley and Corner Construction on Feeder Cables Are Features

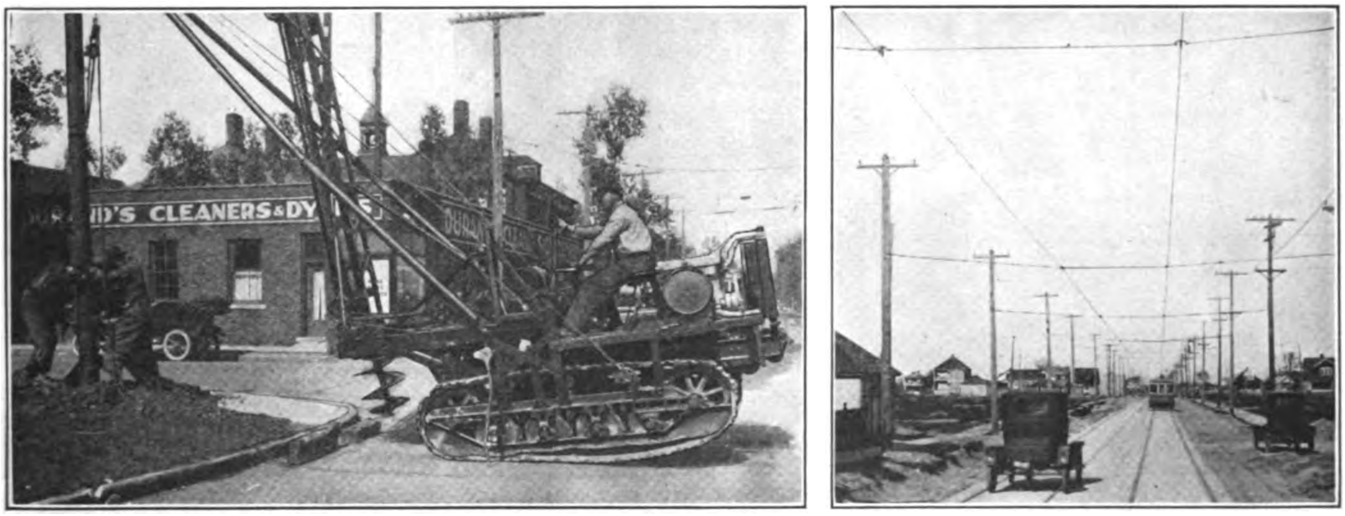


TYPICAL APPEARANCE OF THE OVERHEAD AT SPECIAL WORK LOCATION, SHOWING BACKBONE CONSTRUCTION

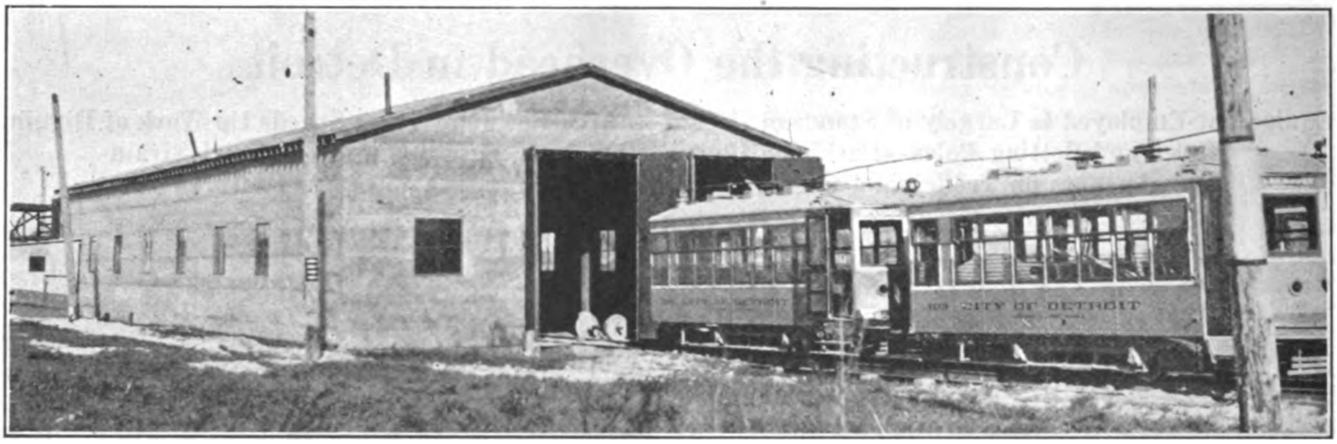
ADHERENCE to the use of standard fittings and materials, substantial and permanent nature of the construction and the use of labor-saving devices and methods characterize the overhead work of the Detroit Municipal Railway, just as they were pointed out in an article in the issue of July 23, to be the special attributes of the track construction. Following the requirements of a city ordinance, tubular steel poles are used within a circle approximately 2 miles in radius, with the center at the City Hall, except where wood poles are already existing. Wherever possible, the overhead of the street railway department was supported on poles of the Detroit Edison Company or the Department of Public Works, so as to avoid the erection of a duplicate pole line. The steel poles are 30 ft. high and made up in three sections, 7 in., 6 in. and 5 in. in diameter, for tangent track and fitted with a plain cast-iron cap and a 2-ft. dog guard placed to extend 1 ft. above and 1 ft. below the ground line. The bottom section of these poles is extra heavy, the other sections being of standard thickness. For use at strain points the steel poles are made up of 8-in., 7-in. and 6-in. diameter sections. Outside of the 2-mile radius, Western red cedar class B poles of A. E. R. E. A. specifications, mostly 30 ft. high, with some 35-ft. and 40-ft. poles, are used. These poles were treated by a process including a four-hour immersion in hot creosote followed by a four-hour immersion in cold creosote.

The steel poles, which also practically conform to the A. E. R. E. A. specifications, are set in concrete 6 ft. in the ground. The wood poles are set the same distance in the ground and provided with a ring of concrete 1 ft. high at the bottom of the pole and a concrete collar at the ground line. To improve the appearance of the overhead construction where the Charlevoix Avenue line crosses East Grand Boulevard, a Massey hollow concrete pole was set on either side of the boulevard.

The No. 00 hard-drawn round trolley wire was made



AT LEFT, THE HOLE DIGGER IS ALSO EQUIPPED WITH WINCHES AND DERRICK AND IS USED TO SET THE POLES. AT RIGHT, APPEARANCE OF COMPLETED OVERHEAD ON TANGENT TRACK. POLE LINE AT THE LEFT WAS SET BY THE RAILWAY COMPANY



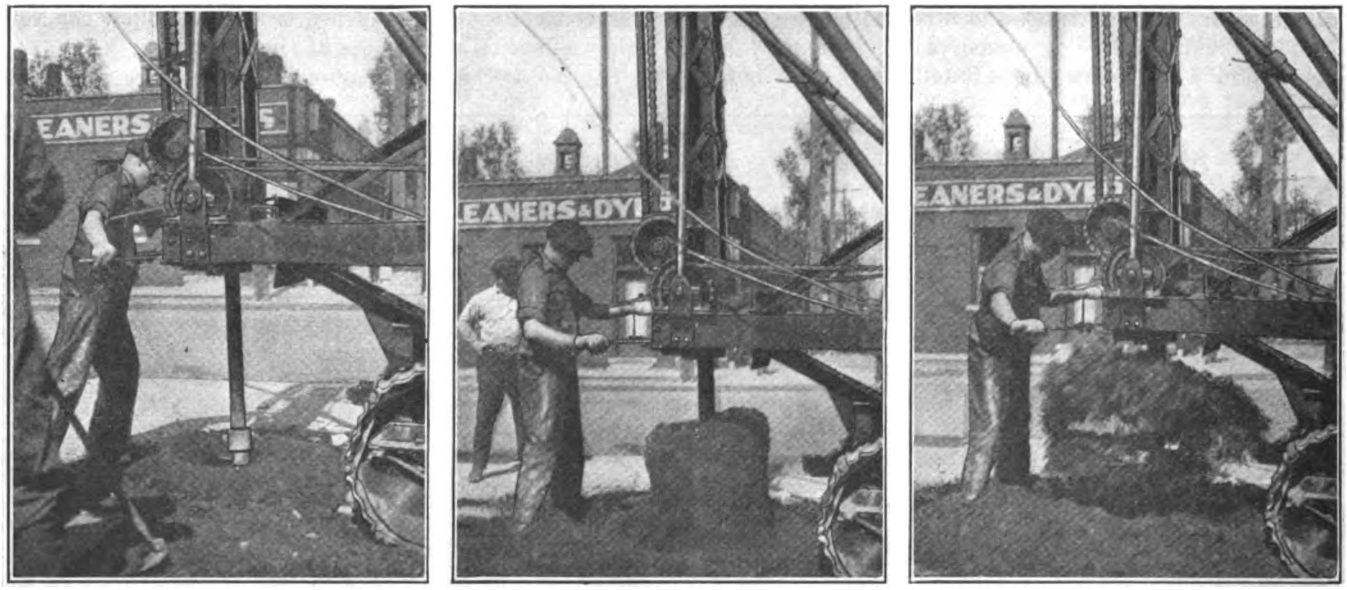
Temporary Car Shop of the Municipal System

after A. E. R. E. A. specifications by the Detroit Copper & Brass Company. This was used over tangent track and phono-electric wire over the curves. The hangers used were of the standard round top design and supplied by various manufacturers. Standard single and double curve pull-overs were employed. Porcelain strain insulators were used exclusively, for the reason that in case of breakage the loops of the span wire lock together and, while the insulation is lost, the overhead does not fall. Where the span wires are attached to wood poles double insulation is provided between the trolley and the pole by the hanger and a single strain insulator. With the steel poles, however, an extra porcelain insulator is inserted so that triple insulation is secured.

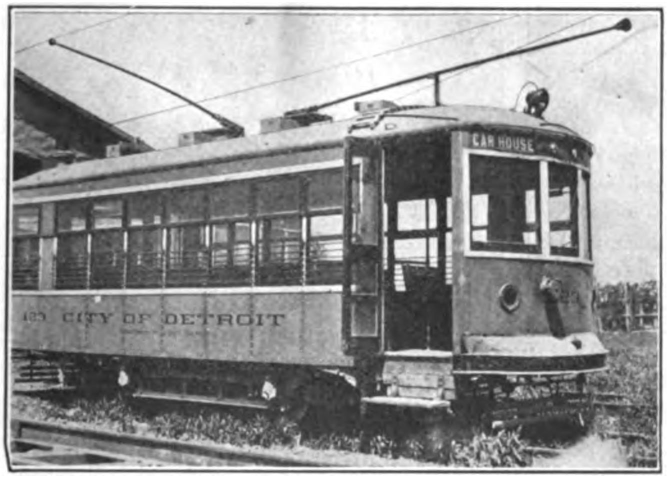
The span wire is 5/16-in. seven-strand galvanized steel and the pull-off wires are ¼-in. seven-strand steel galvanized wire. All curves are erected with a backbone construction using either ⅜-in. or ½-in. seven-strand galvanized steel wire, depending on the strain at the particular location. By using this backbone construction all pull-offs are placed radially and "pockets" in the overhead work avoided. Up to the time of this writing the overhead construction had been done with the use of an ordinary stationary platform tower mounted on a motor truck. This was taken down at night in order to drive through the streets with safety. Orders have been placed, however, for one 2½-ton truck equipped with a Trenton tower and one 4-ton platform truck on which a winch will be mounted, for use in the further construction work. All of the trolley and span wire was strung under a definite tension measured by dynamometer, and all poles were set with a plumb bob and given a rake of 1 ft., measured at the top.

A feature of this Detroit overhead construction was the use of a new anchor strain plate designed by the General Electric Company and its location at mid-span, It is shown in an accompanying picture. One of these plates is installed on each trolley wire and the two are connected with two lateral wires having strain insulators at the middle point and terminating in a ring outside the trolley wire. These rings are then guyed by diagonal wires running to the four poles of that span. At the present time these strain anchors are installed only at the approaches to curves, but it is planned to install them on tangent track every 1,000 ft. later on. As the strain plates are installed at the middle of a span, the anchor may be installed at any time without disturbing the construction already in place.

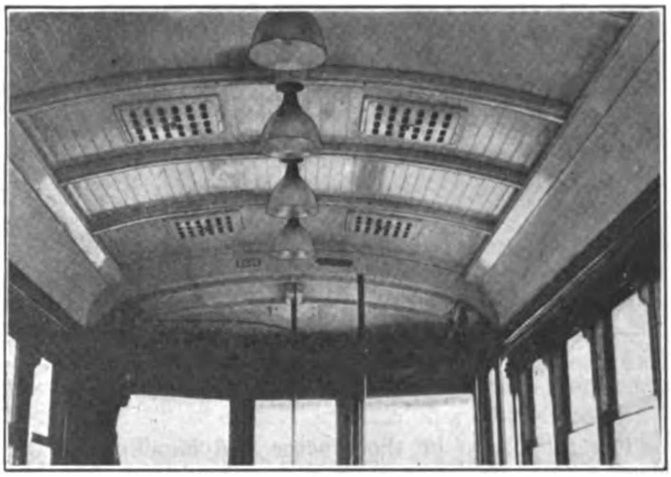
The 500,000-circ.mil feeder cable, where it is installed, is carried on an insulator mounted on a Way insulator pin which loops over the cross-arm so that the only hole made in the cross-arm is that for the through-



At Left, Digging a Pole Hole. The Auger Is Rotated and Forced Downward. In Center, Rotation Stopped and Auger Being Raised to Lift Soil Out of the Hole. At Right, Spinning Auger to Remove Soil Which Is Thrown Around the Outside of the Hole



TYPE OF CAR BEING USED ON THE DETROIT MUNICIPAL LINES



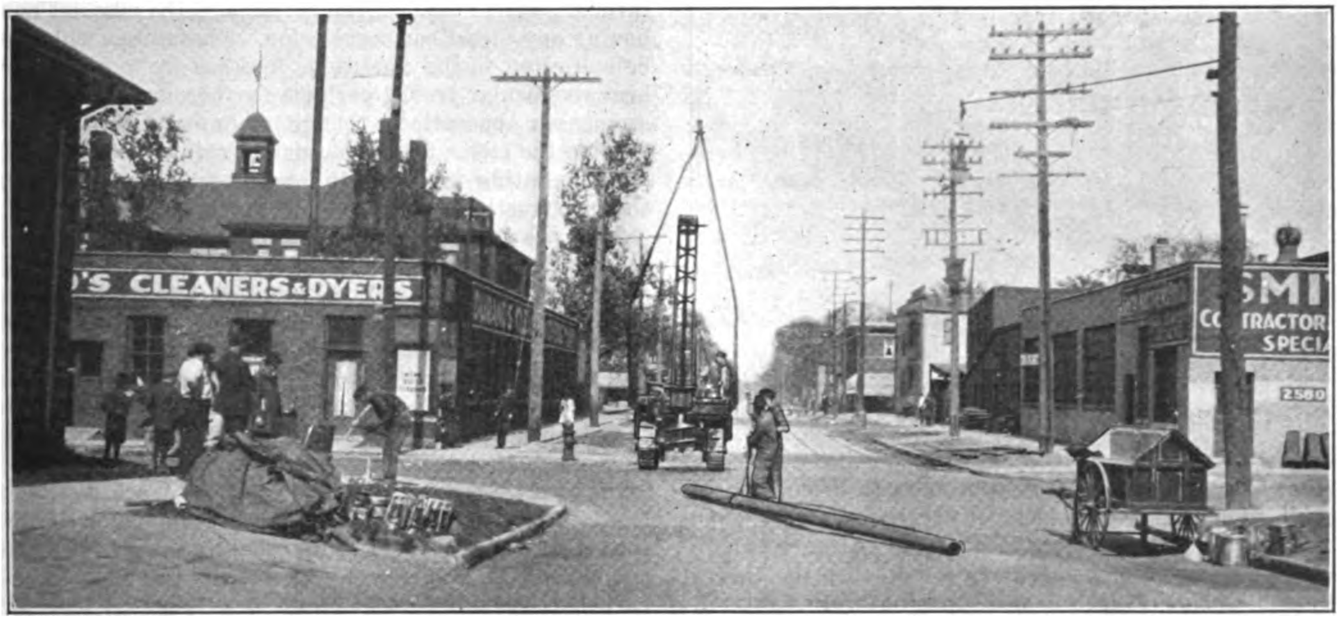
THIS SHOWS THE ROOF CONSTRUCTION AND LIGHTING ARRANGEMENT

bolt fastening at the pole. A unique system of making short turns around corners with the feeder cable has been adopted. Instead of the cable being carried around the turn continuously, it is cut and stub-ended in the two directions, one piece being installed higher than the other at the corner. A piece of the cable is then installed vertically between the two and connected to them by Dossert connectors pulled up tight with a wrench and taped. Accompanying views picture this construction.

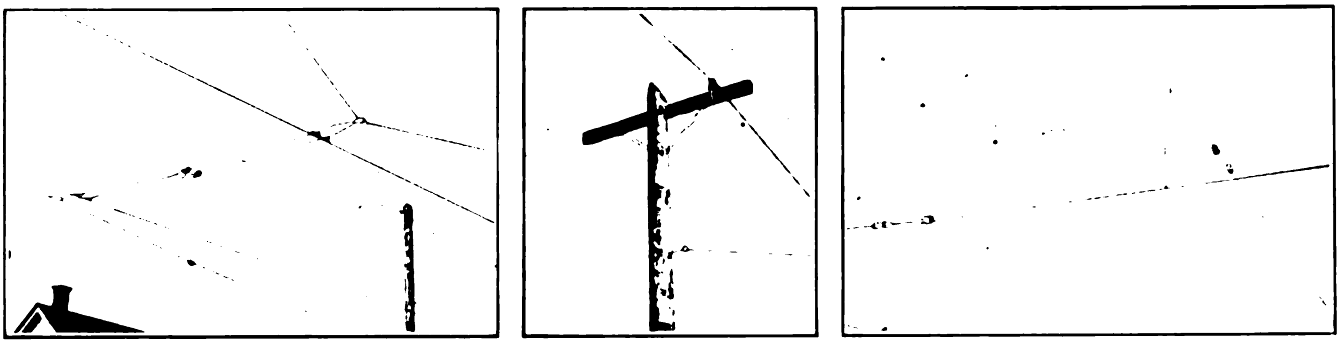
The cross-arms are Washington fir and the braces and other pole-line hardware are of standard A. E. R. E. A. design. The feeder cable is of standard triple braid weatherproof stranded copper with No. 0000 feed-in taps. No negative feeder has been installed as yet except that making connection from the nearest point of a car line with the Detroit Edison substation, from which direct-current power is purchased. As already noted, however, the trackwork is being very thoroughly bonded, with a view to the ultimate use of a completely insulated negative return system, following recommendations of the Bureau of Standards.

Perhaps the most interesting phase of the construction work in connection with the overhead is the labor-saving machine used in digging holes and setting poles. Two earth-boring machines equipped with winches and derrick, manufactured by the Winthrop Truck Company, and distributed by the Western Electric Company, are used for this purpose. The following is the procedure in using this machine, and the various steps are clearly pictured in accompanying illustrations.

The machine is mounted on caterpillar tractors and of course is self-propelling. A pole to be set is first snaked by the tractor to a position close to the hole. The operator then runs the machine into a position such that the 24-in. auger is directly over the point at which a hole is desired. It should be said in passing that this tractor will go anywhere, over curbing, over open trackwork and, like the army tanks, seemingly knows no obstructions. With the machine properly set, the auger is lowered, revolved and forced into the ground approximately 2 ft. until the auger is filled with earth. The rotation is then stopped and the auger raised above the hole and spun. This throws the dirt out centrifugally around the edge of the hole. The auger is again lowered and the hole drilled about 2 ft. farther into the ground and the operation repeated. A hole may thus be dug 8 ft. deep if desired, the depth to which the Detroit pole holes are bored being 6 ft. When the hole is dug the machine backs away slightly, picks up the pole and, with two men to guide it, lowers it into the hole.



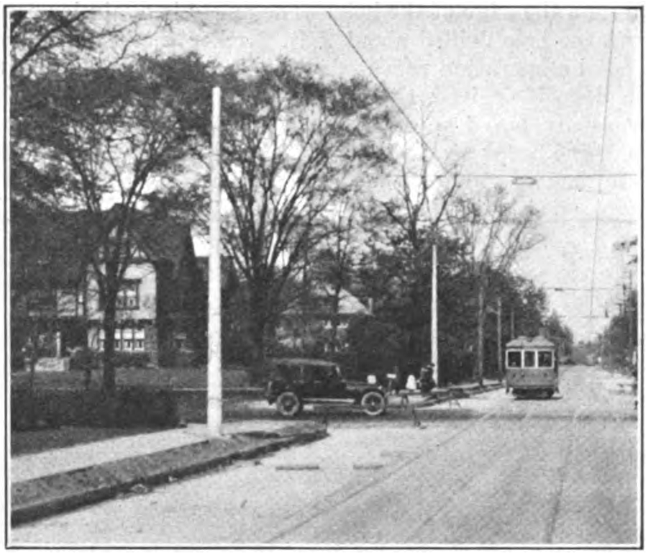
EARTH BORING MACHINE AND TRACTOR DRAGGING POLE INTO POSITION ADJACENT TO HOLE



AT LEFT, NEW TYPE OF STRAIN PLATE MOUNTED AT MID-SPAN WITH GUYS TO THE FOUR POLES OF THE SPAN. IN CENTER, TYPE OF POLE, CROSSARMS AND HARDWARE EMPLOYED. FEEDER CABLE LOOP INSULATOR PIN WHICH AVOIDS A HOLE IN THE CROSSARM. AT RIGHT, DEAD-END METHOD EMPLOYED IN MAKING SHORT TURN OF THE FEEDER CABLE

The propulsion of the tractor and handling of the derrick are controlled from the operator's position on the machine. The rotation and raising and lowering of the auger is controlled from levers extending in front of the machine by a man who stands on the ground. On speed tests, the hole has been dug and pole set in two minutes. This ordinarily requires about four minutes. Including the time required in moving from one position to the next, a pole may be set about every ten or fifteen minutes. This, of course, does not allow for breakdowns, which always occur with any piece of machinery subjected to very heavy duty and rough handling. The machine is served by four men on the average.

At present all power used by the municipal railway is furnished by the Detroit Edison Company. What the future power supply will be depends on the working out of the study being made by the Public Lighting Commission to determine the advisability of building a large new modern steam plant of sufficient capacity to handle the street lighting and lighting of public buildings and the railroad load, to displace the present small steam plant used for street lighting and the lighting of public buildings alone. So the railway department is confronted with the problem of arranging for a temporary supply of energy for the next two years, and thereafter, for the permanent supply either with the Detroit Edison Company or the Municipal lighting plant. At present, the only power equipment owned by the city is the feeder plants in the Detroit Edison substations and positive and negative feeder cables connecting the lines, the power company having furnished everything else needed.



ANOTHER VIEW OF THE FINISHED TRACK AND OVERHEAD SHOWING SAFETY STOP SIGNS EMPLOYED AND CONCRETE POLES ERECTED ADJACENT TO BOULEVARDS

Outside of the streets already occupied by the Detroit United Railway, Detroit is miserably laid out for a street car system. The streets are very narrow, the blocks short and few streets run through, thus making necessary many sharp curves, including frequent reverse curves at points where there is a jog in the street. Sufficient clearance for the passing of safety cars on the curves has been secured, but if the large Peter Witt type cars are later used, the vestibule platforms will have to be narrowed in about 7 in. to give proper clearance. Some of the short, sharp reverse curves make this matter of clearance a difficult problem. Some of the routes are necessarily rather circuitous and some encounter many grade crossings with steam roads, main line and switching yards.

These various things will tend to make operation difficult and slow and somewhat hazardous. The city is making an effort to remedy these conditions as far as is practical by engaging in a great street widening campaign, coincidently with the railway construction. Most of the streets on which car lines are being built are either only 26 ft. or 34 ft. wide. These streets are being widened to 36 ft. and 40 ft., this work usually following along after completion of the track. The widening and paving of some of the streets in which new car lines are being built will open up badly needed through, short cuts between sections of the city not now having any direct communication. These lines will thus be subjected to the conditions imposed by more or less heavy vehicular traffic, perhaps further impeding rapid street car operation, though helping materially to develop the city. So the municipal railway officials will have operating problems to keep them interested after the construction work is done.

The cars in use and purchased thus far (300 in all) are divided 250 of the standard one-man safety type and fifty of the Peter Witt type. The present cars are equipped with Woods locked fare boxes and air-operated International registers, center lighting, Nichols-Lintern indicating signals, headlights mounted on the roof and an electrical interlock making the car inoperative if both trolley poles are on the wire. Some complaint has been made that the cars were noisy, and this has been attributed by some to the rigid type of track construction. An investigation with some experiments showed that the noise could be materially lessened if some sound-deadening material was put in the roof of the car, there being no head-lining. It is expected that this trouble will be largely overcome in the cars now on order.

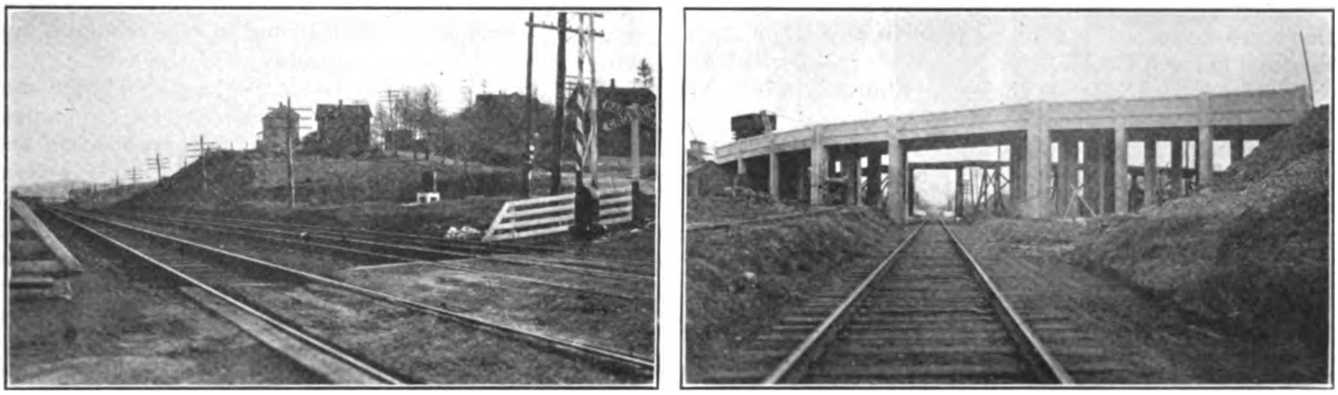
Commission Popular in Keystone State

Pennsylvania, with Its Less Rigid Commission Laws and Decisions, but with the Largest Number of Public Utilities of Any State, Is Regulating Very Effectively—Safety Work an Important Duty—Classification of Pennsylvania Utilities

STATE regulation of railroads, the usual initial step toward public utility regulation, is comparatively new in Pennsylvania, the first law controlling them having been enacted in 1907. This law created a commission of very limited powers, lacking in the main the final orders mandatory for railroads and giving but little jurisdiction in many important phases of railway regulation until strengthened by later amendments.

The law controlling railroads was in many respects copied from other railroad commission laws and resembled closely the law of Wisconsin, which had been in active use for several years. Later, necessity arising, the Legislature of Pennsylvania completed another law, regulating at this time not only railroads but all public service companies. This law in effect is as follows:

> An Act defining public service companies; and providing for their regulation by prescribing and defining their duties and liabilities; prescribing, defining and limiting their powers and regulating their incorporations and to a limited extent regulating municipal corporations engaged or about to engage in the business of public service companies; creating and establishing a Public Service Commission for the regulation of aforesaid; prescribing and defining the powers and duties of such commission and its officers. . . .



AT LEFT, VERY OBJECTIONABLE GRADE CROSSING IN STATE HIGHWAY WAS ABOLISHED BY A VIADUCT CONSTRUCTED 400 FT. EASTWARD. AT RIGHT, NEW CONCRETE VIADUCT WITH TEMPORARY WOODEN TRESTLE IN BACKGROUND

For the purpose of regulating these public service companies and of carrying out the provisions of this act, the Public Service Commission was created which consists of seven members, who are appointed by the Governor and approved by the Senate, the term of office being ten years. This long term of office is an unusual feature which provides a means of securing great continuity of administration. By the usual arrangement in the first appointments of a four-year term for the first commissioner, five for the second, six for the third and so on, until the last commissioner has a ten-year period, the term of only one commissioner expires every year. Each commissioner appointed must have the qualifications set by the law, which are: He must be a resident of the commonwealth, must be an elector therein for a year before his appointment and not less than thirty years of age. Neither shall he be connected directly or indirectly with any business, employment or vocation the duties of which are incompatible with the duties of his office, nor shall he participate in any hearing or proceeding in which he has any pecuniary interest.

The personnel of the commission consists of seven commissioners as follows: William D. B. Ainey, chairman; James S. Benn, Samuel L. Clement, Jr., S. Ray Shelby, John W. Reed, John S. Rilling, Milton J. Brecht.

The secretary of the commission, John G. Hopwood, under its direction, is the executive officer, besides having jurisdiction over the remainder of the staff, preparing and issuing its determinations, rulings and orders.

The Attorney-General of the Commonwealth is ex-officio general counsel of the commission, appointing two attorneys as counsel and assistant counsel. These are Frank M. Hunter and John Fox Weiss respectively. The duties of the counsel are to attend hearings before the commission, conduct examination of witnesses and represent the commission in the courts as well as to perform all other professional duties required of them by the commission.

The staff of the commission is subdivided into six bureaus, namely:

Engineering under Chief Engineer F. H. Snow; accounts and statistics under R. F. Busher; accidents and safety under John P. Doheney; rates and tariffs under P. F. Fickenscher; public convenience under Major E. M. Vale; and a law department under Counsellor Frank M. Hunter.

POWERS AND DUTIES OF BUREAUS

Engineering—The chief duties of the engineering bureau are to make strict investigations and act in an advisory capacity, reporting directly to the commission on all assigned subjects. By law several valuations are required, such as original cost, reproduction value less depreciation and such other valuations as are deemed necessary by the bureau.

In connection with this work this bureau has developed a system of engineering conferences for the purpose of saving the time of the commission and expediting the work. At these engineering conferences, made up of engineers representing the interested parties before the commission and presided over by an engineer representing the commission, questions of the inventory and appraisal are discussed item by item and if possible agreed upon. If agreement is not possible, the differences are noted and called to the attention of the commision or are left open for the presentation of testimony at the hearings. The results of these conferences are presented to the commission in the form of a signed report, enumerating in detail the items concerning which agreement was reached. This procedure has been found to reduce very materially the amount of testimony offered at the formal hearings with a consequent reduction in the volume of evidence to be considered by the commission, as well as a reduction in time required for the hearings.

The question of service is incorporated under the bureau of engineering and the standards to be conformed to are set, not by law, but by precedent cases. Service complaints are thoroughly investigated and remedied according to the discretion of the bureau.

Accounts and Statistics—Strict classification of all public service companies with a particular system of accounts to be adopted and used by each class, according to the volume of business transacted by the company, is the chief activity of this bureau. The issuance of reports, forms, cost data and the filing of all data compiled by the commission in its official business constitutes the remainder of this bureau's work. The amount of business transacted by this department is exceptionally heavy since in the State of Pennsylvania there are more public utilities than in any other state, the total being 3,750.

Accidents and Safety—Under this bureau is included all regulation and inspection of safety devices for every kind of public service company as well as all reports pertaining to accidents and their causes. Grade crossing improvements must be approved by the commission as required by law, and since the road-building program of the state increases yearly the amount of grade crossing work is very large.

Under this department comes also the following: Inspection and approval of interlocking systems, signaling devices, methods of construction and inspection of power lines, especially overhead crossings.

Valuable statistics are compiled by this department concerning accidents but these are withheld from public inspection except by permission of the commission.

The bureau of accidents receives approximately 15,000 reports yearly relating to accidents of a public service character, all of which are tabulated and examined with a view toward suggesting a possible remedy for a recurrence of collisions, etc., under similar conditions. Particular attention is paid to accidents occurring at grade crossings of steam railroads. Records show that there are 11,720 public crossings in Pennsylvania, and while the commission is moving as rapidly as time and money will permit in bringing about eliminations, it will be many years before the dangerous grade crossings will have been eliminated.

The advent of the automobile introduced a factor in grade crossing accidents of considerable consequence, as may be observed from the fact that 429 automobiles were struck at these places during the year 1920, and that in one month of the present year automobiles were involved in thirty-four of the thirty-seven collisions with trains. There is no doubt of the existence of crossings surrounded with dangerous conditions, and there is no doubt that in many cases the recklessness of the traveler over the crossing is responsible for the disaster.

Under the direction of this bureau the advance warning signs adopted by the American Railway Association are being placed 300 ft. from each crossing. The railroads are providing the signs free of charge with the understanding that the municipalities erect and maintain them. The expectation is that before the end of the year these warnings may be seen on all the highways in the state.

SOME PECULIAR ACCIDENTS OCCUR

In the course of its work the commission occasionally deals with accidents of an unusual and peculiar kind. In one instance two street railway passengers in different cars traveling in opposite directions were leaning out the windows; their heads bumped and one of the men was instantly killed. A few years ago a fishing rod carried by a minister of the Gospel came in contact with an electric wire with fatal result, and was it not the irony of fate to find a dead tramp in a railroad wreck with nothing in his pockets but four-leaf clovers?

Public Convenience—This department constitutes a very important factor in the commission's work, for through it pass the applications for incorporations or right to do business.

To the bureau of public convenience there have been assigned by the commission, under the public service company law, all proceedings relating to the issuance of certificates of public convenience and certificates of valuation, evidencing the commission's requisite approval under the various provisions of the act.

These proceedings consist of contracts between municipal corporations and public service companies; incorporation of utility companies; reorganization and amendment of charters of such companies; sale, assignment, transfer, or lease of the property of the public service corporations; consolidation and merger of public utility companies; acquisition or construction by a municipality of a public service plant; acquisition of the right, title, or interest in the stock and bonds of other public service corporations; construction, alteration, and relocation of any crossing at grade, above grade, or below grade at a point where the tracks of a railroad or street railway cross any public highway; valuation of the property and assets of public utility corporations; right of foreign public service companies to do business in the State of Pennsylvania.

PASSES ON CONTRACTS AND FRANCHISES

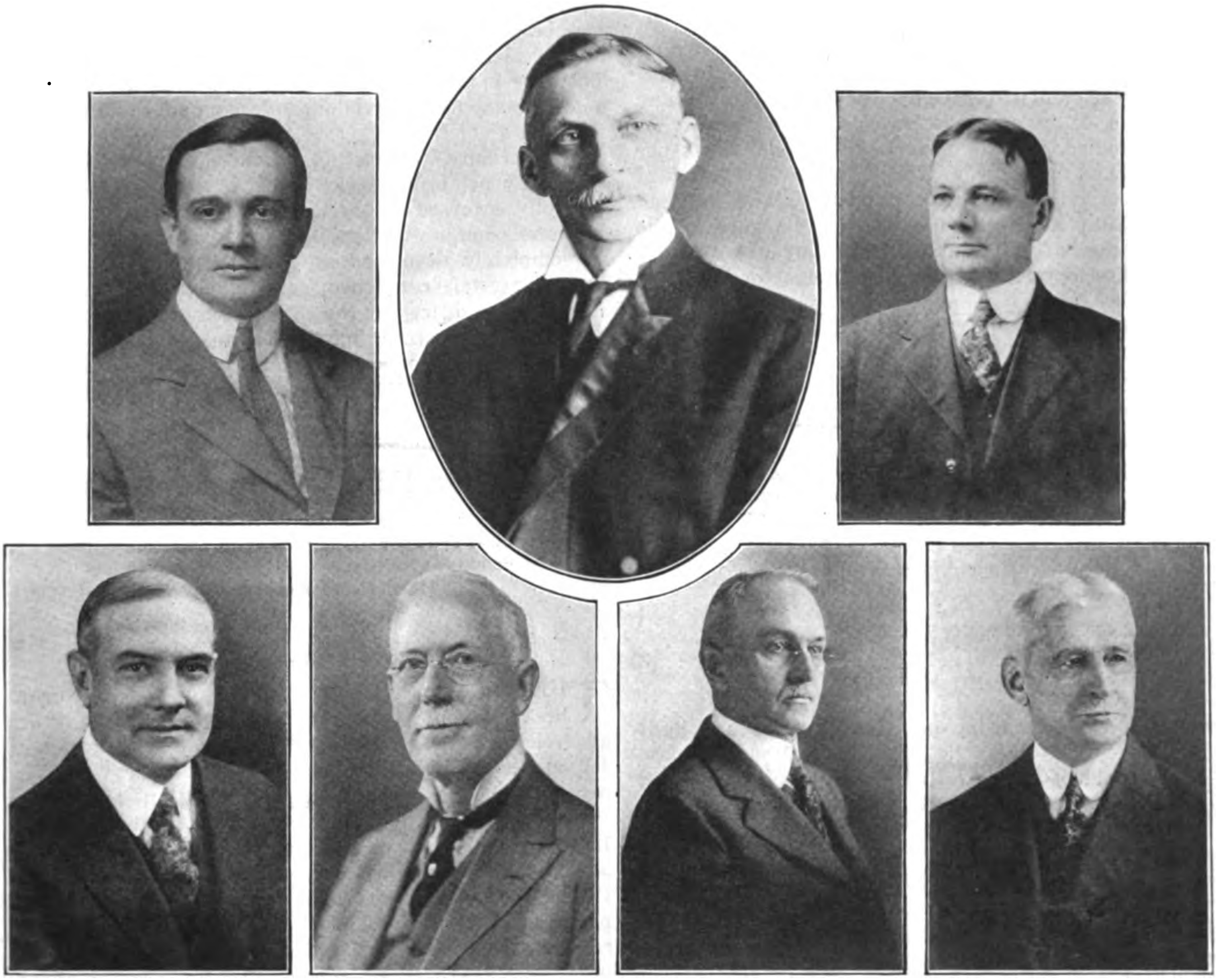
The character and scope of such proceedings directly under the supervision of the bureau may be better illustrated by the following statement of the cases submitted during the year 1920:

134	Service contracts. (Entered into between utility companies and municipalities.)
95	Franchise contracts.
132	Incorporations.
10	Mergers and consolidations.
137	Leases and sales.
116	Railroad and railway crossings.
681	Motor transportation, or taxi transportation, lines.

The policy of the commission, as sustained by the Appellate Courts of the State, has been not to approve a franchise contract which fixes the rate to be charged by a utility company, it being held that, under the public service company law, the commission has exclusive jurisdiction to fix rates which a utility shall charge; and that, under the police power, the state has the right to delegate to the commission such power.

On auto transportation lines, the commission has adopted the policy of not approving applications of that nature where existing and operating common carriers are furnishing service which adequately and conveniently accommodates the public.

In crossing proceedings, the commission follows the well-established principle, as laid down by the courts of the state, namely, that no grade crossing over a public highway by the tracks of a railroad or street railway will be approved, unless the testimony clearly establishes an imperious necessity and the fact that no construction than that at grade is possible. A large number of the crossing proceedings filed during the past year were for the abolition of dangerous grade crossings, or the construction of industrial sidings across public highways to serve manufacturing plants. In every case where the commission approves a grade crossing, such approval is made subject to conditions which, in the opinion of the commission, protect and safeguard the public.



MEMBERS OF THE PENNSYLVANIA PUBLIC SERVICE COMMISSION
Top row, left to right, Samuel M. Clement, Jr.; William D. B. Ainey, chairman; S. Ray Shelby. Bottom row, left to right, James S. Benn, John W. Reed, John S. Rilling, Milton J. Brecht.

Classification of the utilities show there are twenty-seven different classes, including transportation utilities such as airplane companies, which makes an admirable provision for the future. The present commission allows this department no jurisdiction over municipal utilities but only gives it power over those privately owned, a feature differing radically from most state commissions. Jitney regulation was established in this state among the first.

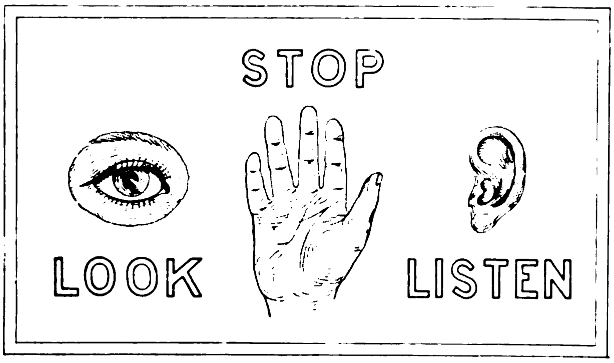
Meter testing and calibration for both utilities and their consumers are problems which have been undertaken to widely varying extent by the different state commissions. In many instances these tests are required of the utilities themselves. In Pennsylvania a very complete laboratory has been equipped for this purpose under the direction of H. B. Pratt. A building near the Capitol in Harrisburg has been adapted for this purpose, in which two floors are devoted to a very complete installation of electrical generating and testing equipment. Several independent forms of electrical energy are provided from remote-controlled motor generators located in the basement of the laboratory. Elaborately appointed testing benches provide facilities for rapid connection and calibration of all types of measuring instruments and meter transformers. All calibrations are referred back to the standard cell and potentiometer, while current transformers are tested by the Brooks method, using two wattmeters. Portable Edison storage batteries of large capacity are used for direct-current calibration. Another battery of larger capacity forms part of the equipment and floats upon the direct-current supply busbars.

The law in Pennsylvania provides for tests of utilities standards only. This plan is, of course, open to some objection, since the consumer has no unbiased source of testing. However, the standards of the utilities are kept in accurate calibration by periodic tests and adjustments in the laboratory of the commission, and such companies are encouraged to install laboratories and follow up consistently the testing of consumers' meters. In Philadelphia and Pittsburgh, where the laboratories are more complete, the standards are calibrated under the supervision of a representative of the commission without making use of the Harrisburg equipment.

Elaborate card catalog records of all meters tested are maintained in the laboratories of the commission at Harrisburg.

RATES AND TARIFFS

The scope of this department is very large, embracing the entire fields of rates, complaints against rates, and reparations or excess fare awards. The number of tariffs handled in this department totals 2,000 per month. This totals over 170,000 since 1914, divided as follows: Railroad tariffs, 140,000; street railroad tariffs, 2,391; other utilities, 30,000. In spite of the preponderance of railroad tariffs the amount of work on non-railroad tariffs is the largest due to details of appraisals and accounting in railway, power and light utilities.



SUFFICIENTLY UNIQUE TO ATTRACT ATTENTION. WILL IT PREVENT ACCIDENTS?

In the field of street railway operation all cities in Pennsylvania charge more than 5 cents for fares, the only exception being in small towns where the people would walk otherwise.

The commission cannot suspend rates but in place of that action excess fare tickets or reparation awards are substituted. This department also has direct control over sales and mergers of utilities but, illustrating a unique feature of the commission, it has no power to control stock and bond issues.

The approval of the commission is not necessary to change rates, providing the previous rate was not ordered by the commission, and an ample notice of thirty days' time is given so as to allow for complaints in case of a new rate.

CLASSIFICATION OF UTILITIES IN PENNSYLVANIA

Repair shops	16
Auto transit companies	38
Canal and navigation companies	3
Electric light, heat and power companies	227
Ferry companies	25
Artificial gas companies	76
Natural gas companies	115
Gas and electric companies	12
Inclined plane companies	5
Pipe-line companies	12
Municipal sewage treating works	14
Steam heating companies	18
Steam railroads	130
Electric railway companies	114
Telephone companies	196
Toll bridge companies	196
Turnpike companies	72
Water companies	711
Miscellaneous	5
Total	1,820

CONCLUSION

Conference with Hon. W. D. B. Ainey, chairman of the commission, and one of the leading railway commissioners of the country, emphasized the significance of the Wilkinsburg Electric Railway case as a precedent for future decisions involving local municipal franchises. No railway may, of course, enter the streets of a city without consent of the municipal authorities. Consent may be granted or withheld for no good reason and the rate of fare is often seriously involved in such a grant. The case in question, supported as it was by Superior and Supreme Court decisions, offers an adequate remedy for such a condition.

Furthermore, the statute to the effect that corporations may not issue stocks or bonds except for cash is carefully enforced by the commission.

Commission regulation in Pennsylvania, though not as completely developed as in other states as far as rigid control is concerned, certainly has been a great success as evidenced by the enthusiasm of the companies affected. It appears to have not so many bitter enemies as are found in some other states, which can be probably attributed to the just and fair administration of the state's laws.

Merchandising Transportation

A Talk on the Principles of Advertising for the Promotion of Traffic—The Principles Sought in Drafting Advertisements Are Given and Typical Advertisements Are Reproduced

BY W. H. BOYCE
General Manager Beaver Valley Traction Company, New Brighton, Pa.

THE real object of advertising is to sell. It may be to sell an article, an idea or a service. If an advertisement designed to sell street car rides does not sell street car rides, no matter what other virtue it may have, it is a failure as a transportation sales force.

Advertising is the thing that should make our trade increase. Printed matter is not the only kind of advertising. Every act of each employee is an advertisement. Reputation, honesty, politeness, methods, neatness, promptness, and thoroughness are advertisements. The quality, price, frequency, your aggressiveness, everything is an advertisement—either good or bad.

The most convincing—not the loudest—advertisement wins.

One of the best advertisements for street railways is to be found in the good impression carried away by the car riders and reported to their friends and their neighbors.

Advertising directly to increase the sale of transportation has been conducted as far back as 1917 by the company with which the writer is connected. At that time the Beaver Valley Traction Company ran advertisements of the nature of those shown on the opposite page.

Since that time, advertisements along the same line, samples of which are also presented on the opposite page, have been effectively used from time to time by the company.

We Are Selling Street Car Rides

When we advertise our business we do so to simplify the selling of our product—street car rides. This is obvious, but the way in which we advertise and how this advertising benefits our customers is decidedly important, as it is an integral part of our "rapid transit merchandising" policy, carefully planned and effectually carried out. With us it is not a case of too many brands of the same article or too many "slow sellers." No, indeed! On the other hand, we concentrate on the highest grade of rapid transit service, including the "last word" brand of street cars and a most generous ride for which we charge you only a

5-Cent Piece

Service

Do You Know:

That service is the only thing we have to sell?

That while increased cost of labor, fuel and material has added greatly to operating expenses the last year,

You May Ride as Far for 5 Cents Today as You Did Before We Were Obliged to Meet This Additional Expense?

We Will Carry You Farther for a Nickel Than Any Other Method

Ever think of it before? No other method of transportation will carry you as far for so little money as street railway lines. Think of the distance from Morado to Junction Park, for instance, 6 miles for 5 cents.

It's cheaper than railroads, automobiles, horse and buggy or even shoe leather.

Yet we carry daily hundreds this distance, who never stop to consider this fact.

Think It Over

What Is Street Car Service?

Street car service is not altogether a matter of rules and regulations—not only a matter of cars operating through your streets.

Street car service is a human understanding of your needs, and the ability to meet those needs to your complete satisfaction.

We want to know more of your needs and attend to them for you.

Won't you write and tell us what you want or need?

Typical Display Advertising Announcement by Beaver Valley Traction Company

Personally, we never have been and are not now inclined to the belief that billboard advertising for the merchandising of transportation would be as productive as newspaper advertising, car cards, company publications, and circular letters.

Railway advertising must be of the positive and not of the negative kind. If we are honest with our employees and the public, we do not have to waste a lot of time trying to recall a lot of our former statements; hence, we can devote all our thoughts and energy, when dealing with the public, to the selling of our goods.

Statements to our employees and to the public should be easily understood. We must make good on every promise, stated or implied. Only in this way can we gain the confidence of the people with whom we are dealing, and without confidence we cannot be successful.

Don't forget that the human element is the one great thing sought for, or aimed at, in selling campaigns.

True economy uses opportunity. It does no one any good to save a little money if by so doing he sacrifices a more valuable opportunity. Each of our street cars in operation offers you an opportunity to economize time and money. We suggest that you improve the opportunity.

"Shop" for the dealer as well as the article. If you could get a 5 per cent reduction in the price of an article by going a block farther down the street, you would be inclined to go to that much trouble. Do you know that the actual intrinsic value of the service that the Beaver Valley merchant is able to render, by reason of his proximity, is often worth more than the 5 per cent? Try our local merchants. They will make good on price, quality and service.

What is "street car service"? Street car service is not altogether a matter of rules and regulations—not only a matter of cars operating through your streets. Street car service is a human understanding of your needs, and the ability to meet those needs to your complete satisfaction. We want to know more of your needs and attend to them for you. Won't you write us a letter and tell us what you want or need?

Value received. When you pay your street car fare the ride you secure is the only physical expression of the service you receive from us. The real value lies in our ability to furnish the kind of transportation you expect. There is no price on this. You get it or you do not. We want to give you a perfect or supremely excellent service. That's our ideal. If for any reason you do not get the kind of service you want and expect, won't you be kind enough to drop us a note giving the facts in the case? To be successful we must furnish the kind of service that *you* want.

Don't walk! Ride! The tired worker will enjoy his evening meal more if he rides home on the street car. Rest of body, mind, and complete relaxation comes when you ride. Walking, mind and body must be continually alert to the dangers of the street lest death or injury claim you as a victim. The saving of 5 cents won't pay many surgeons' fees or much of a doctor bill. Ride! Don't walk! Be safe!

Could the public learn by some comparison? Double the number of patrons going into any two of the largest but best-known stores in Beaver Valley in a week's time; count all the patrons of all the theaters in the country on any big Saturday; take and double the crowd at the biggest of the county fair days, and the street car conductors still have a greater number of customers daily.

In view of that do you still think that just anyone can be a conductor—a salesman of rides on these lines? The clerk who makes fifty sales a day may be good—a street car salesman sells ten to twenty times that number daily. Is there any comparison? Some stores have people to "wait on you." Good stores generally have salesmen to sell and serve you.

Our conductors are salesmen in the true meaning of the word if they meet our expectation. And, although we deal in a necessity, yet we go to greater extremes in training, checking up, ironing out, and putting on the proper finishing touch than any concern dealing exclusively in luxuries.

Just "anybody" cannot be a conductor on these lines. Our rigid tests of intelligence, education, experience, and thorough investigation cannot be withstood by any but number one Class A men. After all that, we require a medical examination of each man that insures to you and his fellow employees his freedom from any skin, constitutional, chronic or malignant disease communicable to others.

It is not fair to the service we wish to give that you should commit any untoward act that would tend to break the spirit or lessen the desire of the new employee to become a proficient conductor on these lines. Our older men are experience trained in dealing with you and it is right that you should expect and receive a complete service from them.

Ride—and get there first.

Good logic for the salesman out to see a customer.

Good logic for a housewife out with the market basket.

Good logic for the shopper on the way to the business district.

Good logic for the tired worker on the way home.

Good logic for the suburban dweller.

A ride on the street car assures safety in travel.

A ride on the street car assures a missing of the congested traffic of pedestrians.

A ride on the street car is a bracer and a rest-up as well.

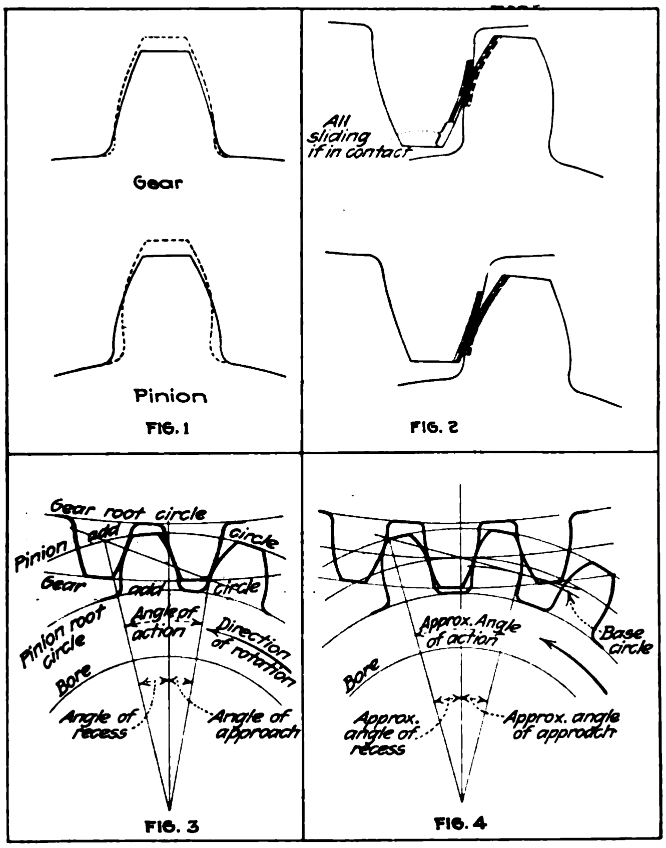
Don't walk when a ride on the street cars will save you time and energy and keep you safe.

Text of Other Advertising Announcements by the Beaver Valley Traction Company

Tooth Contour of the Helical Gear

The Various Design Features of This Type of Gear Are Explained and the Reasons for Its Superiority Over the Spur Gear Are Shown

AT FIRST it is probably not evident just why the helical gear has characteristics superior to those of the spur type. As Messrs. Phillips and Holy pointed out in their paper printed in the July 2 issue of the ELECTRIC RAILWAY JOURNAL there are several undesirable features inherent in the spur gear, although many opportunities for improvement which existed could not be utilized because the multiplicity of standards thereby introduced would nullify the benefits to be derived from these mechanical perfections. Therefore, the introduction of the helical gear for railway use automatically clears the way for manufacturers to market a gear embodying the latest development in two forms, since any interchanging of the two types is impossible. At the same time the helical gear corrects the "stepping over" action of the older type and the result is a quieter running gear that can transmit a heavier torque for a given width of face.



MESHING ACTION OF INVOLUTE AND HELICAL GEARING

Fig. 1—Sections of gear and pinion teeth of both helical and spur gears. (Full line is the helical.)

Fig. 2—Illustrating the relative amounts of rolling and sliding action. (Above, spur; below, helical.)

Fig. 3—The angle of recess is greater than the angle of approach with the helical gear.

Fig. 4—With the spur gear the two angles are approximately equal.

The accompanying drawings show how the tooth contour and the meshing action of the two types vary. It can be seen from the full outline in Fig. 1 that the tooth of the helical gear is substantially stronger at the base than the old 14½-deg. tooth. The strength of this new tooth is approximately 200 to 250 per cent of that of the spur-gear tooth. This is true not only because there is more metal at the base, but also because the tooth is shorter and consequently the moment of the forces acting on it is less.

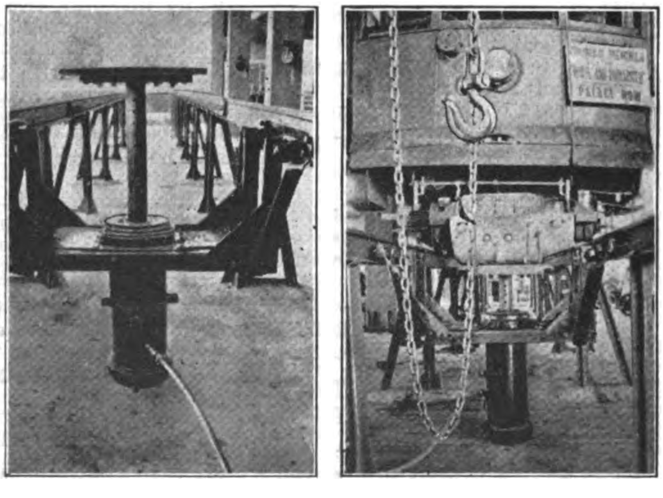
From Fig. 2, the amount of rolling that is obtainable on the new tooth form is illustrated. Small black and white squares indicate the length of tooth contour that mate together. For instance, a length of contour on the gear face equal to the first square starting at gear tip rolls and slides with a length equal to that of the last square on the pinion flank, etc. This shows relative lengths of involute contour for mating gears.

Over the entire face the rolling action of the new tooth form varies from 55 per cent to 70 per cent pure rolling as against approximately 40 per cent for the 14½-deg. spur tooth. This is an increase of about 50 per cent in rolling contact. The cause of this is partly due to the 14½-deg. tooth contour being necessarily corrected for interference, undercutting and methods of manufacturing, whereas the new tooth contour is involute throughout, partly due to increase in pressure angle. From this feature alone there is a decided improvement in uniformity of velocity ratio and smoothness of operation when first installed. As the bearing wears, these advantages over the 14½-deg. contour become even more pronounced.

In Fig. 4 showing the angle of action of the ordinary spur gear it will be noticed that the angles of recess and approach are approximately equal. In helical gearing a better design has been obtained by the use of a long and short addendum, *i.e.*, a long addendum on the pinion and a short addendum on the gear. The benefit derived from this is well understood to the trade and is due to the increase in angle of recess and decrease in angle of approach. The effect of this is to reduce friction and aid in smoothness of operation as the friction of the arc of approach is greater than that of recess. The design as shown in Fig. 3 is such as to secure an angle of approach approximately 70 per cent of that of recess. It will be noted that stubbing the tooth somewhat slightly reduces the total angle of action for the new tooth form, but this is more than counteracted by the added angle of action due to the helix angle.

Convenient Type of Pit Jack

ACCOMPANYING illustrations show a homemade pit jack which was constructed in the shops of the Northern Texas Traction Company and which is giving very satisfactory service. The pits in this shop



PIT JACK WHICH ROLLS ON THE RAIL FLANGES. THE BOTTOM HALF OF A MOTOR IS LOWERED WITH THE ARMATURE IN IT TO FACILITATE REPAIRS are of the open type and the pit jack is arranged so that it rolls along on the inside of the rail. The frame is constructed of 3-in. channels with 3/16-in. corner gusset plates. The rolling elements are made of No. 408 ball bearings that have pitted balls, which make them unfit for other service. The cylinder has a side adjustment of 12 in. and the plunger or push rod has holes drilled 1 in. apart. This allows a ½-in. pin to be inserted at any desired height as a safety feature. The top has a minimum height of 3 ft. 2 in. and a maximum lift of 5 ft. 7 in.

Portable Substation with Collapsible Construction

A Standard Flat Car Provided with a Superstructure Which Can Be Readily Removed Enables Heavy Parts to Be Handled by Cranes

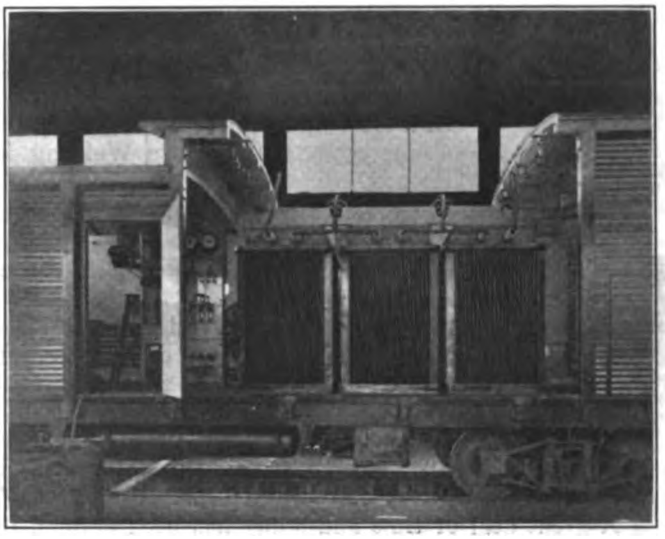
By F. J. Foote

Superintendent of Power Ohio Electric Railway

The accompanying illustrations show a 500-kw. portable substation, which has recently been constructed by the engineering department of the Ohio Electric Railway and which has now been placed in service near Springfield, Ohio. The chief feature of the construction lies in the fact that portions of the roof and sides of the car can be readily removed, thus enabling the heavy parts of the equipment to be reached by crane or derrick. This makes rapid repairs possible and also reduces the cost of such repairs when compared with what would be necessary for a portable substation of the usual type.

One of the company's regular steel underframe flat cars was used and the superstructure built on this, the side posts being placed in the stake pockets along the sides of the car. The type of construction used and the location of the apparatus can be readily seen in the accompanying illustrations.

The construction of the high-tension and direct-current choke coils has some rather unusual features. The high-tension choke coils are made of No. 2 solid bare copper wire and consist of twenty-five turns 15 in. in diameter on a ¾-in. spacing. Each coil is held in shape by three wood clamps running the full length of the coil. The direct-current choke coil is an extra large one, 30 in. in diameter, and consists of ten turns of 400,000 circ.mil covered cable. This is also held in shape by wooden clamps. This direct-current choke coil is placed on the roof of the car and all parts were made in the company's shops.

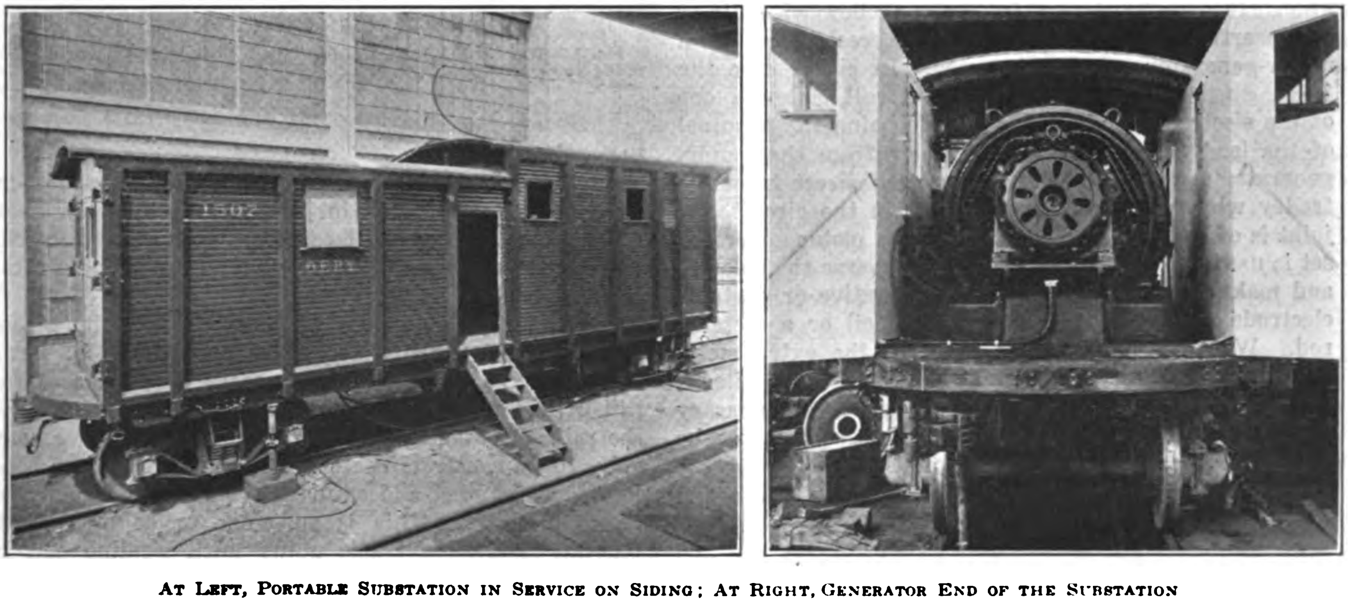


Transformer Section with Portions of Side and Roof Removed

The equipment of this portable substation consists of a 500-kw., six-phase rotary, three 200-kva., 26,000-volt to 390-volt, oil-insulated, self-cooled transformers, a two-panel switchboard, gap-type lightning arresters and choke coils.

Type of Interurban Car for Germany

In describing some design and structural features of a type of interurban car recently purchased by a railway in Germany, *Engineering Progress* says that despite materially greater strength, it has been found that iron bodies which are designed as a beam of large cross-section are lighter than wooden ones. The fault of the cars built of wood was that none but the longitudinal beams were used to support the body. The cars with bodies having a wooden framework weighed from 19,000 to 20,900 lb., while the steel bodies weighed no more than 17,300 lb. This meant a saving in weight of from 1,700 to 3,600 lb. The steel car has given excellent satisfaction.



At Left, Portable Substation in Service on Siding; At Right, Generator End of the Substation

Successful Use of Welded Joints in Baltimore

Notable Immunity from Broken Joints Has Been Experienced in Baltimore, Where the Welding Is Not Carried Across the Entire Width of the Joint Plate

By W. W. Wysor
Chief Engineer United Railways & Electric Company of Baltimore

OF PARAMOUNT importance and interest since the beginning of railroads has been the question of joints. The joint not only determines the life of the rail but, in street railways, is responsible for a very large proportion of the maintenance charges on track and paving, as well as being a factor in accidents and the up-keep of rolling stock.

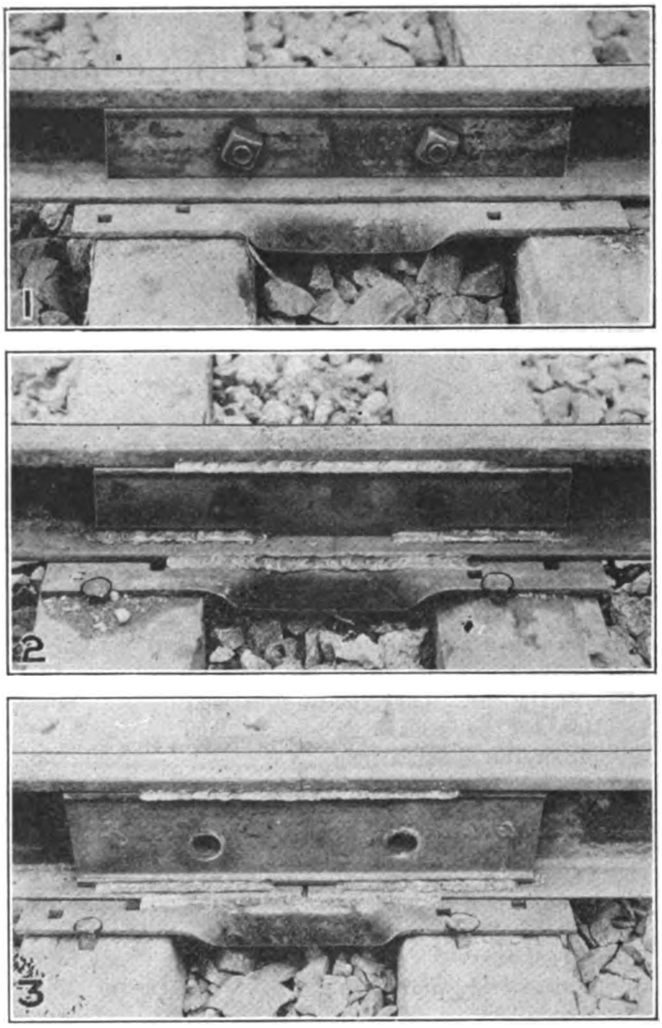
A great deal of time and study has been devoted by engineers to some method of "eliminating" the joints, especially in paved streets, and to this end many forms of splice bars have been developed and placed upon the market. While the modern form of splice bar is a decided improvement over the old fish plates, it has been found that no form of bolted or even riveted joint would have a life equal to the unbroken rail, and in their efforts to reach this goal engineers have turned their attention to welding.

The welding of joints, in some form or other, has been practiced for many years with more or less success, depending largely upon the thoroughness with which the details of the particular process have been worked out and the skill of the men doing the work. Among the better known types of welded joints are the cast, Lorain and thermit weld. All of these have been used with much success and are being extensively employed today. Much interest has been manifested in recent years in seam-welded joints, and it is this particular type of joint with which this article deals.

A seam-welded joint is one in which the rails are joined by standard or special splice bars and the edges welded to the head and base of the rail. The welding may be done by means of an electric arc or by gas flame, but the electric arc is most generally used.

While alternating current has been used to some extent in arc welding, so far as I am aware, direct current has been used exclusively on rail-joint welding of this kind. It may be drawn from the trolley wire direct by inserting in the circuit suitable resistance, or a motor-generator set may be used. In either case the joint, consisting of splice bars and rail, becomes one of the electrodes, the other electrode being the terminal of the lead from the trolley wire or from the motor-generator set. In case current is used direct from the trolley wire, with merely resistance in the circuit, the joint is of course negative, but where a motor generator set is used it is the usual practice to reverse the polarity and make the joint positive. The negative or portable electrode may be either a carbon pencil or a metallic rod. Where a metallic arc is used, the extra metal for welding the seam is contained in the electrode itself, but where a carbon arc is used the extra metal necessary is supplied in the form of a rod or wire cut to the length of the weld to be made and is laid along the seam to be welded and fused with the joint plate and rail.

In Baltimore we use a motor-generator set and the carbon arc process. On girder rail work we use standard splice bars 24 in. long and a special base plate, this base plate being 28 in. long by 10½ in. wide spanning over two ties. On T-rail work we use a splice bar especially designed for welding, and we also use the same base plate as for girder rail.

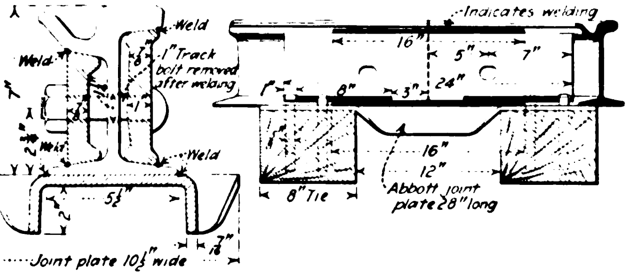


SEAM-WELDING RAIL JOINTS

No. 1—Standard A.R.A. 100-lb. T-rail with joint plates in place ready for welding.
No. 2—Standard A.R.A. 100-lb. T-rail with joint welded and bolts removed.
No. 3—7-in. grooved girder rail with completed seam-welded joint.

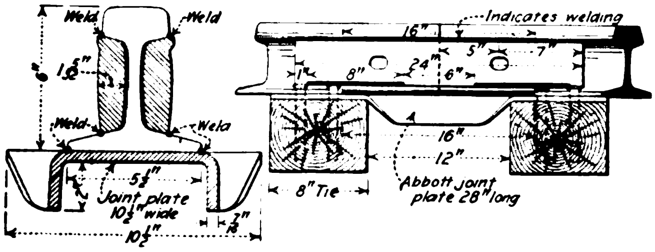
Up to the present time we have welded 7-in. girder rail, L. S. Co. Sec. 105-484, and standard 100-lb. T-rail A. R. A. type A only. In both cases we purchased the rail drilled with one hole only, 5 in. from the end of the rail. The splice bars were punched with two holes only, 10 in. center to center. The rails are laid and the joints are applied and secured in place temporarily by two 1-in. bolts. This is sufficient to hold the rails together and keep traffic going until welding can be done. The track is first brought to proper surface and alignment before the welding is started. When we are ready to weld, the rails that are not already tightly abutted are driven back as closely together as possible. The bolts in the joint plates are then tightened up with a long wrench, the plates being driven into place by slight blows of a sledgehammer as the bolts are tightened. After the welding is done the bolts are removed and used on other joints.

When we first started this welding, about two years ago, we did not employ base plates, but the joint plates were welded for the entire length, both top and bottom. We had a few of these joints break, or rather the rail broke at the end of the joint, just outside the welding. We then started using base plates, which, as stated above, are longer than the joint plate, and we also began "staggering" the welds. Instead of welding all seams full length, we weld the top seam for a distance of 16 in., leaving 4 in. unwelded on each end. The bottom seam of the joint plate is welded in two places, each 8 in. long, the weld starting 1 in. from the end of the plates, and a gap of 6 in. is left in the center. The base plate is welded for a length of 16 in. through the center. Since this method was adopted, about eighteen months ago, we have not been able to discover any broken rails or welds.



SIDE ELEVATION AND SECTION OF L.484 105-LB. RAIL WITH SEAM-WELDED JOINT

The reason for making the so-called "staggered" or lapped seam welds is twofold. Wherever the weld terminates, there is more or less of a "nick" in the rail and also a metallurgical change in the rail itself, although just what this change is I am not prepared to say, and where these "nicks" or changes are opposite each other the tendency is for the rail to break at that point. The action is analagous to the breaking of a rail by "nicking" it, head and base, with a cold chisel. The "staggering" of the welds tends to overcome this trouble. Again, the flexibility of the rail is suddenly interrupted by the extreme rigidity of the box-like joint. The "staggering" of the welds tends, to some extent, to break up this rigidity.



SIDE ELEVATION AND SECTION OF A.R.A. 100-LB. RAIL WITH SEAM-WELDED JOINT

We have welded by this process about 4,000 joints and, outside of about fifteen breaks, which occurred in the early stages of our work, we have had no failures that we have been able to discover. There may, of course, be failures or partial failures that are hidden by the paving, but if so they have not become serious enough to show on the surface. We have had conductivity tests made of the joints and they show an average conductivity of 100 to 150 per cent as compared with the rail.

In welds of this kind, or any other kind for that matter, too much importance cannot be placed on the skill of operators. We have a foreman in charge of this work who is himself a skilled welder and he trains all of the other men. We do not employ for this work men who do not show an interest in welding, and we try to impress upon them from the start just what they are trying to accomplish; that is, the welding of the splice bars to the rail and not merely the playing of the arc on the welding rod until it is melted.

The construction of joints, both T-rail and girder rail are clearly indicated by the accompanying drawings and photographs.

Letter to the Editors

Wages Commensurate with Work Done

THE BEAVER VALLEY TRACTION COMPANY
NEW BRIGHTON, PA., July 21, 1921.

To the Editors:

I heartily agree with your editorial "Get Work Commensurate with Wages Paid" in the July 16 issue of the JOURNAL.

Acting upon this theory, we had a section put into the agreement with our trainmen last year (and it is also in our present agreement) which reads as follows:

> Where experienced trainmen of this company with one or more years of experience are rehired they shall be paid at the rate to which their previous experience would entitle them. When trainmen with one or more years' experience on foreign roads are employed they shall receive the rate of pay to which their previous experience would entitle them after their service record has been received and O. K.'d by this company.

This has been the means of our securing experienced men who had formerly been in our service or in the service of other companies and who during the period of scarcity of labor were not willing to start at the low scale of wages. The results have been quite satisfactory.

W. H. BOYCE,
General Manager.

Havana Railway Has Its Troubles

THE needs of the transportation department of the Havana Electric Railway required during the past year that every effort be exerted to keep the greatest possible number of cars in operation and also add to that number as many new cars as could be constructed and equipped. Throughout the year 1920 this was made extremely difficult by the delay and irregularity in the receipt of imported materials of all kinds. Especially was this true during the first nine months when the stock of some important article was always giving out. While shipments were being held up by embargoes or were aboard ships lying in Havana Harbor awaiting an opportunity to unload, it was often necessary to withhold cars from service for lack of wheels or motors or other important parts that could not be provided. In spite of these difficulties thirty-two new cars were completed and delivered to the transportation department, the work on eighteen more was so far advanced that they were expected to be ready for use in January, and nine cars were entirely reconstructed.

Status of Powdered Fuel

Summary of Existing Installations—Detail of Burners and Pulverizers—Test Results from Various Localities—Comparisons with Stoker Plants—Trend in Combustion Methods and Firing Equipment Design

H. D. SAVAGE of the Combustion Engineering Corporation presented a paper entitled "The Use of Powdered Fuel Under Steam Boilers" before the American Iron & Steel Institute at New York on May 27. In this paper Mr. Savage summarized the situation in regard to the use of powdered fuel under boilers in a very able manner.

In regard to the preparation of the pulverized fuel, two mills have become practically standard, respectively called the Raymond and the Fuller. Each of these mills is built in sizes of from 2 to 6 tons per hour rated capacity when grinding to a fineness so that 95 per cent of the coal will pass 100 mesh and 82 per cent through 200 mesh, using bituminous coal of less than 1 per cent moisture. The power consumption is from 15 to 20 hp. per ton per hour of bituminous coal ground to these specifications with a maintenance cost of approximately 5 cents per ton. The grinding of anthracite fuel is much more difficult and entails a higher maintenance cost, but prospects are bright in regard to the use of the Hardinge mill for this purpose.

A new mill is being developed at the present time which uses air separation, but differs otherwise in type and principle from any of the present standard methods. The prospects are good that this mill will be able to grind bituminous coal containing about 3 per cent moisture with only about half the power consumption of the present type mill.

The driers have been standardized into two types, called the single shell drier and the double shell. The latter has greater capacity, better efficiency and greater freedom from internal fires, and the first cost is not greatly different for the two types.

The conveying equipment has become standardized into two types, the screw conveyor and the air transport system. Of these systems the Fuller-Kinyon pump is probably the simplest. It is essentially a high-pressure feeder, consisting of a hopper, high-speed screw and a delivery nozzle. Air is brought into the coal at about 40-lb. pressure and forced through pipes of varying sizes, depending on the capacity for which the pump is designed.

EXISTING INSTALLATIONS

The first commercial installation of any importance was at the Oneida Street plant of the Milwaukee Electric Railway & Light Company, where in 1918 five Edge Moor boilers, each of 468 nominal horsepower capacity, were equipped and have been in successful operation for three years without any operating difficulties. The plant operates on either Illinois and Indiana screenings or Youghiogheny coal. Tests show a combined efficiency as high as 85 per cent on the plants of this company. Another important installation is the plant of the Allegheny Steel Company at Brackenridge, Pa., where nine 333-hp. Wickes boilers and two 600-hp. Stirling boilers have been equipped. The plant has been in operation for about two years and a half and additional boilers are now being installed. A unique feature of this plant is that the coal is used as it comes from the mine without any driers and the pulverizing plant is about 350 ft. from the boiler room, to which a screw conveyor is used to transport the coal.

At the Lima Locomotive Works, Lima, Ohio, there are equipped six 400-hp. Wickes boilers, one 500-hp. Wickes boiler and one 500-hp. Heine boiler. Bituminous coal from the Central Ohio district is used in this plant, analyzing approximately as follows: Moisture, 3 per cent; volatile, 32.2 per cent; fixed carbon, 50.6 per cent; ash, 17.2 per cent; sulphur, 1.94 per cent; B.t.u., 11,935.

DESIGNED FOR THREE FUELS

There are five 500-hp. Edge Moor boilers and two 300-hp. Edge Moor boilers equipped with the pulverized fuel equipment in Oklahoma City, Okla., at the packing plant of Morris & Company. This plant is arranged to operate on either natural gas, fuel oil or powdered coal, whichever the condition of the market warrants as being most economical. A change from one fuel to another can be made in about five minutes. At this plant the fuel used is from the McAlester district, analyzing as follows: Moisture, 5.2 per cent; volatile, 33.39 per cent; fixed carbon, 48.34 per cent; ash, 13.07 per cent; sulphur, 0.63 per cent; B.t.u., 12,417. The results of the operation have been good and observed periods have shown efficiencies of from 78 to 84 per cent. A recent report from this plant covering the first nine months of 1920, using $4.13 coal and including a 20 per cent charge for interest and depreciation, shows a net cost per 1,000 lb. of steam of $0.385. Other installations of more recent date are those at the St. Joseph Lead Company, Rivermines, Mo., where two Stirling boilers of 768 hp. were installed and have been in operation for about three months. They are being operated at from 200 to 225 per cent of rating with flue gas temperatures from 580 to 609 deg. F. Another installation is one of eight 1,308-hp. Edge Moor boilers at the new Lakeside plant of the Milwaukee Electric Railway & Light Company. Two of these boilers are equipped with the Fuller system and six with the Lopulco system. All these are now operating.

One of the most interesting installations is that now nearing completion at the River Rouge plant of the Ford Motor Company, where powdered coal is being installed in connection with four Ladd boilers of 2,640 nominal hp. each. These boilers are the largest that have as yet been built and are intended to operate at from 200 to 250 per cent rated capacity. They will operate on a combination of blast furnace gas and powdered coal, and the design is such that these fuels can be used either separately or in combination. The gas is introduced horizontally at a lower level than the coal through the medium of an especially designed grid burner.

At the plant of the Bethlehem Steel Company, Lebanon, Pa., there are four 520-hp. Babcock & Wilcox boilers that have been in operation approximately one year. The British Columbia Sugar Refining Company at Vancouver, B. C., has two 504-hp. Badenhausen boilers, two 250-hp. Babcock & Wilcox, nine 110-hp. horizontal return tubular and two 500-hp. Stirling boilers. The Puget Sound Traction Company at Seattle, Wash., has ten Babcock & Wilcox boilers from 300 to 600 hp., which have been in operation for about two years.

The foregoing installations are the only plants of any size using the powdered coal equipment. They are located in various geographical locations and operate on a wide range of fuel. From records of the plants operating results have been very satisfactory, according to Mr. Savage.

RESULTS OF TESTS

A great number of tests have been made on powdered coal installations both by the local companies, by the Bureau of Mines and by the Combustion Engineering Corporation. The results of these tests have been presented in various technical articles in the technical press and show that the powdered coal installations are operating very satisfactorily. The effect of fineness and of moisture in coal has not been very marked, but questions of high ratings at high efficiency are still rather unsettled as until recently only a few plants have been designed for burning powdered coal and such tests as were available were taken on changeover plants formerly using other types of fuel-burning equipment. The tests show that the capacity is in direct proportion to furnace volume and that for existing furnaces the most efficient rates of combustion have been obtained when using 1 to 1½ lb. of fuel per cubic foot of furnace volume.

GENERAL DISCUSSION

All of the plants now operated are designed to have the pulverized coal stored adjacent to the boiler and fired through the medium of specially designed feeders. There is a discussion at present in regard to firing the pulverized fuel directly from the mill to the combustion chambers without an interval of rest. But this method, while very simple and practical from a mechanical standpoint, is subject to several objections brought about by questions of reliability and efficiency. There are many mechanical units connected with the operation of the pulverizer and separator equipments which may get out of order with the result that fuel would fail of delivery to the boiler. Also in these systems the same air is used for separation and for firing, and it is very difficult to control this air in each instant so as to get a uniform mixture at the burner. The most serious deficiency of this system, according to Mr. Savage, is the lack of reserve supply of coal, which throws all the peak demand on the coal-preparing equipment at the time when the station load is at peak, while, on the other hand, a bunker supply permits separation of coal at off-peak intervals and also gives more reliability in the burning due to the elimination of hazardous mechanical arrangements.

In regard to installation costs, Mr. Savage states that if a modern central station using high-grade Eastern coal and average load factor is taken as a basis for the test it is doubted whether the net saving in favor of powdered coal would be better than 10 per cent, but considering the price such a station would pay for coal today the saving would in most cases warrant the additional expense. In an industrial plant having a varying mill load the saving with powdered coal would be more than with any other type of plant, due to its ability to serve fluctuating loads and to the saving during bank periods. In regard to the cost of fuel preparation, Mr. Savage states that in his opinion the cost of firing coal from coal car to ash car is not greater in a pulverized coal plant than in a modern stoker plant. This conclusion is based on some detailed calculations presented in the paper which consider all the auxiliary power for driving stokers and also the saving due to the exhaust steam heating the feed water. The figures on the assumed data show that the plant, when operating at 20,000 hp., burns 31 tons of coal per hour with a power requirement for preparing the coal of a little less than 20 kw. per ton.

IMPROVEMENTS IN FIRING

In regard to the troubles in connection with the burning of powdered coal, the greatest trouble in the early attempts was from slagging. Proper furnace design and correct air admission have practically eliminated this trouble except with coal having a low fusing point, but even with these coals the trouble is confined to extremely high rating when coal in excess of 2 lb. per cubic foot per hour is burned. The use of water screens and multiple zones and other improvements are tending to eliminate entirely any trouble from slagging under high rating with any powdered fuel. In regard to the ash, at Milwaukee careful observation showed that 25 to 50 per cent remained in the combustion chamber, 5 to 12 per cent is collected in the second and third pass, 25 to 35 per cent is caught in the base of the stack and 12 to 25 per cent is lost in the stack. Studies are being made for eliminating the ash that goes through the stack, although it is so fine and flocculent that it causes no serious trouble. There has occurred no deterioration of the furnace brickwork and, in fact, boiler furnace maintenance has been reduced through use of powdered fuel.

Elimination of Waste

Reports of the Federated American Engineering Societies, Prepared Under the Direction of Fifteen Engineers, Point Out Ways of Reducing Loss from This Cause

DURING this week the Federated American Engineering Societies has made public extended abstracts of the general report of the committee on the elimination of waste, as well as of its detailed reports of the building trade and metal trade. An account of the work of this committee was published on page 1091 of the issue of this paper for June 11. The reports were prepared under the direction of fifteen engineers, known as the committee on elimination of waste in industry. The six industries studied were the building trade, men's ready-made clothing, boot and shoe, printing, metal trade and textile manufacturing.

A number of plants were studied intimately in each industry and a larger number gave additional information. The committee was named on Jan. 12, 1921, and six months later, or on June 15, 1921, the report was approved as a whole by the committee. While the transportation industry was not considered, some of the conclusions reached by the committee are applicable to all industries. In its general report the committee attributes the greater part of the waste in industry to:

1. Faulty management of materials, plant, equipment and men.
2. Interrupted production, resulting from idle men, idle materials, idle plants, idle equipment.
3. Restricted production intentionally caused by owners, management or labor.
4. Lost production caused by ill health, physical defects and industrial accidents.

Under faulty management the committee includes lack of standardization and machinery and methods, lack of cost control and accounting, high labor turnover, ineffective workmanship and faulty sales policies. Under the topic of interrupted production, the committee points out that in many trades there is seasonal unemployment, as well as that due to labor disturbances. There is also idle equipment because of overbuilt factories and idle material. Restricted production is brought about sometimes by managements and often by unions by restricting the use of machinery or requiring wasteful methods because of union rules. Under lost production, a rough estimate is given that the average loss per person per year from illness is thirteen days, and that 42 per cent of this illness is preventable. This is exclusive of time lost because of accidents.

Suggestions are made by which a number of these causes of waste can be overcome.

REPORT ON BUILDING TRADES

In its report on waste in the building trades the committee estimates that $500,000,000 a year in wages in this industry is being lost through unemployment. The building industry ranks second only among the industries of the country in size and contributes to the wealth of the nation more than $3,000,000,000 yearly. The chief sources of waste are irregular employment, inefficient management and wasteful labor regulations.

Referring to irregular employment, the report says that the building trade workman is busy on the average about 190 days in the year, or two-thirds of his time. The public should be educated to the need of a more even distribution through the year of its construction demands and requirements. Haphazard management in planning and controlling work and lack of standards characterize most building undertakings. Union regulations have also produced enormous losses through direct or indirect restriction of output. Greater co-operation between the workmen and the employers is an absolute essential.

Management is blamed for failure to furnish continuity of employment, failure to plan work in sufficient detail, lack of proper schedules to allow proper co-ordination of scheduling, purchasing and delivery, with job requirements; failure to use proper amount or type of equipment, general failure to develop and use a greater amount of mechanical equipment, etc. Wasteful labor regulations, according to the report, consist of requiring skilled men to do work that could be performed by the unskilled, of restricting individual incentive through requiring uniform wages, of limiting the number of apprentices, of an excessive reduction of working hours, of restricting output by prohibiting the use of labor-saving devices, and of jurisdictional regulations. The strike is one of the greatest economic wastes to be found in the building industry, the report declares. In 1920 in Massachusetts 138,519 working days were lost because of strikes and lockouts, and if this figure is applied to the entire building industry, a waste of some 3,000,000 days per year is found.

REPORT ON THE METAL TRADES INDUSTRY

In its report on the metal trades industry, the committee estimates that the industry as a whole is operating at only about 60 per cent of normal output. It urges manufacturers to hasten a return to normal conditions by producing goods as economically as possible, so as to make selling prices low enough to attract buyers. Much stress is laid in the report on the cost of labor turnover. The average labor turnover for the year 1920, for the plants covered by these studies, was 160 per cent, and the highest turnover was 366 per cent. If 60 per cent of the separations are assumed as unavoidable, due to deaths, marriages, etc., there is still left in the average figure an avoidable or preventable turnover of, say, 100 per cent, and the industry with its 2,000,000 employees has 2,000,000 unnecessary separations. Expert estimates of the cost of labor turnover vary from $50 to $250 per employee hired, trained and separated. With an average figure of only $50, this item would mean a waste of $100,000,000 due to this one cause in this one industry.

The report also recommends an open interchange of ideas and business results by managements, both in the particular industry and in other industries, so as to lead to a higher level of methods, service and general business estimates. It also urges greater standardization, and in this connection it says:

> The great variety of designs called for by those who buy street cars, locomotives, trucks and other transportation equipment is well known to be capable of beneficial limitation if all manufacturers and users could, through some agency, get together and by scientific study of the problems, not only from a utility or service standpoint but from a manufacturing standpoint as well, reduce as much as possible the enormous number of varieties, styles and types now required to be built. Many of these varieties are largely a matter of personal opinion or judgment of the buyers who have not had the opportunity to study the subject in all its phases. A great deal can be done toward standardizing the designs of these products and thus promoting the best interests of all concerned.

Correction in A. S. T. M. Report

The report of the meeting of the American Society for Testing Materials, as published in the July 16 issue of the ELECTRIC RAILWAY JOURNAL, page 103, intimated that the proposed tentative specifications for special quality carbon steel rails was adopted by the Association. Such action was not taken. At a meeting of Committee A-1, prior to the presenting of its report to the convention, it was voted to withdraw that specification, and it was accordingly referred back to the sub-committee. Consequently, all reference to it in Committee A-1's report was eliminated and the specification was not submitted to the convention.

Another typographical error occurred under the topic of corrosion of iron and steel in the reference to the tests made in the Pittsburgh district. The report as published stated that material with 0.06 per cent copper or more failed after five months exposure. This should read fifty-two months exposure.

Iowa Association Meets at Lake Okoboji

THE Iowa Electric Railway Association held a joint meeting on June 24 with the Iowa section of the N. E. L. A. at Lake Okoboji, Ia. President H. E. Weeks, vice-president Tri-City Railway & Light Company, Davenport, Ia., was re-elected to this office for the ensuing year, as were also the other officers of the association.

Two of the papers presented before this meeting have already appeared in the ELECTRIC RAILWAY JOURNAL, one being on the "Sale of Securities by Utilities," by H. E. Weeks, which appeared on page 65 of the issue of July 9, and the other on "Valuation and Rate of Return," by L. B. King, appraisal engineer, United Light & Railways Company, Davenport, Ia., which appeared on page 104 of the issue of July 16. William Chamberlain and John A. Reed, both from Cedar Rapids, Ia., and respectively general counsel for the United Light & Railways Company and the Iowa Railway & Light Company, discussed the status of the Iowa laws pertaining to the regulation of utility rates. F. J. Hanlon, Mason City, Ia., gave the report of the legislative committee and reviewed the matters that had come before the Legislature of interest to the electric railways. A round-table discussion of wages, the open shop, rates of fare, jitneys, etc., occupied the meeting during the afternoon.

The next meeting will be held at Waterloo, Ia., on Sept. 16 and 17.

Engineering Foundation Pushes Highway Research

PROF. W. K. HATT of Purdue University has been appointed director of the new Advisory Board on Highway Research of the National Research Council. In co-operation with other organizations, active research work on national highway questions will be started. The appointement of other committees to consider vehicle designs, economics and cost of transport, finance, traffic and construction are under advisement.

American Association News

Bus Committee Meets

ON JULY 15 the American Association committee on trackless transportation held its second meeting at headquarters. This meeting was for the purpose of going over the sub-committee reports that had been prepared since the meeting of June 24. Among those present were H. B. Flowers, United Railways & Electric Company of Baltimore, chairman, and the following members; C. B. Buchanan, Virginia Railway & Power Company; F. W. Fenn, National Automobile Chamber of Commerce, New York; G. A. Green, Fifth Avenue Coach Company; H. L. Howell, National Railway Appliance Company, New York; C. W. Kellogg, Stone & Webster Company, Boston; C. J. McPherson, J. G. Brill Company, Philadelphia; H. A. Mullett, Milwaukee Electric Railway & Light Company; Albert S. Richey, Worcester, Mass. Others in attendance were J. W. Welsh, acting secretary; L. D. Miller, International Motor Truck Company, and E. B. Warriner, assistant secretary National Automobile Chamber of Commerce, New York.

The sub-committees presented their reports so far as possible but many had found the time allowance too short properly to prepare their part of the report. The committee discussed in detail the question of publishing figures concerning the cost of motor bus operation. Mr. Welsh stated that there were many requests for this sort of information. Several thought such figures where available should be embodied in the report or at least made easy of access for those interested.

Another meeting is to be held the early part of September at which time the sub-committee reports will be correlated and put in final form for presentation at the convention.

Stores Accounting Report Completed

ON JULY 25 the Accountants committee on stores accounting and the Engineering committee on purchase and stores met jointly at association headquarters. At this meeting the report of the committee on stores accounting was completed and turned over to Acting Secretary Welsh for printing. The report presents a proposed standard classification for material and stock records with forms to illustrate its use. The report also bears the approval of the purchase and stores committee.

Among those present were R. A. Weston, special accountant the Connecticut Company; W. H. Staub, United Railways & Electric Company, Baltimore; W. L. Davis, Lehigh Valley Transit Company, Allentown, Pa., and John Fleming, Capital Traction Company, Washington, D. C.

Convention News

ACTING SECRETARY WELSH of the association announces that the reports of the T. & T. and Engineering Committees are already in the hands of the printer, and he anticipates now that they will be ready for distribution to members about the middle of August. In view of the fact that a special feature of the convention this year will be prepared discussions on these reports, this early distribution will enable a careful study which should be reflected on the floor of the convention.

The 1920 convention proceedings are now practically ready for distribution. The delay has been largely due to a prolonged strike at the printing plant in Albany. It is expected to ship the completed sets the early part of August.

Announcement is also made of the appointment of E. C. Faber, Aurora, Elgin & Chicago Railroad, as chairman of the convention entertainment committee. The balance of the personnel of this committee will be announced shortly.

Committee on Standard Classification

THE publication in recent issues of this paper of a series of accounting questions and answers which have received the approval of the committee on standard classification of accounts of the Accountants' Association has brought to the office of the ELECTRIC RAILWAY JOURNAL several inquiries as to the history of this committee and its connection with the Interstate Commerce Commission. With the assistance of H. L. Wilson, treasurer Boston Elevated Railway and chairman of the committee, the following has been compiled:

The American Electric Railway Accountants' Association held an organization meeting in Cleveland in 1897, and at that meeting it was the opinion of those present that the most important thing for the association was the adoption of a standard system of accounts by which an intelligent comparison could be made of street railway reports. In consequence a committee of three, composed of C. N. Duffy of Chicago, William F. Ham of Brooklyn and J. F. Calderwood of Minneapolis, was appointed to submit such a classification.

This committee promptly performed its work and submitted a report at the first annual convention of the association, held at Niagara Falls in October, 1897. This report was carefully considered and a revised report was requested. The committee was continued, and at the next annual convention of the association, held in Boston in September, 1898, it submitted a revised report which was adopted, and the classification was recommended for general use by all railway committees.

This classification was in such form as to make it possible for the smaller companies to keep their accounts without undue trouble or expense, yet was so flexible as to make it entirely possible and practicable for the larger companies to keep their accounts in accordance and have all the detailed information they might desire. This classification was adopted previous to the general advent of interurban roads, but amendments to the classification to suit interurban practice were made and adopted at the convention of the association held in Atlantic City in October, 1907.

At about this time the Interstate Commerce Commission was considering the promulgation of a system of accounts to be used by all electric railways coming under its jurisdiction, and in February, 1908, the commission issued a tentative classification which subsequently, at a largely attended meeting held in Washington on May 12 and 13, 1908, was somewhat modified to meet the views of those representing the electric railways. The accountants' committee and representatives of the Interstate Commerce Commission spent the following week in making up a standard classification of accounts, which was adopted by the Interstate Commerce Commission to take effect from Jan. 1, 1909. This classification is still the standard classification of the Interstate Commerce Commission and the American Electric Railway Accountants' Association. While instructions have been modified since that date, the text of the accounts has not been changed. This system is not only the official one of the I. C. C. and the American Association, but it has been generally adopted by all the State commissions having jurisdiction over electric railway carriers' accounts.

At the time the text was prepared it was agreed by those in conference that if any questions were submitted direct to the Interstate Commerce Commission or to the American Association before any final replies were sent they should be jointly considered by both parties in interest. This arrangement has remained in force ever since, and the most harmonious relations have always existed between the Bureau of Accounts of the Interstate Commerce Commission and the Accountants' Association.

Up to the present time 653 communications have been submitted direct to the Interstate Commerce Commission and 112 direct to the Accountants' committee. Some of the inquiries have contained a dozen or more questions. Hardly a week has passed and at certain periods hardly a day without some questions relating to accounting matters being referred to the committee, and it is probably true that no committee of the American Electric Railway Association has been so constantly called upon for its service as has the committee on the standard classification of accounts.

PERSONNEL OF COMMITTEE

There have been but few changes in this committee during the past twenty-four years. The present committee consists of William F. Ham of Washington, who has been a member of the committee since it was formed in 1897; H. L. Wilson of Boston, who has been a member of the committee since 1898; W. H. Forse, Jr., of Anderson, Ind., who has been a member since 1907; R. N. Wallis of Fitchburg, Mass., and P. S. Young of Newark, N. J., who have been members since 1914.

Other members of the committee have been as follows: C. N. Duffy, 1897-1905 inclusive and 1906-1908 inclusive; J. F. Calderwood, 1897-1905 inclusive; H. J. Davies of Cleveland, 1898-1900 inclusive; W. G. McDole, 1899-1907 inclusive; H. C. McKay, 1904-1905; Frank R. Henry, 1904-1907 inclusive; E. M. White, 1905-1906; W. B. Brockway, 1907-1914; F. E. Smith, 1908-1914.

C. N. Duffy was chairman from 1897 to 1905; Mr. Ham from 1905 to 1911, and Mr. Wilson since 1911.

American Electrolysis Committee Completes Report

THE American committee on electrolysis, made up of representations of nine national organizations, has completed another report. From the nature of the problem it was decided that the entire report must be unanimously agreed upon by all the representatives of all interests. The committee on electrolysis of the American Electric Railway Association has accepted the report as representing a valuable contribution to the written material on the subject of electrolysis. Copies of the report, which goes to press on Aug. 1, will shortly be available to members at $1 each upon application to the office of the railway association.

The committee was first organized in 1913, and in 1916 it prepared a preliminary report confined exclusively to a statement of facts unanimously agreed upon and drawn up with the idea that it would form the basis of future constructive work. The entrance of the country into the war suspended the work, but with the resumption of peace the committee was reorganized and attacked its problems anew.

The work was subdivided into four parts, each of which was handled by a separate sub-committee; namely: Principles and definitions; design, construction, operation and maintenance; methods of making electrolysis surveys; the study of European practice. In addition to those there was a special research sub-committee organized to co-operate with the Bureau of Standards.

The American Electric Railway Association was represented on the committee by W. J. Harvie, chairman of the American Association committee on electrolysis; G. W. Van Dersee, assistant general manager Milwaukee Electric Railway & Light Company, and L. P. Crecelius, consulting engineer, each of whom served on different sub-committees. V. B. Phillips, consulting engineer, acted as expert adviser to the association's representatives.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

"Secret Books" Sought by State

Another move in the fight on the Chicago Surface Lines was made on July 19 when State's Attorney Crowe demanded that the companies' "secret books" be turned over to him. He did not intimate the purpose for this demand, but it was suggested by others that it had been inspired by Mayor Thompson, with whom the state's attorney is allied politically.

The request was in the form of letters to Henry A. Blair and Leonard A. Busby, executives of the companies making up the surface lines. Both sent replies "respectfully declining" to accede to the demand and explaining that there are no "secret books." Attorney James M. Sheean, for the Chicago Surface Lines, said:

> The books of the operating company, the Chicago Surface Lines, show all operating expenses. After they are audited the city gets 55 per cent of the net divisible receipts under the 1907 traction agreement with the city, and the other 45 per cent is split between the subsidiary concerns. Mr. Crowe's demand is merely a scheme to annoy the companies. He apparently wishes to know how the stockholders of the various companies spend their dividend checks.

Mayor Thompson has been trying for several years to get possession of these individual company books and has been refused by the Public Utilities Commission and the courts. The matter was set for a hearing before the new State Commerce Commission on July 27. Recently that body continued until Sept. 13 the hearing on the proposed abolishment of skip stops in Chicago.

Connecticut Company's Outing

The annual outing of the employees of the Connecticut Company was held July 21 at Ocean Beach, New London, Conn. More than 400 gathered at Swift's Pequot Casino for a shore dinner. Music for the occasion was furnished by an employees' band of twenty pieces under the direction of I. A. May, comptroller.

After dinner, addresses were made by Mayor Morgan of New London, and James Hammond, secretary of the New London Chamber of Commerce. Mayor Morgan complimented the Connecticut Company on its efforts to render efficient service and wished the company the best of success in the future. Mr. Hammond said that he had always been an advocate of street railways and could not see why they should not always be a success when represented by such a highminded type of men.

Remarks were also made by President Storrs and Vice-President Punderford of the railway. Mr. Storrs announced that for the present the company would try to raise its standard of efficiency to the highest per cent so as to make the service the best in the country. Philip Hussey was the oldest employee at the outing. He has been in the service of the railway for fifty years.

The outing was a success and furnished the opportunity for renewing personal acquaintances that are not always possible during working hours. The only complaint seemed to be that the outings were held too infrequently. Fifty-two weeks seemed to be a very long interval.

Mr. Chappelle Returns to New Orleans

C. C. Chappelle, New York, representing the security holders of the New Orleans Railway & Light Company, New Orleans, La., has returned to that city. F. W. Ballard, utility expert, engaged by the city to revalue the property of the railway, is expected in New Orleans shortly. It is anticipated that Mr. Ballard will bring his previous estimate of the value of the property of the company of $32,000,000, made in 1918, down to date. The arrival of Messrs. Chappelle and Ballard is expected to hasten action on the part of the city in reaching a decision that will give promise of a permanent solution of the city's trolley problem.

It is said that Mr. Chappelle returns to New Orleans clothed with power of attorney from the security holders of the company to negotiate a settlement. He said:

> I have returned to New Orleans in the interests of the security holders' committees of the New Orleans Railway & Light Company, whom I represented in the negotiations some weeks ago and whom I continue to represent.
>
> Due to ill health I was unable—in connection with those negotiations—to complete certain investigations in reference to operating and physical conditions of the property.
>
> While the delay is to be regretted, the general exchange among yourselves as to views, methods, means and conditions to be met for the permanent solution of your utility problem should be helpful and progress has been made.
>
> It was my privilege to present and discuss some of the laws of economics and business principles affecting the solution of your public utility problem.
>
> My position then and now is that a permanent solution, can only be accomplished by co-operation of the public and through constructive action by the Commission Council. I can add nothing further to my previous expressions.

Negotiations to Select Neutral Members.—Negotiations are taking place to select a neutral member of the board of arbitration in the wage dispute between the Schenectady (N. Y.) Railway and its employees. The men are now working at 45 cents an hour, which is the company's proposal pending the result of the arbitration proceedings. The rate fixed by the board will be retroactive to May 1.

Ordinance Introduced to Oust Detroit United Railway

The fight between the city of Detroit and the Detroit United Railway was renewed when the ordinance was introduced into the City Council to require and direct the railway to cease operation of its cars upon and over sections of Fort Street and Woodward Avenue where franchises have expired, and remove therefrom all its property, and providing for the time within which it shall be done.

The ordinance was introduced upon the request of Mayor Couzens after the city's offer for the lines in question had been rejected by the company. The ordinance was read twice by title and ordered printed and laid on the table, no further action to be taken for one week. This is the first effort on the part of the Mayor to have the D. U. R. ejected from the streets.

While it has been conceded that there is nothing to prevent the company from dispensing with service on the lines immediately, the Mayor believes that such action will not be taken by the company, since it would interrupt interurban service.

According to Joseph S. Goodwin, of the municipal system, the only value that the tracks represent to the people of Detroit is the estimated value that can be placed on them as a means of transportation for the people until such time as the tracks can be entirely rebuilt to carry heavy traffic, or until more advanced means of transportation are provided. The Mayor stated that out of consideration for the public the offer had been made for the line to make the transfer of ownership as easy as possible for the railway patrons.

The Mayor proposes to lay temporary tracks necessary to preserve service. To care for the Woodward Avenue traffic, railway lines will be built by the city for its cars on paralleling streets, one block each side of Woodward Avenue.

Since the recommendation has been handed down by the Utilities Commission as to the proper type of crossing to install where the city tracks cross existing tracks of the Detroit United Railway, work is being pushed with a view to getting the crossings installed so that service can be started on the additional city lines.

W. E. Davis, Cleveland, has been named as the third member and chairman of the board of arbitration, which will endeavor to fix the price that the city will pay for the day-to-day line. Prof. Henry E. Riggs and William H. Maybury are the other members of the board. Professor Riggs will be the company's representative. Mr. Maybury will represent the city.

Wage Cuts in New York

Interborough, Brooklyn Rapid Transit and Brooklyn City Employees Accept Ten per Cent Cut

As a result of recent negotiations between Frank Hedley, president and general manager of the Interborough Rapid Transit Company, and the Brotherhood of Interborough Rapid Transit employees, the men accepted a 10 per cent reduction in wages effective July 24. The new agreement, which will remain in force until June 30, 1922, affects about 15,000 men, who shared in the increase of June, 1920. Its effect upon the company is a saving of about $2,600,000.

The old and new wage agreements are as follows:

	Cents per Hour	
	Old Rate	New Rate
Motormen	86	78
Guards	58	53
Laborers	48-58	44-53
Mechanical forces	65-80	58-72

In its request of July 8 the company placed before the committee of the Brotherhood of Interborough Rapid Transit Employees the fact that a receivership certainly faced the company unless some tangible saving in the revenue could be effected. On receipt of the acceptance of the new working arrangement the management expressed its appreciation of the men's co-operation.

A similar wage reduction for employees of the Brooklyn Rapid Transit Company to become effective Aug. 5, has been announced by L. M. Garrison, receiver of the property. This reduction for old employees averages substantially 10 per cent, with a greater reduction in rates of pay for some classes of new employees.

For conductors and motormen on the surface lines the following schedule will be in effect:

	Cents per Hour	
	Old Rate	New Rate
Grade A (5th year of service and thereafter)	..	60
B (4th year of service)	67	55
C (3rd year of service)	62	52
D (2nd year of service)	59	50
E (2nd six months of service)	*57	48
F (1st six months of service)	*57	45

* Same rate of pay prevailed for first year.

Existing schedules are to be changed as soon as practicable so as to provide for all regular runs a minimum of eight hours and forty-five minutes, with a maximum of ten hours and thirty minutes, with the understanding that as many runs be made ten hours as may be found practicable.

Work in excess of ten hours and thirty minutes to be paid for at the rate of time and one-half.

All time allowances as provided for in the former regulations, except such as may be necessary to maintain a minimum of eight hours and forty-five minutes for regular runs, will be eliminated.

For conductors and trainmen of the rapid transit lines the scale is as shown in the table at the bottom of this page.

Under the old rate conductors on the rapid transit lines for the first six months received 59 cents, next twelve months 60 cents and after eighteen months 62 cents. The guards for the first six months were paid 53 cents, next twelve months 54 cents and after eighteen months 57 cents.

Schedules are to be arranged so that 50 per cent of the swing runs shall be completed within a spread of twelve hours, and the other 50 per cent within a spread of thirteen hours.

A similar reduction in rates of pay and changes in working conditions, effective the same date, will be made and applied to all other classes of hourly-rated employees whose wages were increased in accordance with the receiver's notice of July 16, 1920.

This same general average reduction in rates of pay will also apply to all classes of the clerical and supervisory forces which received the increase authorized by the receiver's notice of July 16, 1920. In cases where any individual or class in the clerical and supervisory forces was increased last year by an amount less than the percentage applying to the hourly-rated employees, the reduction made effective Aug. 5, 1921, will be correspondingly less.

This reduction does not apply to the 800 motormen, signalmen and towermen of the Brooklyn Rapid Transit system who are members of the Brotherhood of Locomotive Engineers. Their agreement does not expire until Jan. 1, but it is reported that they are considering a suggestion by the company to accept a similar reduction.

H. Hobart Porter, vice-president and general manager of the Brooklyn City Railroad, stated that arrangements similar to those announced by Receiver Garrison as having been agreed to by the employees of the Brooklyn Rapid Transit System would be made with the employees of the Brooklyn City Railroad, the negotiations leading to these arrangements having been carried out jointly by the receiver and the Brooklyn City Railroad.

		Cents per Hour
Conductors.	Grade A (3rd year of service and thereafter)	55
	B (2nd year of service)	54
	C (1st year of service)	53
Trainmen.	Grade A (5th year of service and thereafter)	51
	B (3rd year of service)	49
	C (2nd year of service)	47
	D (2nd six months of service)	46
	E (1st six months of service)	45

Montreal Would Cut Men 20 per Cent

An amicable outcome is expected in the negotiations between the Montreal (Can.) Tramways and its employees arising from the company's proposal to put into effect on Aug. 1 a wage reduction of 20 per cent. The majority of the men are showing a conciliatory attitude, and each side has been meeting the wishes of the other in the matter of conferences to discuss the situation. Several of these informal meetings have been held within the past week, but on July 25 matters had not yet reached a stage where a definite result could be announced.

The present rate of wages is as follows: Conductors and motormen—first year, 45 cents an hour; second year, 50 cents an hour; third year and subsequent years, 55 cents an hour. Inspectors, instructors and depot clerks (day), $175 a month. Depot clerks (night), first year, $160 a month, thereafter $170 a month. Track sanders (hill men), 85 cents an hour.

This scale has been in effect since July 1, 1920, and represents an increase of approximately 20 per cent over that in force for the previous year, which in turn was 30 per cent higher than that in force before July 1, 1919. The company's proposal, therefore, will restore the scale approximately to that in effect from July 1, 1919, to July 1, 1920.

The present maximum of 55 cents an hour represents an average increase of 131 per cent over the maximum of 25 cents in force in 1914, although in the case of the younger men the percentage of increase was considerably higher.

In April of this year, J. E. Hutcheson, general manager of the company, notified A. Lacombe, president of the employees' union, that it was the company's intention to terminate the existing agreement on wages and working conditions, which was entered into on Aug. 27 of last year, and was based on the award of a board of conciliation and enquiry appointed by the Dominion Department of Labor. The agrement covered the year from July 1, 1920, to June 30, 1921, and was automatically renewable by default of either party to give at least thirty days' notice of intention to discontinue the same. By agreement, the status quo was continued in July, pending the company's submission of a proposal to the men, and early in the month the union was notified of the proposed 20 per cent reduction. Failing an agreement by negotiation, the issue will probably be submitted to arbitration, and there seems no immediate danger of a strike.

Arbitrators Reduce Pay Scale.—The pay of motormen and conductors in the employ of the Youngstown & Ohio River Railroad, operating an interurban line between East Liverpool and Salem, has been cut 5 cents an hour. The old scale was from 55 to 65 cents an hour. The new award, the result of arbitration, is retroactive to July 1.

Mr. Gadsden on Chamber of Commerce Transportation Committee

The Chamber of Commerce of the United States has just announced its appointments for the ensuing fiscal year of the personnel of two committees dealing with the subject of transportation and communication. Under the departmental organization of the national chamber, an executive committee for the department of transportation and communication has been appointed, the members representing the various divisions of the industry. The committee consists of the following men:

Chairman, Howard Elliott, New York; vice-chairman, Lewis B. Stillwell, New York; utilities—Edwin O. Edgerton, San Francisco; railroads—George A. Post, New York; and Wilmer W. Salmon, Rochester; marine—H. H. Raymond, New York, and J. M. Whitsitt, Charleston; highways—A. J. Brosseau, New York; electric railways—Philip H. Gadsden, Philadelphia; waterways—Douglas Fiske, Minneapolis; port terminals—B. F. Cresson, Jr. New York; communications—John J. Carty, New York; postal—Lucius Teter, Chicago.

The chamber has also appointed a special railroad committee with George A. Post, chairman.

The departmental plan of the chamber with respect to transportation and communication is a recent development of the work of the United States Chamber and this department has been organized under the direction, as manager, of J. Rowland Bibbins, formerly supervising engineer of The Arnold Company, Chicago. The department will carry on the former work of railroad and marine transport with Richard Waterman and N. Sumner Myrick, formerly secretaries of the railroad and marine committees, and this work will be extended into other related fields of transportation. It is expected that highways, waterways and electric railways will occupy immediate attention.

Wage Reduction Proposed in Kentucky

A general reduction in wages of all employees of the South Covington & Cincinnati Street Railway, amounting to approximately 10 cents an hour, has been submitted by the company to members of the railway union at Covington, Ky., for their approval.

Provided the men agree to accept the new wage scale it will go into effect on Aug. 7, when the present agreement expires. If it is rejected, the question will be submitted to an arbitration board for settlement.

The proposed new scale for conductors and motormen on the Green Line fixes 45 cents an hour for the first three months, 48 cents an hour for the next nine months and 50 cents an hour thereafter. Their present scale is 54 cents an hour for the next nine months and 60 cents an hour thereafter.

The new scale for carhouse men and other employees ranges from 30 cents to 51 cents an hour against the present scale of from 45 cents to 62½ cents an hour.

Extra men at present are guaranteed 210 hours or $105 a month. They are offered a straight salary of $75 a month under the new scale. The present scale has been in effect since Aug. 7, 1920.

The new scale is equivalent to the reduction in wages recently put into effect after negotiations between employees and officials of the Cincinnati (Ohio) Traction Company.

The men have since rejected the reduction proposal.

Power Hearings at Toledo in August

Announcement has been made at Toledo, Ohio, that the power rate hearing before the Ohio Public Utilities Commission has been set for Aug. 3, 4 and 5. The points at issue will be the valuation of the property of the Toledo Railways & Light Company, used in producing the power; the depreciation on the plant; rate of return on investment; and whether or not a demand charge or a fixed charge shall be made along with a consumption charge.

The Rail-Light has proposed a charge of $30 a year per kilowatt of demand and 1¼ cents per kilowatt-hour for energy actually used. This is regarded as so excessive by the street railway commissioner that he has made no offer to the company.

So far the company has been paying approximately 2.40 cents per kilowatt-hour for power. Whatever excess there is in this will be refunded to Feb. 1 when a rate is finally established and approved by the commissioner.

Prof. H. E. Riggs, of the University of Michigan, who was engaged to value the properties and assist in the presentation of the case has worked out five valuations on different bases. The Rail-Light wants its rate to be set on basis of a 1919 reproduction valuation of the plant.

It is believed that action by the utilities commission may be final in settling the dispute which has gone since the beginning of operation under the service-at-cost plan. It also may tend to wipe out considerable of the deficit already piled up.

Interurban Cuts Wages

Announcement has been made by the Marion & Bluffton Traction Company, Marion, Ind., of wage cuts effective on Aug. 1 which affect every class of employees. The average reduction will be approximately 12½ per cent, with the range in reductions running from 10 to 15 per cent. Trainmen will have their wages reduced 5 cents an hour while section hands will be cut from 30 cents to 25 cents an hour for a ten-hour day.

In its statement announcing the reduction the company declared that the lower wage scale is in line with a general retrenchment policy. It is alleged that receipts have shown a notable falling off during the past year.

Dayton Strike Settled

The strike of the electric railway employees at Dayton, Ohio, was terminated on July 21, following the signing of an agreement between the Peoples' Street Railway and the Dayton Street Railway and their employees. The walkout occurred on July 6.

Both sides claim victory, and the resumption of service finds both parties to the contest in amicable mood, apparently. The principal point at issue was that of wages. The company offered 45 cents an hour and the men demanded 52 cents. The men formerly received 62 cents, but under the agreement will receive 48, a compromise rate.

The men feel that they gained not a little by the terms, with the inclusion of arbitration and working agreement clauses in the settlement. The company is elated over the settlement in favor of the "open shop."

As a result of the settlement of the controversy and the acceptance on the part of the men of a lower wage, the City Commission of Dayton is expected to reduce the fare from 7 to 5 cents. Steps are being taken toward that end at the present time.

It is anticipated that similar wage and working term agreements will be entered into by the Oakwood Street Railway and the Dayton & Xenia Electric Railway.

Canadian Radial Hearings Concluded

The long drawn-out inquiry into the advisability of the Hydro-Electric Commission of Ontario embarking on a large scheme of radial railway construction and operation terminated on July 2 with the summing up by I. F. Hellmuth, K. C., counsel for the commission. Mr. Hellmuth's argument was distinctly hostile to the undertaking.

In dealing with the financial aspects of the proposition, he referred to the evidence of E. C. Clarkson, chartered accountant, who had shown the large provincial commitments already undertaken and pointed to the danger of straining provincial credit and having to pay higher rates of interest for borrowed money. As a result of their borrowings, the government and the Hydro Commission had forced the interest rate on capital up to more than 6 per cent. Ontario was committed to the policy of public ownership, but it could not force this policy down the throats of United States bankers and financiers who advised the investors.

In consequence it would be difficult to float bonds for publicly-owned hydro radials in the United States. Money could not be raised in England. Investors there, instead of buying Canadian securities, were sending what they already held to Canada for sale. The money, if required, would have to be raised in Ontario.

Testimony at the hearings has been published from time to time in the ELECTRIC RAILWAY JOURNAL extending over a period of months.

Wages Cut on Key Route

By a vote 425 to 201, platform men of the Key Route and traction lines of the San Francisco-Oakland Terminal Railway have voluntarily accepted a reduction in their wages of 6 cents an hour. The new schedule will become effective on Aug. 1.

W. R. Alberger, general manager of the company, in a joint statement with W. J. Moorehead, president of the union, said that investigations were made and statistics of the United States Department of Labor consulted in fixing the rate.

The new wage scale follows:

Traction Line—First three months, 52 cents an hour.

Next nine months, 55 cents an hour.

Second year and thereafter, 59 cents an hour.

Key Route—First three months, 54 cents an hour.

Next nine months, 57 cents an hour.

Second year and thereafter, 61 cents an hour.

The new scale is the result of conferences between the company and the union officials. These conferences were made possible by an agreement made a year ago whereby either side could open negotiations for an adjustment of wages every six months.

Plea Rejected to Set Aside Arbitration Award

A. C. Blinn, vice-president and general manager of the Northern Ohio Traction & Light Company, Akron, Ohio, has refused union pleas to set aside the recent wage arbitration award. Following the decision of the arbitration board, the men appealed to the company to disregard the award.

In a letter to W. B. Fitzgerald, vice-president of the Amalgamated Association, Mr. Blinn reviewed the whole chain of circumstances leading up to arbitration. It was only after a strike of seven days during which the public served by the company was greatly inconvenienced and the company lost in receipts about $150,000 that the men agreed to accept arbitration. Mr. Blinn dismisses the contention that the wages awarded were not comparable with wages paid on other properties by citing wage scales on the Cleveland interurbans.

On the very important issue of the direct request to ignore the award of the arbitration board Mr. Blinn said:

> This award was from 1 to 2 cents an hour lower than the offer the company made before the trainmen went out on strike. Neither the wage offered by the company to prevent a strike, nor the wage requested by the men was involved in the arbitration proceedings. The function of the board of arbitration was to determine a reasonable wage and in rendering its award we must assume that neither the wage offered by the company nor the wage requested by the men had anything to do with the board's judgment as to what was a reasonable wage under all the circumstances; certainly the members of the board were not entitled to consider either.
>
> Inasmuch as both sides solemnly agreed to be bound by the award of the arbitrators the company does not feel that it should be called upon to disregard the award any more than the trainmen would so feel in the event the board of arbitration has awarded them the wage they requested and the company should now be calling upon the trainmen to disregard the award of the arbitrators and voluntarily reduce their wages. If the trainmen had been awarded the wages they requested, notwithstanding the payment of it might have put the company in bankruptcy, the company would have been held strictly to the award and it would have been subjected to much ridicule by your organization had it suggested that the award be set aside in its favor.
>
> Your request cannot be granted. To do so would make a complete farce of the arbitration proceedings. It would establish a most dangerous precedent by which future arbitrations would to a great extent be affected not only in arbitrations between this company and its employees, but arbitrations for the settlement of labor disputes throughout this territory.

Beaver Valley Wages Reduced

A new wage agreement was concluded by the Beaver Valley Traction Company, New Brighton, Pa., with its trainmen on July 18. The rate of wages for the trainmen in the employ of that company and the Pittsburgh & Beaver Street Railway during the period beginning May 1, 1921, and ending April 30, 1922, both inclusive, follows:

From May 1, 1921, to May 31, 1921:	
First three months	54 cents
Next nine months	57 cents
After one year	63 cents
From June 1 to June 30, 1921:	
First three months	49 cents
Next nine months	52 cents
After one year	58 cents
From July 1 to April 30, 1922:	
First three months	44 cents
Next nine months	47 cents
After one year	53 cents

The 5-cent reduction in June was made effective by reason of an agreement entered into on June 7 and made retroactive as of June 1.

As noted in the ELECTRIC RAILWAY JOURNAL for June 18, W. H. Boyce, general manager of the company, recently asked his trainmen to assume a part of the $93,000 loss which faces the company for the coming year.

Interurban Men Cut 16 2-3 per Cent

The wage controversy between employees and management of the Rochester & Syracuse Railway, Syracuse, N. Y., was settled on July 24 by a decision of the arbitration board announcing a 16⅔ per cent cut. This reduction brings the wages of platform men from 62 to 52 cents an hour for a ten-hour day. A proportionate reduction also affects substation operators, ticket men, bridge and shop men. Common laborers must submit to a 26 per cent cut

The Empire State Railway's employees will receive $4 94 a day or 25 cents less than the Rochester & Syracuse men. They will work on a nine-hour-day basis.

Arrangements are pending for a private arbitration between the employees and management of the Auburn & Syracuse property.

Number of Trainmen Reduced.—Following refusal of members of the union to accept a wage reduction the Wheeling (W. Va.) Traction Company laid off forty men and began operation of one-man cars in order to curtail expenses.

Court Orders Wages Reduced

E. J. Triay, receiver for the Jacksonville (Fla.) Traction Company, has secured an order from Judge R. M. Call of the United States Court for the southern district of Florida, authorizing the reduction of wages of trainmen, 2 cents an hour. The scale starting at 40 cents under the old order, drops now to 38 cents.

The increase in fare to 7 cents has cut travel, according to statistics produced by the receiver and while the advance from 5 to 7 cents was a 40 per cent increase, receipts have advanced only 7 per cent during the twenty-eight weeks of 7-cent fare.

Under these circumstances the receiver appealed to the judge, saying that a further fare increase would not suffice, leaving the reduction of operating expense as the only avenue open. He stated that other departments were accepting reductions similar to those proposed for the trainmen—5 per cent.

Wages of the trainmen have been increased almost 100 per cent since 1914.

East St. Louis Cuts Wages

A threatened strike of motormen and conductors (Amalgamated) of the East St. Louis & Suburban Railway East St. Louis, Ill., has not materialized following the failure of the effort of the men in United States District Court to restrain the company from paying 51 instead of 70 cents an hour on the July payroll.

The employees had declared they would not accept the cut in pay which went into effect on July 1. The Federal Court ruling was handed down on July 23, and on July 25, all of the employees of the company had accepted their pay envelopes.

In his decision, Federal Judge English also denied a motion to dissolve the temporary injunction restraining a board of arbitration from holding hearings in an effort to decide a wage scale for motormen and conductors, the board being composed of William Maffitt Bates, an attorney, as chairman; Hunter B. Keith, representing the union, and C. E. Smith, a consulting engineer, representing the company.

Judge English pointed out the fact that Mr. Smith was forced to resign on account of pressure of other business. The two other members had continued to hold meetings and Judge English in his decision held that without Mr. Smith the board had no authority. In effect, the body ceased to be a board of arbitration.

W. H. Sawyer, president of the company, has offered to have the wage question submitted to a new board, but the men have declined. They are now waiting on the final decision of whether the temporary injunction shall be made permanent. In the meantime the company went back to and is paying the scale which the War Labor Board established and which was in effect until April, 1920.

Financial and Corporate

$93,500,000 Cut in Capital

Pittsburgh Reorganization May Be Carried Out on This Basis—Definite Proposal Made

A definite plan for the reorganization of the Pittsburgh Railways was presented to the Council of that city on July 25. The plan was embodied in an agreement proposed to be executed by the city of Pittsburgh, the Philadelphia Company and the Pittsburgh Railways.

The plan contemplates the reorganization of the Pittsburgh Railways or the formation of a new company to take over all the assets of the railway and to be limited to $62,500,000 in the issuance of stock, bonds or other securities in substitution for securities now outstanding, amounting to $156,000,000. An annual return of 6 per cent for ten years is allowed on the new capitalization, which is the value of the railways properties fixed by the Public Service Commission.

The city and contiguous municipalities are given a voice in the annual operating expenses and yearly depreciation allowance, under the plan, and a fixed annual charge is agreed upon in lieu of tolls, taxes and street cleaning, and for street repaving for which the company is obligated, the city being authorized to proceed with this work.

The plan is the result of conferences of A. W. Thompson, president of the Philadelphia Company, with Council and Mayor E. V. Babcock.

The agreement that is now proposed containing the provisions as accepted by both sides, was submitted by George N. Monro, Jr., special assistant city solicitor, and approved by City Solicitor Charles B. Prichard. In an accompanying letter they recommended its execution.

CONTRACT CANNOT BE FLAWLESS

Mr. Monro in his letter of transmittal said that in this complex matter one could not be expected to prepare a contract that would be above criticism or that would contain every necessary detail. The negotiators were firmly convinced, however, from their study of the problem that the principles of the contract were sound and that its execution would go a long way toward ending the litigation and permitting the reorganization of the company so that it could start anew by properly functioning in the public service.

It was his opinion that the time had come for the company and the city to use every effort to stop litigation and have the property returned to the owners so that they might have an opportunity to reorganize on a sound financial basis. This could be done only by fixing a fair value on which the securities could be based and by agreeing upon a fixed return beyond which the company could not collect.

He made it plain that the opinion of the negotiators was that the details of the reorganization was a problem between the company and its security holders, their lawyers and financiers. These were private questions of no public concern and the city should not interest itself in these details.

SHOULD INVITE COMMENT ON PLAN

Mr. Monro recommends that before any steps are taken to adopt or reject the proposed contract, which states the terms the negotiators are willing to recommend for adoption by the respective principals, the contract should receive the widest publicity and constructive criticism should be invited to it. The controlling thought in the preparation of the contract was that the community is entitled above all else to a service at a reasonable fare. This is purely a matter of money and management.

$5,000,000 FOR BETTERMENTS

A necessary initial step in the reorganization is the raising of $5,000,000 to be spent in betterments, improvements and rehabilitation of the railway system. The Philadelphia Company controlling the Pittsburgh Railways proposes to assist the new company in borrowing this sum in the Pittsburgh district. The obligation so created will, of course, be added to the proposed capitalization. In this connection it is stipulated that the directors of the new company shall be residents of Pittsburgh.

The rate of fare under the plan is to be regulated by the surplus or deficit in receipts compared to budget requirements and guaranteed return, and either the city or the company is empowered to apply to the Public Service Commission for an increase or reduction in fares as the surplus or deficit warrants.

The execution of the agreement and its approval by the Public Service Commission, with the capitalization of $62,500,000, will terminate the case in which the city has attacked the valuation of the railway property. This case is now before the Superior Court on appeal.

A. W. Thompson, president of the Philadelphia Company, in commenting on the text of the proposed plan for the reorganization said that if the companies were left to themselves and urged foreclosures and took steps to realize everything possible in their interest from the present situation, chaos in Pittsburgh's street transportation would result. The purpose of the plan now advanced, Mr. Thompson said, was to maintain one system of electric railways on a financial basis that would endure for years to come.

Federal Courts in California Rule on King Tax Bill

An order denying the motion of the Southern Pacific Company and the Atchison, Topeka & Santa Fé Railway for an injunction to suspend operation of the King tax bill was issued on June 30 by the three federal judges hearing the action. The motion included an application to prevent the state from collecting any tax in excess of the present 5¼ per cent levy on gross revenues, which tax the King bill raises to 7 per cent. This decison of the court proposes that the railroads should continue to pay the 5¼ per cent tax, however, until the case can be tried on its merits.

The opinion, which was written by Justice W. W. Morrow of the United States Circuit Court of Appeals, held that the railroads should attack the King bill purely on constitutional grounds and should not bring in collateral issues directed against the whole tax system. The decision directed the Southern Pacific to pay into the state treasury $6,125,700 due under the 5¼ per cent levy. The King bill would increase this figure to $8,167,600. The Santa Fé was ordered to pay $1,833,404 under the 5¼ per cent tax. Its annual tax under the King bill will be $2,444,539.

Interurban Elects New Officers

Isaac Loewenstein, president of the Charleston National Bank, Charleston, W. Va., has been elected president of the Charleston-Dunbar Traction Company, the stock of which he recently purchased. F. M. Staunton, president of the Kanawha Banking & Trust Company, has been elected vice-president; A. H. Hill, treasurer, and E. W. Alexander has been re-elected superintendent. The board of directors is composed of Messrs. Loewenstein and Staunton, F. P. Gross, W. A. MacCorkle and I. N. Smith.

Mr. Hill, the new treasurer of the Charleston-Dunbar Traction Company, is treasurer of the Charleston Interurban Company; Mr. MacCorkle is president, and Mr. Smith is general manager.

At the time the sale of the Charleston-Dunbar Traction Company was announced Mr. Loewenstein said he was making the purchase for other parties, but that he could not at that time make known the names of the parties for whom he was acting.

There has been considerable talk of a consolidation of the two roads, but officials of both roads so far have declined to discuss the matter. The fact that the new officers of the Charleston-Dunbar Traction Company are also officials of the Charleston Interurban Company gives added import to the report that a consolidation is in process.

Second Fare Zone Results in Profitable Operation

The Manhattan & Queens Traction Company, New York City, is now operating on a paying basis according to W. B. Duncan manager for the receivers. This success is due to the second zone fare put into effect many months ago by the Public Service Commission following a strike of the employees for an increase in wages.

The second 5-cent fare zone begins at Grand Street, Elmhurst. Passengers travel from Manhattan to Elmhurst for 5 cents and from that point east to Jamaica another 5-cent fare is collected.

Mr. Duncan said recently that from 1913, when the company started to operate on the Queens Boulevard, until 1916 2½ per cent a year was paid to stockholders. The year following there was no return to investors and in 1918 $3,000 was cleared above operating expenses. In 1919 the company suffered a deficit of $9,000 and in 1920 and until the strike of this year there was a deficit of $19,000. Mr. Duncan said in part:

> Wages of employees were raised 128 per cent and the operating expenses were likewise on the increase.
>
> We feel that no one is paying too much for the convenience of a ride on the Queens boulevard trolley. We are willing to concede anything for the benefit of the people if they do not demand to take money away from us. We are willing to meet them halfway.
>
> We cannot reduce our revenue, however, and we will refuse to consider it. The second fare is now placing the company on a paying basis for the first time in many years. We are paying our wages and all other bills.

Eastern Massachusetts Does Better

The trustees of the Eastern Massachusetts Street Railway, Boston, Mass., report for six months ended June 30, 1921, as follows:

	1921	1920
Operating revenue and income......	$5,637,858	$6,679,949
Operating expenses and taxes........	4,462,613	6,668,555
Gross income....	1,175,244	11,394
Bond interest and rentals	800,626	772,050
Net income......	$374,618	def $760,656

In the six months of 1921 the "cost of service" ($1,174,875), as defined by Chapter 188 of the Special Acts of 1918, was earned by a slight margin. In the same period of 1920 the company failed to earn the "cost of service" by $1,368,605.

United Railways Aided

The North American Company, owning large interests in the United Railways, St. Louis, Mo., which is now in receivership, has underwritten $1,474,000 of bonds for an extension of twenty-six months at 8 per cent, following the rejection of a proposition to issue receiver's certificates in this amount at an interest rate of 10.198 per cent.

The original bond issue of the old Lindell Railway, a constituent line of the United Railways, was made in 1891. It bore 5 per cent interest over a twenty-year period, and there was a renewal for ten years at 4½ per cent. The bonds are due on Aug. 1. When the question of refunding was taken before the Missouri Public Service Commission recently and it was found that receiver's certificates would have to bear a rate of more than 10 per cent, the North American Company stepped in and agreed to the underwriting at 8 per cent.

The application of Receiver Wells to accept this arrangement was approved in Federal Court on July 21.

City Seeks to Operate Line at Present Suspended

The city of New York through Corporation Counsel John C. O'Brien has filed a brief with Federal Judge Edward Garvin in Brooklyn in connection with the city's application for a modification of the order of Judge Chatfield restraining the city from intervening in the foreclosure sale of property of the New York & North Shore Traction Company.

The city protests that the receivers of the railway have refused to operate the lines although they had been fully authorized to do so and that they proposed shortly to sell the property as junk, thereby rendering the city unable to secure its claims to the tracks and wires and preventing municipal operation except at great expense.

In asking for the modification of the order of Judge Chatfield, the city seeks the right to operate the line until the legal questions of ownership are settled "instead of allowing the property, as at present, to rust and rot."

Seattle Expects to Go Behind in 1922

Reductions totaling $620,321 are announced by Mayor Caldwell of Seattle, Wash., in the cost of operating the tax-supported departments of the city government during the year 1922, as compared with 1921.

Estimates filed by the street railway department showed a reduction in operating expense for next year of $621,142. The cost of operation and maintenance in 1922 is estimated to be $4,703,586, where in 1921 it was $5,334,728. The decrease includes a reduction of $423,760 in trainmen's wages, effected by rerouting cars, and use of more one-man cars. The estimate also includes a decrease of $100,000 in the cost of general supplies, a saving of $35,000 for power and other small economies.

The total cost of the railway for the year 1922, if it paid all debts of interest, payment of principal, is $6,898,085. This would include the $833,000 due to the Stone & Webster interest next March, and a $200,000 depreciation fund. Estimates of the 1922 revenues are in preparation. Superintendent Henderson of the railway expresses the opinion that they will be insufficient to meet the year's expenses.

$650,000 Loan to Cincinnati Traction Company

Terms of the agreement by which the Cincinnati Street Railway will lend the Cincinnati (Ohio) Traction Company $650,000 have finally been agreed upon. A notice of this was received by William Jerome Kuertz, director of street railways, Saul Zielonka, city solicitor, and Charles Hornberger, service director, as a committee representing the city administration, from Bayard L. Kilgour, president of the Cincinnati Street Railway. In making the loan, it is expressly stipulated that the Cincinnati Traction Company shall proceed at once with certain improvements and extensions heretofore agreed upon with the director of street railways.

Mr. Kilgour points out in his letter that the action of the railway in making the loan is entirely "voluntary," and that, "it is not the present intention of the Cincinnati Street Railway to make any loans to the Cincinnati Traction Company in the future." He states further that the present loan must be repaid by Jan. 1, 1922.

Officials of the traction company said that as soon as the funds from the Cincinnati Street Railway are made available, no time will be lost in beginning on certain improvements and extensions listed in the company's program.

Employees Asked to Become Shareholders

The Northern Ohio Traction & Light Company, Akron, Ohio, has started a sale of its 7 per cent cumulative preferred stock to its employees and customers. Every employee is urged to become a business partner and a shareholder in the company.

This campaign is being launched to add new capital to the company to enable it to meet the demands of the growing city. The stock is offered at $95 and accrued dividends for each $100 share. The dividends are payable every three months. Two plans have been proposed under which the public may acquire stock. One enables the purchaser to secure stock immediately by paying cash. The other provides for time payments of $10 per share at the time of purchase, $10 per share for seven months and $15 per share as final payment. The purchaser has the option of withdrawing all partial payments any time prior to the date of final payment, but in that event the company agrees to pay only 3 per cent on the amounts paid in up to the time of withdrawal.

The Northern Ohio Traction & Light Company comprises 242 miles of track of which 100 miles are city lines in Akron. In addition to its business in Akron the company sells power in twelve adjacent communities. The company states that its stock is backed by the need of service absolutely essential to the life and progress of the community. The company has never passed a preferred dividend.

Ohio Lines Segregated

System Centering at Springfield Broken Up Into Constituents to Facilitate Rehabilitation

Interurban and city properties which have heretofore been operated as a part of the Ohio Electric Railway, Springfield, Ohio, have come under separate management. This change resulted from the cancellation on July 18 of the operating agreements then existing. The formal cancellation of leases will follow by court action. Petitions have already been filed toward this end.

As none of the properties has been paying any interest foreclosure action will probably be taken. Following this the proposed reorganization will be worked out. Several of the branches which are not considered desirable in the reorganization proposition will be abandoned and the tracks taken up.

Under the separation proposition, it is planned to place each property upon its own resources. The names of the lines will be changed, it is stated. This will be especially true covering the interurban lines in the Springfield and Dayton district. The original line in this section was known as the Dayton, Springfield & Urbana Railway.

J. H. McClure Will Manage

In this separation of control of interurban and city properties the Indiana, Columbus & Eastern, formerly known as the Dayton, Springfield, Columbus and Lima system, with branches from Dayton to Union City, Ind.; Lima to Defiance and Columbus to Grove City, has come under the actice management of J. H. McClure, receiver. He will move his headquarters from Lima to Springfield.

The Ohio Electric Railway proper, as distinguished from the leased properties, consisting of the interurban line from Lima to Toledo, and the local light and railway properties in Lima, has come under the active management of B. J. Jones, receiver for the Ohio Electric Railway. He will move his headquarters from Springfield to Lima. The Indiana, Columbus & Eastern properties will be operated hereafter from Springfield, and Mr. Jones will direct the other properties from Lima.

The interurban properties known as the Columbus, Newark & Zanesville system, extending from Columbus to Zanesville, with the Buckeye Lake and Zanesville city property and light plant, have come under the active management of B. A. Berry, receiver, of Columbus. Mr. Berry was formerly commissioner of securities of Ohio and was recently placed in charge of these properties. These will be operated substantially as at present, in connection with the Indiana, Columbus & Eastern system.

Day & Zimmerman, operating engineers, of Philadelphia, act as heretofore in an advisory capacity, and will have supervision of the general operations of all the properties. The name of each road will be changed, so as to indicate the extent and character of the separate properties.

Savannah Reorganization Plan Out

A plan for the reorganization of the Savannah (Ga.) Electric Company has been presented by Philip Stockton and George J. Baldwin, the committee under a stockholders' agreement of Dec. 26, 1919. It is proposed to organize a new company, which will be known as the Savannah Electric & Power Company, to acquire all of the properties of the Savannah Electric Company and its subsidiaries.

The property is to be conveyed subject to existing mortgages and the bonds issued under these mortgages are to be assumed by the new company. There would be new bonds to the extent of $2,500,000. The stock to be issued would consist of $1,300,000 of debenture stock, series A, 8 per cent cumulative, to be issued to finance the balance of the demand notes and unpaid interest thereon; $1,000,000 of 6 per cent cumulative stock, cumulative after Oct. 1, 1926, to be issued to the present holders of $1,000,000 of 6 per cent preferred stock, share for share, without assessment or other costs; and $2,500,000 of common stock to be issued to the present holders of $2,500,000 of common stock, share for share, without assessment or other costs.

The new first and refunding bonds and the debenture stock are to be issued only to finance obligations which now have priority over the preferred and common stock and to provide for the construction of the new company, so that the equity of the stockholders will in no way be impaired by the plan.

The committee says that the earnings on the basis of the new capitalization are sufficient to pay all charges and dividends upon the new debenture stock and preferred stock with ample margin.

Stone & Webster have been appointed reorganization managers. The time within which the plan may be declared operative is limited to Sept. 30, 1921.

$382,065 Profit Earned by P. R. T.

The audit of the board of experts placed on the books of the Philadelphia (Pa.) Rapid Transit Company on behalf of the city has just been completed. It shows that the gross income of the company for the year ended Dec. 31, 1920, was $39,400,341, out of which the company must pay expenses of one kind or another of $39,018,276, leaving a profit of only $382,065.

The revenue from transportation was $39,301,973, to which was added revenues of other operation making a total of $38,807,354 from operation. Deducting operating expenses, leaves a net income of $9,612,189. Adding to this non-operating income gives a total net income of $10,205,175. Rentals for leased lines amounted to $7,366,500, and interest charges, ground rents, amortization charges, etc., amounted to $9,823,110, leaving the company a profit of $382,065 for dividend purposes.

The report also gives information concerning the monthly passenger revenues and a statement of the net profit and loss for each of the twelve months, together with pertinent information concerning advances to subsidiary companies during the year.

Financial News Notes

Detroit United Bonds Offered.—Dillon, Read & Company, New York, N. Y., are offering for subscription to yield more than 8 per cent $4,000,000 of first mortgage collateral 8 per cent sinking fund gold bonds of the Detroit (Mich.) United Railway, maturities Aug. 1, 1922, and Aug. 1, 1941. The total authorized issue of these bonds is $5,000,000. They are being put out for refunding purposes.

North Carolina Property Sold.—The property, including franchises of the Cumberland Railway & Power Company, Raleigh, N. C., was recently bid in for a committee of bondholders by Herbert L. Jones, president. The public sale took place at Fayetteville on July 2. The price was $75,000. It is reported that the bondholders will continue the road in operation.

Bond Issue Proposed for Improvements.—A bill introduced in the City Council of Seattle, Wash., and referred to the city utilities and finance committees provides for the issuance and sale of $1,330,000 of utility railway bonds in order to carry on needed extension and betterment work. The bill provides for the retirement of these bonds in annual payments beginning six years from date and ending twenty years from the date of issuance, with interest thereon at 6 per cent.

Boston Property Pays Interest.—The Eastern Massachusetts Street Railway, Boston, Mass., met the interest on its Series A, B and SA mortgage bonds on July 1. The two preceding semi-annual payments due July, 1920, and January, 1921, were deferred due to the poor financial condition of the company, and are still unpaid. However, improvement in conditions made it possible to meet the payments on July 1. It is reported that every district is now earning the cost of service. This favorable condition is attributed mainly to the introduction of one-man safety cars.

Traffic and Transportation

City Will Move for Delay

The city of Minneapolis, Minn., proposes in its answer to the petition of the Minneapolis Street Railway before the Minnesota Railroad & Warehouse Commission to move for delay in that the city is not prepared to make the contest. Objection will be made to jurisdiction over electric railway fares, on the ground that the law is unconstitutional.

At the hearing of July 15 in the Duluth Street Railway request for an increase in fare for emergency purposes from 5 to 7 cents, J. B. Richards, city attorney, held that no emergency exists and that any change in fare should await the valuation of the company property. The company replied that it is losing money. The Council has rescinded a resolution calling for $350,000 expenditure for maintenance and $300,000 for extensions and improvements. A decision is expected by July 30.

The city planning board of St. Paul is making a survey of all lines of the City Railway to determine whether all districts are being served adequately and continuously.

Court Orders Fare Cut in Cincinnati

In a decision handed down by Judge Frank R. Gusweiler, the Cincinnati (Ohio) Traction Company has been ordered to reduce fares one-half a cent to 8 cents on Aug. 1, and to advertise such and to post notice of the reduction in the cars. The company also has been ordered to prescribe rules for carrying into effect the provision of the ordinance reducing the rate of fare for school children to 5 cents.

The validity of the ordinance passed by the City Council in amending the service-at-cost franchise was established by the court in reviewing the case. Judge Gusweiler held that inasmuch as the amended ordinance had been accepted by the company it took the form of a contract binding on both parties. He declared that under the state laws and under the United States Constitution this contract could not be altered or modified by the initiative and referendum section of the state constitution adopted in 1912.

Judge Gusweiler said that the ordinance reducing fares seeks to modify both a previous ordinance and the resolution of the Board of Administration adopted in 1896, the days before the referendum. He states that the city gives the company a consideration by providing that the company shall not be authorized or required to pay into the reserve fund any sum in addition to the initial payment of $250,000 now in the fund. The court concludes by stating that the city of Cincinnati is entitled to specific performance of the contract, and therefore orders the company to carry out the provisions of the ordinance.

The citizens' committee, which presented a petition for the referendum, stated that it would probably take some further action in the case.

Emergency Bus Line in Legal Tangle

An order to show cause why an injunction should not be issued against the operation of motor buses on the Grand Concourse, details of which are given in the ELECTRIC RAILWAY JOURNAL, July 16, 1921, was served on July 15, on Commissioner Grover Whalen of the Department of Plants and Structures of New York City under whose direction the buses are being operated.

Suit was instituted by Jennie T. Quinn, represented by Alfred T. Davidson, of 2396 Third Avenue. Affidavits supporting the action were signed by Edward A. Maher, Jr., and Leslie Southerland, president and vice-president of the Third Avenue Railway. Several employees of the company also filed affidavits.

Mr. Whalen said the suit was instituted to put all municipal buses out of commission. If the application should prevail, it would affect every bus line now in operation in the city and would compel people to walk along all the routes abandoned by the electric railways.

Eight-Cent Rate to Continue Indefinitely

By a recent ruling of the State Railway Commission of Nebraska the Lincoln Traction Company will continue indefinitely its 8-cent cash fare. The schedule of rates is 8 cents cash with four tokens for 30 cents within the Lincoln zone. Between outlying points and the city the fare is 10 cents. School children are transported for 5 cents. The company has been operating under a temporary ruling since December, 1920, and this schedule expired on June 30, 1921.

London General Omnibus Plans New Services

According to *Motor Transport* for July, 1921, the London General Omnibus Company plans to open up large country services in the outer circles of Greater London. These new routes will provide facilities between points hitherto without direct means of communication. The routes are through somewhat hilly districts. In consequence a considerable number of single-deck buses of the K type, especially designed for these services, are in course of construction. The new vehicles will each seat thirty-four passengers. They are expected to overcome the difficulties which have risen in certain localities, where the existence of bridges over railways of insufficient strength to take the ordinary type of bus, has caused considerable inconvenience.

Case to High Court

Lower Court at Louisville Seeks Answers on Questions of Law from Supreme Court

The Louisville Railway case has been passed by the United States Circuit Court of Appeals to the Supreme Court of the United States. That, in brief, is its decision regarding the appeal of the city of Louisville from the decision of Judge Evans barring interference with the collection of a 7-cent fare by the company.

Holding the case is one which the Circuit Court should not decide, Judge L. E. Knappen announced from the bench that the court would reserve decision until it had certified certain questions of law to the Supreme Court. What these questions are was not made public.

These questions are expected to reach the Supreme Court in time for the October term. In the meantime, the company may continue to collect the 7-cent fare by authority of Judge Evans' injunction.

In the opinion of Churchill Humphrey, attorney for the company, one of the questions that has been passed to the higher court is the construction of Section 3 of the Bill of Rights of the Kentucky Constitution, which says in effect that no corporate franchise shall be granted unless such be subject to alteration, amendment or revocation.

The Supreme Court, it was said, may merely answer the questions certified to it by the Court of Appeals, or it may order sent to it for its perusal the records of the entire case. In the first event, the answers would come back to the Circuit Court, which would then hand down a decision. In the latter case, the decision would probably come down from the higher court.

The city contends, according to counsel, that the franchise, contracts and agreements calling for a 5-cent fare are binding and continuing in force, while the company's contention is that the contracts are purely regulatory and subject to change.

Company officials estimate that if there had been a decision favorable to the city, it would have to refund on rebate slips a maximum of $142,000. It estimates that it has sold 12,000 strips of tickets a day since March 24. This would mean a refund of $1,200 a day for 119 days. The company believes, however, that not more than 50 per cent or 60 per cent of the rebate slips have been saved. The company collected a 7-cent fare forty-one days without issuing receipts.

Commission Will Hear Arguments

The California State Railroad Commission set July 26 as the date for hearing arguments of the Los Angeles Railway in support of its application for a rehearing of the rate case which has been before the regulatory body for a long time. The commission recently handed down a decision establishing a 6-cent cash fare, but specified that tokens be sold ten for 50 cents, thus retaining the 5-cent fare for regular riders.

The commission in its decision estimated that one-third of the riders would pay 6 cents cash fare. In the application for a rehearing, the railway contends that this estimate is too high and declares that 20 per cent would be a hopeful estimate.

The valuation of the company's property used in establishing the base rate of profit is as of June 30, 1920. The company contends that improvements made since that time have increased the valuation about $5,000,000.

Auto Transportation Act Interpreted

In an order granting certificates of necessity and convenience to both the Barker Motor Company and the firm of Porter & Richards for the operation of auto stages between Everett, Stanwood and Mount Vernon, the State Department of Public Works of Washington makes its initial announcement of regulative principles adopted in relation to auto transportation under the laws of 1921, so far as they are involved in the case decided. Both companies were operating over the routes described on Jan. 15, 1921, by which they are automatically entitled to certificates under the act, if operating in good faith.

Protest against the good faith qualification for exclusive rights on the route was made on behalf of the Seattle, Everett and Vernon Stage Lines Company, on the ground that the two operating companies had not complied with the jitney bond requirement of 1915, for the privilege of entering and leaving stations within the limits of cities of the first class. As the attorney-general has held prior compliance with the municipal jitney bond requirement to be a condition of good faith upon stage companies entering first-class cities, it is expected that the department's decision to disregard the requirement as to lines established before the present certificate of necessity act became effective will be the basis of litigation on the part of contesting stage lines. On this point, the Department of Public Works, in its ruling on the Everett-Mount Vernon contest, says:

> We are not inclined to hold that failure to procure a bond under the law prior to Jan. 15, 1921, must necessarily taint the operator with bad faith and preclude the issuance of a certificate under Chapter 3 of the session laws of 1921. There is such a diversity of opinion even among lawyers as to whether the requirements of Chapter 57 of the 1915 laws apply to stage companies which merely enter city limits for the purpose of receiving and discharging passengers, it would seem harsh to hold that every such operator who failed to procure a bond was necessarily acting in bad faith. We hardly believe a layman should be penalized for failure to comply with statutory provisions when lawyers of standing and ability doubt the application of the law to his case.
>
> A wilful and inexcusable violation of the plain statute or ordinance affecting the operation would present a different question.

This latter conclusion is as near as the department undertakes an expression as to whether failure of stage companies to comply with the jitney bond law on routes entering first-class cities will be accepted by the department as a lack of good faith.

Motor Vehicles Must Pay in Illinois

An amendment to the motor vehicle law of Illinois, made effective July 1, 1921, provides that "all vehicles, trailers and semi-trailers used for carrying freight, when used for hire, operating regularly over fixed or definite routes between two or more municipalities, or from a point or points outside of municipalities into a municipality over improved state highways, and with fixed schedules or rates, shall pay an additional license fee of ½ cent per mile . . . for the total mileage traveled over such improved state highways by each vehicle, trailer or semi-trailer in each calendar month."

Furthermore, all similar vehicles used for carrying passengers, when used for hire, and operating regularly on fixed routes over improved state highways, and with fixed rates, must pay "an additional license fee of one-twentieth of 1c. per mile for each passenger seat, multiplied by the total number of miles traveled by such vehicle over the improved highways."

The new public utilities act also provides that no person shall operate any motor vehicle for the carriage of passengers for hire, or for the carriage of freight for hire, unless he shall file with the commission a sworn statement of his ability to pay all damages which may result from any accidents due to the negligent use of the vehicle, or file with the commission security or bond guaranteeing the payment. In case one person operates two or more motor vehicles, he must file proof of his ability to pay damages, or provide a bond, and carry insurance against damages, to the amount of $10,000 for each motor vehicle.

Maps Prepared to Guide Trainmen

Maps of all lines showing danger points are being prepared by the Los Angeles (Cal.) Railway for the use of trainmen. The maps will indicate fire stations, garage entrances, busy curves and intersections, schools, grades and other points of risk. This plan follows the successful use of line transfer maps which were furnished trainmen when the new coupon transfer was introduced May 1. These maps showed the routes of lines on separate sheets with a red line indicating "in" trip and a blue line showing "out" trip.

Injunction Refused to Connecticut Jitney Men

Judge Keeler of the Superior Court for New Haven County has refused to grant a temporary injunction to the jitney men to restrain the prosecuting officers and chiefs of police in New Haven and Derby from referring complaints and making arrests under the new act regulating buses in that state. The act was attacked for its unconstitutionality on various grounds.

ALL OBJECTIONS DISMISSED

The court dismisses all nine of the objections cited. It holds the new law to be a legitimate exercise of the police power by the General Assembly with reference to a business peculiarly affected by a public interest with ample provision by way of review to insure to any one concern due process of law whereby his constitutional rights may be safeguarded. In disposing of the objection that the legislation takes the plaintiff's property without due process of law, the court holds that clearly no tangible or visible property of the plaintiff was so taken. It says that prior to the enactment of the statute jitney proprietors clearly enjoyed nothing properly called a franchise. They merely followed a calling subject to some degree of special regulation of law. The court further holds as lacking merit the two grounds of objection that the act grants special privileges to certain clases of persons and that it deprives the plaintiff of equal protection of the law. The court held that these objections in effect presented the same questions. The ruling of the court was that an electric street railway had to obtain a certificate of convenience and necessity similar to that acquired by the bus owners to operate.

JITNEY OPERATORS ARRESTED

On orders of City Attorney Sheridan Whitaker of New Haven all jitney drivers on the streets after noon of July 23 were arrested charged with violations of the state jitney law. Even those jitneys which bore "Free Bus" signs were ordered arrested.

Attorneys for the jitney men on July 25 went before the City Court and asked to try but one of those arrested, the others to share alike in the ultimate result. The next step was to plead not guilty and the attorneys filed a demurrer, which the court was asked to overrule so the case could be taken to the Court of Common Pleas, which convenes the first Monday in August. It is planned to follow the same procedure in that court so as to be able to take an appeal to the Supreme Court as soon as possible.

A move to take the case to the Federal court is also going forward. The plan is to move for the fixing of a date for a hearing on an injunction, making the jitney men the plaintiffs and the State of Connecticut the defendant on the ground that it is depriving some of its citizens of private property and their livelihood.

Trolley Bus Installation Proposed at Akron

The officials of the Northern Ohio Traction & Light Company, Akron, Ohio, have agreed to install at least one trolley bus on the West Exchange Street extension as soon as one of the new vehicles is available. The announcement follows a series of conferences between City Councilman Joseph O'Neill and the traction officials. The city councilman proposed to use the new trolley bus on all city car line extensions so as to eliminate the necessity of laying track.

Advocates of the extensions would have the city sell bonds for the purchase of the trolley buses, the principal and interest of which would be guaranteed by the railway. This would give the city a hold on the company in case the municipality should decide to purchase the lines when the present franchises expire in 1924. City officials estimate at present 20 miles of extensions are needed. Trolley buses could perform this service on an investment of $350,000, it is said.

The traction officials estimate the cost of overhead wires and poles necessary for trolley bus operation would average from $4,500 to $7,500 a mile. Railway engineers estimate the cost of track to run from $45,000 to $60,000 a mile. Trolley buses are estimated at $9,000 each. The adoption of the trolley bus will permit the extension of many car lines which under the traction company's present financial status would be impossible.

This is the fourth city in the United States so far which has adopted the trolley bus as an auxiliary to street railway systems. Other cities in their order named are Richmond, New York and Buffalo.

Salt Lake & Utah Granted Fare Increase

The Public Utilities Commission of Utah has issued an order granting increases in fare on the Salt Lake & Utah Railroad, Salt Lake City, Utah, also known as the "Orem line." One-way tickets are to be increased 20 per cent. Round-trip tickets, for which a 20 per cent increase was asked, are permitted to be increased 1.8 per cent of one-way fare. One thousand-mile books are increased from 2¼ cents to 2½ cents a mile. No increase in 500-mile books, commutation tickets or school tickets is allowed.

The application of the railroad company was for authority to increase passenger rates and excess baggage rates in all 20 per cent. The company set up a book value on the property to support the application. The commission stated that it found the income statement indicated so clearly the need for additional revenue that it felt it unnecessary to await the actual physical valuation of the property, it being apparent that the book values showed that the company's revenues were not sufficient. The commission stated that the company had not up to the present been able to set up a depreciation reserve on its property as a whole. The only class of property that had been depreciated was rolling stock and shop equipment.

Eight-Cent Fare Decreased Traffic Slightly

Notwithstanding the fact that fares have been increased from 5 cents to 8 cents in Portland, Ore., within the past three years, the number of passengers increased the first two years, with a slight falling off in traffic when the 8-cent fare went into effect. The figures are as follows:

Year	Rate	Fares Collected
1917	5-cent fare........	60,611,072
1918	6-cent fare........	68,628,602
1919	6-cent fare........	73,960,478
1920	6-cent fare to June 15 and 8-cent thereafter	71,175,872

Transportation News Notes

Operator's Name Posted.—The Trenton & Mercer County Traction Company, Trenton, N. J., has adopted the plan of posting the name of the operator of the car above his head so that passengers may become acquainted with him. The card reads: "The operator of this car is ——— ———."

New Fare in Effect.—The City Light & Traction Company, Sedalia, Mo., recently put into effect a 6-cent fare for purchasers of tickets and 10 cents for a cash rate. Children may ride for half fare. In promulgating the new schedule the company considered the protection of its regular patrons who by buying tickets will pay the usual rate, 6 cents.

Eight Cents in Montgomery.—By a recent ruling of the Public Service Commission the Montgomery (Ala.) Railway, Light & Power Company has been authorized to put an 8-cent cash fare into effect. Ticket buyers will continue to pay the rate which has been in effect many months. The company through its receiver, Ray Rushton, applied to the commission several months ago for a 10-cent fare.

Safety Cars Allowed in Los Angeles.—The Los Angeles (Cal.) Chamber of Commerce has passed a resolution indorsing the continued use of one-man safety cars in Los Angeles "on the grounds that they greatly reduce accidents and practically eliminate those accidents entailing injury." The organization also recommended continued use of the cars to demonstrate more clearly their accident prevention features.

Lower and Higher Fares in Effect.—The Lordship Railway, Bridgeport, Conn., recently announced a reduction in fares from 6 cents to 5 cents from Hollister Avenue to Lordship Beach. However, the trip from Golden Hill Street to the beach will cost 10 cents in place of the former 6 cents. The railway, which has charged a 6-cent rate for the past two years, was instrumental in developing Lordship Beach.

More Trains to Improve Service.—A revision in the schedule of trains on the Interstate Public Service Company's traction line between Indianapolis and Louisville, whereby the service on the line will be improved and more trains operated, became effective June 15. According to the new schedule, one new limited interurban will be operated each way daily between Indianapolis and Louisville and changes will be made in the number of local trains.

Hearing Scheduled on Indianapolis Fares.—A hearing on rates of fare to be charged by the Indianapolis (Ind.) Street Railway on expiration of the sixty-day test period of 5-cent fare and 2-cent transfers, July 31, will be held by the Public Service Commission. Officials of the railway are expected to put before the commission the losses occasioned by jitney bus competition, which are said to average more than $1,000 daily, and on which the City Council has delayed taking action pending further developments.

Reducing Fares to Gain Patronage.—The Minneapolis, Northfield & Southern Railway, operating from Minneapolis to Northfield and Faribault, Minn., has tried to spur up its business by ordering a reduction in fares from 3.6 to 2.5 cents per mile. When the road operated before the war on a low price basis it did a large volume of business. The reduction is made possible by the return of this class of intrastate carrier to the jurisdiction of the State Railroad & Warehouse Commission. The Minnesota fare is legally 2 cents per mile.

Safety Committees Hold Meeting.—The June get-together meeting in honor of the Safety Committees of the Union Traction Company of Indiana was held in Anderson on June 6. Besides the usual frivolity which goes with the "great-great-greatest banquet" there were some serious talks by H. A. Nicholl, general manager of the company, and Ross Luellen, safety engineer. Mr. Nicholl reviewed the financial condition of the company, pointing out that the people who have stock in it have not received a penny dividend since 1912. He further stated that no extensive downward revision of wages had been made and that it was the company's intention to maintain the present scale of wages as long as conditions made it possible. He urged strict economy by every employee. Mr. Luellen, safety engineer, brought out the fact that some excellent no-accident records are being made and that a saving of power which means about $40,000 a year to the company is being accomplished. Other speakers were John W. McCardle, chairman of the Public Service Commission of Indiana, who was the guest of honor, and John F. McClure of Anderson.

Legal Notes

CONNECTICUT—*Injury to Person at Waiting Station.*

A motorman operating a car in a country district was not guilty of wanton misconduct in running down and killing an intending passenger, who was standing 2 ft. from the track, signaling the car, and was struck by the overhang of the steps, for the motorman was entitled to anticipate, for a time at least, that the person killed would withdraw from the danger point. A person waiting at a station is in a different situation from the traveler upon a highway crossing. [Pond vs. Connecticut Company, 111 Atlantic Rep., 621.]

ILLINOIS—*Ordinance of Park Commissioners Granting Rights to Bus Company Held Not Invalid as Occupation License.*

Though a municipality has no inherent power to license any occupation or require the payment of a tax for engaging in it, it has power to impose such conditions for the grant of the use of its streets as it may deem for the best interests of the public, and for such purpose may require a contribution from a public service company, as a motor bus company, and it cannot be held that an ordinance of park commissioners granting to a motor bus company the right to use certain streets, etc., and exacting certain contributions therefor, was an occupation license or passed for revenue purposes, and therefore invalid. [People ex rel. Hoyne, State's Atty., vs. Chicago Motor Bus Co., 129 Northeastern Rep., 114.]

MASSACHUSETTS—*Intending Passenger Hit by Car Overhang on Curve.*

Where it was obvious to an intending passenger that a car would not stop at the usual point on account of a pile of paving stones, the motorman need not warn the passenger that the car would not stop and that she might be struck by the rear overhang of the car. [Fairbanks vs. Boston Elevated Railway, 129 Northeastern Rep., 367.]

MICHIGAN — *Franchise Is Construed Strictly.*

A franchise given to an interurban line with the provision that passengers for a certain fare were entitled to a continuous ride from the township "to Gennessee Avenue, in Saginaw," was held to require transportation only to the junction on Genessee Avenue and not along that avenue after it was reached. [Zilwaukee Township vs. Saginaw-Bay City Railway, 181 Northwestern Rep., 37.]

NEW YORK—*Injury to Employee While Riding on a Pass on His Way to Work Held to Be Within Compensation Law.*

Where an employee of a railway company, furnished with a pass entitling him to ride whenever he chose, was injured in a collision when aboard a train on his way to work, the remedy is not in an action at law, but under the Workmen's Compensation Law, since the injury arose in the course of his employment. [Tallon vs. Interborough Rapid Transit Co., 184 New York Supp., 588.]

NEW YORK—*A Street Railway Can Be Compelled to Raise Its Tracks to Meet Changes in the Street Grade, Though Not Ordered to Do So by Public Service Commission.*

Despite Laws 1880, Chap. 511, the Belt Line Railway Corporation, occupying Fifty-ninth Street in the City of New York can be compelled to raise one of its tracks to meet changes in the contour of the surface caused by repaving, though not ordered to do so by the Public Service Commission. [People ex rel. City of New York vs. Belt Line Railway Corporation, 129 Northeastern Rep., 217.]

NEW YORK—*Pedestrian Crossing Street Held Guilty of Contributory Negligence.*

A pedestrian who before starting to cross a street saw a car more than a block away rapidly approaching, and when he had crossed the first track saw that the car was approximately 29 ft. away, but thinking that he could get across proceeded without increasing his speed and was struck, is guilty of negligence as a matter of law, for he was as much obligated to look out for his safety as was the motorman. [McGuire vs. New York Railways, 128 Northeastern Rep., 905.]

NEW YORK—*Sleighs Need Not Carry Lights.*

A sleigh is not a "vehicle on wheels," within the meaning of Highway Law sec. 329a, providing that every vehicle on wheels shall have attached thereto a light or lights, to be visible from the front and from the rear, etc. [Vadney vs. United Traction Co., 183 New York Supp., 926.]

RHODE ISLAND—*State, Through Commission, Has Authority to Regulate Rates of Public Utilities, Such as Street Railroads.*

The paramount authority of the State to regulate the rates of public utilities, such as street railroads, through the agency of a commission, as the Public Utilities Commission, is well established. [Public Utilities Commission vs. Rhode Island Company, 110 Atlantic Rept., 655.]

WISCONSIN—*Railroad Track Laid Across a Street Is "On" Such Street, Under a Speed Ordinance.*

An ordinance limiting the speed of an interurban electric car upon track on a public street to 15 m.p.h. applies at the crossing to an interurban road which crosses a public street. [Merrill vs. Chicago, No. Shore & Milwaukee R.R., 177 Northwest Rep., 613.]

New Publications

Functions of Engineering Station of University of Illinois

By Charles Russ Richards. Circular No. 9 of the Engineering Experiment Station, University of Illinois, Urbana, Ill.

This bulletin gives details of the kinds of service furnished by the experiment station and lists the co-operative investigations now in progress.

The Engineering Index

Published by the American Society of Mechanical Engineers, New York. 586 pages.

Since 1905 this index has been published annually, up to 1913 by the Engineering Magazine Company, and since that time by the A. S. M. E. Some 700 engineering and allied publications are listed.

Management Engineering—The Journal of Production

Vol. 1 No. 1. Published by the Ronald Press Company, New York.

This is a new monthly publication designed "to serve those who are responsible for the operation of industry." The leading articles all bear on this subject. An interesting feature is that most of the articles carry at their head their numerical classification according to the Dewey system. This classification is not extended to the editorials.

Report on Standardization of Petroleum Specifications

Bulletin No. 5. United States Bureau of Mines, Washington, D. C.

This bulletin supersedes Bulletins 1 to 4 inclusive of the committee appointed by direction of the President of the United States to co-operate with the United States Fuel Administrator.

All the specifications contained in the previous bulletins have been revised and co-ordinated, where necessary, and to them have been added several not previously published. Bulletin 5, therefore contains complete specifications for all petroleum products with full descriptions of the methods of testing employed in the government laboratories.

Pamphlets and Clippings in a Business Library

By Virginia Fairfax. 62 pages; illustrated. *Journal of Electricity and Western Industry*, San Francisco, Cal.

This book is a reprint of a series of articles from the *Journal of Electricity*. The subject matter is the basis of a course of instructions at a library school and is the result of the author's experience in working out a practical method of filing pamphlets and clippings, based on approved principles of library science. The text is divided into five chapters. The points covered are the value of pamphlets and clippings when required for ready reference; the sources and selection of material; the filing equipment needed and the alphabetical subject file.

Personal Mention

Messrs. Bundy and Fast Advanced on the Ohio Electric

J. H. McClure, receiver for the Indiana, Columbus & Eastern Traction Company, on July 15 announced the appointment of F. A. Bundy as superintendent of the Lima Division of the Ohio Electric Railway to succeed C. C. Fast, who has been promoted to general superintendent of transportation, with headquarters at Springfield, Ohio. Mr. Fast's jurisdiction will extend over the property of the Indiana, Columbus & Eastern Traction Company, the Columbus, Newark & Zanesville Electric Railway and the Lima-Toledo Division of the Ohio Electric Railway. These changes were necessitated by the resignation of F. J. Moore as general superintendent of transportation at Springfield. Mr. Bundy was formerly master mechanic for the Ohio Electric Railway at Lima.

"Dan" Smith in the Arena

Enters Mayoralty Contest in Detroit—Has Expressed Himself in Favor of Municipal Ownership

Daniel W. Smith, well known to the electric railway industry throughout the country because of his connection with the Peter Smith Heater Company of Detroit, has announced his candidacy for the nomination for the mayor of Detroit. While no platform has yet been announced, Mr. Smith has expressed himself as in favor of municipal ownership when operated on economic lines and he is expected to put up a fight in keeping with his record as a soldier. Mr. Smith's hosts of friends in the industry will be interested in learning that he has jumped into the political arena.

Besides the numerous friends Mr. Smith has in the electric railway industry, he also has thousands of friends and admirers in Detroit where he has lived throughout his entire forty-six years. Former service men in Detroit are actively supporting his candidacy, for he has gained their friendship through his numerous activities in looking after the wants of needy veterans. During the Mexican border trouble in 1916 Mr. Smith was brigadier-general of the Michigan National Guard and saw border service in that capacity. In the World War Mr. Smith was commissioned a captain in the Motor Transport Corps.

Born in Detroit, Dan Smith is the son of Peter Smith, the inventor of the well-known heating appliances, and he is in close touch with conditions in the city of which he is a native. He is also vice-president and general manager of the Sattley Coin Counting Machine Company, treasurer of the Liberty Foundry and president of the Daniel W. Smith Company.

Mr. Smith has long been interested in and taken an active part in the various military organizations of the state and of the country. In 1892 he enlisted as a private in Company F, Michigan National Guard. Later he was quartermaster sergeant of Company M, 33rd Michigan Infantry and saw active service in Cuba with that organization. On his return in 1899 he was made second lieutenant, Company C, First Michigan Infantry, and later he was successively captain and adjutant of his regiment. In January, 1914, he was made a major and detailed as adjutant general of the First Brigade, Michigan National Guard. He again saw active service on the Mexican border in 1916. When the United States became involved in the World War he refused a lieutenant-colonelcy because the commission would necessitate his being detailed to Washington in the Department of Purchase and Supplies for the War Department. In order that he might get across he obtained the commission as captain of the Motor Transport Corps and was ordered to France, but the armistice was signed while he was on the seas.

Daniel W. Smith

Among the various organizations of which Mr. Smith is a member are: United Spanish War Veterans; American Legion; Veterans of Foreign Wars of the United States; Military Order of the World War; Military Order of Foreign Wars; Detroit Athletic Club; Detroit Boat Club; Detroit Yacht Club; Old Club at St. Clair Flats; Lochmoor Club, and Hunt Club.

Campaign headquarters are being arranged in the Barber Building on the Campus Martius and Monroe Avenue. The campaign is to be conducted purely upon lines of efficiency and economy in city government. His candidacy is bound to appeal to progressive citizens, from whom he expects support.

Mr. Goff Mediator Again

Cleveland Banker and Railway Man Named for Difficult Post by President Harding

F. H. Goff, Cleveland, appears again in the rôle of the great pacificator. He has just been designated by President Harding as an official go-between to promote a settlement of outstanding railroad claims against the government. Mr. Goff is president of the Cleveland Trust Company, a director of the Baltimore & Ohio Railroad and a vice-president of the Lake Shore Electric Railway, Cleveland, Ohio.

It might almost be said that to Mr. Goff these positions are an incident. They are when the opportunity arises for him to serve in a public capacity where large interests are at stake. Men like Mr. Goff can make money any time anywhere. Years back during the stormy session at the conferences between Mayor Tom L. Johnson of Cleveland and the late President Andrews of the Cleveland Railway, at which the present service-at-cost plans were laid, Mr. Goff assumed what appeared then to be the suicidal rôle of buffer. He did it at the instance of the late Judge Tayler, after whom the Cleveland franchise grant is named, and he succeeded in accomplishing the seemingly impossible. This was perhaps the first time that he came prominently before the public. He was then a member of the law firm of Estep, Dickey, Carr & Goff.

Those were the days when Mr. Johnson was holding out for a value of $18,000,000 for the Cleveland Railway lines, the railway was contending for an allowance of $30,000,000 and Peter Witt, the same Peter who later originated the end-entrance center-exit car which bears his name and who now attends the railway conventions, took an active part in all the negotiations.

Peter was, so to speak, the *enfant terrible* of the proceedings. Into them Mr. Goff was precipitated. After the warring factions at the hearings had tired of hurling names at one another, Mr. Goff would make one of his polite little speeches by way of throwing oil on the troubled waters, with the result that success crowned the efforts of the negotiations.

All this may sound like ancient history, but it fixed the place of Mr. Goff in public service so firmly that his is one of the first names to be mentioned in Ohio whenever a problem arises which calls for the excercise of unusual patience, skill and foresight in reconciling interests that appear to be divergent.

As was said before, the profession of banking may be only an incident to Mr. Goff, but then it is an incident that does preclude him from accepting all the honors that the public seeks to thrust on the man. After all, in his capacity as banker Mr. Goff is really serving the public continuously by conserving the funds of the countless depositors whose funds are entrusted to the institution of which he is the head. And he has done so well in the rôle of banker that the Cleveland Trust Company has become one of the two or three largest financial institutions in that rapidly growing community.

Lewis H. Lee to Handle Publicity of Atlanta Railway

Lewis H. Lee, of New York, arrived in Atlanta recently to take charge of the public relations department of the Georgia Railway & Power Company, replacing Charles Towne, who has returned to the New York office of the publicity and public relations organization of Ivy L. Lee.

Lewis Lee is a brother of Ivy Lee, whose publicity organization he has been associated with for two years. During that time he handled the public relations work of the Pennsylvania Railroad and the American Association of Railway Executives. Prior to his connection with his brother's concern he was with George L. Dyer, Inc., a New York advertising firm of national repute, of which another brother, J. W. Lee, Jr., has just been made president.

Mr. Lee's going to Atlanta will be a source of great pleasure to the Atlantans who remember him as a youth and to the hundreds of friends of his father, Rev. Dr. Lee, who was one of the foremost figures in the Southern Methodist church. Lewis Lee was a student at the Boys' High School in Atlanta and after his family moved to the Middle West completed his preparatory education and graduated at Dartmouth with the class of 1918. During the war he was a junior lieutenant in the naval flying corps and was awarded the naval cross for sinking a submarine during his service "overseas."

The Lee organization has recently been employed to handle the publicity and public relations angles of the Georgia Railway & Power Company, and it is to superintend the local details of that work that Mr. Lee goes to that city. The organization formed by Ivy Lee is probably the greatest of its kind in the world. Its services have for years been sought by the largest corporations of the country. The public relations of the John D. Rockefeller interests have for some time been in the hands of the concern and many large Eastern corporations and interests are dependent on the widely known organization for counsel in matters of that sort.

Operating Staff for Boise Company Appointed

The Boise (Idaho) Street Car Company, formerly the Boise Railway Company, which some time ago was sold to S. F. Watts, whose intention it was to improve and restore the property, now has for its operating personnel W. E. Pierce, president; L. H. Cox, first vice-president; J. L. Eberly, treasurer, and F. A. Wingard, general manager and superintendent.

Frank L. Dame, President

North American Company Elects an Experienced Operator and Financier as Its Head

Frank L. Dame was elected president and Edwin Gruhl was elected vice-president of the North American Company, New York, at a recent meeting of the board of directors. Vice-president Gruhl has also been appointed general manager. Harrison Williams, who, with Mr. Dame, Clarence Dillon, George T. Miller, and Edward H. Wells, was made a director in June, 1920, is chairman of the board and chairman of the executive committee. The company has had no head with the title of president since the resignation of James D. Mortimer, on Nov. 1, 1920.

F. L. DAME

Mr. Dame, by training and experience an engineer, is a man who has exerted a very marked influence on utility development through his participation, at first in charge of construction of many properties in the Northwest, then as a manager and finally through his connection with several of the largest utility holding companies.

Mr. Dame began his business career in the testing room of the Westinghouse Electric & Manufacturing Company in Pittsburgh. After a very short training his first construction assignment was at Newburgh, N. Y., and in December, 1889, he was sent to Portland, Ore., as the engineer of that office of the Westinghouse Company. A year later financial depression caused the closing of this office, as well as some others, and Mr. Dame entered the public utility operating field as general superintendent of the Vancouver (B. C.) Railway & Light Company. The end of 1891 found him again located in Portland as engineer of the light department of the Northwest Houston Electric Company. In the following two years he was also active in street railway construction and with the replacement of equipment in several Oregon and Washington cities. This was the beginning of an association of twenty-one years with the General Electric Company, during part of which time he was the operating head of various utility properties in the Northwest, including the Seattle Consolidated Street Railway and the Tacoma Railway & Power Company. This period covered reconstruction development, management and financing of various utilities, and also many official connections with corporations not enumerated.

In 1903 Mr. Dame went to Schenectady as engineer for the committee on local companies of the General Electric Company, which was in charge of all public utility properties then controlled by it. In the following year he was also made engineer of the newly formed Electric Securities Corporation, a subsidiary of the General Electric Company. In 1909 he was chosen vice-president of the Electric Bond & Share Company, a position which he relinquished in the latter part of 1912 to take a long-needed rest.

However, in 1913 Mr. Dame again took up active work when he joined the organization of Harrison Williams, New York. Since then he has served as an officer and director of nearly all of the companies in which Harrison Williams has a controlling interest, including the Central States Electric Corporation, of which he is president; the Cleveland Electric Illuminating Company, of which he is vice-president, and the Republic Railway & Light Company.

Eustace J. Knight has succeeded Edward J. Doyle as secretary of the American Public Service Company, Chicago. Mr. Knight's former position as assistant secretary of the company has been filled by R. E. McKee. Mr. Knight has also been appointed secretary and assistant treasurer of the Middle West Utilities Company, Chicago, an office which likewise had been held by Mr. Doyle. R. E. McKee has been made assistant secretary and E. K. Davis has been appointed auditor.

E. R. Butler has been appointed trainmaster of the southern division of the Interstate Public Service Company railway lines known as the Indianapolis & Louisville Traction Railway, succeeding R. B. Kent, resigned. Mr. Butler entered the employ of the Indianapolis, Columbus & Southern Traction Company as a conductor in 1908, thereafter serving as conductor, motorman and dispatcher. He was appointed trainmaster of the latter company in July, 1919, and on May 1, 1920, was given leave of absence from this company and appointed trainmaster of the Louisville & Northern Railway & Lighting Company and the Louisville & Southern Indiana Traction Company, which have since been taken over by the Interstate Public Service Company. In his new position Mr. Butler will have charge of the operation from Seymour, Ind., to Louisville, Ky., including the city and suburban lines in Jeffersonville and New Albany.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Shipments of Cement Now Exceed Production

Stocks on Hand as of June 30 Above Normal, but Much Less than in Previous Two Months

The approximate production of finished portland cement in the United States during the first half of 1921, according to the Geological Survey, was 42,468,000 bbl. This amount represents about 94 per cent of the quantity made in the corresponding period of 1920.

The year 1921 began with mills producing at a moderate rate and shipments considerably less than production, but month by month both production and shipments of finished cement increased at a rapid rate, shipments exceeding production in May and June. Production in June was slightly greater than in June, 1920, and also a little above the average for that month during the last five years. The shipments in June of more than 10,500,000 bbl. were larger than those of any preceding June.

Stocks of finished portland cement on hand as of June 30, 1921, amounted to 11,150,000 bbl., compared with 10,300,000 bbl. on Jan. 31. The level of surplus stocks reported on June 30 of this year is slightly above normal, though it is less than the April 30 total of 12,600,000 bbl. On June 30, 1920, stocks of cement in the country totaled 9,000,000 bbl., and on Dec. 31, 1920, 8,941,046 bbl.

Coal Production Below 1920

Statistics of the Geological Survey of the Department of the Interior show that in point of production of soft coal the year up to July 16, 1921, was, in round numbers, 23,000,000 tons behind 1920, 67,000,000 tons behind 1919 and about 91,000,000 tons behind the war years. The average production per working day, which declined from 1,267,000 tons in the week ended July 2 to 1,237,000 tons in the week of July 9, dropped still further to 1.227,000 tons for the week ended July 16. This is a decrease of about 4 per cent in two weeks.

The current rate of production, however, is still far above consumption. Public utilities apparently exhibit no anxiety over their coal needs in the coming winter for they continue to hold off on buying. Meanwhile the margin of surplus cars available is not great, due to the large number of bad-order cars. If even a moderate revival of business takes place this fall, it is stated, the limit of cars available would soon be reached.

Prices of bituminous coal, the spot index of *Coal Age* shows, have remained stationary for the last two weeks and are now fixed at an almost irreducible minimum by production costs.

Cedar Pole Stocks Are Good

Producers Expect Good Demand by Next Spring and Are Going Ahead With Production

A survey of the cedar pole market finds generally slack conditions of buying, though by no means a pessimistic outlook on the part of producers. The first half of the year has been pretty quiet in this line, with prospects that the fall will show some improvement. Some producers, however, do not look for an active market before next spring. There is much work being held in abeyance that should result in pole buying, it is stated, and on the expectation that by next spring sales should be brisk pole producers intend to go right ahead and produce a normal quantity this fall and winter.

There have been some inquiries and orders from central stations but up to this time electric railways have shown little or no interest. A large producer of Southern white cedar poles reports that though April and May were quiet months, June sales showed up better. One of the factors cutting demand for cedar poles has been the increased competition from local chestnut poles which make their appeal on the ground of lower cost. Existing high freight rates on pole shipments from the West serve to maintain this advantage but producers are hopeful of relief being afforded there before long.

Competition in the pole market is keen right now, with good stocks held at distribution points and immediate shipments generally made. Prices have not changed since three months ago on Western red cedar poles, at which time a cut of 15 to 22 per cent was made. Northern white cedar poles have not been reduced, it is stated, and in the opinion of a prominent producer are not very likely to be reduced because of their increasing scarcity. Current quotations on Western red cedar poles are as follows: f.o.b. New York, 30-ft. 7-in. top, $9.55; 35-ft. 8-in. top, $16.10; 40-ft. 8-in. top, $19.15, and the same poles f.o.b. Chicago, $8.30; $13.90, and $16.30 respectively.

Railway Supplies for Japan

A commission merchant from Japan who is in the United States desires to purchase railway supplies. Further information may be had by referring to No. 35,189, Bureau of Foreign and Domestic Commerce, Washington, D. C.

W. P. Wire Operation at 50 per Cent Capacity

General Demand Slightly Better With Prompt Shipments and Stocks that Are Still too Large

Central station extensions are not making very noticeable inroads on jobbers', distributers' and manufacturers' stocks of weather-proof wire. There is some central station buying in the Chicago territory, the southeastern states find sales holding up pretty well on Nos. 6, 8, 10 and 12 and the St. Louis district is finding a slightly increased demand for weather-proof wire in sizes Nos. 6 and 8. There some of the jobbers are buying to keep their stocks on an even level. New England reports show a decided change for the better as the number of building permits and of contracts for wiring old houses is increasing favorably, calling for line extensions. New York territory is not noticeable in its purchasing.

Still there has been considerable residence building in the Northwest, southern California, the Intermountain districts, the Southeast, in some parts of the New York territory and in parts of New England, and this should encourage sales of weather-proof for street extensions outside of congested city districts. But electric railway buying and central-station buying as a whole have been so quiet the weather-proof wire mills are running at a rate of about 50 per cent only. Shipments naturally are good and stocks are still too high for mill comfort. Bare copper wire is quoted at 14¼-14½ cents bare at the mill, up-river fine para rubber at 15½ cents, first latex crepe at 14¾ cents and spot cotton in New York at 12 cents.

Weatherproof wire can be purchased at a relatively low rate, about a 15½ cent base ruling for No. 6.

Paris-Lyons-Mediterranean Company Will Electrify

The Paris-Lyons-Mediterranean Company proposes to electrify all its lines, starting with that from Lyons to Marseilles, which bore a traffic of 14,000,000 tons of freight per kilometer in 1913. This line, according to the "Fortnightly Survey of French Economic Conditions," New York City, compiled by the French commission in the United States, serves both directly and indirectly Modena, Grenoble, St. Etienne, Geneva, Roanne and the lines from Tarascon to Cette and Grenoble to Marseilles. So inadequate are the facilities of this last line at present that much of the traffic has to be diverted via Valence.

The electrification of the Lyons-Marseilles line will require 200,000 kw., of which 150,000 kw. must be supplied by the Alps-Rhône region. The power stations to be built along the Rhône will be able to furnish this power, and plans are being made accordingly. The P. L. M. Company also intends to construct a power plant itself which will be located at Mondargon.

It further proposes to develop the power resources of the Bessorthe River. The upper basin would permit the construction of a reservoir of 15,000,000 cu.m. capacity. The fall of 1,100 m. would make available, once the reservoir is constructed, 10,000 kw., an important portion of the power needed by the company in this neighborhood.

The Government Railway Administration had already electrified a section of line in this region in 1911. In the same year it decided to extend its electrified line another 35 km. from Mure in Dauphiné to Gap in Haute Provence. If the saving in coal on the government's line from Mure to Gap be taken as basis of comparison, the electrification of the P. L. M.'s Lyons-Marseilles line should mean an annual coal saving of 5,000,000 tons.

$8,161,000 Spent for Electric Locomotives in 1919

Bureau of Census Production Figures for Certain Materials Used by Traction Companies

In the preliminary statement of the 1920 census of manufacturers with reference to the manufacturing of electrical machinery and apparatus, just issued by the Bureau of the Census, Department of Commerce, several items appear which may be of interest to traction companies. Comparative figures also are given for 1914 and 1909.

	1919	1914	1909
Electric locomotives	$8,161,000	$3,721,000	....
Railway switches, signals and attachments	4,467,000	6,394,000	5,377,843
Insulators	6,504,000	—not specified—	
Lightning arresters, choke coils, reactors and other protective devices	2,353,000	1,189,000	940,171
Pole-line hardware	9,379,000	—not specified—	

Rails, Ties, Fish Plates, Tie Plates, etc., Increase Over 1919 Figures

In its tables of detailed statistics of rolled iron and steel produced in the United States in 1920, the *Iron Age* has listed a few products of interest to traction companies. There were 2,604,116 gross tons of steel rails produced in 1920, but in 1919 there were 2,203,843 tons produced here. Production of steel railroad ties in 1920 was the highest since 1916, the respective figures for 1916, 1917, 1918, 1919 and 1920 being 34,311 gross tons, 9,103 tons, 6,438 tons, 16,645 tons and 26,310 tons.

Angle splice bars in 1919 were produced to the extent of 111,169 gross tons, steel and iron combined, while in 1920 this figure jumped up to 175,278 tons; tie plates increased from 205,210 tons in 1919 to 263,635 tons in 1920; fish plates in 1919 amounted to 11,850 tons, and in 1920 they came to 16,603 tons; other rail joints in 1919 amounted to 49,854 tons and in 1920 increased to 71,236 tons. The output of spikes, bolts, nuts and similar fastenings is not included.

Rolling Stock

The New York, New Haven & Hartford Railroad, New Haven, Conn., which placed an order for eight 60-ft. steel motor cars and fourteen trailers of the same type with the Osgood-Bradley Car Company about two months ago, will receive these cars in the fall of 1921, it is stated. The cost of the motor cars is about $70,000 each and the trailers about $35,000 each. The cars are similar to those now in use on the New Haven's electrified division.

Track and Roadway

St. Petersburg (Fla.) Municipal Railway has deferred its construction work. Efforts to sell $65,000 of municipal bonds for the building of two loops to relieve congestion on the downtown divisions have failed. Should further efforts fail citizens have pledged to take the issue at practically par.

Public Service Railway, Newark, N. J., is improving the grade on Haddon Avenue, Camden, for a distance of 1700 ft. and is installing new rails and ties. The company will also lay a new roadbed from Camden to Collingswood.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has been ordered by the City Commission to improve the roadbed on certain streets in Trenton. This will include new tracks on Olden, Hamilton and Pennington Avenues.

Oklahoma Railway, Oklahoma City, Okla., has petitioned the city for a three months' extension in which to complete the laying of tracks between McNabb and Lincoln Parks. The work was to be finished by Dec. 31. The railway's reason for not finishing the work on time appears to be the hardship of construction in the winter and the desire to rebuild other lines in need of repair, including the tracks on Main Street west of Hudson.

Seattle (Wash.) Municipal Railways, may be forced to make an extension on Beacon Avenue which will cost about $100,000. The City Council recently voted to add this extension to the eight proposed railway betterments.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., was recently before the Railroad Commission as a result of the petition of the City Council ordering double tracking of the North Avenue line from Forty-fifth Street to Lisbon Avenue, a distance of about two blocks. The commission at the same time considered the petition of the City Council for an extension of the Thirty-fifth Street line of the company on Center Street between Sherman Boulevard and Fifty-first Street, a distance of about a half a mile. The case was taken under advisement.

Power Houses, Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal., has abandoned its project of moving its carhouse at Fifth and American Avenues, Long Beach, to the west end terminal of the lines. Mr. Titcomb said that all arrangements had been completed for the transfer until the new city charter was adopted which placed restrictions on the erection of carhouses and installation of switching facilities on and around Morgan Avenue.

Professional Note

J. M. Pneuman, for the past five years commercial engineer in the railway department of the Westinghouse Electric & Manufacturing Company, is now acting as a consultant on equipment maintenance matters. He is giving special attention to equipment maintenance problems, or assisting the management to establish proper maintenance practices, and is taking care of this work on a retainer basis, dividing his time among the several companies in Ohio by which he is at present engaged. Mr. Pneuman is well qualified through long experience to advise in these matters and in more general engineering studies, particularly as applied to the smaller companies. From 1902 to 1906 Mr. Pneuman worked as an inspector on the elevated lines of the Brooklyn Rapid Transit Company and attended night school at Pratt Institute during this time. From 1906 to 1910 he was employed in the factory of the Westinghouse Electric & Manufacturing Company. During the following year he was foreman of maintenance of locomotives at the Stamford, Conn., shops of the New York, New Haven & Hartford Railroad. In 1912 he became master mechanic of the Annapolis Short Line at Annapolis, Md., which was then operated by Allen & Peck, Inc. Leaving this position in 1914, he became chief engineer of the Buffalo, Lockport & Rochester Railway, continuing in this position until he went with the Westinghouse Company again in 1916, this time in the commercial engineering department.

Trade Notes

A. F. Zacher has resigned, effective at once, as district manager of the Buffalo office of the Economy Fuse & Manufacturing Company, Chicago, Ill.

John D. Nicklis, manager of the supply department in charge of mill supplies, Manning, Maxwell & Moore, Inc., 119 West Fortieth Street, New York City, has been appointed manager of supplies and purchases in charge of centralized purchasing at the home office.

Topping Brothers, 122 Chambers Street, New York City, jobbers of railway track supplies and heavy hardware, have appointed Spencer Reed Company, 1265 Boylston Street, Boston, its representative in the New England territory. Frank F. Spencer for several years represented Joseph T. Ryerson & Son, manufacturers of machine tools, iron and steel products, etc.

The International Register Company, Chicago, Ill. through its sales agent, the Electric Service Supplies Company, has leased 112 International portable hand registers to the Third Avenue Railway Company, New York City. These registers are attached to the fare box and used as an additional check on fares. About 250 of them were also placed with the Public Service Railway Company, Newark, N. J., earlier this year, for use on its safety cars.

Handlon-Buck Manufacturing Company, St. Louis, Mo., manufacturer and dealer in electric and steam railway supplies, announces the election of new officers at a recent meeting of the board of directors. A. H. Handlon, Jr., formerly vice-president and manager, becomes president and treasurer; E. R. Handlon, secretary, has been made vice-president; E. W. Handlon, formerly vice-president and treasurer, retains the office of vice-president; and R. D. Teasdale has been elected secretary. The death of A. H. Handlon, president of the company, as announced in the June 25 issue, left a vacancy in the executive personnel.

New Advertising Literature

Belt Conveyors.—The Link-Belt Company 910 South Michigan Avenue, Chicago, has issued a new book, No. 215, on belt conveyors in which it describes the "Uniroll" and "Multiroll" idlers. The company has also issued a new steel chain data book, No. 475.

Water-Cooling Apparatus. — The Binks Spray Equipment Company, 3114 Carroll Avenue, Chicago is distributing a small circular describing its "Spra-Rite" cooling pond equipment for steam and ammonia condensers.

Brazing Torch. — The Production Engineering Corporation, 40 Sudbury Street, Boston, is distributing a circular covering the "Bantam" electric-gas brazing torch, recently developed by the company.

National Board of Fire Underwriters, 207 East Ohio Street, Chicago has issued a fifty-two-page booklet on its "Organization, Purpose and Methods." A description of the services rendered, together with the working method of the organization and numerous illustrations of testing methods and the various labels used, are given.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

Volume 58 New York, Saturday, August 6, 1921 *Number* 6

Any Car Any Time for Any Distance

ELSEWHERE in this issue is an account of nearly two years' operation of the unlimited ride, $1 weekly pass at Racine, Wis. When this plan for increasing off-peak riding was first broached, it was assumed by some to be a revival of the European style pass, while others were skeptical about a form of selling transportation that left no tangible record.

As regards the latter point, the experience of the Racine division of the Milwaukee Electric Railway & Light Company indicates that it was not even necessary to continue recording pass presentations on the former transfer registers. With two special surveys made more than a year apart, showing the average number of rides per business day per pass holder to be slightly less than four, it seems proper to assume that the average number is so steady that multiplying pass-holders by four will give a reasonably correct figure for the average number of daily revenue rides taken by them. This holds at least for the towns of the size of Racine and Kenosha where a thorough knowledge of ride-making conditions is possible.

As regards the former point, this pass is not the same as the European kind because it is necessary in Racine for a pass holder to be better than a compulsory twice-a-day rider in order to save by its use. The figure of average rides quoted above shows that this principle has been effective. While the pass-holder pays only 4 cents per ride he gives the company 16 cents per day, which is more than would be likely to be realized from either cash or ticket riders. No one can say how much more revenue has come to the railway through the pass, but from Mr. Jackson's account it is apparent that the pass has definitely helped to better safety car operation, to improve off-peak riding and to foster the welcome habit of taking any car any time for any distance.

Changes in Taxation Could Well Be Made

THE recommendations of Secretary Mellon to eliminate the higher surtax rate if carried into effect should be of help to all utilities and other issuers of investment securities. It is a well known fact that these higher surtax rates have been so high in the past as to defeat their own purpose. If the rates for large incomes were lower, the holders of those incomes could again afford to invest in public utility bonds rather than the tax-exempt issues of cities, counties and states.

Of course, the clean cut thing to do as a basis of any logical taxation system is to provide that no more tax exempt securities be issued—that the income from all classes of securities be treated alike. The McFadden resolution, now before Congress, proposing a constitutional amendment to that effect should be supported and pushed to an early adoption. But such things take time and meanwhile revenues must be collected and the best immediate moves must be determined.

The recommendation of Secretary Mellon that the transportation tax be cut in half should be of help to the interurban roads as well as trunk roads. On the other hand, his suggestion that the normal income tax be increased to 15 per cent would affect many companies adversely, and the suggestion sometimes made that a special tax be laid on undistributed income would affect electric railway companies still more.

The fact is, as President Gadsden pointed out recently before a committee of Congress, the conditions under which public utilities operate are so different from those which apply to most other corporations as strongly to suggest the advisability that for taxation purposes they should be in a class by themselves. Their rates, return and most of their expenses now are regulated by law; in taxation only are they put in a class with other companies. This is an anomalous condition and its correction can well be considered by our legislators.

Efforts to Preserve Proper Financial Balance

PRACTICAL application is about to be made by the North American Company of the theories of finance stressed by Lucien H. Tyng, chairman of the sub-committee of the American Bankers' Association, in the interim report made recently entitled "The Importance of Adequate Junior Financing." Mr. Tyng quoted an elaborate compilation covering a period of fifteen years to prove a combined note and bond financing among utilities of 79.18 per cent and a combined stock financing of 20.19 per cent as against a theoretically correct fifty-fifty. He said that it served no useful purpose simply to say that the companies must do more junior financing and that the time to avoid any responsibility for reorganization was when dangerous tendencies became evident and before disaster has happened. Thus he stressed points also made by F. K. Shrader before the American Electric Railway Association at its meeting last winter, at which Mr. Shrader, an investment banker, warned against a continuation of the tendency of the past to borrow money rather than to sell share capital.

This is the warning that the North American Company is heeding under the plan for the readjustment of its capital outlined in a recent issue. In this particular case there was no need for immediate concern for the financial future of the company, but there was honest realization on the part of the directors of the fact that continued exclusive use by subsidiaries of bonds and notes to finance the cost of added facilities tends in time to produce a financial structure top-heavy as regards debts, and to impair the credit of the parent company and its subsidiaries. It is an interesting change, this division of the $29,793,300 stock, all common, of the North American Company into even parts of common and of 6 per cent preferred, with the new preferred ranking as an investment issue and the new common as an issue with prospects of participation in the profits to a degree that should hold it near par. No less interesting in its way than this change is the announcement of the offering of $3,000,000 of 8 per cent preferred stock over the counter by the Milwaukee Electric Railway & Light Company, for the same principles of finance are involved. The cost of the money to the company may be a trifle higher under the present plan than would have been the case had resort been had to the issuance of bonds or notes, but then a redemption privilege has been inserted in the stock that may prove very valuable in the future as the practice in the past with the bond offerings has been to make them non-callable.

By the new issue of stock in Milwaukee the proportion of bonds and other secured obligations to stocks outstanding has been changed for the better on that property because of the arrangement wherein the secured debt stands at $37,532,000 contrasted to $17,350,000 of stock, composed of $7,500,000 of preferred and $9,850,000 of common. These are not the theoretically perfect proportions advocated by Mr. Tyng, but they are an approach toward them that cannot but be helpful to the company.

Brains Plus Machines Are Cheaper than Muscle

A VISITOR to the Youville Shops of the Montreal Tramways a few years back, say early in 1914, would probably have pronounced the equipment and practices to be about right. The buildings were modern, the layout was good, and while few of the machines were new they were all in good condition. The fact that much progress has been made recently at Youville, however, is disclosed by an article in this issue, which tells how costs have been controlled through a complete analysis of shop operations.

Fortunately for Canada, the tramways shops were so well organized that when the war broke out they were able to take on a huge job of shell-making, which was completed with the same dispatch that is expected of a concern regularly engaged in manufacturing. This, of course, required a supplemental force of men and additional machinery, but the *esprit de corps* which was behind the shell work done for the government was the regular spirit of the shops, intensified by patriotism. The stimulus of the war work, added to the necessity for economizing in materials and labor, was a contributing factor to the improvement in shop methods outlined in the article.

This improvement has been wrought through close attention to detail, to individual operations. Take, for example, lifting, which was seen to be a time and energy consumer, and which afforded an attractive opportunity for saving. Lifting was minimized by the simple expedient of keeping heavy pieces on as nearly the same level as possible. Lost motion in transferring pieces from place to place was also eliminated by careful routing and loss of effort through unfamiliarity of men with jobs was reduced. And, not least in importance, reclamation work was systematized to the limit.

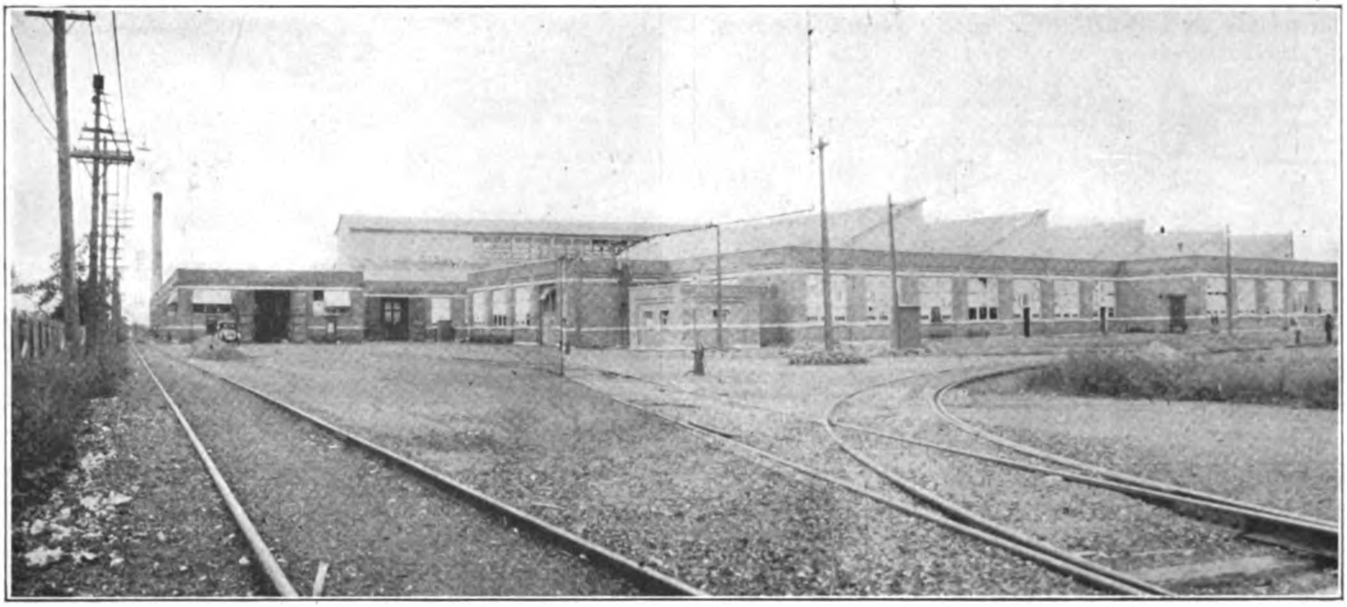
The Montreal Tramways has been doing only what other railways in Canada and the United States have been forced or impelled to do under stress of the same conditions. It does not pose as a model; in fact, the information in this week's article was obtained entirely on the initiative of this paper. At the same time it is only fair to say that the principles so well exemplified at Montreal have wide application. The results secured there show what concentration on the fundamentals and the resulting judicious use of machinery will do in cutting out waste in the shop.

Two Opposing Policies Separated by a Few Miles

THE eyes of the electric railway industry are now focussed in an all-absorbing manner on the situation in Detroit where municipal ownership is making miraculous headway both in respect to the growth of its physical property and its popularity with the public. Such being the case, a rather unique circumstance in regard to public ownership is of particular interest. On June 4 there were quoted in this paper several paragraphs from an article in the *Saturday Evening Post* written by a "country banker." He tells how a certain city, undoubtedly St. Petersburg, Fla., took over the dilapidated rolling stock and plant of the railway operating there after it had become bankrupt. The transition was quick and simple. The city fathers picked their operating staff and the new manager was allowed to proceed unbridled by his superiors and unmindful of the customary financial restrictions and the economies of the problem. He promptly junked all old equipment and purchased new, and generally revamped the property according to his own idea of adequacy. Our observer relates that the fare is 5 cents and a very satisfactory service is maintained. However, his inquisitiveness failed to be aroused to the point of learning what return on the capital a rigid system of bookkeeping would show. But why worry about such an inconsequential detail if the local riders are boastful of their service? Their ignorance that the final reckoning is in the tax rates merely adds another confirmation to the truth that some of the people can be fooled all the time.

Here is the flagrant inconsistency. A luring opportunity exists in Miami, on the coast of Florida, to secure a liberal franchise for the operation of a railway there. The Chamber of Commerce and all other civic bodies, as well as the City Council, are extremely anxious to have someone look into the proposition. They will gladly assure their assistance in getting a franchise without restrictions as to rates, paving of streets or other outside expenses. There are already in place 5 miles of track which can be secured at a price considerably under reproduction cost. These two cities, comparable as to permanent and transient residents, certainly are at wide variance as to solution of their respective transportation problems.

Is one a case of optimism and over-confidence and the other of perhaps adequate detailed study? The guess might safely be hazarded that the Miamians are not the only ones to have investigated with thoroughness the proposition, for as yet no takers have been reported. What seems so strange is that two cities, located so close to each other, should decide upon such opposed methods of operation. It might pay those in whose hands the direction of Miami's municipal affairs rest to direct their efforts toward "selling" the natives on their becoming the owners of this promising property. Nevertheless, the potent question suggests itself: What are the characteristics and virtues of public operation and ownership that mark it as apparently a desirable condition in one place and exclude it from consideration as a solution in a neighboring city? Perhaps the balmy air of Florida is not conducive to consistency.



PANORAMIC VIEW OF THE MAIN SHOP BUILDING

Cutting Out Waste in the Shop

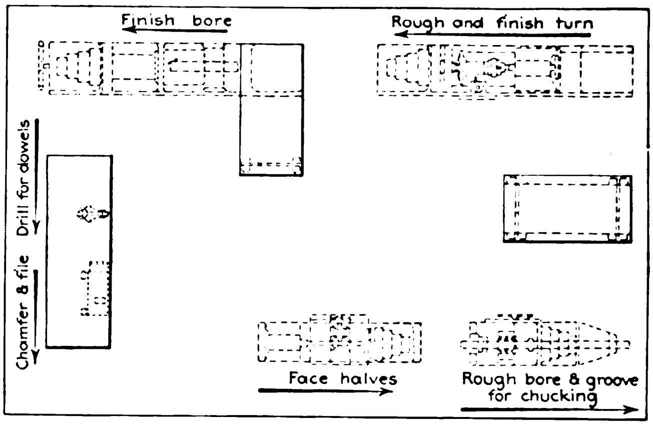
Montreal (Que.) Tramways Has Well-Equipped Shops Which Were Utilized for War Work—Salient Principles Applied in Maintenance Practice Are Minimizing of Lifting Operations, Effective Routing of Machine Jobs and Permanent Repair of Defective Parts

IN ITS shops at Youville the Montreal Tramways possesses unusual facilities for maintenance work on rolling stock. These shops were described in the issue of this paper for July 11, 1914, page 60, but since they were built many improvements in details have been made. The panoramic view reproduced shows the general appearance of the front of the main buildings, while the outline drawings give the present layout of machines for finishing axle bearings.

The manufacturing possibilities of the shops were so good that the Canadian government utilized them during the war for shell manufacture, and about 80,000 each of 6-in. and 8-in. H.E. shells of fine quality were turned out. This involved the installation of much new machinery, some of which was made a permanent part of the shop equipment after the war contracts were completed. All of this war work was under the direction of D. E. Blair, superintendent of equipment and shops, in addition to his regular duties.

In all of the maintenance work the aim is to prevent recurrence of defects by replacing worn and broken parts with others of more substantial nature, as will be illustrated in the present article. Climatic conditions make this unusually necessary, as the effects on the paving of freezing and thawing are severe. Each spring there is an epidemic of motor frame breakages due to this cause, an especially bad season resulting in a crop of 250 or more motor frame breakages during the winter. This condition also causes the breakage of a very large number of truck frames. By co-operation with the track department this trouble is being attacked at the root, while more economical repair and maintenance methods are being introduced in the shop.

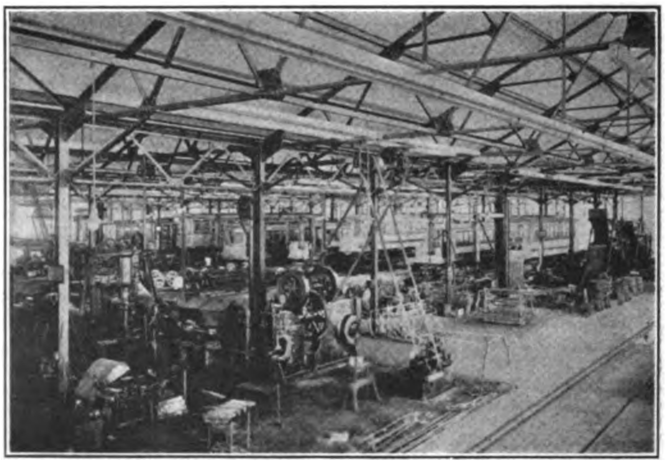
One of the most notable recent improvements in maintenance procedure has been in the handling of supplies, particularly in collecting parts of equipment from the carhouses and in furnishing overhauled parts. This is done with one supply car, manned with a crew of two, who are reinforced locally at the carhouses by two additional men. In a working day of nine hours this car visits all of the five carhouses on the property, whereas until the present routine was adopted two cars, for twelve hours per day, were required. The car is loaded up to about 20 tons on each trip. It also handles all incoming mechanical department stores from down town to the shops.



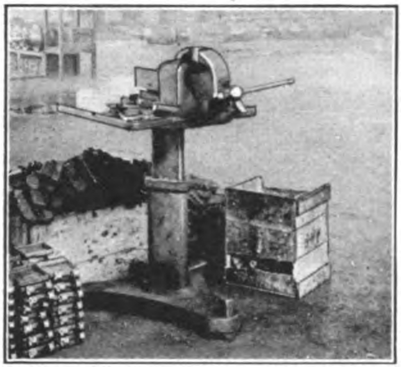
ROUTING DIAGRAM FOR FINISHING AXLE BEARINGS

This supply car is shown in one of the illustrations. (See also issue of this paper for Jan. 10, 1914, page 88.) One feature is the gib crane of 3,000-lb. capacity, operated by a small electric motor which is effective in handling wheels, etc., and which has a working radius of 12 ft. The supply compartments are also notable, particularly those for armatures. These are on the floor level and have covers hinged at the bottom so that they can be used to support the armatures in a convenient position for attaching the chain hooks of the air hoist suspended from an I-beam running above the wall racks

Where the Air Compressors Are Maintained and Tested

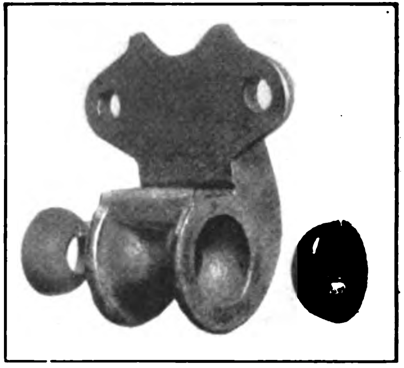


Cars and Machines in the General Overhaul Shop

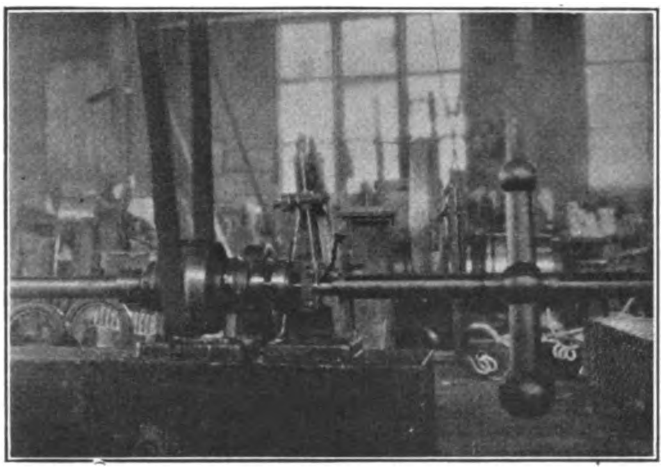


Portable Vise Bench Found Useful Around the Shops

Careful Arrangement of Shop Machinery and Equipment Has Marked Effect on Quality of Maintenance Work Produced

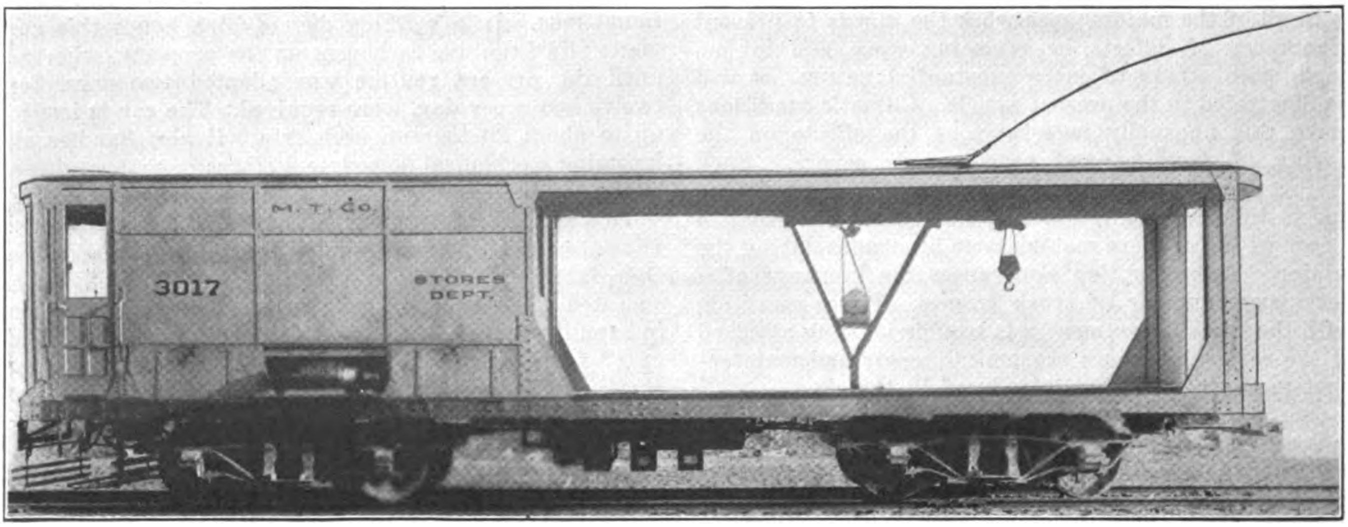


Brake Hanger Socket Casting with Dished Liners

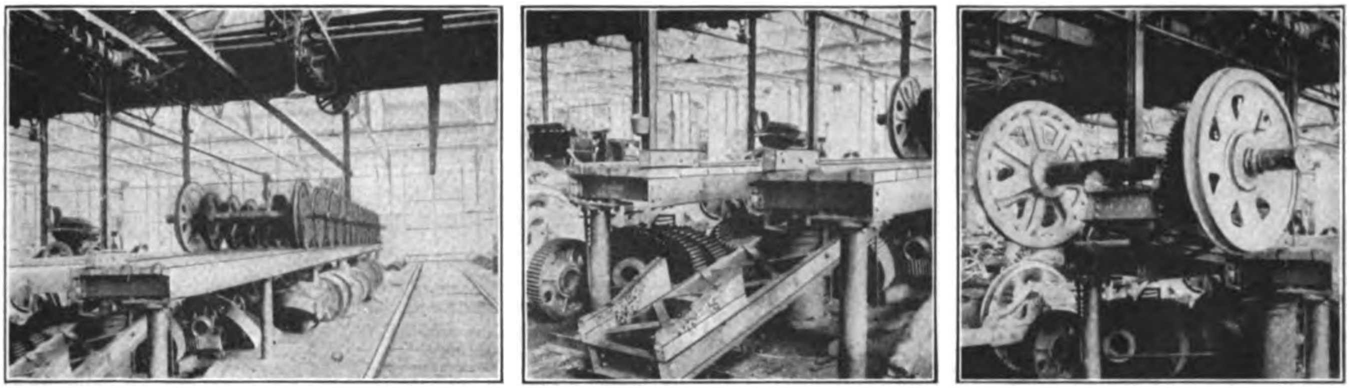


Home-made Winding Machine for Heater Coils

A "Still Life" View in the Wood Mill



The Supply Car Which Visits All Carhouses Once a Day



THE WHEEL AND AXLE STORAGE AND LOADING PLATFORM ALONGSIDE THE SUPPLY CAR TRACK
At left—General view of the platform. In center—The lift in position ready to be loaded.
At right—Wheels and axles raised and ready to roll along the platform.

in the carhouses. Thus the armatures are handled from the carhouses to the winding stands and returned to the pit jacks in the carhouses without running any chances of being damaged by being rolled over floors.

A loading platform for wheels has recently been built in the wheel shop. It merits more than passing notice due to the reduction which it has made in the cost of handling wheels. Several pictures are reproduced to show the details. The main purpose of this platform is to permit storing of wheels on the axles on the level of the floor of the supply car. Incidentally it provides a space underneath for the storage of gear cases, etc. It is a time saver in eliminating a comparatively slow lift by the supply crane, the saving amounting to from thirty to forty-five minutes per day.

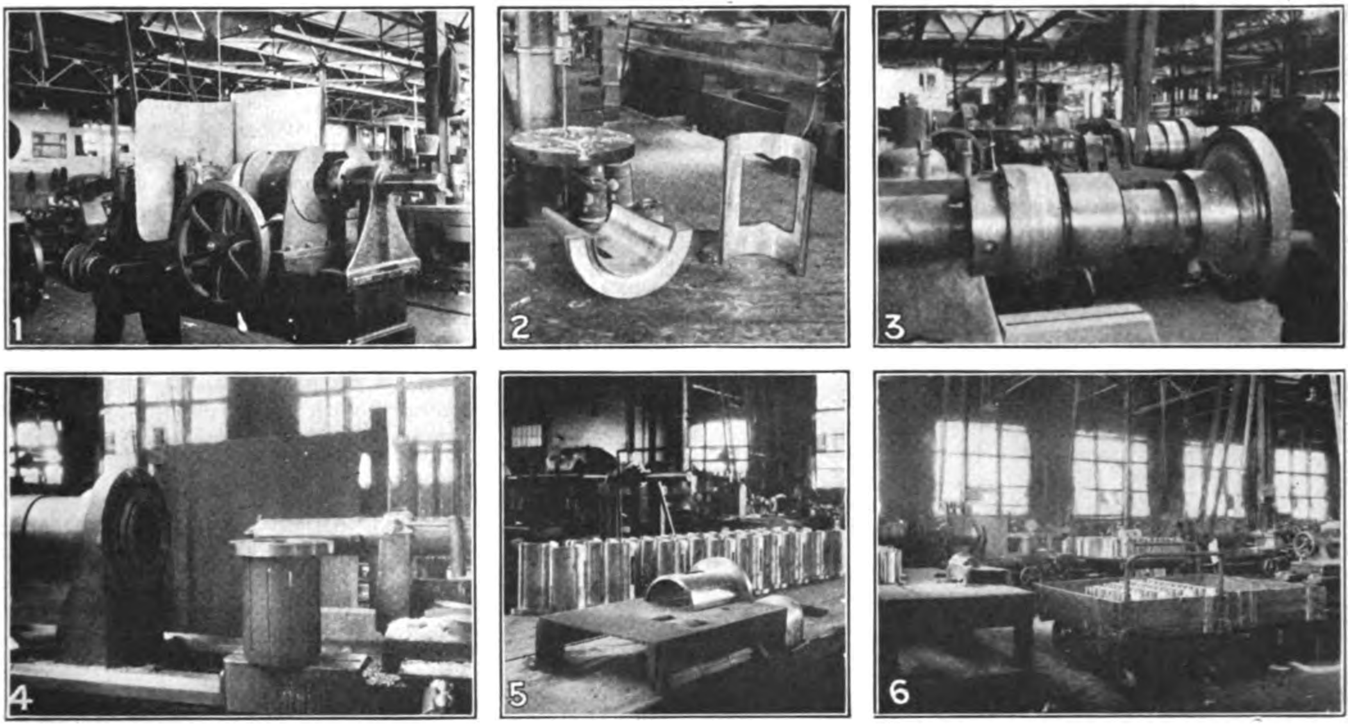
The platform is mounted on a steel underframe of channel sections with columns of 6-in. pipe terminating in flanges top and bottom. At one end is an air-operated lift consisting of a rectangular frame of channels, latticed to stiffen it and hinged to the platform underneath at a distance of several feet back from the end. At the outer end of the lift crane is a cradle made of two wood blocks, curved slightly on the upper surfaces to prevent the axle from rolling off until the lift has been raised sufficiently to permit the wheels to roll down the strap rails laid on the platform.

The lift is raised and lowered by means of a cylinder removed from an old bulldozer, with a control lever mounted alongside the lift and connected with the valve on the cylinder by means of a rod visible in one of the pictures.

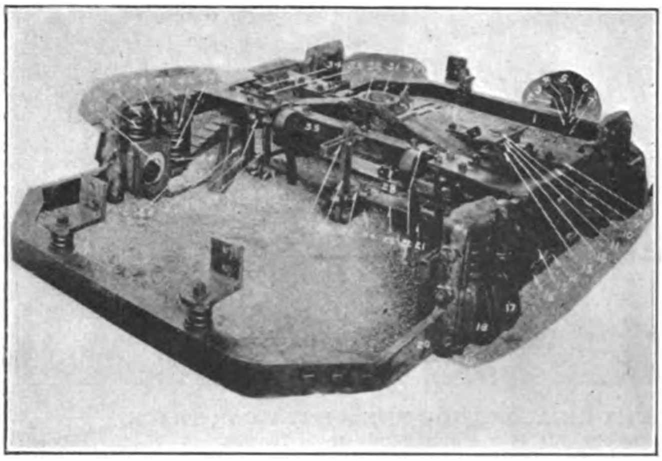
On the platform are two sets of rails, offset so that the wheels and axles will be staggered to economize space.

RECLAMATION WORK IS WELL SYSTEMATIZED

Very little material goes to the junkman from the Youville shops which offers any possibilities in the way of economical reclamation. Reclamation work is handled here according to a manufacturing-type program designed to incorporate simplicity, thoroughness and common sense.

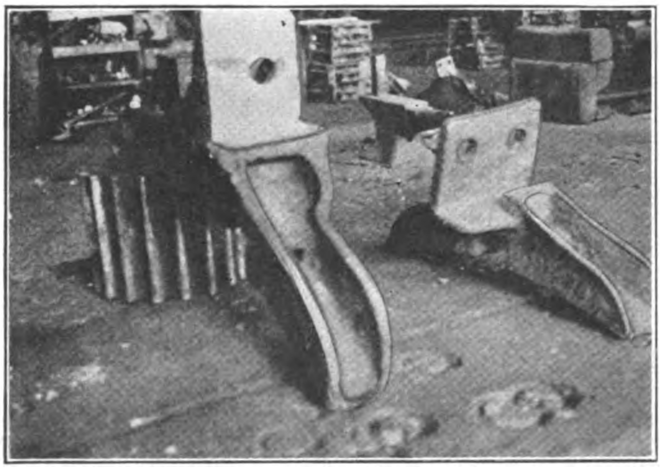


STEPS IN THE OPERATION OF FINISHING A BEARING
1. Boring mill for rough boring and grooving. 2. Halves of bearing rough bored and grooved. 3. Mandrel for holding bearing for rough and finish turning. 4. Chuck, boring bar and chuck bushing for finished boring and end chamfering. 5. Grinding machine for inside chamfering. 6. General view of bearing section, with trucks in foreground.



TRUCK PHOTOGRAPHS ARE NUMBERED TO PERMIT EASY IDENTIFICATION OF THE PARTS

The reclamation work "heads up" in the reclamation storeroom, entirely separate from the new materials storeroom. In charge of this is a specialist, who also has charge of the supply car. He is the general right-hand man to the shop foreman and is more than a mere stockroom clerk because he initiates changes in stock standards as necessary. All used material sent in from the carhouses is received here even if it is apparently of no further use. That which is fit for repairs or reclamation is distributed for repairs and checked off against the department to which it was sent. That which seems to be only fit for the scrap pile is brought to a central weigh scale, where it is further examined by a competent mechanic, who selects pieces that will serve for raw material or which can be put to further use for other purposes. The real scrap is then weighed according to account classification, so that each account receives proper credit. It is then loaded onto a suitable truck for conveyance to the stores scrap bins, where it is sorted and sold according to scrap market classification. Credit is thus given each account daily. Brass and copper scrap after being weighed is received daily by the stores department in locked containers and delivered to the contracting brass foundry by the carload at suitable intervals. Requisitions for supplies from carhouses are sent direct to this department and are filled as far as possible from reclaimed stock on "No Charge" invoices. Written requisitions are then forwarded to the stores department for new supplies. All work done on general repairs and reclamation is charged direct to the operating account affected as the work is being done. An interesting feature of this department is a series of classified bins in which are collected various small O.K. parts of damaged and scrapped apparatus. These are easily located and used to good advantage in the manufacture of new parts on manufacturing orders, all material for which is collected and issued by the material clerk.

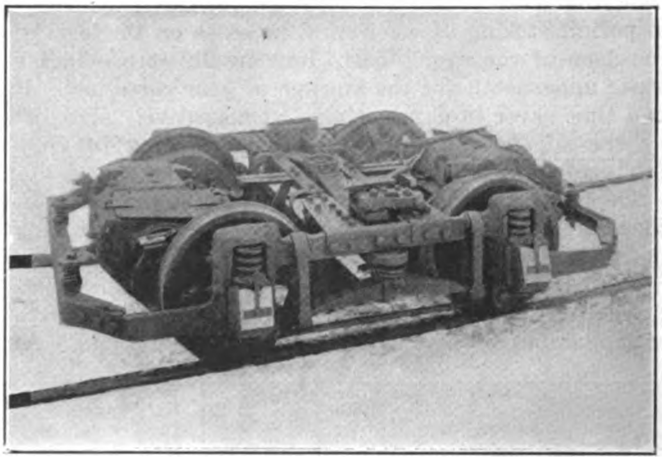


BRAKE HEAD SHOWING FINISHED SURFACES WHICH MAKE CONTACT WITH BRAKE BEAMS

BEARING WORK INVOLVES INGENIOUS OPERATIONS

One of the most interesting sections of the shops is that devoted to bearings. This work is routed in accordance with the plan shown in an accompanying sketch. The machines involved are so placed that the work goes around the four sides of a rectangle, and trucks of convenient height, shown in a picture reproduced, are used to carry the raw material to the machines and the finished material back to stores. Tables are located between machines so as to eliminate all handling between machines. The steps in the work, which is a contract job, are as below:

1. The halves of the bronze bearings are first surfaced on the flat faces in a shaper at present, but a change-over to a milling operation is under way because a stout lathe left over from war work is available for this job.



A REMODELED TRUCK SHOWING WOOD COVERS OVER JOURNAL BOXES

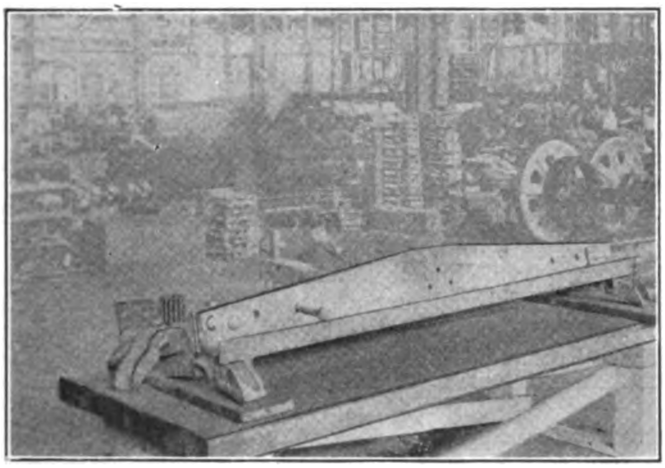
2. Next comes a rough bore in a special boring machine in which the halves of the bearing are held in a stout clamp on a carriage sliding on the bed and controlled by a large hand wheel. At each end of the bar is a tool holder carrying tools for cutting a V-groove in each end of the bearing for use in supporting it during the next operation.
3. Next is the over-all rough and finish turning, in a lathe carrying a mandrel with V-ring clamps to engage the grooves mentioned above in true reference to rough bore.
4. Then comes the finish bore in an excellent lathe inherited from war work. An extra stiff boring bar is used, and its inherent stiffness is reinforced by an anchorage at the rear end, not visible in the picture. In this operation the bearing is carried in a collet chuck, which revolves in a special bearing and which is furnished with split liners for the several types of bearing. These liners are split alternately from the two ends, as shown, so that they compress cylindrically in the chuck. The boring bar carries chamfering tools for rounding off the flanged end of the bearing, eliminating the V-groove there. The groove is allowed to

remain on the other end. The finish bore is made at high cutting speed, up to 200 ft. per minute and with fast feed, made possible by the stiffness of the lathe. The tolerance allowed in this bore is 0.002 in. above or under, which is possible because the chuck liner grasps the bearing uniformly over its entire length.

5. The final operation is the chamfering of the inside edges of the bearing halves, to permit the oil to flow onto the bearing surface. This is done on a special grinding table, through the surface of which projects a small emery wheel. On the front edge of the table is a stop which insures the proper angle and length for the chamfer.

As to costs of labor on contract on this bearing finishing, the following sample data will be of interest. With the men making 72 cents per hour, GE-203 axle bearings average about 47 cents for the job. GE-67 bearings average about 51 cents. During the war the figures reached as high as $1. Westinghouse-533 bearings cost about 50 cents. These prices are not as low as could be obtained if the work were steady. Bearing work is a "filling-in" job and hence is intermittent.

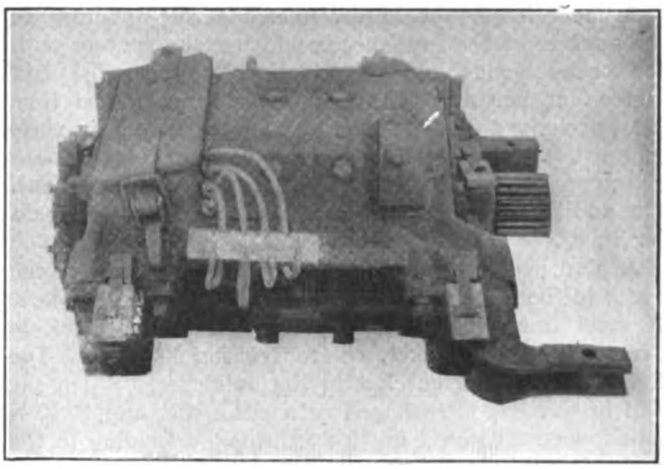
The tramways use 1,500 box-frame motors. These are overhauled on a regular schedule and need few emergency repairs. A section of floor is set aside for such repairs, which for five years past have been handled by two men in the general repair shops. The same men have done this work during the entire period and thus have become expert. The average shopping of the motors for such repairs is at two-year intervals and they make 75,000 miles in this period. No box-frame motor repairs are made elsewhere than in the general shops.



BRAKE BEAM WITH BRAKE HEADS RIVETED IN PLACE

Repair costs have been reduced and much noise eliminated by the use of impregnated wood covers, mounted by means of flat steel springs over the grease boxes. Paraffined wood clamp blocks for the motor leads have reduced grounding of leads to a minimum. On older types of motors the cast-iron cover over the commutator has been replaced by one of sheet iron, thus reducing weight, eliminating breakage and rendering the covers so easy to put on as to eliminate the temptation to leave them off. These covers have been used now for ten years.

Like the bearing section, the armature department has a rectangular layout, the stripping, winding, commutator connecting, etc., being done on the edge of the space. A trolley crane forms a belt line around the section, facilitating the transfer of armatures from point to point. Coil winding is done in the center of the space.

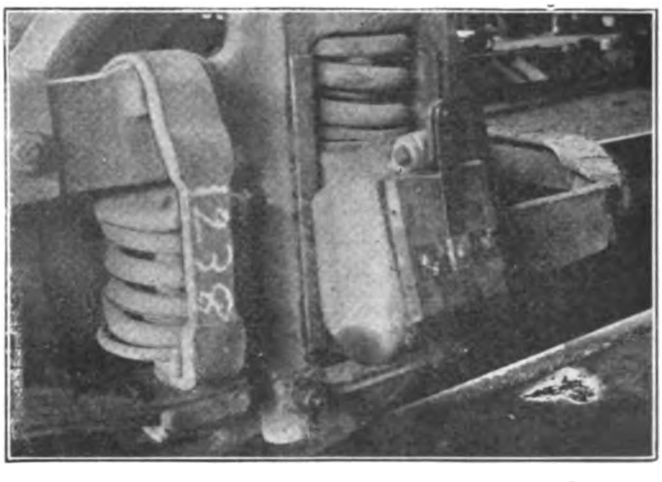


MOTOR WITH WOOD GREASE-BOX COVERS, MOTOR-LEAD CLEATS AND SHEET-IRON COMMUTATOR WELL COVER

Another section is devoted to compressor maintenance and each machine is overhauled every eighteen months. The period will be reduced in due course to twelve months. The Westinghouse and G.E.-CP-27 compressors are standard. When piston fits are first worn out the cylinder is relined and bored out 30 mils under size, the piston and rings being turned down to fit. A special jig is used for holding the rings during turning. On the second overhaul the cylinder is bored to standard size and a new piston and new rings are put in. As far as wear is concerned the rings are good for about ten years' life.

TRUCKS BEING REBUILT AFTER NEARLY TWENTY YEARS

Many of the Tramways' cars are equipped with cast-steel trucks built locally between 1901 and 1905. These are now being thoroughly overhauled or, in fact, partly rebuilt. The pedestals are being relined with a steel channel section pressed out on the bulldozer. When journal-box guides cannot be machined to the new width they have strips welded in. Wood covers, impregnated, are being placed on the journal boxes. These are made of maple or other hardwood scrap at a cost of 30 cents each. Their use eliminates breakage and insures that the boxes are properly closed so as to keep out all water.



"CLOSE-UP" OF TRUCK PEDESTAL SHOWING DETAILS OF JOURNAL BOX COVERS, PEDESTAL LINING, ETC.

A most important improvement is the finishing of the surface of the brakeheads which make contact with the brake beams and the riveting of these in place instead of bolting. The life of brakeheads has thus been prolonged five times, due to the permanently rigid connection. Troubles in service have been lessened and maintenance costs have been reduced to a large extent. The additional work necessary has thus more than paid for itself.

A plan has also been worked out for replacing worn metal in the ball-and-socket joint of Brill brake hangers. A steel liner of spherical form and $\frac{3}{16}$ in. thick is pressed into the socket, where friction holds it. The liners are pressed out hot in the bulldozer. When the ball is worn it is reshaped in a clean die, and if it is much worn a patch $\frac{1}{4}$ in. to $\frac{3}{8}$ in. thick, according to the wear, is worked in behind it. By this plan the life of the hanger is extended about two years each time it is relined.

Another useful kink in truck maintenance is the furnishing of photographic prints of trucks for the use of maintainers on which each item is numbered to correspond with an accompanying key. This eliminates confusion as to what part is meant when an order is given or a record made.

SOME OTHER POINTS IN THE SHOPS WHICH ATTRACT ATTENTION

In shops as large as those at Youville there are many sundry practices, some of which are wholly or partly novel. No attempt has been made here to list these. Among them is the winding of heater coils with the aid of a home-made machine shown in one of the illustrations.

Another point is the use of the bulldozer, which has been mentioned several times. Work for this machine is allowed to accumulate and experts put through the jobs in batches. About two days per month suffice at present.

In painting savings are being made by eliminating unnecessary operations with the idea that a coach finish is not required. While simple striping is still retained, it, as well as the numbering and lettering, is done with yellow paint instead of gold leaf as formerly used. The cars are kept unusually well painted, as part of the general and continuous advertising campaign of the company.

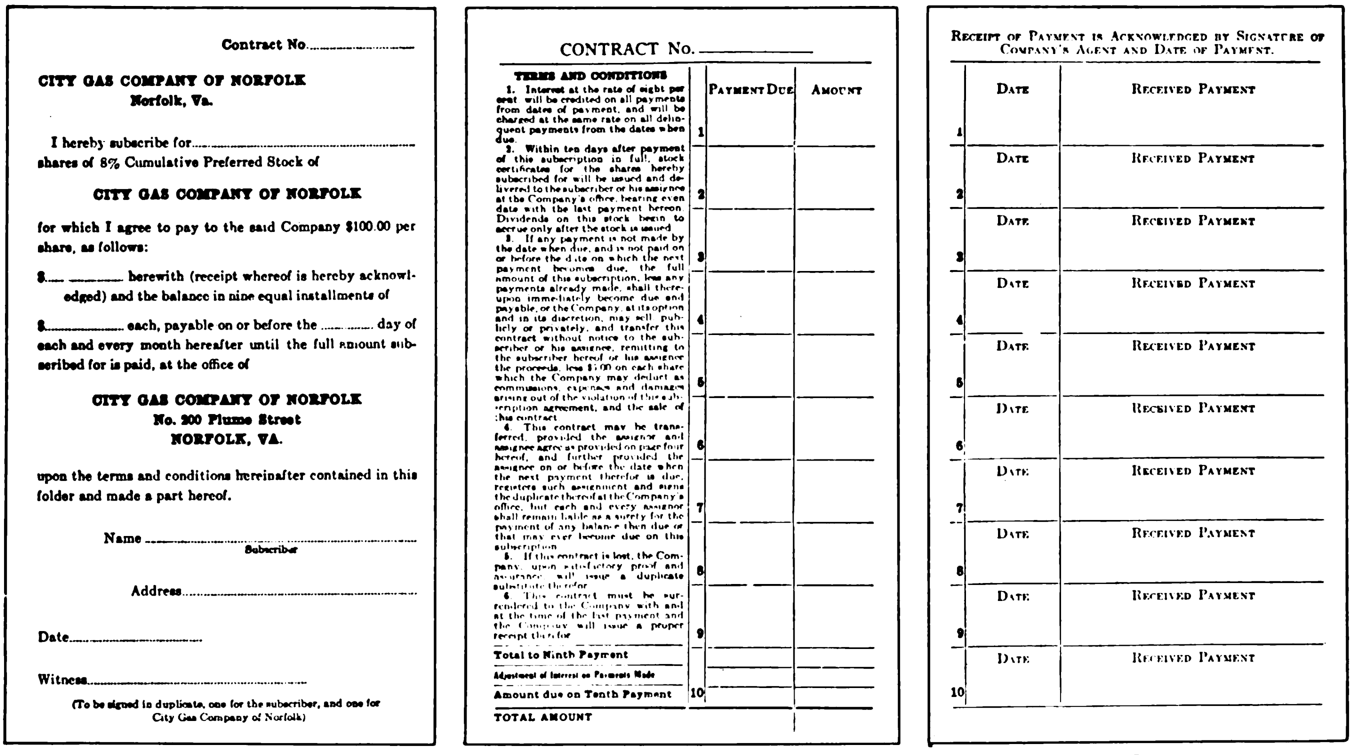
Security Sales to Customers

As a Result of a Plan Followed by the City Gas Company of Norfolk, Many of Its Customers Are Now Also Security Holders

ONE of the elements of making purchase of utility securities attractive to the public is to make such purchase on some easy method of payment. To do this the City Gas Company of Norfolk, a subsidiary of the Virginia Railway & Power Company, has adopted a method which is proving successful.

Eight per cent cumulative preferred stock is offered to the public at $100 per share, payable in ten monthly installments. Many of the usual difficulties attendant upon such an installment plan of paying for stocks are avoided by what practically amounts to a card catalog system. The accompanying illustration shows the three useful sides of the card catalog folder and is practically self-explanatory. This is issued in duplicate; one is given to the subscriber and one remains in the files of the City Gas Company and record is made at the time of payment of each installment. This payment is made easier in the case of gas companies on account of the fact that many patrons come to the office of the company to pay their bills monthly, but the system is certainly applicable to railway use as well.

Reports from Norfolk indicate that the plan has been very successful and that a satisfactorily large amount of preferred stock has at the present time been purchased by customers.



Contract No.........................

CITY GAS COMPANY OF NORFOLK
Norfolk, Va.

I hereby subscribe for.......................................
shares of 8% Cumulative Preferred Stock of

CITY GAS COMPANY OF NORFOLK

for which I agree to pay to the said Company $100.00 per share, as follows:

$........ .... herewith (receipt whereof is hereby acknowledged) and the balance in nine equal installments of

$.................. each, payable on or before the .... day of each and every month hereafter until the full amount subscribed for is paid, at the office of

CITY GAS COMPANY OF NORFOLK
No. 200 Plume Street
NORFOLK, VA.

upon the terms and conditions hereinafter contained in this folder and made a part hereof.

Name ....
Subscriber

Address..

Date...............................

Witness..

(To be signed in duplicate, one for the subscriber, and one for City Gas Company of Norfolk)

CONTRACT No. ....

TERMS AND CONDITIONS

1. Interest at the rate of eight per cent will be credited on all payments from dates of payment, and will be charged at the same rate on all delinquent payments from the dates when due.

2. Within ten days after payment of this subscription in full, stock certificates for the shares hereby subscribed for will be issued and delivered to the subscriber or his assignee at the Company's office, bearing even date with the last payment hereon. Dividends on this stock begin to accrue only after the stock is issued.

3. If any payment is not made by the date when due, and is not paid on or before the date on which the next payment becomes due, the full amount of this subscription, less any payments already made, shall thereupon immediately become due and payable, or the Company, at its option and in its discretion, may sell publicly or privately, and transfer this contract without notice to the subscriber or his assignee, remitting to the subscriber hereof or his assignee the proceeds, less $1.00 on each share which the Company may deduct as commissions, expenses and damages arising out of the violation of this subscription agreement, and the sale of this contract.

4. This contract may be transferred, provided the assignor and assignee agree as provided on page four hereof, and further provided the assignee on or before the date when the next payment therefor is due, registers such assignment and signs the duplicate thereof at the Company's office, but each and every assignor shall remain liable as a surety for the payment of any balance then due or that may ever become due on this subscription.

5. If this contract is lost, the Company, upon satisfactory proof and assurance, will issue a duplicate substitute therefor.

6. This contract must be surrendered to the Company with and at the time of the last payment and the Company will issue a proper receipt therefor.

	PAYMENT DUE	AMOUNT
1		
2		
3		
4		
5		
6		
7		
8		
9		
Total to Ninth Payment		
Adjustment of Interest on Payments Made		
Amount due on Tenth Payment 10		
TOTAL AMOUNT		

RECEIPT OF PAYMENT IS ACKNOWLEDGED BY SIGNATURE OF COMPANY'S AGENT AND DATE OF PAYMENT.

	DATE	RECEIVED PAYMENT
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

TYPE OF CARD CATALOG CONTRACT USED BY CITY GAS COMPANY OF NORFOLK

At left, form of contract to be filled out and signed by customer. In center, terms and conditions that govern. At right, receipt card for recording payments as made.

Traffic and Housing in Large Cities*

The Connection Between the Two Is Close—Local Conditions Will Increase or Decrease the Annual Rides per Inhabitant—Definite Relation Found Between Track and Building Development Within Different Areas Equidistant from a City Center

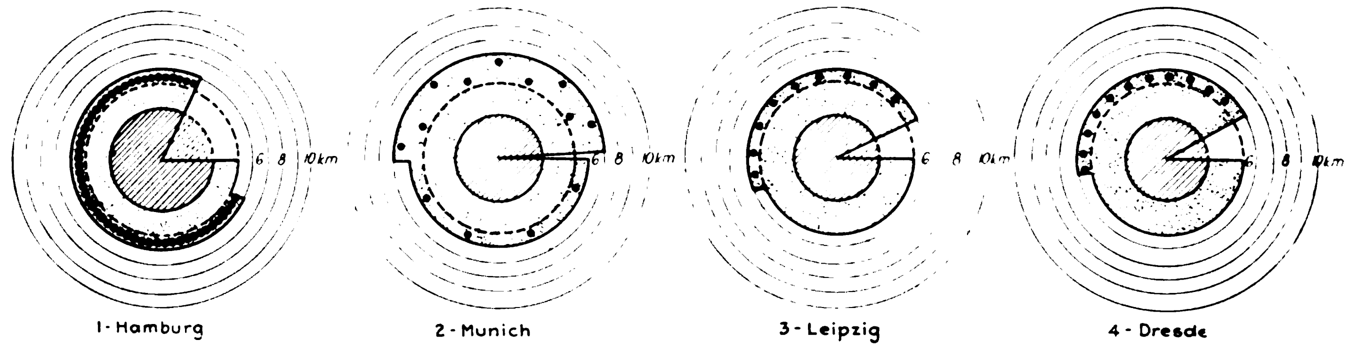
BY DR. ARTHUR ERTEL
Secretary Internationale Strassenbahn und Kleinbahn Verein, Vienna

THE question of housing in cities of more than 100,000 inhabitants today is largely a transportation question. The recent economic conditions, the effect of the eight-hour day and the increased prices of construction materials have greatly affected the street railways, and the higher fares which they have been obliged to charge have cut down the traffic between the residential districts and industrial centers. In fact, it is impossible to foresee when there will be a return of normal conditions to the railways, although that they ultimately will recover there is no doubt any more than that the entire state will be brought back to normalcy in due time.

Studies of the relation between housing and transportation are of value only if a very large number of individual cases is investigated and if proper care is taken for the further development of each railway system.

The city of the future will differ materially from that of the present with its closely built up and congested central area,† so that wrong conclusions will be drawn if present experiences are used without modification as a basis for predicting the traffic of the future. Future city development will be characterized by a much more extensive use of the small single-family house with gardens and much more open space. The large factories to which and from which large numbers of working people flow rythmically will stay as they are.

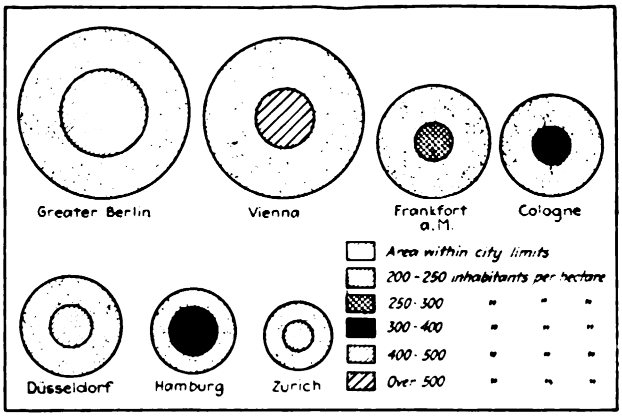
The new means of city transportation will have to be fast, and the fares must be in accordance with the means of the users. At present this cannot be accomplished, but we all have as our goal the final restoration of normal times. In the meantime, the number of transportation means has largely increased. As the greatest competitor to the street railways the automobile has already to be considered, and the airplane may follow soon.



1 - Hamburg 2 - Munich 3 - Leipzig 4 - Dresde

GRAPHICAL REPRESENTATION OF AREA AND DISTRIBUTION OF POPULATION BEYOND THE 5-KM. RADIUS

The smallest circle shows the built-up area, each dot in the shaded portions beyond the 5-km. circle indicates 1,000 population, the open sectors indicate arrested expansion due to natural obstructions, like a body of water, or the proximity of a community under different political control. These sectors are, for Hamburg, 17%; Munich, 1%; Leipzig, 6.7%; Dresden, 7.8%.



GRAPHICAL REPRESENTATION OF SIZE OF CITY, AREA OCCUPIED BY BUILDINGS AND DENSITY OF POPULATION

The outer circle shows the size of the city, the inner circle the area occupied by buildings and the shading of the inner circle the population density.

Recent developments in electric roads have not in all cases been particularly fortunate. In some cases too much red tape and supervision by incompetent authorities have been a handicap, and in many other cases the street railway has imitated too closely its bigger brother, the steam railroad, by installing far too heavy rolling stock. As far as fare systems are concerned, we are today only at the beginning. We cannot expect good results if every passenger has to pay uniformly for the distance traveled. If we make the long-distance city fare proportionately too low the urban traveler has to make up for it. If we ask both classes of passengers to pay proportionally to the distance traveled we shall lose the commuter. Two ways have been suggested to solve this problem. One which was advocated ten years ago has now little chance of realization; that is, to give free transportation to every resident and to cover expenses by taxes. The other is to defray part of the expense of building and operation of

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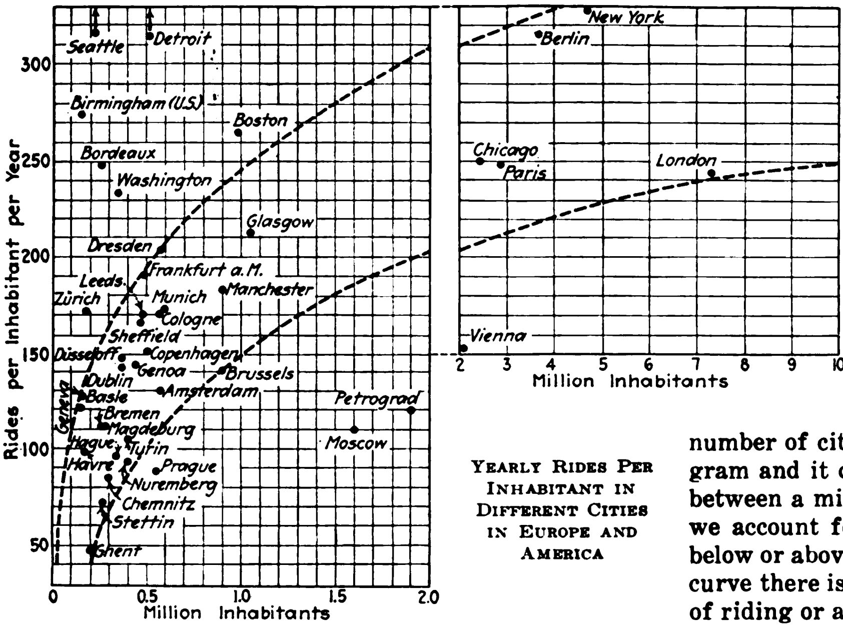
*Abstracted from *Verkehrstechnik*, May-June, 1921.

†EDITOR'S NOTE: Dr. Ertel is speaking primarily, of course, of the older European cities, where this condition prevails to a much greater extent than in the average American city.



YEARLY RIDES PER INHABITANT IN DIFFERENT CITIES IN EUROPE AND AMERICA

TABLE SHOWING POPULATION AND RIDES PER INHABITANT IN LARGE CITIES

	Population in Millions	Rides per Inhabitant per Year
Germany		
Berlin	3.708	315
Munich	0.596	173
Dresden	0.576	205
Cologne	0.572	170
Frankfort	0.487	191
Nurnberg-Furth	0.400	93
Düsseldorf	0.371	149
Chemnitz	0.297	85
Madgeburg	0.278	112
Bremen	0.269	111
Stettin	0.258	72
England		
London	7.312	244
Glasgow	1.050	212
Manchester	0.900	184
Leeds	0.484	170
Sheffield	0.470	167
Dublin	0.380	143
Former Austria		
Vienna	2.030	154
Prague	0.552	89
Belgium and Holland		
Brussels	0.900	141
Ghent	0.209	48
Amsterdam	0.573	123
Hague	0.321	97
America		
New York	4.767	321
Boston	1.099	266
Detroit	0.515	377
Washington	0.343	236
Seattle	0.237	437
Birmingham	0.150	277
Chicago	2.447	250
France		
Paris	2.822	249
Bordeaux	0.262	258
Amiens	0.093	71
Havre	0.177	99
Italy		
Genoa	0.440	145
Turin	0.400	105
Russia		
Petrograd	1.907	120
Moscow	1.600	110
Denmark		
Copenhagen	0.500	151
Switzerland		
Zurich	0.188	172
Basel	0.155	129
Geneva	0.154	122

the roads by a special assessment upon the real estate owners of the communities served. However, it is useless to discuss the fare questions until our (German) wages and material costs have become stabilized.

In 1910 Germany contained forty-eight cities with a population of 13.8 millions, or 21.3 per cent of the total population lived in cities of this size. It is of importance to determine the relation of area of city, total buildings-covered area, and density of population. The first diagram shows this graphically for seven large cities. (Berlin, Frankfort a/M, Cologne, Düsseldorf and Hamburg in Germany, Zürich in Switzerland and Vienna in Austria.)

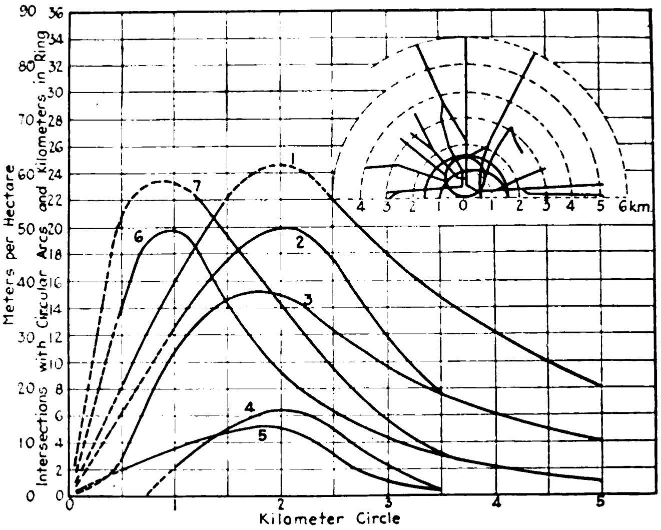
Provided there are no lateral restrictions, the most natural development of a city is radial; that is to say, the city tends to take the circular form. Most large cities have exceeded their 5-km. (3-mile) radius, and some of them extend already beyond their 10-km. (6-mile) radius. It happens frequently that the center is so eccentrically located that communities under a different political control reach into the city area proper. To how much this amounts is graphically shown in the second diagram, where it is represented by sectors graduated by degrees. This diagram shows also the number of city residents located outside the 5-km. radius (each black circle representing 1,000 inhabitants). From 1871 to 1910 the total area occupied by German cities increased 210 per cent.

It is customary to judge the traffic of a city by the number of yearly rides per inhabitant. In general, this gives a fairly truthful picture of actual conditions. In some cases, however, additional facts to understand the data are necessary. The third engraving gives these values for a number of cities in Europe and America in a target diagram and it can be seen that practically all points come between a minimum and maximum curve. But how can we account for the considerable number of cities lying below or above the curves? In cities below the minimum curve there is no doubt either a less-pronounced necessity of riding or an extensive use of transfer tickets. Not so easy is the explanation of the many cities above the upper curve, which comprise cities of quite limited size and especially American cities. No doubt the large areas of such places like Boston, Detroit, Washington, Chicago, etc., account largely for this large number of rides.* It is to be regretted that no more data are available for this investigation, but many spread-out European cities also show high traveling rates.

CHARACTERISTIC CURVES OF CITIES ANALYZED

For the more accurate investigator these general figures are, however, not precise enough, and he has to investigate more closely the individual cases.

The largest German city, Berlin, is not suitable for such an investigation, as it represents the conglomeration of several previously independent political subdivisions, which had, and to a certain degree still have, their own community centers and consequently their centers of traffic. Cities like Vienna, Munich, Düsseldorf, Cologne and Zürich have been more closely investigated by the author. The results of Vienna and Cologne are given on this and the following page.

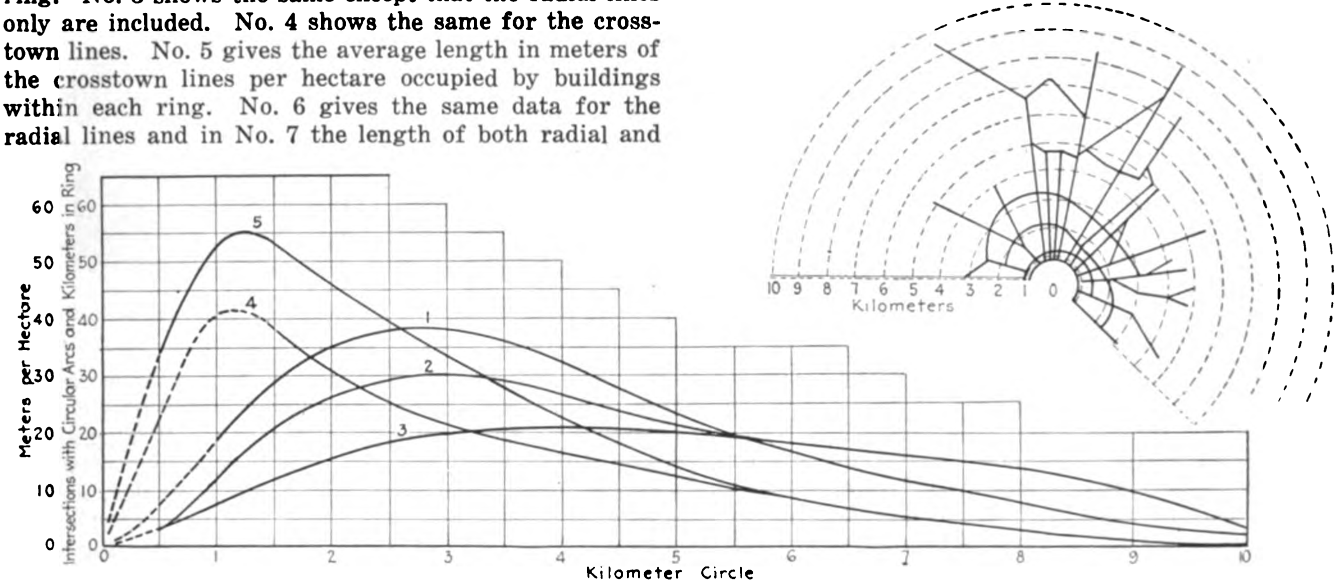


CHARACTERISTIC CURVES OF TRAMWAY DEVELOPMENT IN COLOGNE

[*EDITOR'S NOTE: In some cases also, probably, the figures for population have been taken from the census reports for the central city and represent a smaller number of people than those actually tributary to the railway.]

The upper right-hand drawing in each case is a chart of the greater part of the city included within the circular arcs drawn. The entire system is not shown in either case, because of the intersection of each city by a river, the Rhine in the case of Cologne and the Danube in the case of Vienna. In consequence, a sector of 180 deg. in the case of Cologne and of 225 deg. in the case of Vienna, is given and contains the significant routes. The lines are drawn from a radial point, which in Cologne is the Heumarkt and in Vienna is Stefansplatz. These are not the heaviest points of traffic, but are taken as the logical radiating point in each case.

In the lower left-hand portion of the diagram representing conditions in Cologne are curves giving the following data as they occur within the ½-km. rings around this radial point. No. 1 shows the number of intersections of radial street railway lines with each ½-km. arc. No. 2 shows the length measured in kilometers of both radial lines and crosstown lines within each circular ring. No. 3 shows the same except that the radial lines only are included. No. 4 shows the same for the crosstown lines. No. 5 gives the average length in meters of the crosstown lines per hectare occupied by buildings within each ring. No. 6 gives the same data for the radial lines and in No. 7 the length of both radial and crosstown lines are included. In the case of the chart for Vienna there are only five curves. No. 1 shows the number of intersections of radial lines with each ½-km. arc. No. 2 shows the length in kilometers of both radial and crosstown lines within each circular ring. No. 3 shows the same except the radial lines only are included. No. 4 gives the average length in kilometers of radial lines on each hectare occupied by buildings within the ring, and No. 5 gives the average length in kilometers of both radial and crosstown lines for each hectare occupied by buildings in each ring.



CHARACTERISTICS CURVES OF TRAMWAY DEVELOPMENT IN VIENNA

To compensate for abnormal values due to river area within the city in each case, the river areas have been calculated as being of the same density of population as the remainder of the city.

The regularity of the curves so plotted from the data so obtained, not only for these cities but for the other cities investigated, was surprising. The other cities considered were Munich, Düsseldorf and Zürich, and the curves in all were of the analytical character of

$$(X^2 + a)Y = bX$$

Even the values of *a* and *b* showed a surprising regularity which permits of the conclusion that further developments based upon these rules will lead to the solution of future economical traffic problems.

Coal Consumption by Users

The Geological Survey of the Department of the Interior has recently made public the following summary of information on coal consumption in the United States. The department points out, in this connection, that consumption is not the same as production. Not only must exports and imports of coal be taken into consideration, but the flow of coal in and out of storage must be reckoned with. Further, there is great variation in the quantity of coal actually consumed from year to year, depending to some extent on the weather and to much greater degree on the activity of the industries which are the chief consumers of coal.

The proportion of the total coal consumed, taken by different industries, does not vary so greatly, and the percentages shown in the table below are roughly constant from year to year. The table represents in a general way the conditions during 1917, a year of large consumption. The principal changes since 1917 have been an increase in the proportion exported and a transfer of some millions of tons from beehive to by-product coke. The proportion consumed by the two types of coke ovens combined has undergone little change.

COAL CONSUMED IN THE UNITED STATES AND EXPORTED

(The figures for bituminous coal in this table represent in somewhat generalized form the calendar year 1917; those for anthracite, the coal year ended March 31, 1917.)

	Quantity, (Net Tons)	Per Cent
Bituminous coal:		
Industrial plants	174,600,000	31.7
Public utilities:		
Electric	31,700,000	5.8
Gas	4,960,000	0.9
Railroads	153,700,000	27.9
Domestic consumers	57,100,000	10.3
Power and heat at mines	12,100,000	2.2
Exports	22,900,000	4.1
Bunkers:		
Foreign trade	6,700,000	1.2
Coastwise and lake trade	3,600,000	0.7
Beehive coke	52,240,000	9.5
By-product coke	31,500,000	5.7
	551,100,000	100.0
Anthracite:		
Domestic consumers (domestic sizes)	49,400,000	55.1
Artificial gas plants	1,650,000	1.8
Steam trade (industries, power plants and heating large buildings)	18,450,000	20.5
Railroad fuel	6,400,000	7.1
Power and heat at mines	9,350,000	10.4
Exports	4,600,000	5.1
	89,850,000	100.0
Grand total	640,950,000	

The Imperial Omnibus in Service

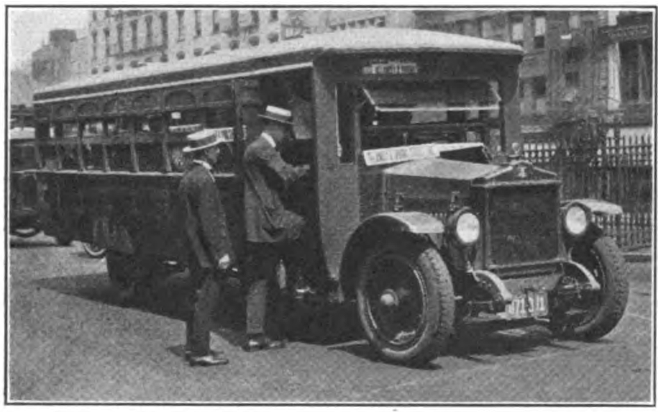
Trial Tests Being Made in Actual Service on One of New York's 5-Cent Bus Lines—Takes Well with the Riding Public and City Officials

THE Trackless Transportation Company of New York, the originator of the low center of gravity, underslung, stepless bus, has recently put one of these motor cars into service on the bus routes in downtown New York which are operated under the control of the department of plant and structures of the city. On this route there are many other types of motor buses but none of them are like this one in design. By means of actual service tests the company will soon be able to know what can be expected of the new bus under actual operating conditions.

The motor bus is of a new type and has been especially designed for passenger service. Some of the factors sought are maximum of safety and comfort to passengers, low cost of maintenance and economy of operation.

The bus, as shown in the accompanying illustrations, has a low underslung body, with the floor but 26 in. above the level of the street. The entrance is at the right forward end, is spacious and has but one step. This allows ready egress and ingress of passengers with a minimum of delay. The bus has a seating capacity of twenty-nine, on four cross seats on either side, two longitudinal seats over the rear wheels and a seat across the rear of the body large enough to accommodate five passengers. Standees to the number of twenty can be accommodated, and this gives a maximum load of forty-nine passengers. An emergency door is provided at the rear. The windows are raised sash and when opened cause a wire guard to slide into place, thereby rendering it impossible for a passenger to put out his arms or head.

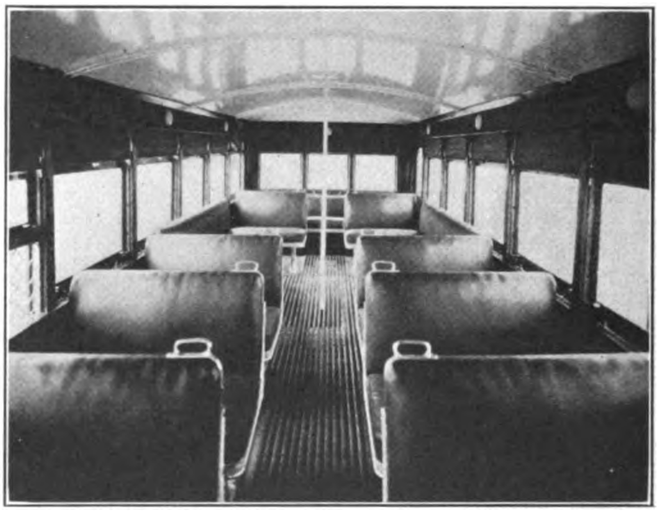
The body is of steel-aluminum construction and was built by the Kuhlman Car Company, Cleveland. It is of the truss side type, with the lower member a structural steel angle and the top member a pressed steel letter-board. The posts are of pressed steel and the roof is of Haskelite. The interior finish is of birch, stained mahogany color with a white enamel roof. Illumination is furnished by seven dome lights. There is also a step light and light for an illuminated destination sign. Three exhaust ventilators are provided, mounted along the center line of the roof. Another ventilator is mounted on the dash of the bus.



EXTERIOR OF MOTOR BUS SHOWING LOW FLOOR AND ENTRANCE WITH ENCLOSED STEPS

The chassis frame is of special design and of a channel section. A special Buda engine of the *ETU* type, with Fuller transmission and Clark internal drive rear-end specially designed make up the power plant. The transmission has four speeds forward and is mounted amidships. It has gears of very wide face.

The rear axle carries 65 per cent of the total weight. The chassis weights approximately 5,000 lb. The rear springs, which are of the compensating type, are 60 in. in length and are hung below the axle. The front axle is of the drop construction type with spring pads forged on the top face in the dropped position. This spring arrangement, using springs of elastic furnace chrome silico manganese steel, together with giant pneumatic tires gives very easy riding qualities and provides a maximum of comfort for the passengers. It is possible to substitute cushion type tires for pneumatic tires where desired, which would reduce height of floor about 2 in.



INTERIOR LOOKING TOWARD THE REAR, SHOWING SEATING ARRANGEMENT

The chassis as equipped has an electric starting and lighting system, speedometer, power tire pumps, fire extinguisher and motometer. There are two forms of brakes. One is a service brake, which is of the propeller shaft-locomotive type that works on the drive shaft; the other is an emergency internal expanding brake on the rear axle.

Two wheel gages are used. The rear wheels are placed 71 in. apart in order to reduce to a minimum the chance of overturning. The front gage is 66½ in. which is desirable in order to give as small a turning radius as possible. The wheelbase is 183 in.

Less than 7 per Cent of Average Family Income Goes for Utility Services

LESS than 7 per cent of the average yearly income of Ohio families is spent for public utility service according to figures compiled by the Department of Home Economics of Ohio State University. This compilation shows that the actual amount spent in 1920 by the average family having an annual income of $1,500 to $6,000 for the services of the utility companies was only 6.49 per cent of the total income.

The families included in the survey spent 1.01 per cent of their income for electricity, 2.27 per cent went for street-car rides, 1 per cent for telephone service and 2.45 per cent for gas.

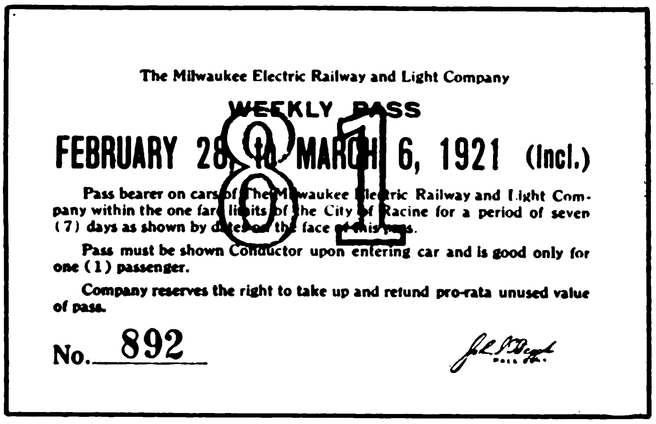
The Weekly $1 Pass in Wisconsin

Experience in Racine and Kenosha Indicates Useful Field for This Method of Encouraging Off-Peak Riding—Pass-Holders Take Nearly Four Rides a Day—Simplification of Fare Collection Results from Use of Pass

BY WALTER JACKSON
Consultant

THE Jan. 3, 1920, issue of the ELECTRICAL RAILWAY JOURNAL described the "Unlimited-Ride, Transferable Weekly Pass at Racine" inaugurated Aug. 18, 1919. The management, the Milwaukee Electric Railway & Light Company first introduced this pass before the safety cars were installed in Racine, so that now the plan has been tried and has worked on both two-man and one-man cars. As the associated Wisconsin Gas & Electric Company adopted a similar plan on Jan. 24, 1921, in Kenosha it seems opportune to discuss the nearly two years' experience of the Racine lines.

It is not necessary to repeat in detail the reasons for introducing a form of transportation which, theoretically, allows unlimited riding for $1 per week. Stress should be put upon the fact, however, that, unlike the passes developed on European street railways, the cost is such that the holder would be paying more than the cash or general ticket rate if he did not take more than two rides a day. Therefore, the idea of this pass is not to give a reduction to the usually compulsory peak-hour rider but to the usually voluntary off-hour rider.



The Milwaukee Electric Railway and Light Company

WEEKLY PASS

FEBRUARY 28, to MARCH 6, 1921 (Incl.)

81

Pass bearer on cars of The Milwaukee Electric Railway and Light Company within the one fare limits of the City of Racine for a period of seven (7) days as shown by dates on the face of this pass.

Pass must be shown Conductor upon entering car and is good only for one (1) passenger.

Company reserves the right to take up and refund pro-rata unused value of pass.

No. 892

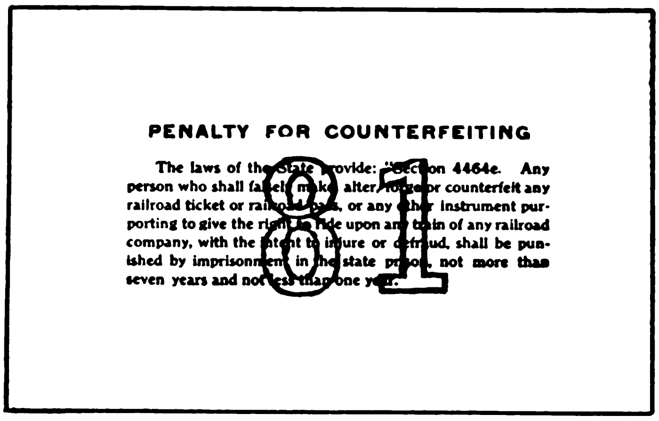
FACE OF PASS SHOWING MARKINGS FOR CONDUCTOR'S CONVENIENCE

In practice, the pass acts exactly as if fares were being charged on a distance basis. The holder who lives close in may take luncheon rides regularly, whereas the holder who lives near the end of the line will not do so because of time limitations. Similar limitations may occur in connection with evening travel. Hence, in the long run, each holder tends to get about the same mileage despite differences in the number of rides.

PASS-HOLDERS TAKE NEARLY FOUR RIDES A DAY

Knowledge of pass experience in foreign cities with length of routes comparable to Racine anticipated an average of four rides per business day. This has been confirmed by two checks taken a long time apart. For the week ended Nov. 7, 1919, it was found that the average number of rides per pass-holder on a weekday was 4.1 and for Sunday, 2.4, including rides normally transfers. For the week ended Jan. 16, 1921, the average number of rides reduced to a revenue basis was 26.5 or slightly less than four a day. In attaining the latter figure, the company assumed that 15 per cent of the gross rides counted were transfers, this being the transfer proportion of the other traffic. This means that the patrons who take as many off-peak rides as they do rush-hour rides (since it is practically impossible to take four rides during rush hours) average a fare somewhat less than 4 cents.

In contrast to this, it may be pointed out that when the pass was instituted, the fares were 6 cents cash with five tickets for 30 cents, good at all hours of the day, and a 5½-cent ticket (ten tickets for 55 cents), good for transportation between the hours of 6 and 8 a.m. and 5 and 7 p.m. On Nov. 23, 1919, about three months after the installation of the weekly pass, these rates were increased to 7 cents and six tickets for 35 cents, at all hours of the day. Even with the so-called workmen's tickets abolished, the pass had to compete with a reduced rate ticket. This fact has doubtless kept down the purchase of passes, which require a dollar's initial outlay instead of 35 cents.



PENALTY FOR COUNTERFEITING

81

The laws of the State provide: "Section 4464e. Any person who shall falsely make, alter, forge or counterfeit any railroad ticket or railroad pass, or any other instrument purporting to give the right to ride upon any train of any railroad company, with the intent to injure or defraud, shall be punished by imprisonment in the state prison, not more than seven years and not less than one year."

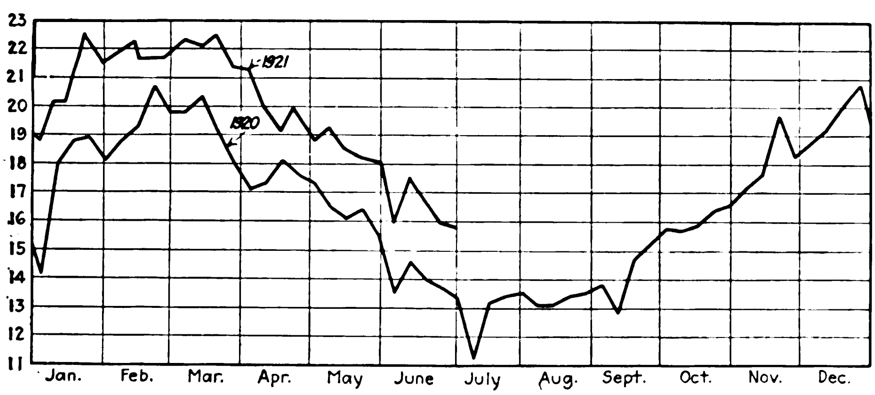
REVERSE SIDE ON WHICH CONDITIONS OF USE ARE PRINTED

Reducing the matter to terms of revenue rather than rides, we find that the pass-holder yields, say, 16 cents a day, while the cash rider probably does no better than 14 cents. The ticket rider yields still less except for his occasional extra ride. If the ticket rider averaged three rides a day or more it would, of course, be to his interest to purchase a pass.

In this connection, the point has been raised whether or not the transferable feature leads to much splitting in the use of the pass. A little thought should show that this is rarely practicable from purely physical reasons. A holder of the pass necessarily cannot give it to another until he has returned from his journey. Such splitting as does occur is carried on among clerks who have successive luncheon periods, but even here the plaints of the downtown restaurant keepers bear witness to the fact that these clerks formerly patronized the nearby lunchroom instead of riding home. Another opportunity for splitting the use of passes lies in their use by housewife and children, but this is encouraged rather than discouraged because it creates voluntary customers. Aside from this, children would enjoy the lowest ticket rate in any case.

ONE-THIRD OF REVENUE PASSENGERS HAVE NO PHYSICAL TRANSACTION WITH THE CAR OPERATOR

During the first week's (August, 1919) use of the pass, the sales ranged from 818 to 964 a week and the percentage of revenue was 10.2 per cent in the case of the larger sales figure. Furthermore, during the week ended Aug. 24, when 818 passes were sold, there was a drop of 1.5 per cent in revenue compared with the preceding non-pass week. This might be explained by the natural assumption that the first buyers would largely be those whose concerns led them to ride more than usual. The next month saw the sale of passes exceed the 1,000 mark, and thereafter revenue increased steadily in comparison with like periods. It is not asserted that the pass caused these enhancements of revenue. During the year following its installation Racine was an increasingly busy community.



SEASONAL FLUCTUATIONS IN SALE OF WEEKLY PASSES, IN HUNDREDS

In September and October, 1920, came faster and more frequent service through the use of the safety cars on all base schedules. This improvement stimulated traffic further. Thus it was that while only 1,128 passes were sold the week ended Sept. 28, 1919, a total of 1,528 passes were sold the week ended Sept. 26, 1920. Late in 1920 Racine's industries began to suffer, but, curiously enough, the pass sales kept climbing, the week ended Dec. 26, 1920, showing 2,080, against the previous comparable Christmas shopping week of 1919, when 1,602 passes were sold. The week ended Dec. 21, 1919, was high water mark for that year, with a sales of 2,055. For the months of January and February, 1920 and 1921, the sales compare as follows:

1920 Week Ended		1921 Week Ended	
Jan. 4	1,413	Jan. 2	1,880
Jan. 11	1,796	Jan. 9	2,046
Jan. 18	1,879	Jan. 16	2,074
Jan. 25	1,889	Jan. 23	2,255
Feb. 1	1,813	Jan. 30	2,148
Feb. 8	1,876	Feb. 6	2,177
Feb. 15	1,932	Feb. 13	2,219
Feb. 22	2,069	Feb. 20	2,163

One of the interesting observations during the present industrial depression is the tendency toward the purchase of passes by those who are seeking work, or perhaps striving to kill time by visiting. The possession of an unlimited-ride pass seems to give them a lot more satisfaction than if they were to spend an equal amount of money for fewer rides.

A most intensive survey would probably be needed to reveal just how much extra revenue is due to the use of passes. This is impracticable, so only the unquestioned benefits will be studied. First, the fact that today approximately 32 per cent of the revenue passengers are pass-holders. This means that one-third of the riders do not call for any more exertion on the part of the car operator than a glance at the color and inch-high numerals of the pass. These riders have but one cash transaction a week (when they purchase the pass) and they never demand or have arguments about transfers. As all but 22 per cent of the total revenue passengers present some form of ticket fare, it is obvious that the operation of safety cars in Racine is close to the ideal as regards their most mooted point, namely: slowness in fare collection.

For the first three or four months following the installation of the pass it was customary for the conductor to ring up on an overhead register each pass presentation, the cash and metal token fares going into a registering farebox. Following a shift in equipment which placed in service in Racine cars which happened to be without such registers, the company concluded that the experience gained made it unnecessary to count pass riders. The two surveys mentioned have shown that the multiplication of the number of passes sold by four gives a sufficiently accurate estimate of the number of riders. The other revenue passengers, as hitherto, continue to drop their fares in the box.

A second advantage is that the car operator and the pass rider have a minimum of friction in their relations. The pass-holder also has the cheerful feeling that any car is his car any time. He comes as close to regarding the car as his personal vehicle as it is possible to make a public conveyance. It is only human nature for him to ride much shorter distances than if he paid separately for each ride, and thus he acquires willingly a most desirable habit.

SALES IN 1921 GREATER THAN IN 1920

So successful has been the combination of one-man car and weekly pass that it has offset to a pleasingly large extent the losses that must be expected during the present depression. Each has done its share toward popularizing the service with both the public and the car operators.

An examination of the sale of passes throughout any extended period will show fluctuations of 50 to 90 per cent. Without going into details it may be stated that weather conditions favoring automobiles, factory inventory periods, holiday weeks, holiday shopping time, and the opening and closing of schools are the chief factors. School children are large users of the pass since it enables them to go home for lunch and to do more riding when visiting their friends. Nor is it a bad idea to foster the car-riding habit at the most impressionable time in the automobile era.

The latest figures from Racine show pass sales to be 15 to 20 per cent ahead of the same period of 1920. The actual sales in 1921 were:

Week Ended:		Week Ending	
Feb. 27	2,169	May 8	1,914
March 6	2,222	May 15	1,848
March 13	2,206	May 22	1,821
March 20	2,249	May 29	1,804
March 27	2,131	June 5	1,595
April 3	2,129	June 12	1,756
April 10	1,986	June 19	1,680
April 17	1,917	June 26	1,599
April 24	1,986	July 3	1,581
May 1	1,882		

In conclusion, it may be stated that the turn for the better has not yet reached Racine. Another hindrance to traffic since April 8, 1920, is the reconstruction of the State Street bridge, which has had the effect of cutting off considerable revenue.

ENCOURAGING THE SHORT-HAUL AND OFF-PEAK RIDER IN KENOSHA

The Kenosha lines of the Wisconsin Gas & Electric Company may be said to require traffic encouragement even more than Racine. While Racine has a population of 63,289 (Jan. 1, 1921, estimate) and routes averaging more than 2 miles from the business and amusement center, Kenosha has only 43,710 people with routes as follows:

	Miles
Milwaukee Avenue	1.21
Elizabeth Street	1.69
Market Street	1.64
Sheridan Road	1.30
Grand Avenue	1.30

All of these routes converge at the center of the city. The fares are 7 cents cash, or eight metal tokens for 50 cents; children's fares 4 cents, and the weekly pass for $1. The passes sold during the first week ended Jan. 30, 1921, were 392; for the week of Feb. 6, 445; Feb. 13, 501; Feb. 19, 465, and Feb. 26, 498. For the week of Feb. 13 the passes brought approximately 15 per cent of the revenue. At present about one-fifth of the revenue riders travel on passes. More recent figures are:

Week Ended:		Week Ended:	
April 10	466	May 29	446
April 17	474	June 5	403
April 24	483	June 12	400
May 1	471	June 19	402
May 8	477	June 26	412
May 15	456	April 3	514
May 22	433		

These figures reflect the tendency toward a decline with the advent of automobile weather. The Kenosha lines have had harder luck than Racine as regards bridges, for in their case the main route has been cut in half during the construction of a new high-level bridge on Main Street since June 10, 1920. Therefore, the possibilities of the pass remain to be determined, although the management has got out inserts with light bills and distributed car dodgers to advertise the pass more extensively than has been done at Racine.

Indeed, as regards both communities, there is still room to sell the pass to a larger number of people on the basis of convenience rather than economy. Such additional patrons are very desirable because they will naturally raise the average rate of fare from this class of business.

An Illuminated Time Table

A METHOD of lighting time tables as employed at the Waterloo station of the London & Northwestern Railway was described recently in the *Railway Engineer*. The time tables are mounted on racks in the center of the concourse, being pasted on inclined panels of clear glass illuminated by transmitted light from lamps inside the rack. Three 20-watt lamps, distributed behind the panel and, of course, serving to illuminate the panels on the reverse side, are used. By this means uniform illumination, equivalent to 4 foot-candles, is provided, and in these circumstances the smallest figures can be read with ease. As the light comes entirely from behind the time tables there is no danger of inconvenient shadows being cast by the observer as he reads.

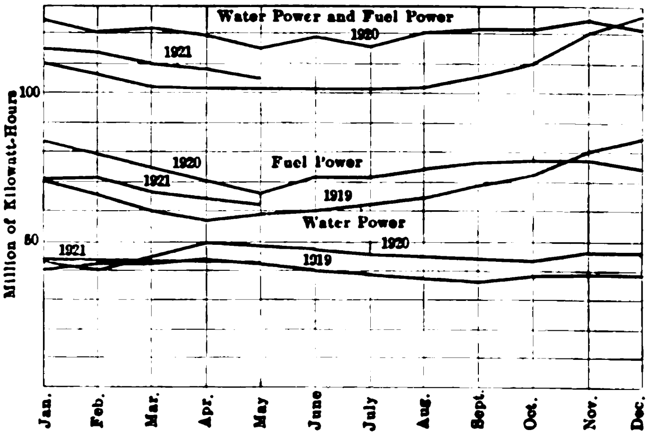
On the Underground Railways illuminated information signs also play an important role, saving the staff a great deal of questioning by the public and materially assisting them in directing traffic. Experiments are also being conducted with a form of sign which might be placed transversely across the platform, so that it could be seen by any one looking out of the window of an approaching train.

Statistics on Power Generation

ON JULY 28 the United States Geological Survey issued a bulletin giving statistics of the production of electric power by public utility power plants in the United States during the first part of 1921, and for several previous years. A chart which shows the average daily production for this period is published herewith.

The quantities in this chart are based on returns received from about 3,200 power plants of 100-kw. capacity, or more, engaged in public service, including central stations, electric railways, and certain other plants which contribute to the public supply. The capacity of plants submitting reports of their operations is about 95 per cent of the capacity of all plants listed. The output of plants which do not report is estimated.

The mean daily output in kilowatt-hours for January, February, March, April and May was 114,200,000, 113,400,000, 109,600,000 108,000,000 and 105,400,000 respectively. The proportion produced by water power was as follows: 37.9, 37.7, 39.6, 40.4 and 40.6 per cent, respectively. The mean daily rate of production of electricity by public utility plants for May, 1921, is the lowest since August, 1919. It should be noted, however, that the decrease in the daily output of electricity by public utility plants since January as shown by the curve of total output for 1921 is probably the normal seasonal decrease due to the increasing hours of daylight.



AVERAGE DAILY PRODUCTION OF KW.-HR. BY PUBLIC UTILITY PLANTS IN THE UNITED STATES

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Steam-Heating Electric Trains in Switzerland

Single-Phase Current at 15,000 Volts Is Applied Directly to the Water in a Specially Designed Boiler, Thus Generating Steam Which Is Used for Heating

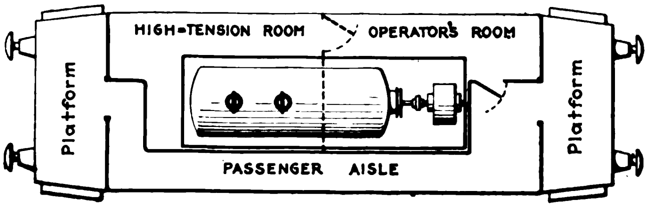
By William A. Rosenberger, M. E.
Zurich, Switzerland

With electrification of the Swiss Federal Railroads in full swing, the problem of heating the trains became an important and somewhat disagreeable side issue. Although early during the recent war Swiss industry had been forced to seek ways and means to replace that part of their coal and fuel imports which their neighbors could no longer let them have, it was not until some time after the conclusion of the great conflict that Brown Boveri & Company, in Baden, Switzerland, together with Sulzer Brothers in Winterthur, succeeded in applying directly and for the first time, a single-phase 15,000-volt, $16\frac{2}{3}$ periods current for the purpose of steam creation by electricity. When I say "directly" I mean without transformation. It is, therefore, now possible to send a 15,000-volt current directly into the water of a suitably constructed boiler, in which all the electric energy is transformed into heat and used to generate steam. But, if this is possible with a 15,000-volt single-phase current, it is also possible with a 26,000-volt three-phase alternating current, which certainly represents a considerable advance in a short space of time, for only two years ago the outlook of ever being able to use a tension exceeding 8,000 volts was far from promising. Today, however, the problem seems to be solved so that in Switzerland electric trains will be heated by "electric steam."

The first outfit of this kind made its maiden trip, a few weeks ago, between Bern and Thun. The electrical steam generating plant of this heating wagon, in the manufacture of which the two previously mentioned Swiss firms had each their part, is installed in a four-axle freight car altered for this purpose by the Swiss Federal Railroads. About the only outward distinguishing sign is the pantograph current collector, a trapdoor-like arrangement on top of the roof, and a few insulators.

The accompanying illustration shows the first experimental heating wagon of this type coupled in between two passenger cars.

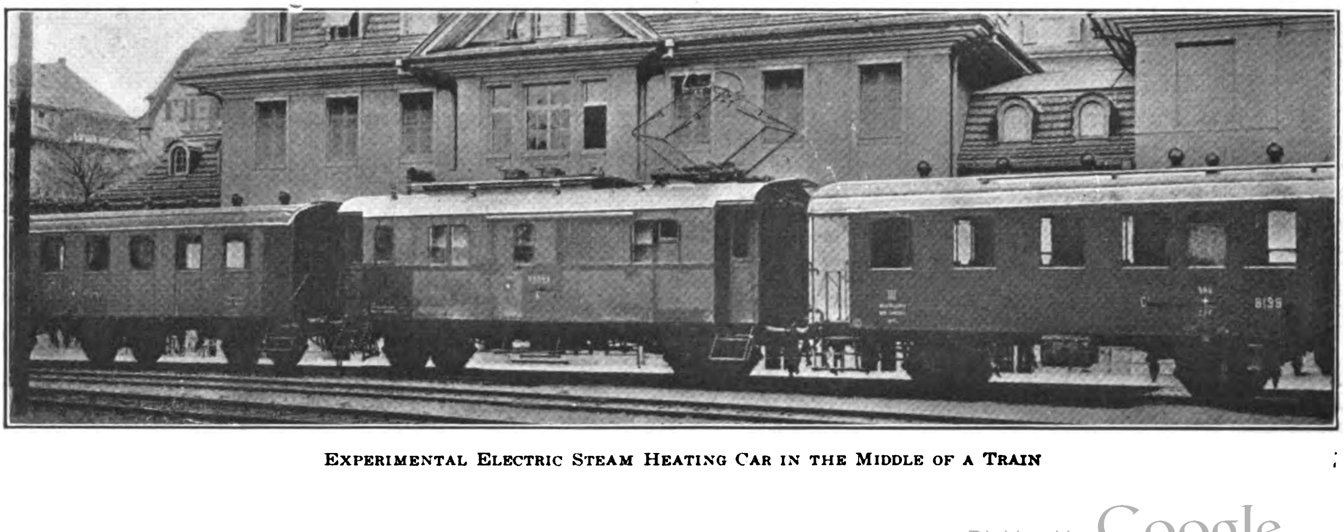
The heating wagon has two rooms and an aisle running straight through which serves as a passageway for travelers. The boiler proper is of the horizontal type, approximately 10 ft. long by 4 ft. in diameter. At one end is located a water circulating pump with its driving motor, the whole being placed over a rectangular water supply tank.



Interior Arrangement of Heating Car

The high-tension room contains a 4-kva. transformer for the pump driving motor, high-tension fuses, current and voltage transformers, disconnecting switches and the main oil switch. This equipment is well protected by a wire mesh partition, having a small passage door which is interlocked with the main oil switch drive in such a manner that the operator cannot enter the high-tension room unless the oil switch is opened.

The boiler, which is heavily insulated against heat losses, has two steam-tight current-inlet insulators, of which each connects with a system of electrodes of special design, developed by the engineers of Brown Boveri & Company. These electrodes are easily adjustable from the operator's room while under tension, thus permitting of varying the load between 300 and



Experimental Electric Steam Heating Car in the Middle of a Train

1,200 kw. according to requirements. As a rule one of the electrodes is quite sufficient for heating under average operating conditions, so that the second electrode constitutes a reserve to be used only while starting to heat up a train or during most severe cold. According to Swiss practice, we calculate for heating purposes with an expenditure of energy of from 5.7 to 8.5 watts per cubic foot, or figuring with an average passenger coach of 4,000 cu.ft. each coach would require from 23 to 34 kw., including all losses. A single electrode could therefore supply sufficient steam to heat a ten-car passenger train under average conditions. This heating wagon is placed as near as possible to the center of the train in order to reduce steam transmission losses to a minimum.

While it is by no means impossible or even impracticable to provide for an entirely automatic operation of this equipment, it was thought preferable with this first experimental outfit to avoid all unnecessary complication by providing for an attendant. Nevertheless there are a number of interesting automatic safety provisions, such as the automatic lowering of the current collector when the door between the operating room and the high-tension room is opened, which, at any rate, is only possible after the main oil switch has been opened. For emergency cases a safety pull is provided by means of which the oil switch is opened and the current collector lowered, while at the same time trapdoors, provided in the roof, are raised to offer escaping steam an unrestricted outlet to the open air and facilitate ventilation.

The oil switch also opens automatically in case of any short-circuit within the boiler or any part of the line between oil switch and boiler, as it does also as soon as the speed of the pump driving motor drops off below a certain minimum, or when the air pressure holding the current collector in position reaches a certain minimum value.

In addition to the 15,000-volt heating wagon, two others operated at 1,000 volts have been tried out by the Swiss Federal Railroads. One of these, also a Brown-Boveri-Sulzer product, is now doing satisfactory service on the Gotthard line, between Erstfeld and Bellinzona. This low-tension heating wagon is coupled directly with the electric locomotive and derives its current from the transformer of the latter. Its operation is, contrary to the 15,000-volt heating wagon, entirely automatic.

Removable Unit Type Circuit Breaker

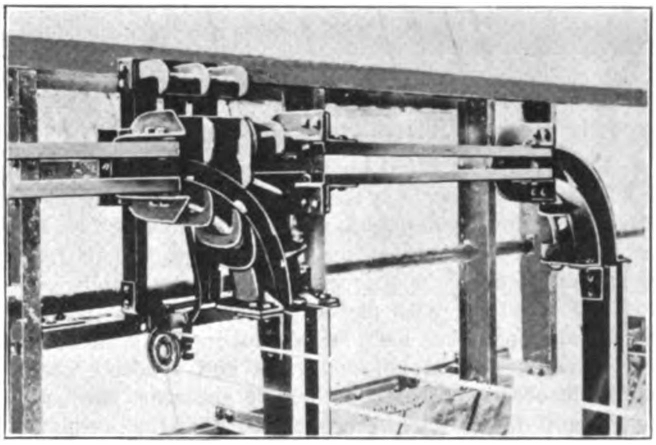
TO MEET the demand of central stations for a high interrupting capacity breaker of the removable unit type, to replace breakers inadequate to handle the existing interrupting capacity of a section, the Condit Electrical Manufacturing Company has placed on the market the type F-10 oil circuit breaker. This circuit breaker is compact and will go into most any cell formerly occupied by an oil circuit breaker having an interrupting capacity between 1,200 and 2,000 amp. per phase at 15,000 volts. As the interrupting capacity of the circiut breaker is 10,000 amp. per phase at 15,000 volts, this allows central stations to increase the interrupting capacity of their equipment from five to eight times.

As these breakers are not supported from any cell structure it is only necessary to install the tracks on the cell floor. No overhead framework is necessary and in general no change is required in the masonry, busbars or connections to the breaker.

Type F-10 oil circuit breakers are built in capacities from 500 to 1,200 amp. at 15,000 volts and 500 to 800 amp. at 25,000 volts, single throw, and can be furnished for single or multiple operation.

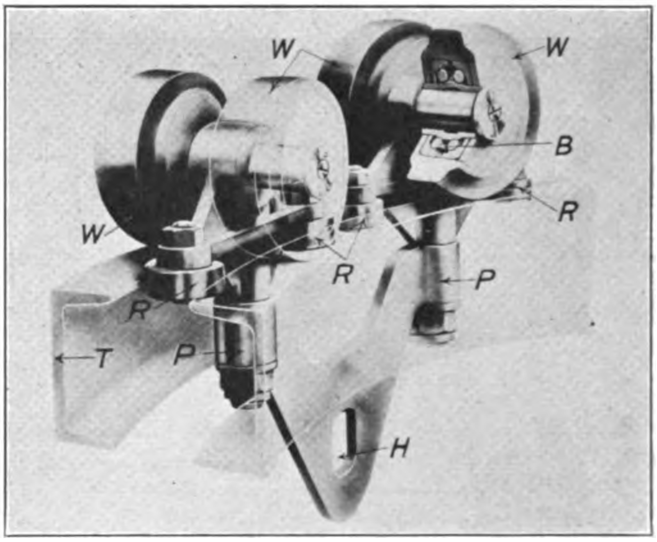
New Trolley Transveyor System

THE Whiting Corporation of Harvey, Ill., has placed on the market what it terms the short-turn overhead trolley system. This is a comparatively new departure, but several successful installations are now in use. The track consists of two parallel standard rolled channels 2⅛ in. between flanges and held in place by clamps. It is designed to carry loads with no intermediate supports except at the splices, corners and switch points. The corners and switch connections are interchangeable, so that when found desirable a right corner can be removed and a double switch or universal switch can be bolted in the same place. All of the short-turn corners and switches have a track curvature of 18 in.

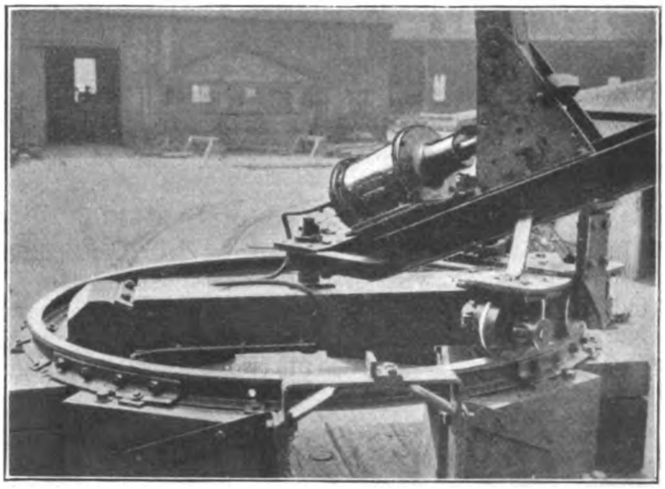


STANDARD SWITCH AND CORNER

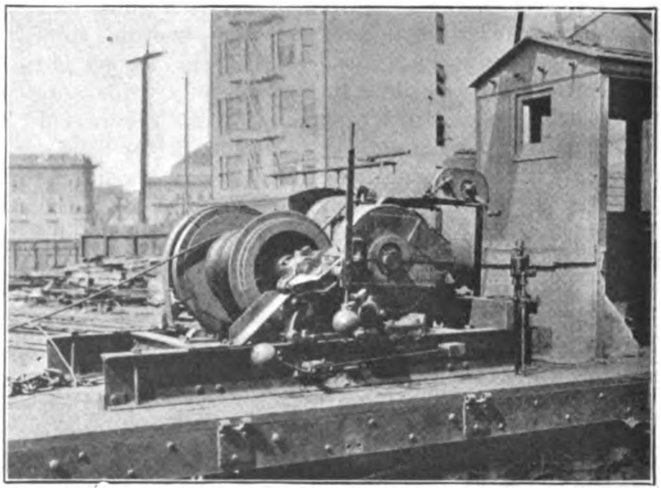
The track equipment is arranged for two-wheel, four-wheel or eight-wheel trolleys. These trolleys have ball-bearing wheels and guide rollers which run between the toes of the channels.



VIEW OF SHORT-TURN TROLLEY
W, wheels. *B*, ball bearings. *R*, guide rollers. *T*, supporting channels. *P*, pivots. *H*, hoist connection.



TURNTABLE AND AIR CYLINDER FOR DERRICK OF PLOW CAR



WINCH MOUNTING AND ACCESSORIES

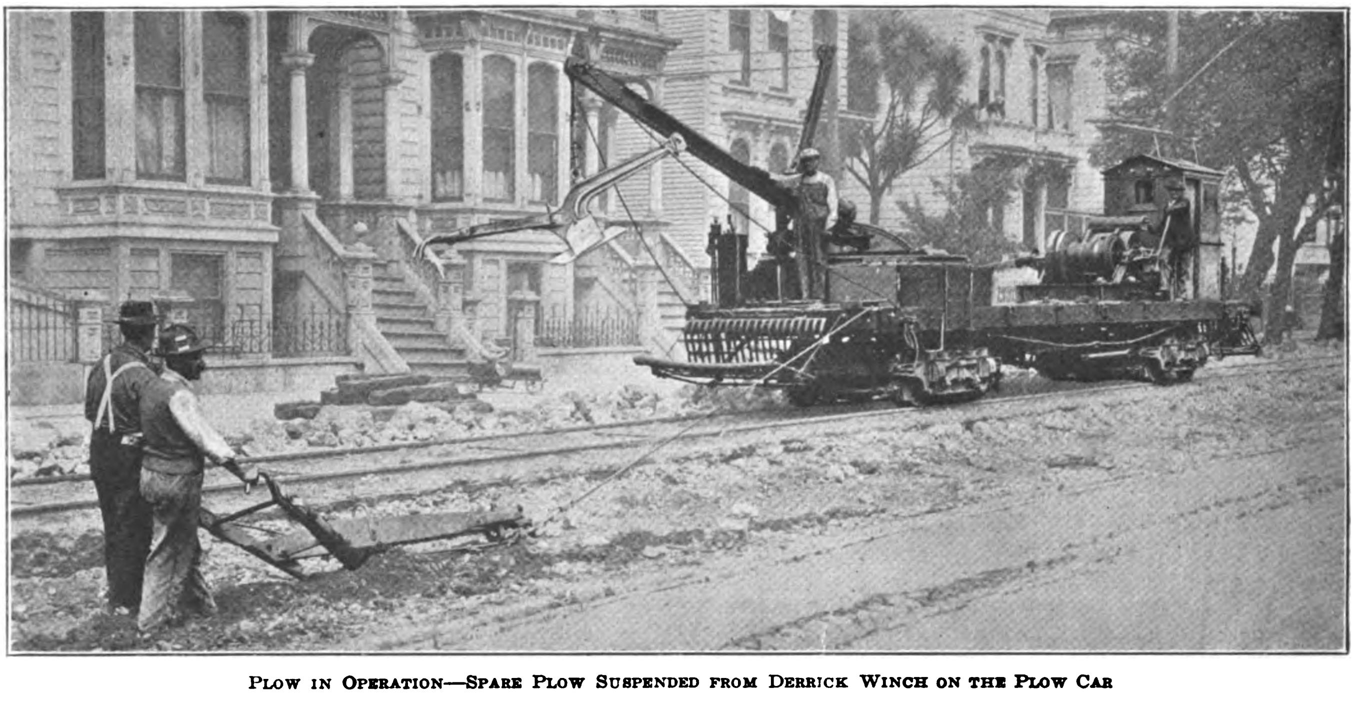
Car Equipped to Operate Power Plow

A CAR recently fitted up in the shops of the Market Street Railway of San Francisco to provide a convenient and economical means of plowing up the right-of-way, consists of an ordinary work car from which one of the cabs was removed and on which were mounted a winch with its accessories and a derrick. The arrangement has been successful in doing all necessary plowing and rooting out ties and concrete along the right-of-way. Furrows 11 ft. outside the rails have been made, and where anchorage for a snatch block is available this distance of offset could be greatly increased. This method of plowing with power has been used for eight years but the power has always been furnished by a 6-ton derrick car. A few months ago plowing had to be done while the derrick car was on work from which it could not be spared. The car here described was constructed to serve in the emergency.

The plow is drawn by a cable running from a 3-ton single-drum winch driven by a GE-1,000 motor with an ordinary type K controller. The cable passes between guide sheaves at the center of the rear end of the car. Additional sheaves are also provided on either corner so that the line can readily be offset this far when desired. To offset the hauling line still further, an anchor chain and snatch block are attached to the end of a tie rod in the adjacent track (if the work is between two tracks). By adjusting the length of the chain the offset can be regulated as desired. The side of the snatch block is hinged so that the cable need not be threaded through it but can be dropped into place by opening up the side. The car is used on a temporary portable T-rail track at the side of the track trench being plowed.

For lifting the plow off the ground the car is provided with a power derrick operated by a 10-in. air-brake cylinder which takes air from the air reservoir of the car itself. The 1-ft. throw of the piston in this brake cylinder is multiplied by the mechanical arrangement shown in the accompanying illustration in a ratio of 1 to 8, so that for the 1-ft. movement of the piston the derrick hook is moved a distance of 8 ft., which is sufficient for handling the plow.

The mechanical arrangement of lever and rope is such that the ratio can be easily and quickly changed



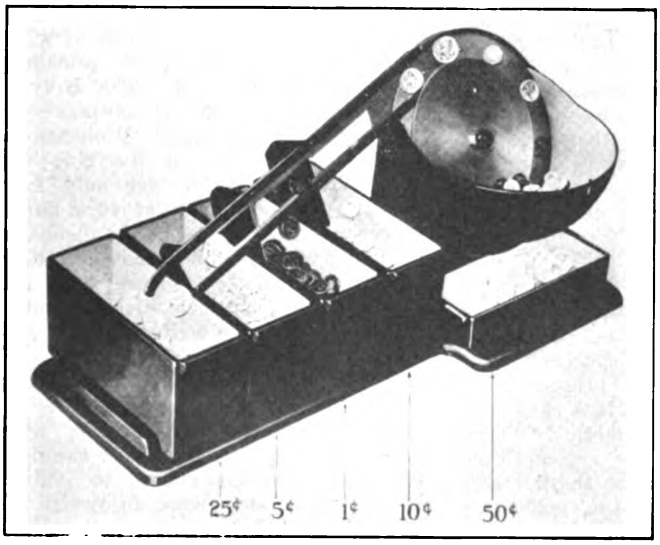
PLOW IN OPERATION—SPARE PLOW SUSPENDED FROM DERRICK WINCH ON THE PLOW CAR to any of the following: 1 to 8, 1 to 6, 1 to 4 or 1 to 2. The 1 to 8 ratio is sufficient to raise a weight of 500 lb., this capacity increasing of course as the ratio is decreased. The plow weighs about 450 lb. The derrick boom is swung by hand into any desired position on a circular track built up on the car platform. This track has a stop to prevent a continuously circular motion, thus insuring that the flexible air supply line will serve the cylinder in all positions of the boom. The air cylinder is operated by an ordinary brake valve near the winch.

No return line is used on the plow with this rig. When a new furrow is to be started the derrick raises the plow and the car moves down the track with it to the point where the furrow is to start. After setting the plow in place the car moves back, paying out the cable as it goes, until the far end of the furrow has been reached. The plow is then drawn up to the car and the operation repeated.

The details of this device were worked out by W. D. Chamberlin, principal assistant engineer. B. P. Legare is engineer of maintenance of way, Market Street Railway Co.

An Inexpensive Coin Counter

AN EXTREMELY simple and inexpensive coin-counting machine which may be purchased outright rather than used on the rental basis usually required has been made available by the Coinometer Company, Detroit, Mich. This consists of a motor-driven disk which picks up individual coins of all denominations from the container in which it revolves, lifts the coins up to the top of the disk, whence they roll by gravity down an incline extending over compartments for receiving the coins. This incline has a graduated opening which permits the coins to drop through into the proper compartment as they reach the opening of proper size. The disk and incline are mounted in an inclined position so that, while carried edgewise, the coins lean back against the support and therefore drop through the opening at the first opportunity.

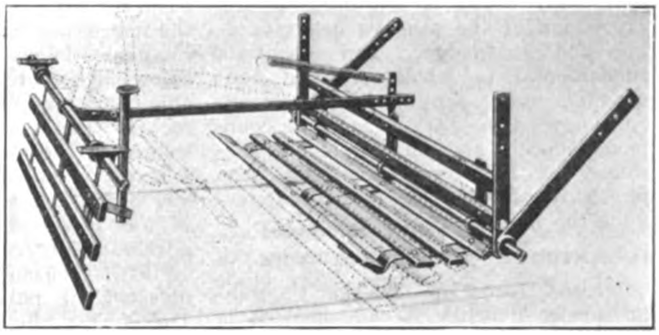


SIMPLE AND INEXPENSIVE COIN-COUNTING MACHINE

It is claimed that the machine will count accurately 1,200 coins per minute or 72,000 coins per hour. It is said to sort a mere handful or a bushel of mixed coins with guaranteed accuracy at the rate noted above and every coin is always in plain sight with no danger of lost money. It weighs less than 23 lb., is 21 in. long by 10 in. wide and 10 in. high. It is constructed of solid metal throughout and finished in black enamel.

A New Life Guard

A NEW spring life guard has been placed on the market by the Root Spring Scraper Company, Kalamazoo, Mich., which is claimed to have very light weight. Spring steel is used for every part subject to possible breakage, thus giving a flexibility which tends to overcome breakage and also decreases the probability of injury to a person picked up. The drop fender is made entirely of spring steel with the members bent in such a manner that they will ride over the rail and pavement without catching and yet pick up any object encountered.



NEW LIFE GUARD THAT IT IS CLAIMED WILL NOT RATTLE DOWN

The operating device connecting the gate to the drop fender is made in such a manner that the trip break is below or slightly past center when the guard is in normal position. There is thus claimed to be no possibility of the guard being tripped, due to vibration or shock. It is claimed, however, that the guard drops very quickly, the speed of this action being increased by a heavy coil spring, when anything strikes the gate.

Plan to Reduce the Time and Cost of Air Seasoning Wood

IN CO-OPERATION with the sawmills and wood utilization plants throughout the country, the Forest Products Laboratory, Madison, Wis., is organizing an extensive field study on the air seasoning of wood. This study, it is believed, will be of extreme interest to the lumber manufacturer and to the wood-using industries. The purpose is to determine the piling practice which will result in the fastest drying rates consistent with the least depreciation of stock, the least amount of required yard space, and the least handling costs.

The air seasoning of wood is an old practice. No systematic attempt has ever been made, however, to work out the exact conditions under which drying time and drying costs can be reduced to a minimum. The new project will furnish a comparison of the effects of such piling variables as sticker heights, the spacing of boards in layers, the heights of pile foundations, and the directions of piling with relation to prevailing winds and yard alleyways.

A tentative working plan of the air seasoning study has been prepared by the Forest Products Laboratory, and copies are being sent to the secretaries of the various lumber and wood-using associations, state foresters, forest school heads, and others eminently qualified to comment on the plan.

Winning Public Support and Confidence*

Some Facts Which Few of the Public Know—The Industry's Responsibility to Assume Leadership and Let the Public Know

By George L. Myers
Assistant to the President Pacific Power & Light Company, Portland, Ore.

THE public service industry is in greater need of the support and confidence of the people than any other industry because of the powers exercised by government in its control. It is dependent for its success upon the nature of regulation, which reflects the political policy of the state. The policy in turn is determined by the public sentiment, which is nothing but the expression of the people's understanding and knowledge. The essentials fundamental to wholesome and constructive public sentiments are service and knowledge. Service must be courteous, efficient and adequate. The personnel of an organization and the physical stability of its property determine the nature of its service.

ANTIPATHY MUST BE OVERCOME

Irrespective of the fact that the public service industry is controlled as is no other industry, in none other is there more antipathy on the part of the public. The fundamental reasons which come to mind as responsible for this antipathy are the magnitude and volume of the business, the conditions of natural monopoly within the territories served, the exclusive nature of the service, the quasi-governmental function of it, the convenience in its use and the impersonal relationships. The volume of the business in dollars and cents too often appeals to the public's imagination as the measure of profit rather than the return in percentage upon the investment when there is no understanding of what actually constitutes profit. The condition of natural monopoly and the exclusive nature of the service strengthen the conviction that there must be enormous profits. Also the sovereign powers vested in a public service company and the essential and universal nature of the service give to the public service the attribute of a government service. Many pay nothing directly for what they get out of government. People seem to have an inherent sense of propriety without responsibility in a public service company in return for the privileges given it to do business, which leads them to regard a public service company as a vendor of benevolent service.

Public utility service today in general is not supplied by local plants with their operations localized, but by what might be properly termed for purposes of differentiation a system or systems. Capital for development is drawn from all sources of the country, and furthermore control is often vested far from the existing field of operation. These conditions have broken down the close personal or local relations which formerly existed and require new policies that will break down the barriers which have developed.

Too few people know the essential facts and principles of public service finance. There is still much agitation about watered stocks, although the element of capitalization today is not the basis for rates and return. Many have the impression capital in public service companies is closely held and that only a few participate in the earnings available to pay interest and dividends. The fact is that about 1,400,000 men and women in the electric light and power industry alone are owners of stocks and bonds and more than $300,000,000 of the assets of insurance companies is invested in its securities. In excess of $1,700,000,000 in bank funds are invested in public utility securities. Therefore, while there has been a tendency toward centralization in management and control in the interests of greater efficiency and economy, there has been a growing decentralization in ownership.

Another factor is that there is no general knowledge of the extent to which a public service company is held accountable to authorities of government for its conduct nor of the restrictions placed upon it. The measure of government control to safeguard and protect the public interests should become common knowledge. The orders and decisions of commissions and the opinions of courts must be made clear to the public mind, and their influence and effect brought to public recognition, not alone in cases of local interest and concern, but in those of state and national determination as well.

RESPONSIBILITY IS ON INDUSTRY

If we will concede the public must have a better knowledge and understanding of the facts concerning the industry before it can prosper as it deserves, then the important consideration is the policies and methods whereby this result may be accomplished. The responsibility is upon the industry, and it must assume the leadership. Various means may be taken to get the proper contact with the public whereby the proper public sentiment can be developed, but probably the most effective means is through the press. The press must be impressed with the purpose and spirit of the movement. Its confidence must be inspired and interest aroused. There is another important field for education within the industry. There is not a sufficient understanding of the facts among those who are employed in it. Each department head and employee is not without his coterie of friends and points of personal contact. The personnel should be made to understand that the prosperity of the company and the industry depends upon public sentiment and that they have their part in making it favorable or unfavorable, which in turn is reflected in their prosperity.

The company publication, or what might be termed in common parlance "the house organ," can be made a most effective means for education, as it can be used to cement the organization into a more interested whole.

The industry should not only be alert to the problem of getting the public informed, but it should act in a manner to command public respect. It is often the policy not to dignify unjust criticisms and untruthful attacks with refutation, as this gives rise to controversy, and most utilities seek to avoid controversy, but why let the lie stand to shame the truth when facts are available?

A good deal of what has been said may be considered by some to be idealistic, but it is an idealism which can be made of practical effect if there is only the will to do it. The industry is in need of some idealism and a spirit which values the worthiness of its service and a faith in the common sense and fairness of the people.

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*Short abstract of address at the Fourteenth Annual Convention of the Northwest Electric Light and Power Association, Multnomah Hotel, Portland, Ore., June 16, 1921.

New England Club Has Outing

Delegates Frolic at Aldrich Lake and Enjoy Trips to Mount Tom, Where Banquet Closed the Day's Festivities

THE annual outing of the New England Street Railway Club, of which Edward Dana of Boston is president, was held on July 28. The Holyoke Street Railway and its officials were the hosts for the day. Probably no other single outing of the club was ever more successful, not only from an entertainment point of view but in reflecting what can be accomplished by the pull-together spirit that exists between the railway company, its employees and other local civic organizations that have the welfare and growth of the community at heart.

The day started with an inspection of the shops and carhouses of the railway company in Holyoke, after which three special cars took the delegates and invited guests to Aldrich Lake where sports were enjoyed. The baseball game between the railway and supply men ended in a tie after six innings, hence the silver mounted bat which was won last year by the supply men still remains in their possession. John Wilkinson, Boston Elevated Railway, captained the railway team, and Joseph G. Dellert of Boston was the captain for the supply men. Other sports and swimming races were also enjoyed.

Luncheon was served at the lake, after which the party again boarded the cars for an inspection trip, via Amherst, Old Hadley and Northampton en route to Mountain Park. Opportunity was thus given to see a large part of the trolley system, the country served, the numerous colleges that abound in this territory, and other historical points of interest, of which there are many. Arriving at Mountain Park shortly before 4 o'clock, the party was entertained at a special matinee of six acts by the artists playing at the theater. After the show came the trip up Mount Tom over the incline railway. Prior to dinner on the summit the delegates had an opportunity to view the wonderful scenery of central Massachusetts from the vantage point of the Summit House. Promptly at 7 o'clock 210 delegates sat down to a real Mount Tom roast chicken dinner. Souveniers of Holyoke's industrial life were furnished by the Chamber of Commerce to each visitor, consisting of writing paper, loose-leaf booklets or pads, and spools of thread.

Following the dinner a short business session was held at which twenty-five new members were voted into the club, making a total of ninety-one since President Dana started his campaign for increased membership. Mayor John F. Cronin of Holyoke, who had been with the party all day, extended an official welcome on behalf of the city. A vote of thanks was extended to L. D. Pellissier, president of the Holyoke Street Railway in appreciation of his interesting efforts and the success that has attended them. Replying, he expressed his keen appreciation that the club had selected Holyoke for the outing. He then presented on behalf of the club a Seth Thomas chime mantel clock to Fred F. Stockwell, the club's treasurer, for his unselfish services, and a purse of gold to John W. Belling, the secretary. Acceptable remarks were made by both recipients. After the banquet moving pictures provided entertainment including a film that the Holyoke Street Railway has just had prepared for advertising Mount Tom's beauties throughout the country.

The committee in charge consisted of W. W. Field, Boston, chairman, with L. D. Pellissier, the Holyoke chairman, and George E. Pellissier as vice-chairman.

Regulation of Public Utilities

Regulatory Laws Must Conform to Economic Laws—Division of Regulation Between Judiciary and Legislative Authorities — Utility Boards Should Be Composed of Men of Broad Vision

BY HARVEY S. CARR[*]

Carr & Carroll, Attorneys, Camden, N. J.

FROM the creeping, creaking stagecoach and the isolated inn of Plantagenet, England, to the vestibuled train the de luxe, the fast freight line, the whaleback steamer and the towering grain elevator of the America of today is a far cry. Yet it is to these humble and remote sources—the state regulated innkeeper, hack driver, baker, farrier and tailor of mediæval times—that the United States Supreme Court turns in search of the basic principles governing the right of the state to regulate the great modern public utilities that touch the daily life of millions of our people.

In God's providence the empire builders were not discouraged by regulation—the Harrimans, the Hills, the Morgans, the Goulds and the Vanderbilts—these men of vision and constructive imagination were not preceded by heralds bearing aloft "blue sky" banners, with that soul-inspiring legend "Safety First." Neither were they accompanied through the forests and over the majestic rivers and mountains by the regulatory bodies of forty-eight separate states. Some of them may have been rude and crude, whiskered and wicked, but they did great things and posterity is their debtor.

With the concentration of power came abuses, actual or potential, rebates, discrimination and oppressions, and the public sought to protect itself by regulatory statutes, boards and agencies. As a result of a long legal history, it may now be accepted as settled that the power to prescribe rates is legislative. The power to determine whether rates prescribed would, if enforced, impair or destroy rights of property that are protected by constitutional law is judicial.

THE VALUE OF THE SERVICE TO THE CONSUMER

It is unfortunate that the method of review by the United States Supreme Court appears to preclude an examination and disposal of the whole subject matter of the inquiry. The cases reach that court usually upon the initiative of the public utility company and under the Fifth or Fourteenth Amendment upon the claim that the instant rate results in the taking of property without due process of law and is therefore confiscatory.

This necessarily limits the determination of a finding that a particular rate is or is not confiscatory. Hence, the basis of the adjudication must always be the aggregate return on the capital invested and not the value of the service to the individual user.

So the supposed danger to the consumer resulting from excessive charges growing out of monopolistic control is lost sight of and never becomes a subject of adjudication. The utility is on the defensive and seeks to protect the confiscation of its property by the public. The Supreme Court can do no more than to enforce a vote upon confiscatory legislation, hence the primary question for which regulation was designed, viz., is the particular rate or charge of the utility unjust or oppressive? remains unadjudicated.

It seems a curious anomaly of our judicial system that the very question that state regulation was intended to cover cannot be adjudicated by the court of last resort.

ECONOMIC LAW AND STATE REGULATION MUST COINCIDE

To the extent that a rate or regulation is in conflict with economic law it is erroneous. Public utility boards must adopt the broad economic view and must enforce a policy based thereon whether it is immediately popular or not. Rate questions become in time the issues of a political campaign with all of the accompanying rancor. It is difficult for a utility board not to be influenced by such clamor, especially since in New Jersey it combines with legislative power the powers of prosecutor, judge and jury, and institutes proceedings on its own initiative.

The disputes that come before a utility board for determination are usually far more serious and important than suits which come before courts of law or equity. A determination of a utility board in a populous state may touch the daily life of millions of persons and affect property values running into hundreds of millions of dollars. An erroneous decision in an important matter always affects the public injuriously. If the rate allowed is too high, the injury is direct. If too low, the injury, although consequential, may be far more serious in the resultant impairment of service and impairment of the confidence of the investing public, from whom alone the needed capital for extensions and improvements can come. Hence, it is of the utmost importance that a public utility board, wielding such immense power for weal or for woe, and whose findings as a practical matter are subject to but scant supervision by appellate courts, be composed of men of courage, vision and of broad and accurate economic views. Many of the men who have served on these commissions and many of those still serving are of this character. Especially is this true of our present commission in New Jersey.

Ultimately informed public opinion will control the situation. If this were not so democracy would not exist. Where the utility has taken the public into its confidence and cultivates friendly relations with its customers, conditions are much improved, and reasonable requests for modification of rates have not been seriously opposed by the public.

CONCLUSIONS

1. Rates must be just and reasonable.
2. Fairness of the individual rates should be reached by allowing the utility to earn in the aggregate a sufficient sum to pay its operating cost and the accumulation of a reasonable surplus to provide for the unforseen contingencies of the future. This should be the basis of rate making.
3. Rates must be sufficient to attract capital.

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[*] Abstract of paper read before the Pennsylvania State Bar Association at Asbury Park. June 29, 1921.

4. Rates must not be so low as to be confiscatory.

5. Efficient and economical operation should be required, encouraged and rewarded, and should be reflected in profits and dividends.

6. The rate-making machinery should be in the hands of a special tribunal composed of men trained in that class of work. The rate must be such as will afford protection of the individual consumer from oppressive rates, and yet such that the utility will be permitted to live and give adequate, efficient and satisfactory service.

7. The legal machinery of review is inadequate in that it does not usually permit a review of the merits of the entire controversy.

[The complete paper gives a very able presentation of the historical development of Supreme Court regulatory decisions, with clear interpretations of each decision supported by legal opinion.—EDITORS.]

Pennsylvania Electric Association

THE Pennsylvania Electric Association will hold its fourteenth annual convention from Sept. 7 to 10 inclusive at Bedford Springs, Pa. There will be morning and afternoon sessions except on Saturday when the final session will be held in the morning.

The program opens on Wednesday evening, Sept. 7, with the reception to the president. On Thursday morning the chief features will be the address of the president, Henry Harris, of Wilmerding; the appointment of auditing and nominating committees and a paper on "The Super-Power Survey as It May Affect Pennsylvania," by Harold Goodwin, Jr. The afternoon session will be a commercial meeting with a number of reports and papers. The technical session will be held on Friday morning, Sept. 9, while the accounting session will be held on the morning of Saturday, Sept. 10. Prominent speakers will address the public policy session on the evening of Friday, Sept. 9.

A feature of the entertainment will be furnished by the Westinghouse Electric & Manufacturing Company of Pittsburgh. Each evening the Westinghouse band will play at Pittsburgh and the concert will be reproduced by means of the radiophone at Bedford Springs.

A. L. Atmore, 1000 Chestnut Street, Philadelphia, is chairman of the program committee, and W. K. Kerford, Philadelphia Electric Company, is chairman of the entertainment committee.

Industrial Advertising Conference

THE importance of industrial advertising and the necessity of specialized treatment in its development are recognized in a plan to hold an Industrial Advertising Conference at the Milwaukee Convention (1922) of the Associated Advertising Clubs of the World. The movement is being promoted by the Engineering Advertisers' Association of Chicago and the Technical Publicity Association of New York.

American Association News

How Taxation Affects Public Utilities*

Public Utilities Are a Separate Class in Regulation but Are Not So Treated in Taxation—The Supply of New Capital Is Limited by the Effects of the Present Taxation System

By P. H. GADSDEN

President American Electric Railway Association; Chairman of Joint Tax Committee of A. E. R. A., N. E. L. A. and A. G. A.

WE URGE that public utilities be placed in a special class for the purpose of taxation, so that the burden of Federal taxation to be imposed upon them may be determined in the light of the fact that they are regulated industries. Public utilities are already by law treated as a special class for everything except taxation. Their rates and the selling price of their products are fixed by law. They are compelled to buy their labor and material in the open market and to sell at prices fixed under regulation. The public utilities are segregated in a separate class with reference to their operating expenses. The kind and quality of the service rendered by them is largely specified by law. The ordinary business man can adjust his affairs to the varying conditions of the time. In periods of depression he can retrench, reduce his activities, and cut off his expenses. The individual can do the same. The utilities cannot. They can neither adjust their revenues to meet increasing operating expenses or increased taxation, nor curtail their facilities for business operations.

Again, they are placed in a special class so far as undertaking new business is concerned. The merchant or manufacturer can refuse to take on business when he sees no profit in it. Public utilities must furnish electric transportation, gas, electric light, and power to all who apply for it under regulations fixed by law.

But when it comes to taxation, public utilities have up to this time been treated as any other business corporation, notwithstanding the fact that a public utility's return on its investment is limited by law, whereas the ordinary business corporation is free to make any profit which business conditions will permit.

For these reasons we urge the Ways and Means Committee to consider adopting a permanent policy of setting aside all public utilities—that is, regulated industry, in a special chapter to be treated separately for the purposes of Federal taxation.

2. The American Electric Railway Association, American Gas Association, and the National Electric Light Association, earnestly protest against any increase in the normal income tax on gas, electric railway, and electric light and power companies, and urge that the normal income tax on public utilities be kept as at present at 10 per cent and not increased along with business corporations generally as has been proposed. The reason for this distinction is apparent to anyone who is conversant with the history of public utilities during the last four or five years. It is admitted that of all classes of business enterprise, the public utilities have suffered the greatest injury as a result of the war. For several years when every other class of business was prospering beyond anything ever anticipated, the net income of the public utilities gradually, month by month, diminished; in many cases dividends on stocks were passed, and even interest on bonds left unpaid at a time when industry generally was enjoying an unparalleled prosperity.

We urge, therefore, that it is only fair that the burden of Federal taxation on public utilities should be made lighter than on business generally. Their rates for service, being regulated by law, are not easily adjusted to increased expenses. Owing to the local character of electric railways, gas, and electric light and power companies, it was not found practicable during the war for Congress to take any action to relieve their condition such as was taken in the case of the steam railroads. They have had to bear the full brunt of increases in the cost of labor and materials without any assistance from the Federal Government, notwithstanding the fact that it is now clearly recognized that the services they render are essential to the national life Here is an opportunity, however, for Congress to show its appreciation of the plight of the public utilities of this country and afford them some measure of relief. It was in recognition of these facts that the committee of the National Industrial Conference Board in its report recommended that the income tax on public utilities be retained at 10 per cent.

3. *Tax on undistributed income*—A tax on undistributed income would fall with peculiar hardship upon public utilities. In the first place, in a regulated industry there is no opportunity for unusual or excessive earnings. The rate of return is placed at a maximum which rarely exceeds 8 per cent, so that with public utilities it is not possible to declare an 8 per cent dividend

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*A brief presented to the Ways and Means Committee of the House of Representatives as a part of the record of appearance before that committee by W. V. Hill, representing the A. E. R. A., N. E. L. A. and A. G. A.

and retain an equivalent amount in the treasury of the company as undistributed earnings. The reason which is generally urged to support the tax on undistributed income does not apply to regulated industry. There is one reason, however, which, when properly understood, would seem to show that it is clearly against the public interest that such a tax should be applied to public utilities. Owing to the extraordinary increase in the cost of operations, both during and since the war, with the tardy and meager increases in rates which have been allowed, the public utilities as a class have been forced to suspend the payment of dividends and to utilize any small amounts of net income for the purpose of providing for those necessary extensions and betterments of their service which are insistently demanded of them by the public. It is generally recognized that the credit of public utilities has been affected injuriously by the experiences through which they have been forced to go. For years they have been unable to secure the additional new capital necessary to provide the extensions and betterments to plant and facilities to keep apace with the development of their respective communities. In this connection I refer the committee to that portion of the report of the Senate Committee on Reconstruction and Production referring to public utilities. This report shows that public utilities have had to postpone extensions and enlargements of their plant and facilities for years. At the same time, a certain amount of such extensions and betterments have had to be made.

They have been made out of the net income of the public utilities which othewise might have been declared by way of dividends. The tax upon undistributed income of public utilities would still further reduce the available funds now being used for extending the railway, gas and electric light and power services to the consumers of this country. If such a tax is seriously considered by this committee we would urge that either public utilities be expressly exempted, or that the paragraph should be so worded as not to apply to earnings which are reinvested or held for reinvestment in the property within twelve months after the year in which they accrue, or which, together with the earnings distributed, do not exceed, say, 10 per cent return on the value of the property.

4. *Tax-exempt securities.*—While public utilities, unfortunately, are not subject to any excess-profits tax, and while their income taxes amount to a very small amount of money—they amounted in 1918 to only about $12,000,000 for the three industries I represent—while it is true that our stockholders and bondholders have suffered so that their taxes have been very largely reduced, I want to call the committee's attention to the serious burden which the excess-profits taxes and the high surtaxes have in an indirect way upon the public utility business.

We have recently had a study made of the effect of the surtaxes and the income taxes upon the sale of public-utilities securities. We have been very much disturbed to find that under the present fiscal and taxation laws of this Government the taxpayer who is subject to a surtax of over 3 per cent can not afford to buy a public-utility security paying 8 per cent or less in preference to a 5 per cent tax-exempt bond. That means that practically the only purchases of our securities must come from the people who are in the $10,000 class. The reason for it is that the public utility, being regulated by law, its earnings being kept down to practically 8 per cent, cannot, of course, have any long-time issue securities of a greater rate of interest.

$1,250,000,000 BEHIND

I am not trying to inject an argument for exemption of securities, but I am showing how vitally interested public utilities are in any law which will spread out the burden of taxation and which will make it possible for Congress to reduce, if not cut out, these very high income taxes. The public utilities of this country, including the steam railroads, must every year find new money for their extensions and betterments. The group I represent requires about $75,000,000 a year. Altogether, including the steam railroads, we need about $2,000,000,000 of new money every year. That money must be obtained in the open market in competition with these municipal securities. No man with a high income can afford to buy our securities, because we cannot afford to pay more than 6, 7 or 8 per cent, as the laws say we cannot get more than that amount. The investor is being driven by that process away from public utilities into municipal bonds, building schoolhouses and courthouses and public roads. The effect of that is this: In the first place, the $2,000,000,000 of betterments which the public requires can not be made. They have not been made in four years. We estimate that public utilities are behind in actual necessities—that is, the three public utilities I represent—at least a billion and a quarter now, owing to the inability to get money.

DRIVEN TOWARD MUNICIPALIZATION

The second effect is that as we fail year by year, owing to our inability to get this additional new capital to measure up to the standard and growth of our various communities and fail to render the facilities which the communities must have, there is a growing dissatisfaction in the communities against our service and an increasing demand on the part of the population to take them over. It is quite apparent that the public will say: "If you cannot raise money, we can; we can get all the money we need at 5 per cent." Therefore, we reach this anomalous situation that while the political policies of this Government have been definitely and firmly fixed in opposition to the municipalization of these utilities, the financial and fiscal policies of the Government are inexorably driving us into it. Therefore, any tax whose tendency is to spread out the burden; any tax which will raise money sufficient to enable this Government to relieve the higher brackets on the surtax and the income tax is working in the interest of the public utilities and immediately in the interests of the users of those facilities all over the country.

Engineering Association Nominations for 1922 Officers

THE committee on nominations for the Engineering Association has reported as its selection for officers for the ensuing year as follows: President, C. S. Kimball, Washington Railway & Electric Company, Washington, D. C.; first vice-president, L. C. Datz, American Cities Company, Birmingham, Ala.; second vice-president, H. A. Johnson, Metropolitan West Side Elevated Railway, Chicago, Ill.; third vice-president, A. B. Stitzer, Ford, Bacon & Davis, New York. These gentlemen, together with Charles H. Clark, Cleveland Railway; Roy C. Cram, Brooklyn (N. Y.) Rapid Transit Company; Daniel Durie, West Penn Traction Company, and Charles Rufus Harte, the Connecticut Company, New Haven, Conn., were nominated as members of the executive committee. J. W. Welsh was nominated for secretary and treasurer.

The report is signed by Martin Schreiber, Public Service Railway, chairman; C. C. Beck, Ohio Brass Company, Mansfield, Ohio; D. E. Crouse, Rochester & Syracuse Railroad, Rochester, N. Y.; John Lindall, Boston (Mass.) Elevated Railway, and F. McVittie, New York State Railways, Rochester.

Safety Car Committee Meets

THE American Electric Railway Association's committee on safety car operation had a meeting on Aug. 2 at the association headquarters, New York City. Those present were R. P. Stevens, chairman, Republic Engineers, Inc.; James P. Barnes, Louisville Railway; H. B. Flowers, United Railways & Electric Company, Baltimore; W. H. Heulings, Jr., J. G. Brill Company; and C. W. Kellogg, Stone & Webster, Inc.

The scope of the committee as outlined by the executive committee of the association was considered, together with various suggestions from several members, and it was decided to confine the work this year to the consideration of problems closely related to what might be termed as the general aspect of safety car operation as affected by legislation and regulatory action as well as public and labor relations. A brief will be prepared dealing with the present use and benefits derived from safety car operation, and a simple questionnaire will be sent out to collect information regarding the number of the various types of cars operated by one man which are now in use.

Recent Happenings in Great Britain

Coal Strike Settlement Opportune—Tramway Showing Better—Glasgow and Manchester Do Well

(From Our Regular Correspondent)

After three months—the longest coal strike on record in England—the coal miners' strike came to an end on June 28 and on July 4 work in the pits was resumed as far as it was possible at the time, many mines having been flooded and others seriously thrown out of gear. A ballot had been taken some little time before in which a large majority of the miners voted—the percentage who troubled to vote was quite small—refusing to accept the terms offered, though these were accompanied by a Government offer of £10,000,000 for easing the period of reduction of wages.

AN ATTEMPT was then made to call out other trades unions by way of sympathetic strike, but it failed miserably. Following this the executive of the miners' union eagerly sought conference with the mine owners for a settlement. The settlement was confined to a question of wages and the national pool of profits demand was dropped like a hot coal.

The new conference was held in the end of June and an agreement reached which professes to be permanent. The miners are to get the £10,000,000 so far as it is required to ease specific hard conditions during three months' progressive reduction of wages. Thereafter the industry is to be on an economic basis, with wage boards to settle all disputes.

The most important point is that the profit-sharing principle is to be more fully adopted than it has ever been before, the workmen obtaining fixed proportions of all surplus profits. In this way it is hoped the production will be increased—the great desideratum—and that thereby coal prices will come down.

Matters have been so arranged that the incentive to increased production is powerful. In the early days of July preparations were active in many branches of industry for resuming work at full pressure. It is reported that there is an accumulation of orders in the hands of manufacturers, and as soon as coal is plentiful, and it is hoped cheaper, the way will be open for development.

A sign of the times in this connection is that the employees in numerous important industries, including the engineering trades, are agreeing with the employers to accept material reductions in wages, the impelling force being the gradual fall in the cost of living. Wages were raised because of the increase of the cost of living; now they are to fall correspondingly.

The tide of swelling wages in the British tramway industry has at last reached its maximum and is now about to fall. The recent Court of Inquiry set up by the Ministry of Labor, it may be recalled, recommended that present wages should be stabilized till Dec. 31 next. In view of the reduction then beginning in the cost of living, the employers refused to accept the recommendation. A committee of Joint Industrial Council for the industry considered the position and on June 10 submitted recommendations to the council, and the latter body, with only one dissentient, adopted them.

The effect of the changes thus brought about is as follows: The present rate of wages will be maintained until the beginning of the first full-pay period in August, 1921. From that date reductions from and additions to wages will be at the rate of one shilling per week for each complete five points variation either way in the cost of living index figure (as published monthly in the *Labor Gazette*) commencing from the figure of 135 per cent over the August, 1914, cost of living. Thereafter, wages will be adjusted by this method every three months, the adjustment to be determined by the index figure for the month preceding. In the case of employees under eighteen years of age, the reduction or addition will be at the rate of 6 per cent per week for each five points variation.

The arrangement will be terminable by three months' notice from either side after Dec. 31 next. It will be seen that this scheme is in principle the sliding scale which has been in operation in a good many British industries for some time. For the last few months the index figure has been steadily, though not very rapidly, falling, and it is not probable that it will rise materially again.

In June more examples arose of the conversion of boilers in English tramway power stations for burning oil instead of coal. In this way various tramway services which had been cut down owing to the coal miners' strike have been brought back to something like normal. A notable case of recent conversion is that in the Greenwich station of the London County Council Tramways. Four Babcock & Wilcox boilers, each of 4,780 sq.ft. heating surface, have been changed over. Almost every day in the latter part of June announcements were issued by the steam railway companies of restoration of trains which had been withdrawn, this being rendered possible by the conversion of locomotives to oil burning. The day of the absolute monopoly of coal as a source of power in this country seems to be over. The only thing that can restore it to its old position is a great fall in its price and that seems unlikely soon.

The policy of increasing the fares on Glasgow Corporation Tramways has turned out a great success. The effect of abolishing the half-penny fare and slightly increasing other fares has been made fully manifest in the accounts now issued for the year ended May 31 last. During that period the revenue amounted to £2,392,853. This is an increase of £671,276 over the previous year. The total expenditure was £1,937,664, an increase of £379,503. The net revenue, including interest on investments, is £470,430, compared with £176,762. After setting aside £267,687 for renewal of track and depreciation, and charging rent of leased lines, interest, sinking fund, and income tax, there remains a net credit balance of £105,796.

For the previous year, after making the corresponding allowances, there was a deficiency of £108,531. It should be mentioned that the interest and sinking fund charges are very small as the capital expenditure on the undertaking had been cleared off in previous years. It is proposed to use the surplus to wipe off nearly the whole of the previous years' loss. Apparently the tramways have turned the corner.

The accounts of the London County Council Tramways for the year ended March 31 last are in strong and unhappy contrast to those of Glasgow. The deficit is largely due to the heavy capital charges, while in the case of Glasgow there are, as noted above, practically no capital charges. It was made known some little time ago that the London undertaking had a deficit of over £500,000 for the past financial year, and the details now available fully bears this out.

The total revenue was £4,904,427, being an increase (largely due to increased fares) of £608,581 compared with the previous year. The working expenses, however, increased in greater proportion, the total being £4,623,654, an advance of £942,745. The surplus on working was accordingly £280,773, compared with £614,937. From the latter sum in previous year nothing was deducted for expenditure on renewals, but after allowing for interest, sinking fund, income tax, etc., there was a deficit of £100,722. On the present occasion there is deducted for renewals from the surplus on working a sum of £215,639, leaving £65,134. The net charges against this sum (interest, redemption, income tax, etc.) amount to £655,714, so that the deficit is £590,580. By far the greater part of this is due to the capital charges. For the year now current it is estimated that the deficiency will be only £7,417, the expected improvement being mainly due to increased receipts.

Manchester Corporation Tramways accounts show a balance after meeting all charges, of £124,428, and most of this is set aside for renewals. For the first time for many years no part of the surplus has been handed over for relief of the local rates. The gross surplus was £305,834, compared with £379,632 in the previous year.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Norfolk Debates Franchise

A. Merritt Taylor Says Service-at-Cost Is Not What It Pretends to Be —Incentive to Profit Lacking

The city of Norfolk, Va., is in the throes of a pre-election discussion of the franchise ordinance which has been proposed by A. Merritt Taylor, acting as a consultant for the city. Readers of the ELECTRIC RAILWAY JOURNAL will recall a series of articles last December which analyzed this rather interesting situation in Norfolk and reviewed Mr. Taylor's previous report on franchise bases, valuation, service requirements, and fares (see issues of Dec. 4, 1920, page 1125, Dec. 11, 1920, page 1186, and Dec. 25, 1920, page 1289. Since that time the actual franchise has been drawn up in line with the basis originally outlined. Among its provisions there are some which have been the cause for considerable debate between various groups in Norfolk. On July 24, Mr. Taylor discussed the franchise and answered his principal critics.

FRANCHISE PROVISIONS REVIEWED

Some of the high points of the franchise which have caused this discussion are as follows:

A provision for a base valuation of $8,-750,000, which lies between a Jan. 1, 1920, price of $11,815,399 and a Jan. 1, 1914, price of $6,368,671. This value includes $250,000 "going value," but this is to be raised to 15 per cent of $8,500,000 when the company's service is restored to first class condition. The company is to be allowed 8 per cent cumulative return on this rate base if it can earn it. All deficits in any year are to be added to the present rate base until amortized; in addition the company is to be allowed to earn the annual cost of capital invested subsequent to Jan. 1, 1920, plus a margin of profit of not less than 2 per cent.

A provision that trackless vehicles are to be installed on certain routes.

A provision that the "Grantee shall use and efficiently maintain the most approved fixtures and appliances in general use to prevent injury by electrolysis or otherwise to the water pipes and other public improvements of the Grantor," and shall pay for damages due to failure to comply with this provision.

A provision that the franchise shall run for thirty years; that the city will purchase from the Grantee its entire system at its then value at the end of the franchise term, except that if the city shall issue another franchise with practically the same provision, it shall not be compelled to buy. This particular arrangement is necessary to meet provisions of the Virginia constitution, which limits franchise terms to thirty years.

A provision for a local commission, which is to be advisory to the City Council and the city manager.

A provision that the rate of fare shall be on the flat rate basis, starting at 7 cents, with free transfers. But that this rate may be changed by the Council on its own motion, or at the request of the railway. But the railway shall always be accorded a hearing before a rate change and shall have the right after the ordinance has been in force a year to raise the rates if necessary to provide the returns specified.

Mr. Taylor's report discusses and defends these provisions and others and ends with a warning against municipal ownership and service-at-cost, in which he says:

I hold no brief for suggestions which have been made tending toward municipal operation of your street railway system or municipal regulation of wages of street railway employees, and do not consider them subjects worthy of serious consideration in an enlightened community. I want to warn you that "service-at-cost" is a mythical expression. As business men, you surely recognize that any enterprise to be healthy must perform service not at cost, but at a reasonable profit.

By critical investigation you will find that so-called service-at-cost contracts have either been brought about by unjust coercive methods pursued by cities, or contain an item of profit as an element of cost and are thus not what they pretend to be.

Roads Centering at Indianapolis Cut Wages

Wage reductions of 3 cents an hour for motormen and conductors of the Indianapolis (Ind.) Street Railway, the Terre Haute, Indianapolis & Eastern Traction Company, the Interstate Public Service Company and the Union Traction Company of Indiana became effective on Aug. 1 with notices posted by these companies. Power house, shop and trackmen of some of the interurban companies were cut similar amounts.

It was said in notices posted by the Indianapolis Street Railway that the reduction was made necessary by a decrease of 44,000 revenue passengers daily caused by the continuance of unrestricted jitney bus competition and the present serious industrial depression. The interurban companies said they were compelled to reduce wages because business has fallen off.

The wages under the new scales of both the city and the interurban companies are far above pre-war scales.

The reduction made to platform men will not make up for the deficit caused by the falling off of business, estimated at more than $500,000. The platform men of the company formerly received 40 to 45 cents an hour, depending on the length of service, and interurban platform men from 42 to 47 cents an hour.

Interurban Reduces Wages

Wages were reduced on Aug. 1 by the Union Traction Company, Anderson, Ind. The announcement was made on July 28. The new scale in cents per hour for trainmen operating city cars is as follows:

First year	30
Second year	31
Third year	32
Fourth year	33
Fifth year	34
After fifth year	35

Operators of one-man cars will receive 2 cents per hour over this scale.

The new scale of the interurban men is as follows:

First year	39
Second year	40
Third year	41
Fourth year	42
Fifth year	43
After fifth year	44

This is a flat reduction for both classes of service of 3 cents an hour.

New Franchise Grant Presented at Fresno

The first draft of the proposed indeterminate franchise which the Fresno (Cal.) Traction Company is asking of the city of Fresno has been placed in the hands of city officials by the company. The offering of the franchise grant by the company follows negotiations with the city opened some months ago and is supposed to cover both the points desired by the city as well as those asked by the company.

After the franchise draft has been submitted to the city attorney for inspection, it will be considered by the commission as a whole. The company holds a number of franchises on different lines of the city for various terms from twenty-five to fifty years. These franchises expire at different times. The first grant to run out will expire in seven years. In the business sections generally the franchises still have about nineteen years to run.

The position of the company is that with these franchises running for what are called short terms the company cannot borrow the money needed for street work, extensions and improvements. With the indeterminate franchise the officials claim they will have no difficulty in securing whatever money is needed. Under the proposed grant service would be rendered at cost, a stabilizing fund of $25,000 being set up as the fare barometer.

Concessions and Compromise Fix Award

The finding of the board of arbitration in the matter of wages on the Rochester & Syracuse Railroad, Syracuse, N. Y., was referred to in the ELECTRIC RAILWAY JOURNAL, issue of July 30, 1921. In detail the wages are as follows:

Motormen and conductors for the first six months of service have been reduced from 56½ cents an hour existing prior to May 1, 1921, to 46½ cents an hour. For the second six months of service the rate has been reduced from 58½ cents, existing prior to May 1, to 48½ cents an hour. Shopmen involved in the arbitration (except the nine car-cleaners and one watchman employed in the shops) were reduced 16⅔ per cent below the wages received prior to May 1.

This same ruling applies to substation operators, electrical repairmen, freight trainmen, ticket and freight agents.

Louis L. Waters, the neutral member of the board, declared in a statement that the amount of reduction was reached only by concession and compromise. That the financial showing of the company was not good, the arbitrators agreed. Still, Mr. Waters said the proposed 23.5 per cent reduction of the company and the 11.7 per cent reduction as seeming justified to the men did not seem a just award.

Building Program Submitted by Company at Fort Wayne

In a letter addressed to the board of public works of Fort Wayne, Ind., the president of the Indiana Service Corporation, Robert M. Feustel, outlined the building program of the corporation for the next five or six years, showing extensive improvement requirements which will have to be made to meet the many transportation problems of the city during the period outlined. Among the things which Mr. Feustel's letter says must be done within this period are the following:

Abandon the line on Pontiac Street from Hanna Street to Anthony Boulevard in favor of a double-track line from Calhoun to Hanna Street, then out Hanna to McKee Street and from there to Wayne Trace.

Open Oxford Street in the southwestern section of the city to take care of the greatly increased population in that section. This would be entirely new trackage.

Double track Creighton Avenue from Calhoun to Fairfield Avenue. This to be done as soon as business becomes normal.

Extend a line into the Bloomingdale section of the city. This would involve the widening of Third Street from Franklin Avenue to Runion Avenue sufficiently to enable the company to lay double tracks on this street. Mr. Feustel recommends that the absolute minimum width of this street between curb lines be 34 ft.

Double track West Main Street from the new West Main Street bridge to the Lake Erie Railroad tracks, a distance of approximately 1 mile.

Extend the Columbia Street line across the new bridge over Delta Lake to Anthony Boulevard. This line should also be double tracked.

In his letter Mr. Feustel says:

While there is a considerable lull in our traffic at the present time which will require some curtailing of city service for the next few months this has nothing to do with what should be our possible long-time construction requirements covering a period of five or six years. In these difficult times it is of course necessary for us to conserve all construction funds and this outline of our future work is made only because we do not believe that payment should be placed or work should be done in these dull times in such a way that it will make it difficult or impossible to make the necessary transportation extensions in the future. We expect to make application for the suggested change of the Pontiac line at once and will follow with necessary petitions on the other locations as fast as the traffic requirements demand.

Covington Employees Accept Cut

Employees of the South Covington & Cincinnati Traction Company, Covington, Ky., at a special meeting voted to accept a reduction of approximately 10 per cent in their wages. When the proposition was first presented to the men they voted it down and the selection of an arbitration committee was in progress when the employees reversed their decision. The new wage scale became effective on Aug. 3. Under the new scale the motormen and conductors will receive a maximum wage of 50 cents an hour.

Railway to Build Park.—The Philadelphia (Pa.) Rapid Transit Company is planning to build an amusement park on W. Market Street on the old Burd Home property. The company believes this project will beautify the section.

Accident to Mule

Texas Court Describes Principles of Mule Valuation, When Struck by Car—Mule Owner's Responsibility

The Northern Texas Traction Company now knows how much it costs to injure a mule. So does Mr. Stone, the owner of the mule. The question of mule valuation was the subject of extended litigation recently in Fort Worth, the case finally coming before the Court of Civil Appeals in Texas where a decision was given on May 26. The facts leading up to the litigation, as set forth by Judge Fry in his deciding opinion and repeated here in somewhat abbreviated form, follow:

This is a suit for $229, damages to a mule alleged to have been inflicted by plaintiff in error negligently running a street car against the mule, which with three others was tied to the rear end of a wagon, and being led along the streets of Fort Worth. The cause was submitted to a jury on special issues, and on the answers thereto judgment was rendered in favor of defendants in error for $201.

The jury found that the street car was running at a greater rate of speed than 18 miles an hour, and that this fact was the proximate cause of the injury to the mule, and that the mule was of the market value of $220 in Fort Worth, just before the accident, and $100 in West, after it had been hurt, and treated for its injury. It was also found that Stone expended $10 for his board and lodging in Fort Worth in order to treat and care for the mule, that medicine for the mule cost $2.50, and there was a charge of $25 for caring for the mule after it was sent back to West, and $8.40 for freight on the mule back to West. It required twenty-two questions to elicit this highly interesting instructive information about the manner in which the mule was hurt and the time spent and tender care lavished on the animal to nurse it back to health and efficiency. Not more than six questions would have been sufficient.

If the mule was injured through the negligence of plaintiff in error, the measure of damages was the difference between its market value in Fort Worth before the injury and the market value thereafter. If, however, there was no market value for the mule in Fort Worth, as Stone testified, after it was injured and he took the mule back to West and by care and attention restored the animal to such an extent that he sold it for $100, and that was the reasonable value, then the measure of damages would be the difference between the market value of the mule in Fort Worth before it was hurt and the reasonable value of the mule after it had been restored to partial usefulness, less the necessary and reasonable amounts expended in such restoration. While it is true that the measure damages would not be the difference in market value of the mule before injured in Fort Worth and the market value after it was restored to some efficiency at West still such rule would not injure plaintiff in error, because the evidence showed that the mule was worth more in West than it would have brought in Fort Worth. If defendant in error was acting properly in trying to minimize the damages by caring for the mule, he should be reimbursed for all reasonable sums expended in such care and attention, and that can be done by deducting these sums from the value of the mule after such care and attention.

The evidence, however, fails to show that defendant in error was acting reasonably; for, while he swears the mule was not worth a dime in Fort Worth after he was hurt, the uncontroverted evidence shows that defendant in error was offered $35 in cash for the injured mule in Fort Worth at the time of the accident, but he refused it and chose to take the risk of restoring it to its usefulness. In treating and taking care of the mule he expended more than four-fifths of his value after being restored and left only $19 to be credited to plaintiff in error on the original value. Defendant in error should pay for his mistake in endeavoring to cure the mule, and plaintiff in error, if liable at all, should have the benefit of the offer of $35, which would have reduced the damages to $185 instead of $201.

The next question considered was the issue submitted by the trial court of whether the motorman should not have given "such assistance to the plaintiff as was reasonably demanded by the circumstances to obtain clearance and avoid an accident." But the appellate court naturally declares that the hypothesis upon which this charge is based is not clear. On this point the opinion says, in part:

How the motorman, driving a street car, could give assistance to the owner of the lively young mule tied with three others to the rear end of a wagon is certainly not disclosed by any evidence and is not based on any law, statute or otherwise. If the court meant that the motorman should have stopped his car, if he saw the mule on the track, until it could be persuaded or forced to walk in a safer place, he ought to have said so. That part of the charge had no reference to the facts and could have no other tendency except to mislead the jury. It is followed by language that might lead the jury to believe that the street car ought to have steered around this unnatural animal "without pride of ancestry or hope of posterity," as an automobile would do; for that is what is meant by giving "such assistance * * * as the circumstances shall reasonably demand in order to obtain clearance and avoid accident."

The learned judge then considers whether the mule injured, or its owner, was guilty of contributory negligence, as well as whether the motorman could have avoided the accident by other means. On this point he says:

There was evidence tending to show that the mule was three or four feet from the track when the front of the car passed, and, as stated by one of the witnesses, the mules "were kind of gay." The evidence presents a picture of a countryman from the McLennan County village of West, coming into the stirring modern city of Fort Worth, with two mules drawing his wagon and four untutored country mules attached by ropes to the rear end of his wagon. To these denizens of the field and meadow, honking automobiles, clanging street cars, and the turmoil of modern commercial life were not only novel, but alarming, as they steered their perilous journey through the city, with their nerves keyed to a high pitch, until at last they reached a modern convenience called an aqueduct. But unknown to them, and while wending their perilous way through this labyrinthine passage, before they were aware of its approach, a huge vehicle flits by, as on the wings of the wind, and what more natural than that the nearest mule to this unknown vehicle should seek instantly to defend itself against what was deemed to be an attack upon its personal liberty, by using the effective weapons placed in its possession by nature? The jury found that the gay and festive mule did not kick the car, which they probably might do under the testimony, although no one acquainted with the total depravity and moral obliquity of the average mule would hesitate to credit the statement that the mule now under investigation administered a swift kick to the car as it was passing its ever-ready heels. There was direct testimony to this effect.

In conclusion the judge remanded the case for retrial, believing that the jury should have considered whether the plaintiff was not so much to blame for the injury as to absolve the railway company.

Ford Hasn't Forgot Gasoline Trolley

In an interview appearing recently in the daily press, Edsel Ford, who is now president of the Ford Motor Company, is quoted as follows: "Father hasn't given up the gasoline 'trolley' car. It has been dormant for some time, but recently we ran one down the Detroit, Toledo and Ironton Railroad to Springfield. We believe it will solve many traction problems."

Arbitration Award Accepted

Announcement has been made by officials of the Northern Ohio Traction & Light Company, Akron, Ohio, that the company's railway employees have agreed to abide by the wage award of the arbitration board. This board recently returned a finding fixing the rates of pay of the men from 1 to 2 cents per hour less than had been suggested by the company in its original proposal for a reduction in wages.

The opinion apparently prevailed among the men that the arbitrators to whom the wage matter was referred had been swayed in their decision by the offer made by the company originally to the men, for they asked A. C. Blinn, vice-president and general manager of the company, to set aside the arbitration findings.

This Mr. Blinn refused to do. He dismissed the contention that the wages awarded on his property were not comparable with wages paid on other properties, and said that "we must assume that neither the wage offered by the company nor the wage requested by the men had anything to do with the board's judgment as to what was a reasonable wage under all the circumstances."

He said, in conclusion, that to grant the request of the men to disregard the findings "would make a complete farce of the arbitration proceedings."

The details of the award were given in the ELECTRIC RAILWAY JOURNAL for July 9, page 68.

Reduced Wages—One-Man Car Operation

Although union employees of the New Brunswick Power Company, St. John, N. B., have been on strike for several weeks the cars are operating and it is expected that the company will emerge from the struggle with a compact, efficient and loyal organization.

The labor controversy dates back to June 14 on which date the company's agreement with the union expired. The company gave the usual thirty days' notice that it did not intend to renew the agreement. Numerous consultations and meetings were held in an effort to institute a working agreement.

The company desired to reduce wages from 10 to 20 per cent. The men applied for a conciliation board which under the law must be considered before any lockout or strike can take place. The company declined to become a party to the board so the three members were appointed by the Minister of Labor. A verdict was brought in that wages should be reduced 5½ per cent, the one-man car should not be used, all employees should be taken back under the old agreement and that the loyalty stipulation should be ignored.

As a result of this decision the company notified its employees that commencing on June 28 a new scale would be instituted with deductions of 10 to 20 per cent in various departments and that the men would be treated on an individual basis. The former employees did not return, but the company got enough help to operate the cars to a limited though growing extent. The new scale runs from a 10 per cent to a 27 per cent reduction and one-man cars have supplanted the two-man car operation.

British Columbia Company Seeks New Franchise

The British Columbia Electric Railway is negotiating a new franchise for the company on the mainland. In a nutshell, the franchise is a form of service-at-cost agreement, covering city and interurban railway, light, power and gas service. It provides for a maximum return of 6 per cent on the company's actual invested capital, as will be ascertained by a firm of auditors, but new capital may obtain a return of not more than 8 per cent.

At the same time the company is not allowed to charge more than its present fares and rates, with the exception that its car fares can go up to 7 cents cash or four tickets for 25 cents. The company has still its present remedies for inadequate fares on the interurban lines. It will be permitted to charge a 50-cent minimum monthly on gas bills.

The service-at-cost arrangement provides that forthwith and every three years hereafter, the books of the company are to be investigated by the firm of Price, Waterhouse & Company, accountants, and rates are to be fixed so as to pay no more than the rates of returns as stated above. If adjustments have to be made as between various rates, a board of arbitration is provided.

In order to avoid any inefficiency in operation which is apt to result from a straight service-at-cost franchise, the draft agreement provides that any balance over the stated rates of return is to be divided, one half going to the company as a reward for efficiency and the other half to remain on the books untouched to provide for decrease in rates in the next three-year period.

The franchise is indeterminate, in a similar manner as the present franchises. At the end of twelve years a conference may be called to vary the terms.

The company surrenders to the city or the government or any combination of civic and municipal authorities the right to buy, not only as regards the railway service, which was solely within their rights of purchase previously, but as regards the light and power and gas systems. They can also buy these separately, but they cannot buy everything but the railway and leave the company with that.

The franchise does not guarantee the company any return on investment. If the revenue is not sufficient for any reason, it is the company's loss.

In Vancouver and the municipalities the franchises are for a definite term, but at the end of that time, the company must either be bought out or the franchises automatically continue for another term.

Montreal Working Toward Compromise

The wage situation between the Montreal (Que.) Tramways and its employees remained unsettled on Aug. 2, though negotiations were still continuing, with a prospect of amicable agreement. Following the visit to the city of Gideon Robertson, Federal Minister of Labor, and his conferences with both parties, the company offered to substitute a wage reduction of 12½ per cent for its previous proposal of a 20 per cent reduction on the prevailing scale, but without a contract for any specified period.

This proposal was discussed at a joint meeting of representatives of the company and the men's union, held on Aug. 1, at which a member of the Department of Labor staff represented the Minister.

The union representatives contended for a 10 per cent reduction only, with a contract, but the company stood firmly by its amended offer.

The meeting broke up with the understanding that another would be held before the end of the week, when the company is expected to state its final decision. Whatever the outcome may be of the present exchange of opinions, the matter will be submitted by the men's committee to a referendum vote of the union, the alternative issues being acceptance of the company's offer or insistence upon the appointment of a board of arbitration to decide the dispute.

Gradual Rehabilitation in Salt Lake City

With a view to improving its property, and at the same time to enhance the appearance of the city streets, the Utah Light & Traction Company, Salt Lake City, Utah, has enlarged its force of workers and will spend $20,000 a month for the next several months in carrying out this work.

While heretofore there have been six gangs, consisting of forty-two men each, employed by the company in repairing the tracks and general improvements, twelve gangs, consisting of 126 men, are now employed, the object being to complete the work as soon as possible.

The enlarging of the force has been facilitated by a saving of $125,000 to the company as a result of the recent decision of the arbitration board, which stipulated certain reductions in the pay of employees. This money will be devoted exclusively to the above repair work.

It is believed that the company, in spending this amount will meet the wishes of the city, which has asked that improvements be made in the tracks and in paving.

The fares which have prevailed heretofore have failed to furnish sufficient revenue for the company to undertake any big program, but with the program now outlined it is thought that within two years the property will be thoroughly rehabilitated.

San Francisco May Vote to Purchase Market Street Railway

The city of San Francisco began early in June an appraisal of properties of the Market Street Railway with the idea of putting the question of purchase definitely up to the voters of the city at the November elections. As the matter stands now, the procedure will be for the Board of Supervisors to decide, after the valuation, upon what they believe to be a fair price. If the voters indicate their willingness to pay that price there will then have to be settled the question of whether the company will accept the price and terms offered.

Wages Again Reduced by International Railway

The basic maximum wage for trainmen of the International Railway, Buffalo, N. Y., will be reduced on Aug. 15 from 60 cents an hour to 55 cents an hour, with similar adjustments in the hourly rates paid other employees.

The company, desiring to put off the longest time possible any general reduction in wages, made certain adjustments as of May 1, 1921, and at that time stated that a continuance of the 60-cent basic wage was dependent upon an improvement in the revenue of the company. In announcing the wage cut the company said:

> Wages since May 1, 1921, have been very generally decreased elsewhere on street railways, and indications are that there will be further reductions in the future.
>
> Street car riding on the International system has been falling off at an alarming rate. The figures for May, June, July, 1921, as compared with 1920 are as follows:

	Total Passengers Carried		Decrease 1921 Under 1920	
	1921	1920	Passengers	Per Cent
May....	18,158,661	19,194,767	1,036,106	5.40
June....	17,529,883	19,007,069	1,477,186	7.77
July....	17,375,454	19,994,294	2,618,840	13.10

> For the six months ended June 30, 1921, the company fell short by $916,683 of earning a fair return upon the value of its property devoted to the public service according to the formula adopted by the Public Service Commission when granting the 7-cent fare—four tickets for 25 cents.
>
> This great falling off in business must be met with a cut in operating costs.
>
> In addition to other economies there must be a substantial reduction in the payroll in order that the company's receipts may meet its expenses.

Fund Raised for Paving Obligations

A plan to avert an impending crisis between the city of Cape Girardeau, Mo., and the street railway over an ultimatum delivered by the city in the matter of the paving of West Broadway is believed to have been devised. The City Commission ordered the Cape Girardeau-Jackson Interurban Railway to remove its tracks on that part of West Broadway for which paving contracts had been let, but the company has refused to act. E. A. Hart, general manager of the Cape Girardeau-Jackson Interurban Railway, has suggested that the city and civic organizations provide a fund of $8,200 to defray the expense of taking up the track and relaying it and for the purchase of four new cars. In return the company will agree to perform the work of removal and relaying the track and pay incidental expenses and will place the new cars in operation at once and will keep the system in satisfactory condition for five years.

City Loses Suits to Recover

Supreme Court Justice Irving Lehman has denied the application of the city of New York to recover upward of $125,000 from the Interborough Rapid Transit Company because "bonuses, presents or honoraria" received by executives were charged against the city as part of the construction cost of subways under construction in 1913. In a similar action he decides that the city is not entitled to recover $1,990,800 from the New York Municipal Railways Corporation, the subway operating subsidiary of the Brooklyn Rapid Transit.

Justice Lehman points out that the agreement provided a time limit of thirty days in which protests against the decisions of Alfred Craven, the then chief engineer, were to be made.

No Trolleys in Des Moines

Electric railway service in Des Moines, Ia., was suspended on Aug. 4, following a federal court ruling. Other carriers of all descriptions were rushed into service on Aug. 4 to provide transportation. The court had previously indicated that the shutdown would result unless some solution was found for the difficulties between the city and the Des Moines City Railway over jitney competition and other matters.

The immediate cause of the withdrawal of the trolleys was the inability of the company to operate successfully in the face of bus competition. Judge Wade said that the property could not be operated longer without prejudice to the bondholders.

P. H. Gadsden, president of the American Electric Railway Association, says that the suspension of the railway under orders of the federal court was due primarily to lack of adequate relief in the way of higher fares and "lawless competition" from jitney buses.

The troubles of the company at Des Moines were reviewed at length in the ELECTRIC RAILWAY JOURNAL for June 11. Developments since then were followed in the issue of July 23, page 144.

Supplementary Bus Service Planned

The fare receipts of the Tulsa (Okla.) Street Railway on the East First Street division alone recently have been $200 a day less than they were a few months ago, due to jitney competition. It was erroneously stated in the ELECTRIC RAILWAY JOURNAL, issue of July 23, that the loss in receipts was $200 a month. The company contemplates the use of motor buses as a temporary experiment where it feels branch lines ought to be built and in order to develop the territory to the point where the permanent extensions are justified.

News Notes

Franchise Surrendered for Indeterminate Permit.—The Terre Haute, Indianapolis & Eastern Traction Company, which operates the local system in Richmond, Ind., has notified the City Council there that it would surrender its franchise with the city of Richmond and operate in the future under the indeterminate permit issued by the Public Service Commission. A similar notice was filed with the county auditor of Wayne County at Richmond covering the operation of the interurban line from Richmond west to the Henry County line.

Railroad Appeals Bridge Case.—The Brooklyn (N. Y.) City Railroad has appealed to the Appellate Division from a decision of Supreme Court Justice Kelby appointing three commissioners to determine whether the city's plan to run cars across the Williamsburg Bridge is proper. The commissioners have reported favorably on the scheme. The company holds that the city has no franchise and no certificate of necessity for running cars on the bridge, and therefore it would be illegal. The corporation counsel's office contends that the city may operate across the bridge as a matter of right.

Norwood Approves Franchise.—The Norwood (Ohio) City Council unanimously passed the amended franchise ordinance recently submitted by the Cincinnati Ohio Traction Company, and which provides for the reduction in fares on August 1. The ordinance as passed is similar to that which was passed by Cincinnati City Council on June 14. The ordinance is to be effective whenever the Cincinnati ordinance under which fares are to be reduced becomes effective. The ordinance provides that the City of Norwood waive claim to the franchise tax, amounting to $6,000, until 1922.

Prizes Offered for Suggestions—Prizes of $15, $10 and $5 were recently awarded E. C. Hunsucker of the Charlotte street railway, R. T. Marlow and H. R. Johnson of the Winston-Salem railway property for the most valuable and timely suggestions affecting the street railway service of the Southern Public Utilities Company at its several branches. The first prize-winner emphasized courtesy and patience on the part of the employees. The second winner discussed the need for the establishment of a training school for new men and those who have been in the service less than two years and the last winner suggested that the first and main thing for a successful motorman was to learn to maintain schedules. The letters were published in the July issue of the Southern Public Utilities magazine.

Financial and Corporate

Utilities in Greater Favor

In its monthly survey of business conditions issued on July 25 the Guaranty Trust Company, New York, comments on the improved condition in the bond market and refers particularly in this connection to public utility issues. On this matter it says, in part:

> The market for public utility issues, particularly those of well-managed and conservatively financed power and light companies, has reflected the improved position of public service corporations. Gross earnings are showing an improvement, and, with the decline in labor and other operating costs, an even greater improvement is being shown in net earnings. Average earnings of 14 representative companies, as reported for April, 1921, showed gross earnings 16 per cent greater than for April, 1920. The corresponding increase in net earnings was about 24 per cent. With the growth of population in general and the increasing concentration in industrial centers that the last census indicated, the opportunity for expansion of public utility enterprises is such as to make probable increased development in this field.

I. C. C. Allows Two California Short Lines to Quit

So far as known the first railroad to get the official count placing it in the down-and-out class from motor truck competition went out on June 21 when the Interstate Commerce Commission counted ten over two branch lines of the Ocean Shore Railroad in California. One line runs from San Francisco to Tunitas Glen in San Mateo County and the other runs from Santa Cruz to Swanton in Santa Cruz County. The official knockout of the railroad by the motor truck is contained in this decision of the Interstate Commerce Commission:

> Construction of the lines in question was begun in 1905 and completed in 1909, with some interruptions due to financial difficulties. The completed property was acquired by the applicant in 1911 in reorganization proceedings following a receivership. Gross revenues have never equalled operating expenses and a deficit amount to $407,848 at the close of the year 1920 has been met by assessments on the outstanding stock aggregating $29 a share. Traffic diminished progressively, chiefly because of increasing competition by motor vehicles. The territory served is devoted principally to agriculture and lumbering. No objection to the granting of the application has been filed with us. The record is clear that but little use has been made of the service in the past and that there is little, if any, prospect that the lines can be made to serve any useful purposes in the future. We, therefore, find that the present and future public convenience and necessity permit the abandonment of the lines.

Receiver Resigns at Montgomery

Ray Rushton has resigned as receiver for the Montgomery Light & Traction Company, Montgomery, Ala., and S. B. Irelan, already holding the position of receiver for the Montgomery Light & Water Power Company, has been appointed by Judge Henry D. Clayton to succeed him.

Accompanying his resignation, Mr. Rushton submitted to the court a report in which he refers to the unsuccessful effort to secure the application of the service-at-cost plan, with a 10-cent fare to start, to the railway system. Regret is expressed by the retiring receiver at the opposition shown by the city commission of Montgomery to the plan and the failure of the Public Service Commission to apply it. He is of the opinion that the traction company cannot perform its functions and duties until some more reasonable plan is adopted than that now in force.

In the course of his remarks Mr. Rushton said:

> Your receiver has now served the court and the property for a period of two years and a half. During that time under the instructions of the court, everything has been done that was possible to rehabilitate the property and put it in a condition to meet its obligations to the public and its creditors, in the hope that the time would come when the owners would get some return from their investment.
>
> The Alabama Public Service Commission seems to be of the opinion that the public will be better satisfied with an inferior service and a lower rate. To this I cannot agree. It is true that there are some few citizens of Montgomery who probably approve of such a plan, but from an intimate contact with the patrons of the company, it is the opinion of your receiver that a large majority want good service and are willing to pay for its reasonable cost, but of such facts I have been unable to convince the commissioners.

Fewer Passengers at Increased Fares

Effects of the increased fares on Glasgow Tramways are plainly visible in the following figures: During the financial year ended May 31 the traffic revenue of £2,388,444 showed an increase over that of the previous year of £671,953. On the other hand, the number of passengers, 447,601,811, showed a decrease of 61,738,075. The traffic revenue per car mile increased by 5.737d. (to 21.307d.) while the passengers carried per car mile decreased by 2.612 (to 16.638).

Kansas City Road Making Progress Under Receivership

The steady progress of the Kansas City (Mo.) Railways under the receivership has been the subject of comment by Kansas City business men. The company is giving perhaps the best service in recent years, and despite the depression alleged to exist in business generally, is showing an increase in passengers carried over last year.

It is of interest that fully 85 per cent of the passengers are using tokens with which to pay fare—about 70 per cent paying with the metal tokens costing 15 cents for two, and 15 per cent using the tickets at 7 cents in lots of five or multiples thereof. While nominally a 7-cent fare prevails, the public does not take advantage of that privilege, but on the average pays more than 7½ cents.

The apparent satisfactory character of the progress being made is reflected in the absence of court proceedings often accompanying the operation of a receivership. It is inferred that the bondholders and the stockholders are equally content with the developments, and observe a unity of interest in the continuance of the present steps in the handling of the company.

Another Drastic Financial Reorganization

Key Route Plans to Cut Capital from $48,219,000 to $30,245,000 Including $1,500,000 of New Money

The financial structure of the successor company to the San Francisco-Oakland Terminal Railways will differ materially from that of the present company if the reorganization which is now planned is carried out unchanged. Moreover, the capitalization will be scaled many millions, for it is proposed to exchange $48,219,000 of the present securities for $28,245,000 of new securities.

The plan eliminates entirely the now outstanding $15,125,000 of common stock of the present company and places the stock control of the operating company with the holders of the prior preferred and preferred stock who formerly were the holders of bonds. Holders of present preferred stock to the extent of $13,050 000 will receive in exchange $6,525,000 of new common stock, or one share of common for two shares of preferred.

The proposed plan complies with the principles of reorganization approved by the Railroad Commission. As long ago as Aug. 11, 1919, that body indicated to the railway that the only permanent remedy for the financial difficulties of the company was a thorough-going reorganization. That the plan now advanced is such is indicated by the fact that whereas the total value of the property is $37,232,000, including $1,500,000 for betterments, there will be outstanding only $30,245,000 of stocks and bonds of the successor company. In this valuation no amount has been included to represent going concern, franchise or other tangible items.

The object has been to limit the prior preferred stock to an amount on which dividends may reasonably be expected to be earned from the beginning. On the basis of 1920 earnings, the amount available for interest and dividends of the reorganized company would be as follows:

Gross earnings		$6,829,970
Net before depreciation, but after operating expenses and taxes		$1,579,218
Bond interest	$612,331	
Note interest	216,000	
Prior preferred dividend	393,277	
	$1,211,608	1,221,608
Balance		$357,610

The plan contemplates paying in cash all coupons on outstanding bonds maturing prior to Nov. 19, 1919, and funding all coupons due from that date up to the time of the distribution of the new securities. The upaid coupons, it is estimated, total $1,676,820. Of the new first mortgage issue, the first series of $2,500,000 is to be initially issued and sold, and of this the owners of the new common stock are to buy $1,000,000.

Municipal Consent Necessary to Abandonment

The Board of Public Utility Commissioners of New Jersey has granted permission to the Bridgeton & Millville Traction Company to discontinue service and remove the tracks on the private right-of-way upon the line from the crossing of the Central Railroad on the Bridgeton turnpike in Tumbling Dam Park, Bridgeton. Providing the city assents, the company will also be permitted to remove the section of these tracks on the public highway. Authority to remove about 10 miles of track running between Newport, Port Norris and Bivalve has been denied by the commission. The commission stated in its opinion that the company did not consult any of the municipalities affected.

Abandonment of this section of the line, the commission pointed out, would eliminate the only electric railway communication between Bivalve, Port Norris, Dividing Creek and Newport, and also part of the line connecting Bridgeton and these points. Permission to abandon this section of the line, representing about 26 per cent of the revenue tracks of the company, was sought on the ground that its operation is not profitable. Some evidence of municipal consent must be presented, the decision of the commission stated, before such authority will be given.

Little Rock Property To Be Appraised

The City Council of Little Rock, Ark., recently authorized C. E. Smith, St. Louis, to be retained to appraise the property of the Little Rock Railway & Electric Company in order to check up the company's recent report of its holdings and to determine if the company is entitled to an increase in fares from 6 cents to 7 cents.

The Council on July 7 refused permission to the company to collect a 7-cent fare. The company then filed suit in the Second Division Circuit to restrain the city from prohibiting the collection of the advanced rate. It also asked for a temporary restraining order which would prevent interference during the pending of the suit.

The work of starting the valuation depends upon the action of Judge Guy Fulk in fixing the date of hearing the petition of the company for the order to prevent the city authorities from interfering with the proposed increase in fares. The city authorities want the work to begin as soon as possible, so that the city can perfect its defense against the proposed increase in railway rates.

Traffic Ratios Computed

Tabulation Shows Results from 154 Companies Made by American Electric Railway Association

The Bureau of Information and Statistics of the American Electric Railway Association has made public the results of a recent study on traffic statistics of 154 electric railway companies. These figures are given in the accompanying table. Further explanation made by the Bureau in regard to some of the figures follows:

Certain of the companies in the city groups also do some interurban service, but it is impossible to segregate the statistics. Where there are two or more companies in a city, the figures from all were used to determine the average revenue passenger ride per inhabitant. Where this was not possible, the figure was rejected. The averages on rides per inhabitant are omitted from the interurban group because the tributary population could not be determined. As methods of counting passengers on interurban lines vary, the figures on numbers of passengers on these roads are not comparable. The table is made up from a table of statistics obtained from 154 individual roads, and the figures given as averages in the respective groups are the arithmetical averages of the figures for the roads in that group taken individually, and not the weighted average for each group taken as a whole.

AVERAGE SERVICE RATIOS OF CITY AND INTERURBAN COMPANIES GROUPED ACCORDING TO NUMBER OF CARS OPERATED

RATIOS	City Companies Operating				Interurban Companies Operating			
	I 1 to 50 Cars	II 50 to 250 Cars	III 250 to 1,000 Cars	IV 1,001 or More Cars	I 1 to 10 Cars	II 10 to 25 Cars	III 25 to 75 Cars	IV 76 or More Cars
Average number of properties analyzed	23	31	14	7	13	16	13	8
Revenue passenger rides per inhabitant per year	133	288	317	369	......	......	......	......
Index*	100	216	238	278	......	......	......	......
Revenue passengers per car-mile	5.25	6.21	6.76	6.75	2.02	2.47	3.51	4.53
Index	100	118	129	129	100	122	174	224
Revenue passengers per mile of single track	205,900	263,500	464,000	515,000	31,170	36,400	74,000	147,100
Index	100	128	226	251	100	117	117	473
Car-miles per mile of single track	36,650	42,100	69,900	73,900	13,940	15,670	18,170	28,750
Index	100	115	191	202	100	112	112	206
Passenger revenue per revenue passenger, cents	0.0658	0.066	0.063	0.0705	0.224	0.242	0.154	0.092
Index	100	100	95.7	107	100	108	68.4	41.1
Car-miles per passenger car	44,900	46,850	43,100	39,500	58,700	79,700	63,400	56,170
Index	100	104	96.0	87.9	100	136	108	95.7
Revenue passengers to total passengers carried [per cent]	92.35	86.45	80.8	79.5	96.6	95.3	93.1	89.97
Index	100	93.7	87.5	86.1	100	98.7	96.4	93.1
Car-miles per car-hour	8.55	8.94	8.88	9.05	13.26	13.89	11.43	11.19
Index	100	105	104	106	100	105	86.4	84.5

*This index is obtained by assuming the value of the ratios in Group I as 100 and calculating the proportional deviation of the other groups.

Earnings Shrink in Cleveland

The Cleveland (Ohio) Railway in June carried 4,759,616 fewer riders than it did in the same month a year ago. This is a loss of 12.59 per cent and is the most serious decrease in traffic sustained by the company since the present business depression. In June, 1921, the company carried 33,047,581 riders as against 37,807,197 in June of 1920.

As a result of this big falling off in the number of riders, the company for June showed a deficit of $44,953. The company's passenger revenue in June was $1,417,120, a decrease of 2.37 per cent over June, 1920, when the rate of fare was only a nickel cash or five tickets for a quarter as against the present 6-cent fare or nine tickets for 50 cents.

The company's interest fund, which is the fare barometer, showed a deficit of 67,006 on July 1. The company's maintenance, depreciation, and renewal reserve account shows a current over-expenditure up to the present time of close to $500,000.

Because the company is unable to secure new capital, owing to the city's refusal to increase the company's dividend rate from 6 per cent to 7 per cent, and the company's inability to sell its present 6 per cent stock at par, the directors have authorized the officers of the company to take the funds for all expenditures for new work, that should come from new capital, out of the maintenance allowance until such a time as conditions made it possible to attract new capital.

Negotiations Under Way to Strengthen Property

Interest due on May 1 on the $3,979,000 of outstanding first mortgage 5's of 1937 and the quarterly interest due on June 1 on the outstanding $650,000 of 7 per cent notes of the South Carolina Light, Power & Railways Company, Spartanburg, S. C., have been defaulted. The company passed into receivers' hands last February. It is believed that arrangements will be carried through that will obviate the need for foreclosure and sale of the property.

The present plan is to have the people of Spartanburg vote on an increase in gas and electric light rates and the power consumers will be asked to enter into contracts for the rates as allowed by the court. An effort will also be made to obtain an increase in railway fares.

An $8,000 Increase in Income

The June report of the Public Service Railway, Newark, N. J., shows an increase in the net income of $8,901 over June, 1920. The net for June, 1921, was $13,016. In the matter of traffic the railway carried 37,292,708 passengers, of whom 30,246,530 were revenue passengers and the others transfer passengers paying 1 cent each. The revenue from both these classes of passengers amounted to $2,162,948. However, the revenue would have been increased by $68,000, it is estimated, if the new rate for transfers, namely, 2 cents, had been in effect. This is assuming that the increased transfer charge would not have decreased the number of transfer passengers.

The average fare per revenue passenger including transfer passenger was $0.07151 during June and the revenue per car-mile was 45.4851 cents.

Financial News Notes

Stock Dividend at Detroit.—The Detroit (Mich.) United Railway has declared a dividend of 2½ per cent, payable in stock on Sept. 1 to stock of record of Aug. 16. This is a stock dividend similar to that declared three months ago.

Eureka Bonds to be Offered—The city of Eureka, Cal., which recently took over the property of the Humboldt Transit Company has been authorized by the citizens to float a bond issue of $130,000. The property was valued at $75,000 and the remaining $55,000 will be used for extensions and betterments.

Receipts Decline in East St. Louis.—The receipts per day of the East St. Louis & Suburban Railway, East St. Louis, Ill., passenger department declined since January from $3,490 to $2,740, or a falling off of 21 per cent. The East St. Louis Railway shows a similar decline since January from $3,150 to $2,450, or 22 per cent.

Belgian Company Extends Its Activities.—The Compagnie Générale de Chemins de Fer Secondaires of Brussels, has changed its name to Compagnie Belge de Chemins de Fer et d'Entreprises. The company proposes to operate as a contractor and as promotor of light railways in countries both in and outside of Belgium.

No Bidder for Georgia Property.—Although it was announced some time ago by Judge B. D. Evans of the United States Court for the Southern District of Georgia that the City & Suburban Railway, Brunswick, Ga., would be sold as a going concern to the highest bidder, no bid for the property was received at the sale on July 5. The line will probably be sold as junk.

Municipal Railway Increases Gross.—Municipal railway earnings at Tacoma, Wash., during the month of June were $8,576, as against $8,096 for May, $8,492 for April and $8,273 for March. There was an average of 7,258 passengers carried during week days, as against an average of 7,124 for May, indicating a slight resumption in the tideflats industries which feed the municipal line.

$992,000 of Notes Approved.—Permission to the Cincinnati (Ohio) Traction Company to use the proceeds from a bond issue of $992,000 of 7 per cent notes for improvement, if the notes are purchased by the Cincinnati Street Railway, has been granted by the Ohio Public Utilities Commission. It is expected that the notes will be issued at once, as the traction company has been awaiting the decision of the state commission to act.

Objection to Separate Foreclosure.—The Guaranty Trust Company, New York, N. Y., has filed a bill in the United States District Court taking exception to the decision of Judge Orr, in which he rules that the Southern Traction Company, one of the three underlying companies of the Pittsburg Railways may foreclose on the mortgage and operate its West End lines independently. It is contended that any such action might delay the proposed reorganization plan.

Would Extend Notes at Increased Rates.—The Interborough Rapid Transit Company, New York, N. Y., has applied to the Transit Commission for permission to extend the date of the maturity of $39,416,000 of its notes for one year from Sept. 1 next, and to increase the interest rate from 7 to 8 per cent. It was explained that the condition of the money market would make it difficult to obtain an extension of time at the present interest rate, and that the inability of the company to meet the notes made an extension imperative.

Request to Issue Notes and Bonds.—The Indiana Railways & Light Company, Kokomo, has filed a petition with the Public Service Commission of Indiana asking for authority to issue and sell $250,000 of its first collateral gold notes and to issue $424,000 of its first refunding mortgage bonds for the reimbursement of its treasury and for permission to use the bonds as collateral security. According to the petition the money is required to reimburse the treasury for expenditures made for the improvement of the company's properties.

$573,169 Increase in Tube Balance.—The Hudson & Manhattan Railroad, operating under the Hudson River between New York City and New Jersey, reports for 1920 gross operating revenues of $9,016,253, against $7,978,910 in 1919, and a balance after interest and reserve for contingencies of $596,730, compared with $23,561 in the previous year. After deducting full interest on adjustment, income 5 per cent bonds in 1920 there was a deficit of $1,058,370. The net income from railroad operations for the year was equal to 3.55 per cent on the outstanding debt allocated to railroad operations.

Payment Announced on Income Bonds.—The directors of the Hudson & Manhattan Railroad, New York, N. Y., have declared an interest payment of 2½ per cent on the company's $33,102,000 of 5 per cent adjustment income bonds, payable on Oct. 1, 1921, out of the surplus income for the six months ended June 30, 1921. This is the second installment of interest to be paid on these bonds since Oct. 1, 1916, the first installment of 2 per cent having been paid on April 1, 1921. As the interest on these bonds is cumulative after Jan. 1, 1920, a balance of 3 per cent of cumulative interest remains unpaid.

Service Must Be Resumed.—The Board of Public Utility Commissioners has ordered the Jersey Central Traction Company, Keysport, N. J., to resume operation of its cars on Carr Avenue, Keansburg, Monmouth County. The traction company submitted an application to the board providing for the removal of their tracks on Carr Street, claiming that the cars were operated only during the summer months and that even then the traffic was very light. The Utility Board held that the continuance of the Carr Avenue line was necessary in order that adequate and proper service be provided.

$12,800 Earned in Salt Lake City.—The Utah Light & Traction Company, Salt Lake City, Utah, earned a balance after depreciation of $12,800 for the year ended Dec. 31, 1920, compared with $29,355 for the previous year. Gross earnings were $2,069,482, and net earnings $580,199. Other income was $401,748. After paying interest on bonds and making other deductions the balance was $157,525. Against this sum $144,725 was set aside for depreciation. The total number of passengers carried in 1920 was 40,512,223, compared with 39,521,505 for the previous year. The number of car miles in 1920 was 5,316,917, and in 1919 5,303,783.

Commonwealth Company Prospects Improve.—George E. Hardy, president of the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., says, with some improvement in market and financial conditions and taking into consideration the company's present earnings position, it should be possible in the near future to formulate a plan looking toward the liquidation of the floating and other short-time indebtedness. The company reports net income for June, available for dividends, replacements and depreciation, of $164,386 against $8,398 in June, 1920. The account for the six months totals $1,524,532, compared with $1,207,941.

Suit Brought Over Rentals.—The Ninth Avenue Railroad, New York, N. Y., has brought action against the Forty-Second Street, Manhattanville & St. Nicholas Avenue Railway and the Third Avenue Railway in the Supreme Court. The plaintiff alleges that annual rentals for the use of the track on Broadway between Sixty-first and Seventy-first Streets, which were to continue for an indefinite period, stopped on Dec. 1, 1919, and obligations amounting to $42,000 have since accrued. The agreement involved was made on Dec. 1, 1897, between the defendant and the Metropolitan Street Railway.

Traffic and Transportation

New Fares in Winnipeg

Long Litigation Over Commission's Jurisdiction Settled Amicably—Other Matters Being Negotiated

Negotiations between the Winnipeg (Man.) Electric Railway and the City Council of Winnipeg, which have been in progress for some months past have consummated in the passing by the City Council of an agreement with the railway which puts an end to the fare controversy and all litigation connected therewith, stabilizes relations between the company and the civic authorities, and augurs well for harmony and continued co-operation between the company and the city in the future.

As reported in the ELECTRIC RAILWAY JOURNAL previously the Public Utilities Commission of Manitoba granted the company, on three different occasions, higher fares. Exception was taken by the City Council to the final order, which was made Aug. 20, 1920, giving the company a 7-cent cash fare, four tickets for 25 cents, seven children's tickets for 25 cents and abolishing cheap workmen's fares. Holding that the Public Utilities Commission had no jurisdiction to alter fares which were stipulated in the original franchise, the City Council went to the Appeal Court of Manitoba to have the order set aside. A unanimous decision of the Appeal Court given April 4 last, upheld the commission's order, ruling that the commission had such jurisdiction. The City Council therefrom decided to carry its case to the Privy Council in London, England. In the meantime, however, the Council appointed a special sub-committee to try to effect a settlement.

As a result of conferences attended by A. W. McLimont, vice-president and general manager of the railway, the counsel for the company and members of the sub-committee, an agreement was drawn up between the company and the sub-committee, which agreement was ratified by the City Council and came into effect on Aug. 1. This agreement restores the by-law which incorporated the franchise as being "in full force and effect except as to fares" and placing the by-law and all agreements and dealings between the city and the company beyond the jurisdiction of the Public Utilities Commission. Under this agreement the Council agrees to a revised rate of fares (now in effect) and provision is made for an annual revision of fares by arbitration, if necessary, the arbitrators to decide a just and reasonable fare, having regard among other things to the value of the property.

The revised rate of fares which went into effect on Aug. 1 maintains the 7-cent cash fare, with four tickets for 25 cents, provides for a 5-cent cash fare on Sundays, nine tickets for 50 cents on week days between the hours of 6 to 8 a.m. and 5 to 6:30 p.m., while school children's tickets are eight for 25 cents as against seven for 25 cents which previously obtained for school children.

Negotiations between the company and the city will be continued with a view to settling all matters regarding which the city and the company are at present at variance.

Low Fare Test Fails

Experiment in Cleveland With 2½-Cent Fare Will Undoubtedly Be Discontinued

The experiment of the Cleveland (Ohio) Railway in trying to stimulate riding by reducing the rate of fare in a limited zone in the down town section of Cleveland has not been a success. That was the announcement made by John J. Stanley, president of the company, to his board of directors at the meeting on July 28.

The experiment of charging 3 cents cash or a 2½-cent ticket rate of fare in the down town part of the city in a prescribed area was sanctioned by the City Council at the suggestion of Fielder Sanders, city street railway commissioner, for a thirty-day test, starting July 11. The new rates most likely will be discoutinued at the end of the thirty days. Mr. Stanley said:

> The result has been very disappointing because we believed that we might boost our revenues by getting the riding habit instilled into down town shoppers.

Here are the figures showing the number of riders who availed themselves of the 3-cent cash or 2½-cent ticket rate in the zone area during the first two weeks of the experiment:

Date	Ticket Riders	Cash Fares	Total
July 11	8,710	8,216	16,926
July 12	10,145	8,499	18,644
July 13	10,040	8,115	18,155
July 14	11,104	7,645	18,749
July 15	10,374	7,944	18,318
July 16	8,334	7,731	16,065
July 17	2,367	3,247	5,614
July 18	10,747	6,914	17,661
July 19	10,529	7,410	17,939
July 20	10,307	6,562	16,969
July 21	10,408	6,646	17,054
July 22	10,162	6,856	17,018
July 23	8,227	6,600	14,827
July 24	2,812	3,698	6,510
July 25	10,078	6,416	16,494

The city street railway commissioner had estimated that at least 20,000 riders would avail themselves of the low fare every day, but as the figures indicate, at no time did the total number even go as high as 19,000. This means that the company is actually losing money, because most of those who availed themselves of the low fare would probably have ridden at the regular fare of 6 cents, company officials say.

Sioux City Favors Railway

Council Refuses to Issue Licenses—Jitneys Cease Operating—Court Sustained City

The City Council of Sioux City, Ia., has recently ruled that jitneys shall not operate in that city. The jitney operators have attempted to enjoin the City Council from arresting an operator who might run without a license. The court refused to grant such an injunction. Then the operators commenced action to compel the Council to grant licenses. A hearing was had in this matter and the court also refused to grant this relief.

The jitney problem in Sioux City dates back to the winter of 1920 when the General Assembly of the State provided that no jitneys could operate in an Iowa city without license and made it an indictable misdemeanor for them to do so. This act of the Legislature also provided that the City Council might accept or reject the application for such licenses.

Before the present action of the City Council, there were perhaps forty to fifty jitneys operating in Sioux City. The jitneys were making the short hauls and operating upon the streets which were already served by the street cars. The jitneys were taking perhaps $100,000 to $150,000 each year from the railway. The railway was charging a 6-cent fare, which had been voted by the people at a special election to amend the franchise. The original franchise provided for a 5-cent fare.

COURT ALLOWED SEVEN-CENT FARE

With the increase of freight rates and the increased cost of labor, this jitney competition made it entirely impossible for the railway property to meet operating expenses. No dividends had been paid since 1918. It was necessary, then, for the company to eliminate the jitney, or obtain higher fares. Accordingly, action was instituted in the Federal Court of Sioux City to enjoin the City Council from enforcing the 6-cent provision of the franchise on the theory that, because of these conditions above enumerated, it had become confiscatory and therefore in violation of the Federal Constitution. The Federal Court granted a temporary writ of injunction and authorized the company to charge a 7-cent fare. The company operated under this for thirty days.

When the Chamber of Commerce appeared before the City Council and asked that body to refuse licenses to jitney operators in order that the railway might receive the money otherwise taken by the jitneys, and thus accomplish a final reduction of the railway fare, the Council refused to license jitney operators further, and arrested those operating without license. As a result no jitneys have been operated since that time.

The railway then entered into a stipulation with the City Council, defendants in the injunction proceeding, to the effect that the court might decree in the said proceeding that the railway should sell four tickets for 25 cents, this order to be effective so long as jitneys were not running; a single fare to remain at 7 cents.

Reduced Token Fare in Washington

In accordance with a recent ruling of the Public Utilities Commission of the District of Columbia a reduced rate of fare which will be applied uniformly to the several railways operating in the District of Columbia will become effective on Sept. 1. The cash fare will remain at 8 cents with a reduced token fare from 7½ cents to 7 cents. The present 1-cent charge for inter-company transfers and the existing free transfer privileges will continue.

The following properties are included in the ruling: Washington Railway & Electric Company, the City & Suburban Railway, the Georgetown & Tennallytown Railway, the Washington Interurban Railroad, the Capital Traction Company, the East Washington Heights Traction Railroad and the Washington - Virginia Railway. The ruling will continue in force until March 1, 1922, when, unless the commission rules otherwise, the initial rate of fare will be restored to that in effect on Oct. 18, 1919.

The commission in its findings stated that it was highly desirable in the public interest to maintain a uniform rate of fare to prevent a disarrangement of railway service disastrous to both the companies and the public. For this reason the commission believed that it could not reduce fares on the Capital Traction Company's lines and at the same time continue the presnt rates on the lines of the Washington Railway & Electric Company.

The commission stated further that it was its opinion that no appreciable relief from the present state of affairs, whereby one company receives less than a fair return and the other an excessive return, can be obtained unless some new ruling on taxation is formulated or until a merger is brought about.

Connecticut Jitneys to Run Unmolested Temporarily

Unlicensed jitney operators in the State of Connecticut have until Aug. 16 to continue running buses unimpeded. Judge Thomas of the United States District Court issued an injunction on July 30 which terminated the jitney ban temporarily and prevented the police authorities from making arrests. The ruling is the result of the claim on the part of the busmen's attorneys that the men's constitutional rights were being invaded.

Judge John E. Keeler of the Superior Court had previously refused to issue an injunction to prevent the police from interfering with the jitney men who had been refused licenses by the Public Utilities Commission and the men proceeded with their case through the state ciriminal and the supreme court and also through the federal court.

The case will be heard at New Haven on Aug. 16 before a special court of the United States. Circuit Judge Wade Rogers will preside and with him will sit Judge Thomas of the Connecticut District Court and another district judge not yet selected. If the federal judges should decide in favor of the busmen the then prosecutions in the lower court will cease instantly. If, on the other hand, the case goes against the bus operators then criminal proceedings will be started at once.

In New Haven the jitneys will be operated on a 5-cent fare basis pending settlement. A session will be held in Bridgeport to discuss, among other things, the fare question.

Increased Transfer Charge in Effect in New Jersey

New rates went into effect on Aug. 4 on the lines of the Public Service Railway in New Jersey in accordance with the order of of the Board of Public Utility Commissioners rendered July 14. As indicated in the ELECTRIC RAILWAY JOURNAL for July 16, the board found and determined that the rate which had been charged by the company for transfers was insufficient and ordered the company to charge a fare of 7 cents where 7 cents had been charged and to charge 2 cents for a transfer where a charge of 1 cent had previously been in effect.

According to computations by the commission, the extra charge of 1 cent for a transfer will afford a yearly increase in receipts to the company of about $715,000. It is also held that this increase, together with the reduction in cost of operation and wages and other adjustments in operating expenses, as found by the board, will produce a sufficient revenue to enable the company to meet all its requirements for operating expenses, taxes and depreciation and will afford a reasonable return upon the value of the property.

The commission estimates the number of passengers to be transported for the year beginning Aug. 1, 1921, as follows:

Base rate fares	361,130,000
School fares	5,300,000
Total first fares	366,430,000
Transfer fares on 2-cent basis	75,000,000
Total of all fares	441 430,000

As has been indicated previously the board found the fair value of the property for rate-making purposes to be $82,000,000, after considering all the evidence in the case relating to value, the historical cost, cost of reproduction new, accrued depreciation, appreciation, going value, contingencies, cash working capital, materials and supplies and all other elements of value, tangible and intangible.

The board considers a return of $5,-842.500 a fair return on the $82,000,000 valuation, this return amounting to more than 7 per cent upon the valuation.

Emergency Fare Hearing Continued

Hearing of the petition of the Minneapolis (Minn.) Street Railway before the State Railroad & Warehouse Commission for an emergency increase in its rate of fare from 6 cents to 7 cents and four tickets for a quarter was continued from July 26 to Aug. 23 after a half-day session. The matter was put over at the request of the representatives of the city government that they were not prepared to present their argument. A representative of organized labor made a verbal statement against the proposed increase. He was asked to file a brief along with the other parties to the hearing.

Horace Lowry, president of the railway, said that before the war the company earned from $1,800,000. Earnings have, however, fallen off to about $1,100,000 a year. He said that Minneapolis in 1918 valued the street railway property at $24,000,000, and since then the value had increased $1,000,000. The book value of the property is $29,500,000. He said:

> We pay taxes on a valuation of about $23,000,000. On that investment a return of $1,000,000 is only about 4 per cent. Present earnings at a 6-cent fare are inadequate. We have $5,000,000 of bonds maturing next January on which we are paying 7 per cent interest. Unless we get money to pay the bonds an extension of the time they run will be necessary, and financial men tell us that extension will mean an addition of about 2 per cent interest. It is vitally necessary for the street railway to get on a financial basis to do refunding and provide money.

The commission denied the plea of City Attorney C. D. Gould for dismissal of the case on the ground the commission had no jurisdiction. This plea may be made later through the courts to test the law passed by the 1921 legislature putting trolley rate making under the jurisdiction of the commission.

The hearing on the appeal of the St. Paul City Railway for an emergency rate of 7 cents has also been put over until Aug. 23.

Eight Cents in Cincinnati

Fares were reduced half a cent to 8 cents and the "pay-as-you-enter" system was re-established on lines of the Cincinnati (Ohio) Traction Company on Aug. 1. Reduction in fares was accomplished by an ordinance passed recently by the City Council modifying the company's franchise.

For the next three months the fare will be 8 cents for adults and 4 cents for children ten years and under. The return of the "pay-as-you-enter" system is due to trouble experienced through congestion at certain points under the "pay-as-you-leave" system.

Attempts on the part of the Citizens Committee to stay the reduction in fares until after the November election were foiled when the city appealed to the courts and got a decision to the effect that the ordinance was not subject to a referendum vote. A suit is pending in the Ohio Supreme Court relative to the matter. It will be heard within a few weeks.

Utility Law Questioned

Wording of the Public Utilities Act of 1911 as amended by the 1921 Legislature was questioned before Chief Justice Gummere at Newark during the hearing of an application by the New Jersey & Pennsylvania Traction Company, Trenton, N. J., for a writ of certiorari enjoining the Public Utility Commission from suspending the ten-cent fare application of the company another three months.

The chief justice told L. Edward Herrmann, counsel for the board, that the language of the law was ambiguous and that the commission should seek to have the Legislature clarify it. The law, according to Herrmann, gives the commission the right to suspend a rate for six months. The company and the chief justice disagreed. The chief justice allowed the writ of certiorari, but refused to issue an order enjoining the commission's suspension, because Mr. Herrmann said the commission would be prepared to render a decision on the dime fare application by Aug. 10. The company operates between Trenton and Princeton.

Reduced Fare Results Disappointing

City officials in Kalamazoo, Jackson, Battle Creek and Lansing, where 6-cent fares went into effect on July 1, see danger of a return to higher fares as a result of reports submitted by the Michigan Railway, the operating company, giving the total fares collected during the period of the new fare.

The report will show that during the second week of the trial total fares were smaller than in the corresponding week a year ago. Greater use of automobiles in spite of the business depression is considered the cause for the decline in the railway patronage.

At the time the reduced fare was granted the four cities by Manager J. F. Collins, it was intimated that the continuance of the reduction must be dependent upon an increase in fares collected and the corresponding increase in the company's revenue. The cities are determined to insist that the lower fare be continued until a thorough trial has been effected. Competition by jitneys is playing an important part in the discussions between city and company.

Lansing, where success was claimed by city officials for the first two weeks of the experimental reduction in fares, now has under consideration a project calling for the operation of motor buses as tributary to the electric lines, with transfer privileges from bus to bus and car to bus, or vice versa. This proposition has been put forward as one solution to the present jitney competition, for it will enable the railway to serve those parts of the city which are not now tapped by the car lines and thus defeat one of the chief sources of strength of the jitneys.

The reduction in fare is from 10 cents to 6 cents, with nine tickets for 50 cents. The cut in fares came after the city officials had firmly demanded some reduction which was granted by General Manager Collins on June 30. In his letter granting the reduction Mr. Collins asked that the committee of the City Council having the matter within its jurisdiction investigate the affairs of the Michigan Railway, the operating company, and audit the books.

Eight-Cent Fare Asked

Indianapolis Street Railway Sees in This Rate Its Only Hope—Suicide, Says City

The presentation by the Indianapolis Street Railway of a petition for an 8-cent fare with a 2-cent transfer, the assertion by Samuel Ashby, Corporation Counsel, that "Well, we're not going to have an 8-cent fare in this city if we have to turn the whole thing over to the jitney buses," and the presentation by company officials of a tale of financial woes based on a mass of statistics marked the conference on July 29 of members of the Public Service Commission, officials of the city and officers of the company on the street railway situation. The conference lasted about two hours.

After H. H. Hornbrook, attorney, had finished presenting the company's petition for an increase in fare, Mr. Ashby said:

> It occurs to me that if the Indianapolis Street Railway was deliberately trying to ruin itself it couldn't have devised a better scheme than such a petition under such conditions as we have now. A fare such as that suggested would not have a tendency to help this situation. Why, it's almost suicidal. It would effect an increase in the jitney competition and ruin the company.

Then Mr. Ashby said there must be no such thing as an 8-cent fare.

Mr. Hornbrook replied that there was no alternative for the company other than to ask for a rate sufficient to support it. He said jitney competition was authorized by the city. Mr. Ashby said the Council had expressed the intention of curbing the competition. Ferdinand Winter, also counsel for the company, said that since last spring the City Council had been deliberating about what it should do, and that meanwhile the company had been losing $1,000 a day.

The result of the conference was that the commission took the evidence presented to it under advisement and retired.

Joseph McGowan, treasurer of the company, was the only witness on the stand. He presented figures to prove that jitney competition is growing worse all the time. He testified that the June business was $965.53 below the June, 1920, business and that the business for July, 1-17 was $1,102 a day below that of July, 1920.

For the six months ended June 30 the company's earnings fell short by $183,000 of providing a 7 per cent return on $15,000,000.

The commission merely continued the order that now is in effect, giving the company a 5-cent fare, with a 2-cent charge for transfers.

New Ohio Bus Law in Effect Aug. 15

Motor vehicles transporting passengers for hire between municipalities in Ohio will be subject to regulation as public utilities beginning Aug. 15, on which date the Graham bill passed by the recent Legislature, becomes effective.

Their classification as a public utility will require all such lines to file with the Ohio Public Utilities Commission, schedules of rates which may not be increased except after thirty days' notice by publication and makes them in all respects subject to the same control as is exercised by the commission over other public utilities.

Hundreds of such lines are in operation in the State, using both motor buses and touring cars, most of them operating in competition with interurban and steam railroads, but heretofore without any regulation whatsoever.

The utilities commission has prepared a notice of the new law, together with suggested forms for filing schedules, which are being mailed out to individuals and companies conducting motor transportation lines wherever the commission learns of such lines being in operation.

The law will not affect motor truck freight and express lines operating on highways, nor motor passenger lines operating within municipalities.

Court Upholds Seattle's Right to Regulate Jitneys

The State Supreme Court at Olympia, Wash., on July 20 sustained the right of the city of Seattle to regulate jitney traffic on its streets. The decision was rendered in the rejection of an appeal of H. P. McGlothern against dismissal of an injunction action brought against the city to restrain enforcement of the regulation ordinance under which 187 applications for jitney operation had been refused.

In the King County Court, Judge Walter M. French had dismissed a temporary injunction granted the jitney operators pending final decision. The Supreme Court holds that this controversy questions the city's power to control its streets, a power of which there can be no doubt under a rule well established in this State and generally. The city is held to have had the authority and to have been engaged in proper exercise of it at the time injunction suit was brought.

The decision of the Supreme Court makes valid the jitney ordinance passed by the City Council in June a year ago. The decision, according to Corporation Counsel Walter F. Meier's office, gives the city the right to place the jitneys under restriction, to require all jitney drivers to obtain licenses and to keep the jitneys off certain streets served by the Seattle Municipal Railway.

At the time the ordinance was passed, the jitney drivers obtained a temporary restraining order that has been in effect for a year.

Personal Mention

Power Engineers Together

Messrs. Murray and Flood Combine Forces as Consultants on Heavy Traction and Other Subjects

William S. Murray, formerly chairman of the Super-Power Survey, and Henry Flood, Jr., formerly engineer-secretary of the Super-Power Survey, have formed the firm of Murray & Flood, Grand Central Terminal, New York, for the purpose of carrying on a consulting engineering practice. The work to be undertaken will comprise general power engineering, public utility interconnections, power plant engineering, both steam and hydro-electric, heavy traction railroads and industrial electrification.

Mr. Murray was for many years the chief electrical engineer of the New York, New Haven & Hartford Railroad. His connection with the road began in April, 1905, when he secured the position of electrical engineer, later becoming consulting engineer with the road to undertake the electrification of the Now York division. The electrification of the railroad with the single-phase system was completed in 1915 at a cost of $25,000,000. During the latter part of the time when he was acting as consulting engineer he was a member of the firm of McHenry & Murray, which was formed in 1913.

MR. MURRAY A LEHIGH GRADUATE

In 1917 Mr. Murray became president of the Hoosatonic Power Company, which owned water power sites of that portion of the Hoosatonic River within the State of Connecticut. He was also chief engineer of the Connecticut Power Company, which purchased the company owning these power sites. This latter company has recently completed the hydro-electric station on the Hoosatonic known as the Stevenson plant, which is one installation of a chain of developments which, when completed, will make Connecticut's contribution to conservation the saving of 500,000 tons of coal annually.

Mr. Murray was graduated from Lehigh University in 1895 with the degree of electrical engineer. Upon graduation he went with the Westinghouse Electric & Manufacturing Company, and during the following seven years successively passed through its manufacturing, testing and construction departments. With the last-named department he was associated with the first high-tension plant installation in the State of Maine.

Mr. Flood likewise has had previous consulting engineering practice in New York City. His most recent work consists of an association with Dr. John Price Jackson in conducting the power survey for interconnecting the electric utilities companies of western Pennsylvania, eastern Ohio, and northern West Virginia, and in acting as engineer-secretary of the Super-Power Survey.

Mr. Flood received his technical education at Cornell University. He was for a number of years associated with the electric utility industry, starting with the Newburgh Light, Heat & Power Company as assistant to the manager of the electrical department. Later he was associated with the Grand Central Light & Power Company as power engineer and from there went to the Central Hudson Gas & Electric Company as chief engineer, where he remained for seven years. Following this he was mechanical engineer for the American Smelting & Refining Company. It was this company he left to take up work as a consulting engineer.

Mr. McKinley Attends Interparliamentary Union

William B. McKinley, Senator from Illinois and president of the Illinois Traction Company, Peoria, has sailed again on a foreign mission. He left New York on Aug. 4 on the *George Washington* for Stockholm to attend the nineteenth conference of the Inter-parliamentary union, composed of members of the national legislative bodies of more than twenty governments in Europe, Asia and America. The forthcoming meeting will be the first since 1914.

Mr. McKinley has long been a deep student of economic and political questions and has made himself an authority on matters involving foreign relations. This is the more unusual because all the time he has been deeply concerned with the management of his banking interests, to say nothing of the calls made on his time for advice and help in the administration of the Illinois Traction System, probably the most extensive combined city and interurban railway system and lighting property in the country. Several years ago, Mr. McKinley, accompanied by a party of friends went on a trip around the world, spending considerable time in the principal foreign cities.

Robert B. Rifenberick, formerly consulting engineer of the Detroit (Mich.) United Railway, has been appointed valuation engineer of the United Railways & Electric Company, Baltimore, Md. Mr. Rifenberick was connected with the Detroit United Railway from 1909 until the early part of the present year. Before that he was consulting engineer of the Cleveland Electric Railway and previous to that he was engineer in charge of construction on the Cleveland & Eastern Railway. He was long in the services of the steam railroads. He was graduated from the Miami University Scientific Training School in 1885.

H. H. Buckman, master mechanic of the Interstate Public Service Company, Indianapolis, Ind., has tendered his resignation effective Sept. 1, 1921. After severing his present connection, he will represent the United Lead Company in the Middle West, with headquarters at Indianapolis. Mr. Buckman has been with the Interstate organization for seventeen years, and his energy and thorough knowledge of his department have materially assisted in bringing the traction system of the company to its present high state of efficiency. Mr. Buckman's successor has not yet been appointed.

Captain George F. Daggett has been appointed secretary to George McAneny, chairman of the Transit Commission. Captain Daggett became chief clerk of the old Public Service Commission soon after it was organized in 1907. Nine years later he was appointed assistant secretary. He joined the war forces in 1917, was commissioned as captain and attached to the Army Intelligence Department in Washington. After the armistice he returned to the commission as chief of the Transit Bureau. He resigned in 1920. The Transit Commission is seeking to bring back to the service men whose ability has been proved.

Louis T. Klauder recently resigned from the Philadelphia Rapid Transit Company as construction engineer to enter the consulting engineering field. Mr. Klauder was graduated from the Williamson School in 1901 and from the Drexel Institute in mechanical and electrical engineering in 1908. He entered the engineering department of the Pennsylvania Iron Works in 1901, later resigning to become associated with the Philadelphia Rapid Transit Company in 1905. With the latter company he occupied in turn positions of draftsman, chief draftsman, assistant engineer and construction engineer in charge of plant design and construction. From the last-named position he has just retired in order to devote his entire time to consulting work.

C. A. Baxter has been appointed superintendent of transportation of Chicago & Oak Park Elevated Railways, Chicago, to succeed H. G. Harding, who resigned to become general superintendent, Chicago & Interurban Traction Company. Mr. Baxter has been trainmaster of the Oak Park "L" since 1912. He began work in the electric railway field as a train clerk on the Metropolitan West Side Elevated Railroad, Chicago, in 1895. A year later he became a motorman on the same road, continuing until he was made trainmaster of the Oak Park line in 1912. His early experience in the railroad field began when he was fifteen years old as a telegraph operator and station agent on the Springfield-Sandusky (Ohio) branch of what is now the Big Four Railroad, and later on the Burlington Railroad, in Nebraska and Kansas.

J. G. Huntoon

Management Localized

Greater Individual Responsibility to Cities Will Hereafter Devolve on Tri-City Officials

The Tri-City Railway, Davenport, Iowa, has undergone a sweeping reorganization of its personnel to the extent that it will divide the detailed management of the railway in Iowa and Illinois, localizing the interests in an endeavor to get into closer personal touch with the various communities. This is the first step in a general reorganization of the system and a general realignment of the present personnel.

J. G. Huntoon, general manager of the Tri-City Railway since 1908, and now a vice-president of the company, retired from the active capacity of manager on Aug. 1. T. C. Roderick, present assistant general manager, has become general manager of the Tri-City Railway of Illinois. R. J. Smith, formerly superintendent of overhead construction, has become general manager of the Tri-City Railway of Iowa, and Clark G. Anderson, assistant general manager of the interurban lines, has become general manager. E. L. Fischer, general manager of the Muscatine Lighting Company, becomes general manager of the Muscatine railway lines. These promotions and changes were referred to briefly in the ELECTRIC RAILWAY JOURNAL for July 23.

This reorganization means the localizing of lines in Illinois, Davenport, Muscatine and the interurban lines under existing heads, in order that greater efficiency may be obtained in the way of relieving the main office of much detail. Each line will be placed under a separate head and all books will be kept in the respective offices for that line.

T. C. Roderick

Mr. Huntoon has desired for some time to relinquish his duties, but his resignation was refused by President B. J. Denman, because Mr. Huntoon's services were considered necessary to the successful working out of certain matters. The change that has now been brought about is merely the consummation of a long effort on the part of the general manager to be relieved of detail work, in order to be free to put into effect broad principles advanced by him for establishing closer personal touch with the three cities.

Mr. Huntoon is by no means severing all connection with the line, for he will remain as vice-president of the company. He is a railway operator who has come through all phases of the work to general manager. In recording Mr. Huntoon's life history, one Davenport newspaper says that thirty-three years ago he set out one morning looking for a job. A gang was at work laying track for the Davenport & Rock Island Railway, the pioneer horse-car line of that city. John Huntoon was hired as a water boy, and he later became timekeeper, then cashier, and in 1895 succeeded Henry Schnitzer as superintendent. In 1908 Mr. Huntoon stepped up another rung when he became general manager and vice-president of the Tri-City Railway, succeeding James F. Lardner, who retired. He has held that position continuously since.

R. J. Smith

Mr. Roderick, the new general manager of the Rock Island and Moline line, is backed by twenty-five years' experience in traction operation. He went to the Tri-City in March, 1918, from Grand Rapids, Mich., where he was engineer of the Grand Rapids Railway for eleven years. Previous to that time he had been connected with the Citizens' Street Railway, Detroit, and with the Indianapolis Street Railway.

C. G. Anderson

R. J. Smith, who becomes the new general manager of the Davenport line, went to Davenport in 1911 as assistant construction engineer of the Clinton, Davenport & Muscatine Railway. At the completion of this interurban, Mr. Smith became engineer of way and structure for the Tri-City Railway and since the year 1918 he has acted in this capacity for all of the properties controlled by the United Light & Railway.

Mr. Anderson, the new general manager of the Clinton, Davenport & Muscatine Railway, had been assistant general of the property since 1914. For the four years prior to his connection with the railway he was the commissioner of public works of Moline, having been in the service of the city as city engineer from 1905 until 1910. Mr. Anderson was born in Moline, Ill., in 1873. While in the University of Illinois he specialized in civil engineering and was graduated wth the class of 1898. During the succeeding seven years until he became city engineer of Moline, he was in a general engineering practice in Peoria, Ill.

Mr. Fischer, the new general manager of the Muscatine division of the company, retains his position as general manager of the Muscatine Lighting Company, to which he was appointed in 1918. Mr. Fischer is a young man who has risen rapidly to

E. L. Fischer

the top. His first position, involving some real responsibility, was with the Fort Dodge Gas & Electric Company as electrical superintendent. Although he took this position in the fall of 1917 he was promoted to general superintendent of the same company in the spring of 1918. In August, 1918, he resigned to become general manager of the Muscatine Lighting Company.

Mr. Fischer entered the Iowa State College in 1908 and was graduated with the degree of Bachelor of Science in Electrical Engineering with the class of 1912. His first railway connection was with the Fort Dodge, Des Moines & Southern Railroad, whose employ he entered in April, 1912, as general storekeeper. In the fall of that year, however, he severed his connection with the railway in order that he might take up experimental work at the Iowa State College for a few months. In November, 1912, he entered the employ of the Fort Dodge Gas & Electric Company as a meter man and in two years he was advanced to superintendent of electrical distribution. Mr. Fischer received the degree of electrical engineer from Iowa State College.

Obituary

George W. Edwards

George W. Edwards, president of the Brooklyn (N. Y.) Rapid Transit Employees' Benefit Association, died on July 30 following an operation. In many respects Mr. Edwards was a very unusual man. He had a positive genius for handling men and it was for this reason that he was appointed by the company in charge of its welfare activities at the inception of that work. "Pop" Edwards was the sobriquet applied to Mr. Edwards by the men on the B. R. T. This title was well chosen for Mr. Edwards was in many ways a father to the thousands on the system. At his office at the main club house of the company in East New York the men came to Mr. Edwards for succor and advice on all sorts of questions and they found in him a most sympathetic counselor. He had come up from the ranks himself and had never lost the common touch and the men knew that what George Edwards told them he told them from deep convictions of his own.

Mr. Edwards started is as a brakeman on the elevated lines in New York. He went to work for the elevated in Brooklyn as a train dispatcher when the first elevated railroad was opened there in 1885. Later he was made superintendent and then general superintendent of the Brooklyn elevated. In May, 1904, he was made secretary of the Employees' Benefit Association. Shortly afterward he was elected president of the association. When the pension department was organized in 1910 Mr. Edwards was made secretary and member of the board of pensions. In 1912 he was appointed welfare administrator of the entire property. Mr. Edwards was born in New York City sixty-six years ago.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Buy Coal Now!

Letter From Secretary of Commerce Advises the Buying of Coal as Soon as Possible

The Secretary of Commerce made public on July 18 the text of a letter that he has addressed to all the public utility associations. The letter reads:

> I would like to call the attention of your association to the bituminous coal outlook. There is every indication that there has been an undue slackness in the purchase of coal, which may accumulate to large demands in the autumn. I am convinced that, due to the general depression, the prices of bituminous coal at the mines are not too high at the present time. This, I think, is proved by the fact that numbers of operating coal companies are making no profit whatever. If there should be a recovery of business activities in the autumn, taken in conjunction with the large increase in percentage of disabled cars (from 5 per cent to 16 per cent during the past six months) and the inability of the railways to finance their maintenance, there are possibilities of development of a most serious situation as regards coal movement.
>
> I cannot but feel that the Interstate Commerce Commission, in the face of warnings they have sent out in this connection would not be disposed to give any priority in such an event. It seems to me, therefore, to be obvious that the public utility companies, both in their own interests and in the protection of the public, should make early provision for stocks of coal sufficient to carry them over a critical period.

Metal Market Unfavorable

The copper market situation is far from favorable. Prices are ¼ cent lower than when last quoted. Pressure to sell by outside interests is held responsible for the weaker prices, but even large producers have lowered their quotations to 12.75 cents for August shipment. With small producers copper is available at 12.50 cents delivered for August and 12.25 for prompt shipment. Consumers have not reacted to these lower prices, however; in fact, as selling interests become more anxious to unload buyers hold off all the more. It is stated that as low a price as 12.12½ cents per pound delivered has been made by second hands. Wire base has dropped ¼ cent to 14 to 14.50 cents.

The Copper Export Association on Aug. 15 called in for redemption $1,000,000 of its 8 per cent gold notes, series A, due Feb. 15, 1922. The securities to be redeemed represent about 10,000,000 lb. of copper.

The value of non-ferrous scrap metals recovered in 1920, according to the Geological Survey, amounted to $188,507,260, or $6,666,000 more than in 1919. Copper recovered in 1920, including that in alloys other than brass, had a value of $48,060,800, compared with $41,812,000 the preceding year. In the same period brass scrap remelted increased from $75,944,100 in 1919 to $77,454,000 last year.

The lead market is quiet with prices steady. Tin has dropped again and is cheap at its present low price of 26 cents, but buying interest has not reacted as yet. Zinc is a shade firmer, and though sales are still quiet, producers are not pressing to sell.

Insulator Market Active

Demand for High-Tension Insulators Is Falling Off, But Previous Orders Keep Manufacturers Busy

Production of high-tension insulators is still at full capacity throughout the industry, but as deliveries are being made faster than orders are received, it is a question just how long this will hold true. One of the large producers, for instance, has enough business on hand to keep going full time for two months, though it is admitted there is not a whole lot in sight after that time. Deliveries have been steadily improving and now range from about four to six weeks on suspension types and four to eight weeks on pin-type insulators, depending upon the voltage. No stock has yet been accumulated on the high-tension types, but on low and medium voltages there has been some accumulation. Very few orders are being received from electric railways, but there are quite a number from central power stations. These latter orders, however, are small in size.

Lamp Production Still Low

Production of lamps has been showing a falling off during the last few months. From reports on factory operation it would seem that production now is on a basis of about 65 to 70 per cent of capacity, and when it comes time for the two weeks summer shutdown of those factories which expect to close it is probable this term will be extended a week or so.

Although factory lamp stocks are pretty large, there are a few signs that point to a possible reduction. There has been a noticeable pick-up in activity among the textile mills in New England, although the metal industries there and in general are still dull. The longest days of the year are a month and more behind us and the earlier evenings are already noticeable. From some quarters it is reported that lamp distributors have been cutting down on their lamp orders to a greater degree than their lamp sales have dropped off, indicating a reduction of their stocks. If this is so, their orders, it seems, should soon begin to increase in size. Of course, the lighting load on central stations shows a decrease throughout the summer months this year as well as in the past, and in addition the industrial depression has kept many lamps dark.

Rolling Stock

Elmira Water, Light & Railroad Company, Elmira, N. Y., has received the eight safety cars which were ordered some time ago from the Osgood-Bradley Car Company.

The Columbus (Ga.) Railroad has ordered four new cars for delivery about Oct. 1. These cars are of a similar type to those already in service.

Pacific Electric Railway Company, Los Angeles, Cal., has recently purchased some additional Birney safety cars for extending its service. This company now has sixty-nine Birney safety cars in operation on its local lines.

The New Orleans Railway & Light Company, New Orleans, La., has ordered 400 Nichols-Lintern mechanical sander equipments. These will be installed on cars already in service in order to comply with the laws recently passed by the Legislature of the State of Louisiana.

Detroit (Mich.) Municipal Railway, mentioned in the July 23 and other issues as purchasing 100 safety cars on July 12, has issued the following data on these cars.

Number of cars ordered	100
Date of order	July 12, 1921
Delivery	Approximately three months
Builder	25 McGuire-Cummings Mfg. Co 50 St. Louis Car Company 25 Osgood-Bradley Car Company
Type of Car	Safety
Seating capacity	32
Weight, total	16,000 lb.
Truck wheelbase	8 ft.
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse DH16
Axles	4 in.
Bumpers	6 in Channel section
Car signal system	Faraday
Car trimmings	Statuary Bronze
Control	K 63
Curtain fixtures	Curtain Supply Company
Curtain material	O'Bannon 076
Designation signs	Keystone
Fare boxes	Johnson
Fenders or wheelguards	H.B.
Gears and pinions	Westinghouse Helical
Heater Equipment	Cutler-Hammer
Headlights	Golden Glow No. 96
Lightning arresters	Westinghouse
Motors	Westinghouse 508
Paint	Sherwin-Williams, Old Dutch Enamel
Registers	International, R7 Air operated
Sanders	Osgood-Bradley traps
Sash fixtures	Howard & Edwards
Seats	Manufacturers' Standard
Seating material	Wood Slats
Step treads	Feralun
Trolley catchers or retrievers	Ohio Brass Company
Trolley base	Ohio Brass Company
Trolley wheels or shoes	Ideal 4½ in.
Trucks	Manufacturers' Standard
Ventilators	Manufacturers' Standard
Wheels	Steel, 26 in.
Special devices, etc.	Nichols-Lintern duplex tail lights
Center lighting	Electric Service Supplies Company Fixtures and opal shade

Track and Roadway

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis Ind., recently prevented the City Council from awarding a contract for the improvement of Seminary Street as had been contemplated owing to the surrender of its franchise under which it operates through Greencastle, Ind. The street will be readvertised and the contract probably awarded in August. The traction company's line runs through the city over Seminary Street.

Indiana Service Corporation, Fort Wayne, Ind., will not build the much-needed new line to the thickly populated northwest section of Fort Wayne owing to the fact that remonstrators have been successful in killing the proposed paving of the street over which the line was to run. It was the plan of the traction company to install the new line when the street was improved, and in a letter to the board of public works recently the company explained that it will be impossible to lay the proposed double track unless the street is widened. Now an effort is being made by the councilman from this particular section to get through a petition for the widening of the street. The proposed route is down Franklin Avenue from the end of the Huffman car line to Third Street and thence west.

Detroit (Mich.) United Railway has notified the Pontiac City Planning Commission that rebuilding of trolley lines in that city, removing the third track from Saginaw Street and double tracking the northwestern division in that city is very doubtful. The expense would total about $300,000. General Manager Burdick announces that adequate repairs are being considered.

Seattle (Wash.) Municipal Street Railway, has had the approval of the Council in its extension and betterment plan. Recently by a vote of five to four, the Council adopted a report adding the extension of the Beacon Hill car line at a cost of $100,000 to the bill providing for the issuance of $1,330,000 of railway utility bonds.

Power Houses, Shops and Buildings

Southern Pacific Company, Oakland, Cal., has prepared specifications for a new station and for rearrangement of tracks after learning that private plans for building a combination office building and station at Franklin and Fourteenth Streets could not be financed. The plans call for a building on Thirteenth Street midway in the block and for the removal of the small buildings now there.

Portland Railway, Light & Power Company, Portland, Ore., has recently placed in operation in its East Lincoln Street station, the largest turbo-electric generator in this territory. The generator is a General Electric Curtis turbo type. The generator has a rated capacity of 12,500 kw. Wood waste will be used as fuel, but fuel oil can be used if necessary.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has bought the plant site of the Pelton Steel Company, Kinnickianic Avenue, Milwaukee, for the extension of its carhouse and shops.

Trade Notes

The Shire Electrical Products Company, Marquette Building, Detroit, has developed a "Startometer" for measuring storage battery output under load.

The .Whiting Corporation, Harvey, Ill., has developed its "short-turn overhead trolley system" for material handling employing short-radius curves, switches, cutouts, etc.

The Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, announces the opening of an office at 110 Hale Street, Charleston, W. Va., with Donald J. Baker as manager.

The Griscom-Russell Company, 90 West Street, New York City, has recently placed on the market its low-pressure expansion joint known as the G-R type "C."

The Permutit's Water Softening Patent Upheld.—In a suit in equity by Permutit Company, 440 Fourth Avenue, New York City, against the Harvey Laundry Company, a user of the apparatus in question, and the Refinite Company, inventor and manufacturer thereof, to enjoin infringements of letters patent No. 1,195,923, Judge Hazel on June 15, in the United States District Court, Western District of New York, handed down a decision in favor of the Permutit Company.

The Wheel Truing Brake Shoe Company, Detroit, Mich., recently celebrated its twenty-third anniversary as a company. It has also enlarged its factory space by the erection of a new plant into which the business has been moved. This change has at least quadrupled facilities for manufacturing Wheel Truing Brake Shoes, it is stated. Business is not as large in volume as in the first half of last year, but though orders are smaller individually, they are reported to be greater in number. Most customers specify immediate shipments, it is said, indicating that reserve stocks are low. Foreign business on this particular product has been light, though shipments have recently been made to Melbourne, Australia and Honolulu, T. H.

The Buffalo Forge Company, Buffalo, N. Y., is now pushing construction to remodel the entire fan shop. This shop, when completed, will be one of the largest fan shops in the United States, covering 64,235 sq.ft. including 23,873 sq.ft. of assembling galleries. While this extension is in progress production continues without interruption, and when it is completed all fan construction will be accomplished with a minimum handling. The material racks are served by an electric railway truck with automatic lift platform.

American Di-Electrics, Ltd., 71 West Broadway, New York City, announces that the address of E. A. Thornwell, its Atlanta (Ga.) distributer, has been changed from Atlanta Trust Building to Candler Building.

Charles S. Crowell, Philadelphia manager of the Underfeed Stoker Company of America, left the latter's employ on July 1. Mr. Crowell has no definite plans for the future, it is stated but after a short vacation will remain actively in the combustion field.

The International Western Electric Company, 195 Broadway, New York City, announces that E. C. Richardson, who has been manager of the Western Electric Compania Italiana at Rome and Milan since 1910, and who also saw foreign trade service at Antwerp has been transferred to Peking, China, as general manager of the China Electric Company—the Far Eastern subsidiary of the American electrical concern. He succeeds C. H. Minor, who has supervised the operations of the China Electric Company ever since it started business early in 1918. Mr. Minor is returning to the European organization of the International company and will make his headquarters at London.

Cie J. G. Brill, Paris, France, which was organized in 1908 for the distribution of the products of the J. G. Brill Company, Philadelphia, in Spain, France and Algeria, has expanded its territory to include Belgium, Italy, Switzerland and Luxembourg. The facilities of the company were also recently enlarged by the addition of new forge, machine and assembly shops and store rooms at Gallardon, 40 miles from Paris. C. B. Dubbleman, 19 Rue du Parnasse, Brussels, who has heretofore been the J. G. Brill Company's agent in Belgium and Holland, will continue as its representative in Holland, but will represent Cie J. G. Brill in Belgium. Giovanni Chechetti, Piaza Sicilia 1, Milan, will continue to handle the Brill products in Italy, but as the representative of Cie J. G. Brill.

The Nichols-Lintern Company, Cleveland, Ohio, manufacturer of car ventilators, sanders indicating signals, etc., reports several recent sizable orders for mechanical sanders, among which are fifty-two equipments for the Pennsylvania & Ohio Electric Company; 400 equipments for the New Orleans Railway & Light Company (both of these orders including hoppers and all accessories), and 150 equipments for the Massachusetts Northeastern Street Railway. Orders have also been received from three other traction companies and two steel companies recently. Since Jan. 1, 1921, it is stated, a total of 550 N-L indicating signals have been specified and ordered. The Railway & Power Engineering Corporation, Ltd. Toronto, Canada, which manufactures and sells Nichols-Lintern products in Canadian territory, has recently received orders for 200 equipments of N-L indicating signals from the Toronto Transportation Commission and for 2,000 N-L ventilators from the Canadian Car & Foundry Company.

New Advertising Literature

"Phono-Electric" Trolley Wire.—Bulletin No. 15, the June 1921 issue of "Phono-Electric," published irregularly by the Bridgeport Brass Company, Bridgeport, Conn., is printed in French. It is being distributed among the electric railway trade in France.

The R. Thomas & Sons Company, East Liverpool, Ohio, manufacturer of porcelain insulators, etc., has just issued a new catalog on "Standard Electrical Porcelain" which includes a number of interesting features. Dimensions of the various products are given in both inches and millimeters, export as well as domestic shipping weights are included and a code word for each item is listed.

J. G. Brill Company, Philadelphia, Pa., has issued Volume 11, No. 12, of the Brill magazine, dated June, 1921. This is the second copy of this publication to be issued since May, 1918, the first having appeared in June, 1920. The general adoption of the safety car has standardized equipment to such an extent that there is less interesting material available for publication, and hence the magazine at present appears only occasionally. The current issue describes cars recently shipped to Brazil, South Africa and Cuba, as well as gasoline-driven motor omnibuses and trailers made by the company.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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Progress in the Accident Situation

WHILE one often hears that there has been a great increase in the number of electric railway accidents because of the increase in automobiles and the many reckless automobile drivers, there is cheer in the study of accidents in Chicago which appears elsewhere in this issue. There it is shown that while the number of accidents is increasing substantially, the number of accidents per 100 automobiles registered and per 100,000 street car-miles operated is showing a healthy decrease. In other words, the effort that is being expended so generally to prevent accidents is really bearing some fruit. Automobile drivers and motormen are evidently becoming more careful, or perhaps more experienced in anticipating trouble and thus avoiding it.

The great need in furthering this showing seems to be a better, more readily usable system of filing accident report data both by railway companies and by the courts, the enforcement of the laws to the limit against those few careless or reckless drivers for whose transgressions everyone must suffer, and vigorous steps to protect the interests of the general public in the use of the streets and highways. The record system for electric railways suggested by R. F. Kelker, Jr., in the article referred to, appears to be a very effective way of handling this detail and is worthy of special study. Anything that can be done to aid in visualizing the accident problems and in analyzing causes, should receive immediate consideration. The plan proposed not only does these things, but it involves practically no expense—which is an especial appeal in these times.

City Railways as Carload Freight Distributers

CITY railways have often been proposed as distributers of freight over the areas which they reach. But such propositions have usually included only l.c.l. or package freight, the railway taking the place of the present trucking concerns to a certain extent. Or, if carload freight was meant, it was assumed that the consignee would have to pay the local railway a switching and delivery charge in addition to the trunk-line charge.

That there are possibilities beyond this, which may be of real value to electric railways, is at least deducible from some decisions of the Interstate Commerce Commission affecting the Kansas City Railways. An article in this issue relates the history of a freight service development there and how the commission has finally granted to consignees on this particular branch of the Kansas City Railways the same freight rate that applies to the trunk-line delivery district. The significance of an extension of this policy, for which this case may be a satisfactory precedent, is very real. If consignees located at any point on the city railway are granted the same carload freight rates as those in the trunk-line switching district, the local railway would soon become an enlarged terminal railway for all carload freight distribution. From a civic standpoint, the development of business centers on land less expensive than that adjoining railroad sidings would be valuable. Congestion of freight traffic would be reduced and deliveries expedited. The local railway could make its track and power investment work during present lean hours.

While there are many other problems than the legal and rate problems to consider and solve before any such development may take place, yet the possible significance of this western precedent should be carefully studied. If it means more business at a profit for electric railways, it should be followed up.

A Reduction in Coal Prices Would Help Business Revival

COAL being one of the important raw materials that go into the manufacture of transportation, electric railway officials may well concern themselves with the possibilities of reducing this fundamental expenditure, to keep pace with the healthy readjustments taking place in the expenditure for railway labor. They have this direct interest in a lowering of coal prices and also an interest in it indirectly for the reason that a substantial reduction in coal prices would be a strong influence toward the revival of business generally, which means an improvement of the market for transportation.

It is quite broadly felt that a reduction in freight and passenger rates on the steam roads would tend strongly to stimulate business. Such a reduction would be much more readily possible if a substantial decrease in the cost of coal to the trunk lines themselves could be effected. Such a reduction would be doubly effective. With a cut of 25 cents per ton to the railroad, its transportation cost and therefore charge could be reduced and thus the ultimate consumer benefit to an extent of possibly 40 to 45 cents per ton.

The whole country is interested in why reductions are not made and the outstanding reasons seem to be: the high labor cost in the mines, manipulation of the market and speculation by coal dealers and operators, too high margins of profit all around, inclusion in the price of overhead costs on undeveloped holdings, high freight rates, etc.

Some definite evidence of the effect of miners' wages on the price of coal is afforded by the following cost figures taken from a mine owned by a large traction company. In 1917, this company engaged a mine operator on the basis of a mining cost of 90 cents a ton with a bonus of one-half any saving under this figure. Without any charge for depletion, bond interest, sinking fund, etc., the pure production cost for April, 1921, was $1.95 per ton, for May $2.28, for June $2.07, and it has averaged $2 a ton for some time past. This is the direct result of high wages and decreased efficiency of the men, for the traction company buys through no middle man and thus all other factors entering into the ordinary purchase of coal, such as mentioned above, are eliminated. Nor can the high cost be attributed to low production, for this is about constant.

The United Mine Workers are operating on the high scale established by federal arbitration and are strongly opposing any attempt to lower the rates, even arrogantly claiming that no reduction will be accepted at the expiration of the present contract on April 1, 1922. Of course it would be unjust to attempt to take the desired reduction in coal cost entirely out of labor. All these other factors bearing on the price should be carefully considered also. But it would seem practical for the United States Department of Commerce, in its efforts to restore business to normal, to take a deep interest in all the factors of the present coal prices, with a view to exerting its influence along sound lines toward a reduction in the cost of this basic material to all industries. If, among other things, a wage reduction in the mines should be forthcoming, as seems likely, there is precedent for bringing it about in the action of the Railroad Labor Board which recently reduced the wages of railroad employees from the level established by governmental agency.

It should be made clear that the public utilities in urging governmental efforts directed toward reduction in the price of coal are not urging regulation either of the coal industry or of coal prices. A regulated industry itself, the public utility industry does not recommend price regulation as an aid to a healthy business condition. But if the government, in its work of aiding industry, can do anything of a helpful nature along the line of reducing costs, it should have encouragement and assistance.

Constructive Leadership as Well as Regulation

AN EXAMPLE of the opportunity of commissions to assume constructive leadership, and not merely to regulate, is afforded by the present Connecticut developments. This is one of the most interesting and important situations in the railway field today in the problem of articulating the railway and the bus in the transportation business, or of finding which the people want and which can do certain kinds of work the better. These columns have already carried comment on the clear definition of a common carrier which has come from the court procedure; and also of the position of the railway upon whom the burden of making good or going broke is squarely placed. Litigation is now proceeding in both state and federal courts, with the really final verdict probably in the hands of the people.

But it is probably not appreciated by the railway industry, by the bus interests nor by the public to what extent they are all indebted to the Connecticut commission, and largely to its chairman, Richard T. Higgins, for the constructive nature of the developments that are taking place. It has done much to make effective in Connecticut the recommendations of the Federal Electric Railways Commission. The entire legislative accomplishment along railway and bus lines was the result of its analysis and recommendation. The situation created is not merely one of eliminating bus operation from the railway area. That may be one immediate move, but the broader purpose has been to establish the existing agency, the trolley, on a legitimate basis as regards taxes, paving, fare provisions, etc., and to regulate competing agencies so that the railway may prove its ability to serve the public and the public may decide if it really wants the railway or the bus. Variables have been removed as far as possible. The bus has been recognized as necessary in certain places. It is now up to the railway.

While the Connecticut commission was once criticised for entering the field of management in a fare adjustment, it should be pointed out that that error was soon rectified and that the present work of the commission, is even more constructive than mere regulation. It is creative and in the interests of the best public policy. The story is not yet closed in Connecticut—it is a long one, but one can be sure that the commission under its present leadership will play an important and useful part in the solution of one of the vexing problems of the local transportation business today.

Reorganization Plans Are Along Right Lines

AS A RESULT of the work of the special reorganization committee of the American Electric Railway Association, the executive committee has made some constructive recommendations to the membership of that body. These are reviewed on another page of this issue, and copies of the complete report of the executive committee will be mailed from the secretary's office as soon as they can be printed. They are to be acted upon by the association at the annual convention in October.

For the best interests of the association and of the industry, the members should make a real study of these recommendations. It should be noted particularly that the committee provides that at this year's convention consideration of amendments to the constitution will not be limited to the exact wording proposed by the executive committee. Modification may be made and new amendments introduced. What is desired is the real expression of the majority of the membership. These facts make it doubly important that the members study these recommendations, not only to examine what the executive committee has recommended but also what it has not recommended.

Every change which the executive committee recommends is constructive and should be adopted. Prominent ones are membership definitions, organization and operation of the executive committee, improvement of election procedure, stimulation of committee activity and creation of the separate office of treasurer, and making him a member of the executive committee. It is significant that provision has been made for admitting trackless transportation companies to membership. This is no surrender to the "jitney." It is the best step toward a solution of the place of the bus in American urban and interurban transportation.

Perhaps the most important change of all, one upon which President Gadsden has laid stress, is the requirement that the executive committee meet monthly and really manage the affairs of the association. That it has not been done in the past is no reason that it cannot be done in the future. It is done in most other associations and societies—in all of them which really accomplish anything of value, it appears. A meeting of the executive committee of the association on a regular day each month should be as much a part of the duty of a man accepting the office as is any one of his regular corporate or operating duties. The provision that executive committee members may be represented by personal proxies—a practice already existing, as a matter of fact—should assure good attendance. An assurance of greater continuity in policy in managing the association is contained in the provision for three year terms for the manufacturer and operator members at large with one-third elected each year. This is a healthy move.

Another move that is very good is the provision for pre-election nominations. This is regarded by some as the most valuable result of the whole work. Its advantage is apparent.

Committee activity has always been recognized as a large element in the useful life of the association. The provision for the six standing committees and for periodical committee reports to the executive committee should add vitality to this work and should assist in keeping the executive committee in closer active touch with the association's affairs.

The executive committee policies formally adopted, aside from constitutional and by-law provisions, should also be welcome. Among these are: Small committees with a definite plan for continuity of membership and therefore activity; co-operation with educational institutions; geographical distribution of committee meetings and of representation on committees (this latter has been done, but it has not been a stated policy); and active co-operation with sectional associations and official representation at their meetings.

Aera's policy, particularly with reference to co-operation with the technical press and to avoiding duplication, was brought up, but no formal recommendation was made. President Gadsden's statement, however, that it would be put up to Mr. Welsh to avoid duplication is a step in the right direction. Such a plan if part of the permanent policy of the association would help to co-ordinate all of the energies in the industry.

The Old Order Changes Slowly

IT IS perhaps not unlikely that there will be as much discussion on what the executive committee did not do as on what it did do. By this is meant its lack of action on admitting municipally owned railways and its rejection of the reorganization committee's recommendations regarding vice-presidents and past-presidents.

The executive committee seemed to feel that the practice of having its potential presidential nominees in training should be continued as at present. As stated in the report of the reorganization committee, its purpose, in revising the set-up of vice-presidents, was to make automatic the operation of the resolution adopted last October which said:

> that in view of the great changes which, from year to year and almost from month to month, mark the critical period through which our industry is passing, it shall be regarded as the fixed policy of the association that, in the selection of all its officers, the association will be guided by the requirements at the time, unaffected by the choice of previous years.

Of course the reorganization committee's method of four vice-presidents, two elected each year for two-year terms, is not the only one. Other ways have been suggested. One is that the association elect five of fifteen directors each year for three-year terms and empower these directors to elect the officers from their own membership, or not, as they deemed best. These directors, the officers, the affiliated association presidents and the two junior past-presidents of the American Electric Railway Association would constitute the executive committee. It will be recalled that Mr. Shannahan some years ago headed a Transportation and Traffic Association committee which recommended the election of only one vice-president by each of the affiliated associations so that there should not be a succession extending over three or four years in line for the presidency of these associations. The fact that all of these suggestions were made is indicative of a certain feeling that the present system has weaknesses which should be corrected. There are arguments on both sides. But the association should not, at a time when reorganization for the greatest effectiveness is under way, let the present system continue without full discussion and assurance that it is the best.

The question of service of past-presidents on the executive committee is a similar but somewhat different one. Some have said it is irksome; it has, of course, always been recognized that their advice was valuable. But even if nominally they have no vote, past-presidents who attend executive committee meetings regularly are certain to exercise great influence in its deliberations. The reorganization committee's recommendation of having only the two junior past-presidents as members of the executive committee, and these with a vote, was made with the apparent belief that the responsibility for management should be squarely placed on men elected to the executive committee for definite terms. This practice is followed by the N. E. L. A., A. I. E. E. and other organizations closely allied with the electric railway industry. After a specified term of active office in those societies even the past presidents return to the ranks.

On the question of admission of municipally owned railways, there is divergence of opinion also. As on the two previous questions, where there is divergence it is easier to let present rules apply. But again it is known that many association members are in favor of admitting municipal railways as members. This question was treated editorially in these columns on July 16.

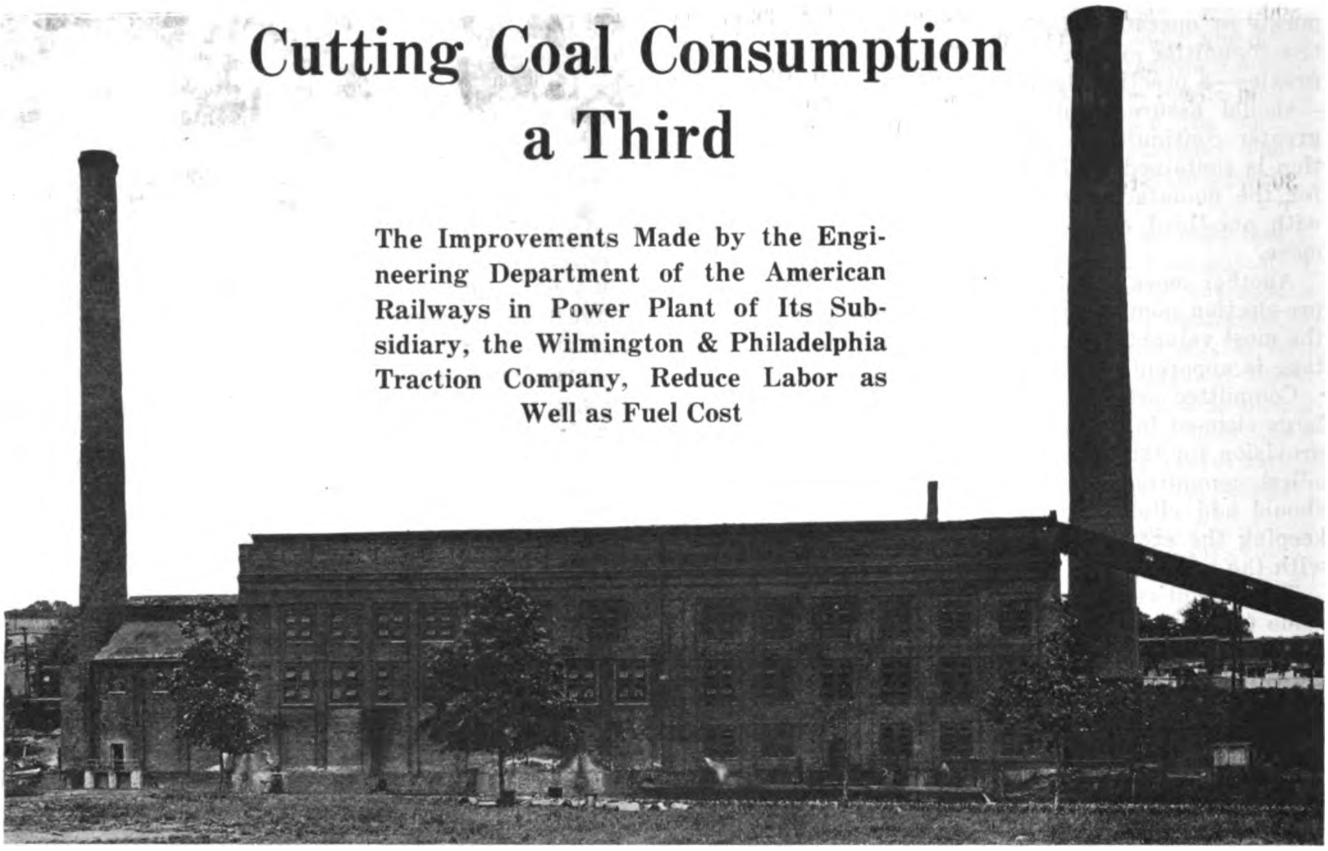
Discussion by Membership Is What Is Now Wanted

THIS extended discussion of the situation is not to impress upon the industry the individual views of the editors of this paper, but to help bring the matter squarely before the membership so that there will be full and free discussion. In all associations, and this is no exception, there is the frequent accusation that policies are "cooked up" in the East and all that the membership can do is to "O.K." or reject. Certainly this is not now so in the American Electric Railway Association as regards the present matter. The door is wide open, the report is now public and open for discussion, and is to be acted on in open meeting and not by ballot. Free discussion is invited by the executive committee.

The ELECTRIC RAILWAY JOURNAL is glad to open its columns and invites a free and full discussion of this report and recommended action. Such discussion is needed to assure intelligent consideration and action at Atlantic City in October. The association is showing new signs of life, and no mistake should be made in recasting its organization and method of operation.

Cutting Coal Consumption a Third

The Improvements Made by the Engineering Department of the American Railways in Power Plant of Its Subsidiary, the Wilmington & Philadelphia Traction Company, Reduce Labor as Well as Fuel Cost



REMODELED POWER PLANT WILMINGTON & PHILADELPHIA TRACTION COMPANY—NEW SECTION AND NEW CHIMNEY AT RIGHT

AT WILMINGTON, DEL., is located the power plant of the Wilmington & Philadelphia Traction Company, which furnishes power for the local railway, light and industrial power requirements. Since 1916 this property has been under the control of the American Railways, the headquarters of which are at Philadelphia. This plant was built in stages, the most recent large improvement in facilities having been the construction of the present main plant under the direction of J. G. White & Company in 1911. The demand on the plant has increased to such an extent by the time that the American Railways took over the property in 1916 an increase in capacity was immediately planned. Even before that year extensions had been inaugurated under the direction of the White company.

Without going into the history of the local power system in detail, it may be said that originally the plant consisted of three direct-current engine-driven units to which were added a 500-kw. and a 1,500-kw. Allis-Chalmers turbine generator units. These were supplemented before the present management took charge by a 4,400-kw. General Electric turbine unit. The plant also comprised, in a separate building, a complete equipment of boilers and two 500-kw. and one 1,000-kw. turbo-generators, inherited from another power enterprise. This is now known as plant No. 2. The machinery had been badly handled so that this plant was of little service in taking care of the growing power demand. It is now used for emergencies only, the turbine room doing duty as a machine shop.

Auxiliary machines in the main plant comprised a 1,000-kw. rotary converter, a 500-kw. motor-generator set for power purposes and two 250-kw. motor-generator sets used as feeder boosters.

At the outbreak of the great war the company had to take care of the enormously increased demand for power only the assorted equipment listed above, part of which was in bad repair. As soon as possible a 7,500-kw. General Electric turbine unit was added, but wartime industries overloaded the plant seriously. To add to the difficulty, the 4,400-kw. generator burned out, requiring rewinding of both stator and field. The blading and diaphragms of the turbine were also damaged. The first stage had to be rebladed and three new diaphragms were required. Opportunity was taken to improve the ventilating system of this unit by changes in the foundation, allowing the incoming air to enter from outside the building instead of as before from the hot pump pit below. This change also facilitated the installation of an air washer in the air intake.

The original two Allis-Chalmers turbines were also rebuilt and a new system of steam piping for them was installed.

GENERAL REHABILITATION UNDERTAKEN

The demand for power continued to increase to such an extent that in 1917 plans were made for the installation of a 12,500-kva. Westinghouse turbine-generator unit. This led to a study of the plant as a whole and an extensive program of changes, now practically complete, was laid out. The result has been that the coal consumption of the plant has been reduced nearly 1 lb. per kilowatt-hour, or from about 3.1 to 2.1 lb. The operating cost in labor has also been reduced about 40 per cent. The capacity of the plant has been more than doubled, last year's output having been more than 70,000,000 kw.-hr. The saving in fuel over what otherwise would have been consumed is not less than $150,000 and that in labor $30,000 per annum.

The new turbine unit is a three-phase, 60-cycle, 1,800-r.p.m. machine. The voltage generated is 11,000, this being the only 11,000-volt machine in the plant. The best efficiency of the unit is at about 10,000 kva. or 8,000 kw., at which load the steam consumption is 13.3 lb. per kilowatt-hour, with 150 deg. superheat, 195 lb. throttle pressure and 28 in. vacuum, referred to a 30-in. barometer.

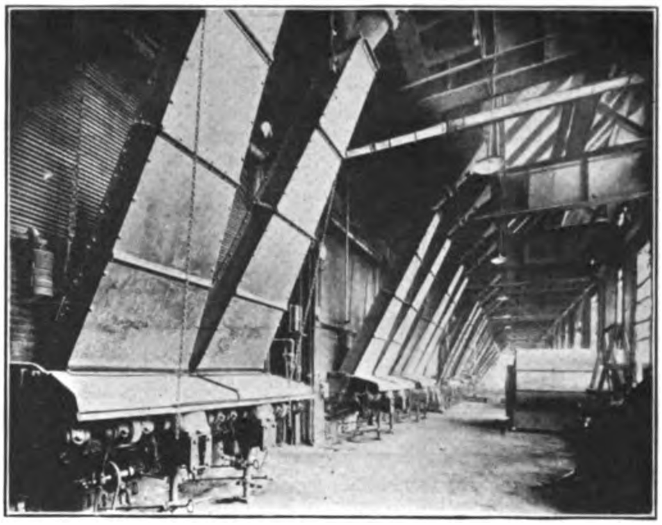
The installation of the unit presented some difficulty as the depth of the basement in the building was only 10 ft. below the engine room floor. This space was also partly occupied by two old engine foundations which had to be removed. A depth of 22 ft. was necessary for the condenser and pumps.

The old engine foundation, which rested on solid rock of a very hard kind, had to be blasted out with dynamite. In this blasting there was considerable danger to the adjacent units, which were kept in continuous operation. Twelve feet of rock had to be removed, and the foundations of the building and of the other generating units had to be underpinned before foundation work for the new unit could be commenced.

FLEXIBLE AIR-WASHING AND COOLING SYSTEM

The generator of the new unit is equipped with an air-washing and cooling system with a capacity of 35,000 cu.ft. per minute. This was so installed that the air can be taken either from outside or inside the building and it can be delivered either out of doors or indoors. This makes it possible to accommodate the ventilation to the climatic conditions.

Unfortunately the space available for the new unit was not what might have been desired so that it was difficult to accommodate the auxiliaries in making the layout. For example, the air-washing and ventilating system required more space than was available above ground. It was necessary therefore so to design the generator foundation as to provide two compartments, one for air inlet and the other for outlet. This part of the foundation was carried down 8 ft. below the first basement floor, and underneath this floor two concrete air ducts were built, each 5 ft. x 7 ft. One is connecting the air washer with the air inlet chamber in the generator foundation and the other connecting the air outlet chamber with the distribution stack.

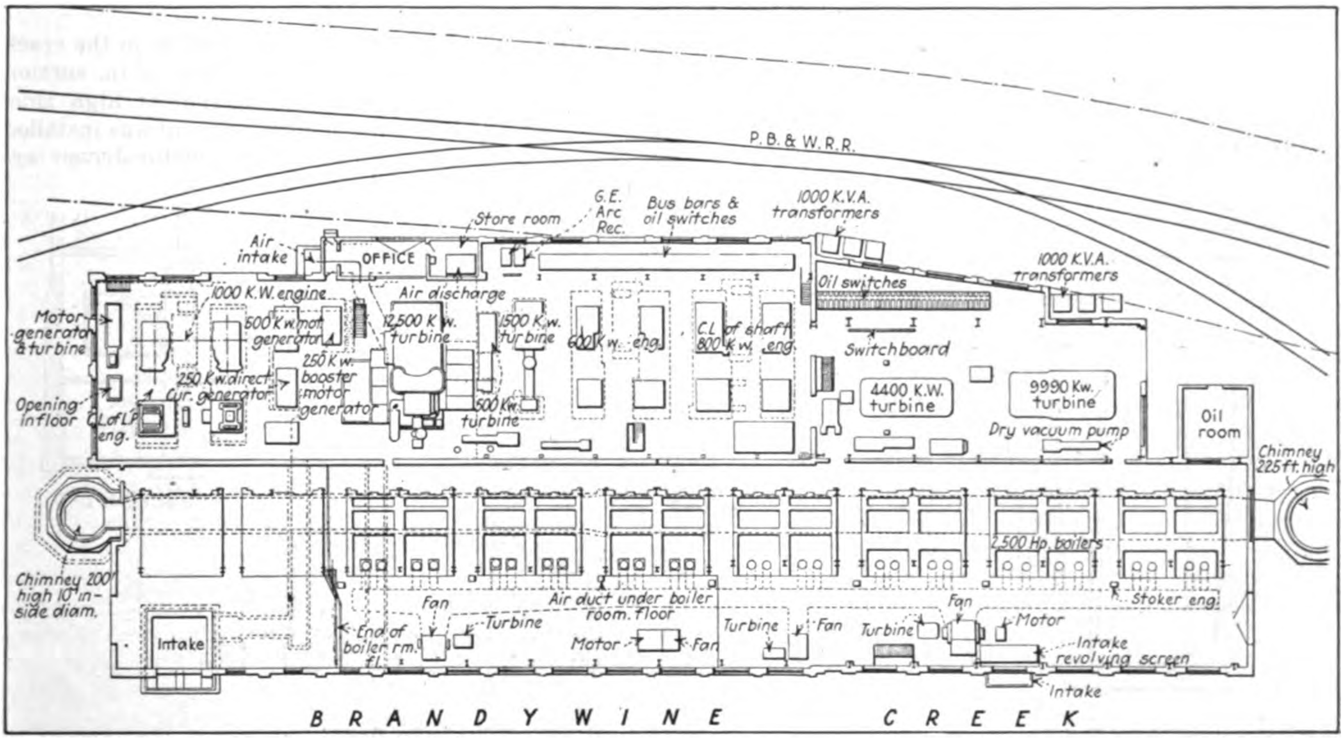


LOOKING DOWN THE BOILER-ROOM FIRING AISLE

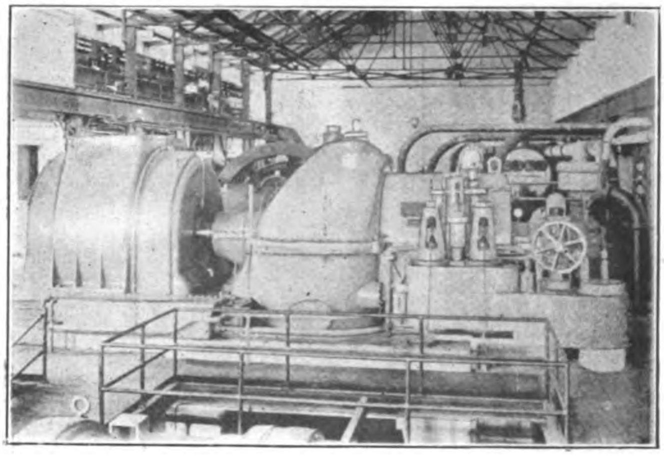
Any one not familiar with this installation would have difficulty in locating the air-washing system of the unit, for it is not visible at the floor level. This arrangement has the advantage of leaving all floor spaces in the basement free and unobstructed, thus facilitating the work of the operating crew.

The air circuit is by-passed around the washer so that the latter can be repaired without interfering with the generating unit. In this case the air passes through two rows of fine mesh screen before entering the generator. The outdoor intake for the air is through louvers and brass wire screens of 24 mesh, No. 30 gage.

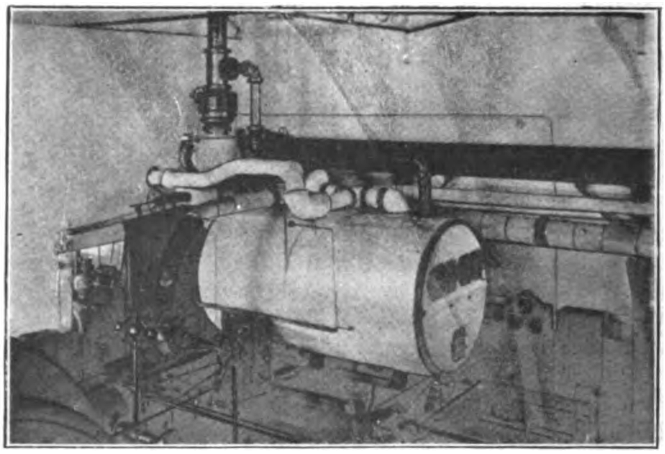
The turbine is direct-connected through a 6-ft. x 12-ft. copper expansion joint to a 17,500-sq.ft. surface condenser. The condenser auxiliaries comprise two


P. B. & W. R.R.
G.E. Arc Rec.
Bus bars & oil switches
1000 K.V.A. transformers
Store room
Air intake
OFFICE
1000 K.V.A. transformers
Oil switches
1000 K.W. engine
Air discharge
Motor generator & turbine
500 K.w. mot. generator
12,500 K.w. turbine
1500 K.w. turbine
600 K.w. eng.
C.L. of shaft 800 K.w. eng.
Switchboard
250 K.w. booster motor generator
250 K.w. direct cur. generator
500 K.w. turbine
4400 K.W. turbine
9990 Kw. turbine
Opening in floor
C.L. of L.P. eng.
Dry vacuum pump
Oil room
Chimney 225 ft. high
2,500 Hp. boilers
Chimney 200' high 10' inside diam.
Fan
Air duct under boiler room floor
Fan
Stoker eng.
Turbine
Turbine
Fan
Turbine
Motor
End of boiler rm. fl.
Motor
Fan
Intake revolving screen
Intake
Intake
BRANDYWINE CREEK

GENERAL LAYOUT OF THE POWER HOUSE



New 12,500-Kw. Turbine Unit



Looking Down on Feed-Water Heater of 20,000 Hp. Capacity

20,000-gal. (per minute) centrifugal circulating pumps for cooling water, two 350-gal. centrifugal hot-well pumps and two dry-vacuum pumps, the auxiliaries thus being in duplicate, only one set of pumps being in use at a time. One each of the circulating pumps and of the hot-well pumps is motor-driven, while the rest are steam-driven. The motor-driven pumps were installed both to insure flexibility and to assist in maintaining high point efficiency through control of the heat balance.

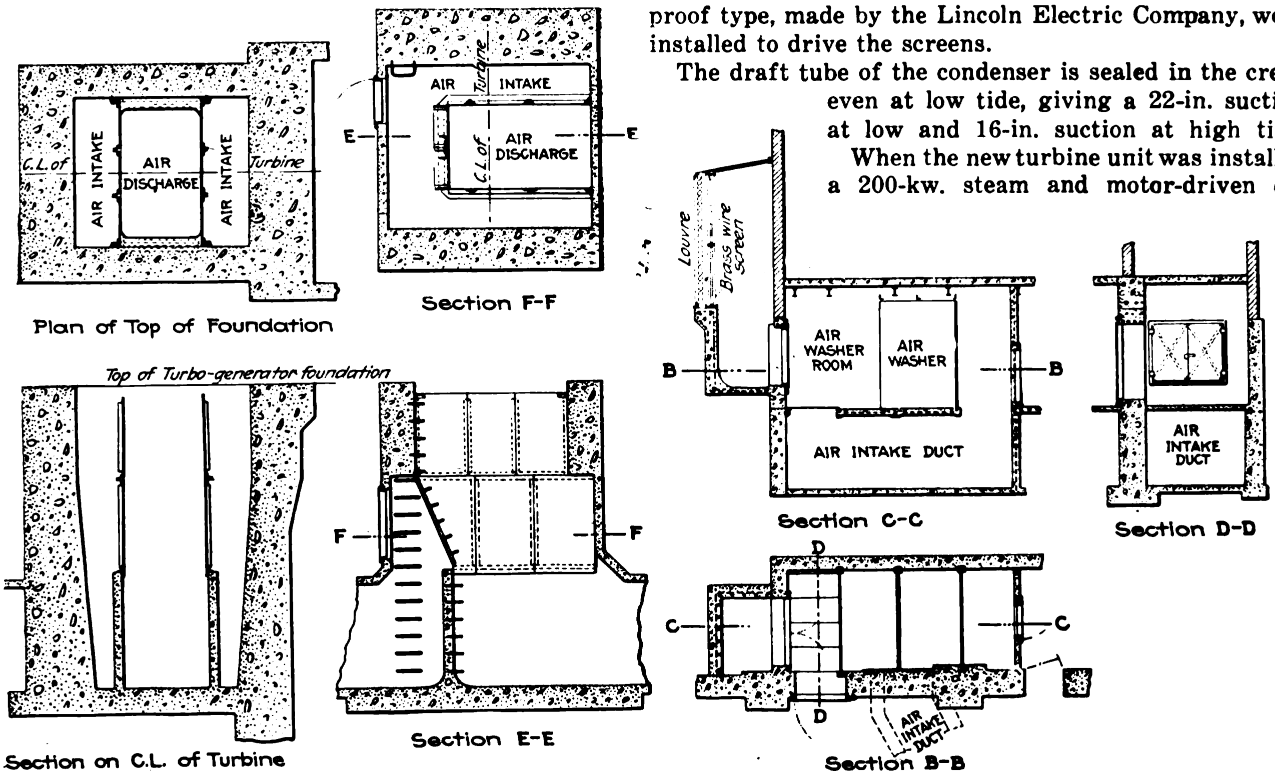
The condenser is also connected to a 30-in. Cochrane multiport free-exhaust valve. This allows the exhaust from the turbine to pass automatically to the atmosphere in case the vacuum is lost or in case it is necessary to run the turbine under high pressure.

Steam is furnished to the turbine through a 12-in. pipe which connects with the main header in the boiler room. In this 12-in. pipe, close to the turbine, is a 54-in. Sweet receiver separator. The separator is intended merely to safeguard the turbine in case the boilers should foam or too high a water level be carried in the boilers. Mention has already been made of trouble in this plant through the carrying over of water, and it is desired to prevent a repetition of this.

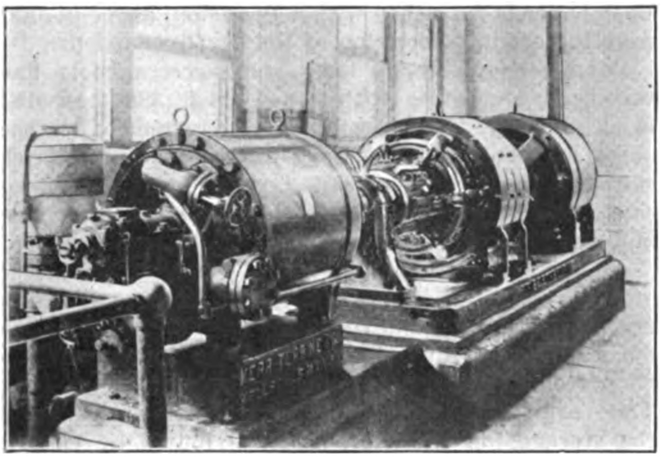
The general placing of this plant is unfortunate in that the boiler room, instead of the turbine room, lies along the source of circulating water, Brandywine Creek. This makes it necessary to carry the circulating water under the boiler-room floor. The new unit requires an entirely new layout of circulating water system. An intake pit was blasted from the solid rock from the creek to a point inside the boiler-room basement, to a depth to bring its bottom level with the bottom of the creek. A grating of flat steel bars was placed over the inlet to the pit.

In the pit inside the building two motor-operated revolving water screens, made by the Chain Belt Engineering Company, were installed to prevent the ingress of leaves, etc., to the 30-in. suction pipe which leads from this pit to the condenser circulating pump. As the vicinity of this intake is damp, motors of the waterproof type, made by the Lincoln Electric Company, were installed to drive the screens.

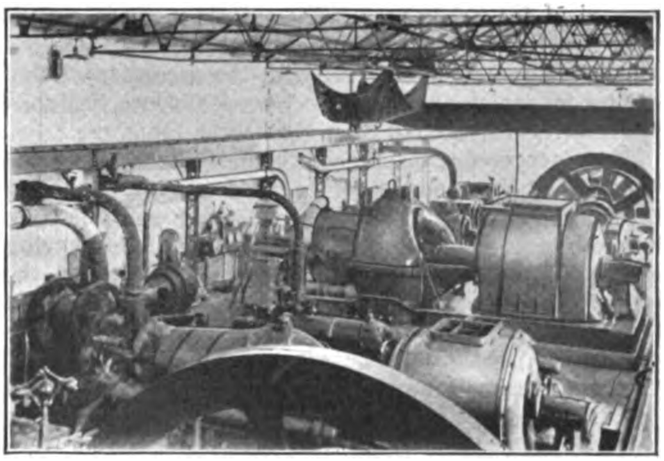
The draft tube of the condenser is sealed in the creek even at low tide, giving a 22-in. suction at low and 16-in. suction at high tide. When the new turbine unit was installed a 200-kw. steam and motor-driven ex-


AIR INTAKE
AIR DISCHARGE
AIR INTAKE
C.L. of Turbine
Plan of Top of Foundation
AIR
INTAKE
Turbine
C.L. of
AIR DISCHARGE
E
E
Section F-F
Top of Turbo-generator foundation
Section on C.L. of Turbine
F
F
Section E-E
Louvre
Brass wire Screen
AIR WASHER ROOM
AIR WASHER
AIR INTAKE DUCT
B
B
Section C-C
AIR INTAKE DUCT
Section D-D
D
D
C
C
AIR INTAKE DUCT
Section B-B

Some Details of the Generator Ventilating System



THE TURBINE AND MOTOR-DRIVEN EXCITER UNIT



GENERAL VIEW IN THE TURBINE ROOM

citer was also put in, its capacity being sufficient for the entire load of the station as it exists today. At one end of the unit is a 300-hp. Kerr turbine, in the middle is a 1,600-amp., 120-volt Burke generator, and at the other end is a Burke motor of 300-hp. capacity. The speed of the unit is 1,200 r.p.m. The motor is of the slip-ring, three-phase, 60-cycle, 2,300-volt type.

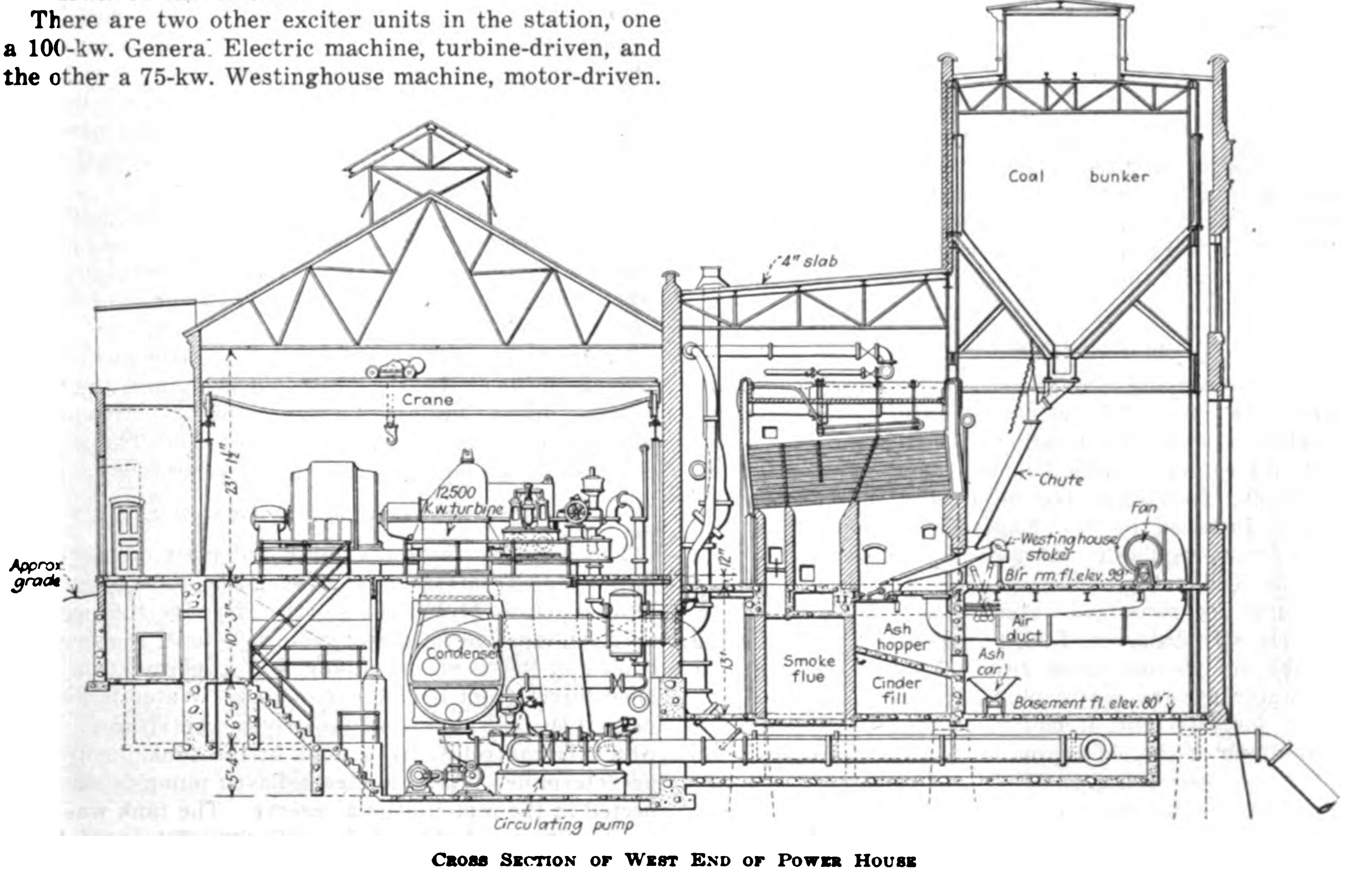
This type of exciter unit was selected for two purposes, first, to assist in maintaining the heat balance of the plant, and, second, to provide the maximum of reliability. The turbine is provided with a governor so designed that it can be set by hand either to increase or to decrease the speed of the turbine, thus relieving the motor of all or part of the load or throwing the entire load on the motor as desired to maintain the proper temperature in the feed-water heater. Further, if the motor should fail or trip out for some reason the turbine will automatically take the load that is being carried by the generator, thereby preventing a shutdown of the station.

There are two other exciter units in the station, one a 100-kw. General Electric machine, turbine-driven, and the other a 75-kw. Westinghouse machine, motor-driven. All of the exciters are controlled through a separate switchboard on the main floor through solenoid-operated, direct-current circuit breakers operated from the main switchboard.

IMPROVEMENTS IN THE BOILER EQUIPMENT

The boiler equipment had to be augmented, of course, to make up for the increase in turbine capacity. The boiler room was extended 100 ft. and new overhead concrete-steel bunkers, coal conveyors, etc., were installed. Six new 550-hp. Edgemoor water-tube boilers were added, these being provided with Westinghouse underfeed stokers. The boiler-room improvements also included the necessary stoker drive, ash pockets, bunker spouts, etc. The earlier boilers numbered six of 500-hp. and two of 550-hp. capacity, all Edgemoor and of the four-pass type, making fourteen boilers in all at the present time.

Incidentally a new main header was installed for



CROSS SECTION OF WEST END OF POWER HOUSE several of the old boilers. The larger of these boilers were equipped with Westinghouse stokers and the smaller with Taylor stokers, with the exception of two boilers on which the original Wetzel stokers, designed for natural draft, have been allowed to remain.

The increased capacity of boilers involved a corresponding increase in boiler feed pumps, formerly three in number. It was deemed most economical to put in two new turbine-driven feed pumps, each having a capacity of 850 gal. per minute, sufficient for the entire station. They will produce a working pressure of 250 lb. per square inch, or an excess of 50 lb. over the boiler pressure. The pumps were made by the Cameron Steam Pump Company, and the turbines used for driving them are of the latest Westinghouse type. New feed-water mains were provided for these pumps, and these were connected at intervals to the old feed line, giving a flexible feed system. Automatic valves are installed also to connect the feed line with the city water system in emergency and to insure water supply for the cooling of bearings.

THIS TANK ELIMINATES THE WATER BILL

DETAILS OF STOKER-BLOWER UNITS

There are four fans in the boiler room to supply air to the stokers. Like the other auxiliaries, these are designed to assist in maintaining the station heat balance. There are two fans of 50,000 cu.ft. capacity each. At present these are motor-driven, but later they will be equipped with turbines also. The newer units are respectively of 65,000 and 85,000 cu.ft. capacity and are driven both by turbines and slip-ring induction motors. The connection to the turbines, which are of the high-speed type, is through reduction gears, while the motors are direct connected.

The blower units give a working pressure of 6 in. (of water), and they insure a high degree of flexibility in operation.

AUXILIARIES IN THE BOILER ROOM

The engineering department of the American Railways believes in the use of the latest devices for improving boiler-room operation. To this end the boilers were all equipped with Diamond soot blowers. Stetz continuous feed-water regulators and a balanced-draft system installed by the Engineering Company. The feed-water regulator operates independently of the regular feed-water line.

A new Cochrane feed-water heater, of the open type, and having a capacity of 20,000 boiler-hp., was provided to take the exhaust steam from all auxiliaries and heat the water for the entire plant. Space being at a premium for this unit, it had to be set up on a pedestal behind one of the old engine units. It thus takes practically no floor space.

All of the boilers are equipped with Foster superheaters to provide a working superheat of 150 deg. Each boiler is furnished with a Precision "three-in-one" gage to permit supervision of the draft conditions.

For the new boilers a brick and concrete smoke flue was built connecting with a new 14-ft. 200-ft. radial brick chimney. The new flue is an extension of the old steel smoke flue leading to the old radial brick chimney. This arrangement, together with the necessary flue dampers, gives a flexible arrangement of flue and stack connections.

An improved ash-handling outfit was another feature of the rehabilitation. An overhead storage bin was erected in the yard and furnished with a Beaumont ash hoist. A track runs along behind the boiler ash hoppers, from which the ashes are collected in small cars. These are hauled by electric tractors to the hoist. From the storage bin the ashes are distributed by electric cars belonging to the company and designed especially for this work.

A NOVEL COAL-HANDLING OUTFIT

Now a word as to coal storage. When the American Railways took charge of this plant little space was available for this purpose. A new piece of ground was promptly purchased and graded to the same level as the old yard. On the enlarged space a drag-scraper coal-handling system, designed by the R. H. Beaumont Company, has recently been installed. This system consists essentially of a cable or set of cables, driven by a reversible, motor-operated drum and carrying special scrapers which are used to drag the coal as desired. The driving mechanism is mounted in an operating tower from which all parts of the yard are visible, and the cable loops around pulleys attached to substantial posts set around the edge of the yard. The stakes or posts at Wilmington consist of 12-in. Bethlehem section steel beams set deep in rock and concrete. With the equipment installed, two scrapers can be used, but one is sufficient at present. One man can handle the work. The same equipment reclaims the coal from storage, delivering it to the crusher through a conveyor. The company now has storage capacity for from 10,000 to 15,000 tons of coal and can distribute easily 60 tons per hour with the drag-scraper outfit. In a pinch 50 tons can be distributed in thirty minutes and the pile can be spread evenly to a depth of 20 ft.

The power plant is located alongside the main line of the Pennsylvania Railroad, from which a siding runs into the yard. In regular operation some coal is dumped from the cars direct to the crusher, but most of it goes into storage.

From the crusher the coal goes to an elevator, which delivers it to an inclined belt conveyor, and thence to a traveling dumping carriage, which distributes it throughout the bunker in the boiler house. This bunker is 200 ft. long and has a capacity of 2,000 tons.

ELIMINATING THE WATER BILL

The company formerly purchased most of the boiler feed water from the city system, the bills amounting to as much as $1,200 per month. To save this expense a 75,000-gal. overhead water-storage tank has been installed in the yard and piping laid to permit this to be filled direct from Brandywine Creek. Water is pumped into this tank by a motor-driven centrifugal pump, which is controlled by a float in the tank, insuring a predetermined level. A steam-driven pump is also connected in the pipe line as a reserve. The tank was built by the Chicago Bridge & Iron Works. Two sand filters have been installed in the water system, with provision for introducing alum later if this is found necessary.

Arrangements have recently been perfected also by which the 500-kw. Allis-Chalmers unit in the power plant can be used as a house-service unit. This has been furnished with step-down transformers to reduce the three-phase voltage from 2,300 to 440, from which power is drawn for the plant auxiliaries.

This turbine will be operated at high pressure, the exhaust steam being used in the feed-water heater.

CONCLUSION

This article does not purport to be a complete list of the changes which have been made in the Wilmington plant. Others, including the placing of the main switchboard in a gallery instead of upon the main floor, are contributing to the general saving. Much credit is due the mechanical engineer of the American Railways, A. Kuylenstjerna, working with the general manager, H. J. Crowley, for enlarging and rehabilitating this plant under trying conditions, without interfering with service and with a gratifying financial return for the investment made. These changes have enabled the superintendent of power generation in charge of the station, George T. Bromley, to obtain more efficient operation.

Des Moines Loses Car Service

All Kinds of Improvised Vehicles Used—Merchants' Association Takes Action to Relieve Situation—Labor Union Interests Seeking Restoration of Service

DES MOINES now occupies the unique if unenviable position of being the largest city in the United States without street car service.

The shutdown of traction facilities in Des Moines which came at midnight, Aug. 3, following an order to that end by Judge Martin J. Wade of the Federal Court, is a direct result of the lackadaisical attitude maintained by the City Council and citizens of Des Moines toward the transportation problems of the city during the past year.

As a result of the shutdown, transportation has been in a condition of chaos ever since the morning of Thursday, Aug. 4. Buses which for the past few months have been petted and pampered by the City Council have utterly failed to meet the situation, and as this article is written the business interests of the city have evidently finally become aroused and are working desperately to find a solution.

Business men are being backed in their fight by the employees' union, which has the support of union labor in general, in a demand to the City Council that the buses be ruled from the streets and some plan developed which will permit of a resumption of street car service. While the business men and labor leaders may not agree as to details they are unanimous that service must be restored.

The first tangible ray of hope for a settlement came as a result of a meeting Saturday morning between officials of the Des Moines City Railway and of the Retail Merchants Association. While both parties to the conference decline to give definite details of its outcome it is said that F. C. Chambers, general manager of the Des Moines City Railway, was commissioned go to Chicago to present to the owners and bondholders the counter proposal agreed upon. Information as to the plan is not authoritative but is said to be based upon a plan for a 7-cent fare with the buses ruled from the streets, the owners or bondholders to advance the $300,000 necessary to meet the overdue interest, and to repurchase equipment which will restore service to a 125 car basis. The main stumbling block of the plan is to the doubt as to whether the $300,000 can be secured. Earlier in the week A. W. Harris advised two of the Des Moines daily newspapers that he would not put any more money into the Des Moines property until he was given fair treatment by Des Moines.

If the financial obstacle can be overcome it is probable

BUSES ATTEMPTING TO HAUL THE CROWDS

POLICE PATRO

EVEN THE POLICE PATROL WAGONS WERE USED

that Judge Wade will be asked to order a resumption of service and the General Electric Company asked to replace the substation equipment which was removed a few weeks ago and which caused the service cut of approximately 50 per cent.

While the retail merchants and company officials were in conference a delegation of union labor men representing practically every union in the city waited on the City Council and demanded that the Council take immediate steps to end the difficulties. No words were minced by the labor leaders, and at the end of the meeting members of the Council agreed that they were willing to vote for an anti-bus ordinance if fares could be reduced to 7 cents. Mayor Barton agreed to get in immediate touch with Corporation Council Miller who is out of the city on his vacation and ask him to return to the city and prepare a new franchise proposal. Members of the Council agreed to hold a Sunday session if Judge Miller could return to the city by that time.

BUSES DON'T GIVE ENOUGH SERVICE

That the buses have failed miserably since the beginning to meet the situation is proved by a vote taken by one of the daily papers late last week as to the preference of citizens as between street cars and buses. In a two days' poll 1,056 people voted for the return of street cars while 202 preferred buses.

Saturday the bus operators had seventy-two buses in service and made the claim that on Friday they had hauled 55,000 people. Additional buses were shipped to the city daily for temporary service, but the bus owners association refused to make preparations for a permanent service by the installation of satisfactory buses unless they were given a guarantee by the City Council of at least a year's service on carline streets. Of the seventy-two buses in service the latter end of last week about half were of a fairly satisfactory kind. The remainder were makeshift, many of them being home-made bodies on trucks. So far, the City Council has refused to make any arrangements for a permanent grant and has turned a deaf ear to proposals of at least three men who claimed to represent Eastern capital which would take over the transportation of the city if a grant was given to them.

As yet the shutdown of the city plant has not stopped service of the Inter Urban Railway which is owned by the same interests as the Des Moines City Railway. The main power plant is still being operated to furnish power for the interurban lines although no definite statement has been made as to how long this will continue. If the Inter Urban was forced to abandon service it would cause serious embarrassment to the work of dismantling Camp Dodge, as well as interfering with the annual encampment of the national guard of Iowa. It would also cause serious difficulties for the Des Moines Electric Company which secures its coal supples from mines located on the interurban.

The comparative cost for a million tractive-miles between the former steam service and the electric service now maintained on the Norfolk & Western Railway, as given recently in the *Railway Electrical Engineer*, shows that electrification is responsible for a 12½ per cent saving. The cost per million tractive-miles of steam operation was $29.90, while that for electric was $26.20. In this comparison all costs entering into operation, as well as interest and depreciation, have been taken into account.

North Shore Makes Safety Record

By Active Attention to Safety Methods the Road Has Greatly Decreased Its Accident Record While Doubling Its Car Mileage

IN AN article in the *National Safety News* for June, on the safety work of the Chicago, North Shore & Milwaukee Railroad of which Britton I. Budd is president, it is pointed out that while this company has increased the number of passengers carried 100 per cent, the car mileage 100 per cent, the passenger revenue 300 per cent and the freight revenue 700 per cent in the last five years, it has cut down its fatal accidents 77 per cent and reduced the total accident costs to 1.18 per cent of its gross revenue. The underlying reason for this showing is attributed mainly to the attitude of the president in heading an extensive safety organization, the functioning of which was described in this paper, issue of Feb. 22, 1919, p. 359. The men all through the organization have been encouraged to make suggestions that would improve the safety of the road. Furthermore, the company has taken every possible means of preventing accidents, most of which have been treated in this journal in prior issues.

One interesting detail mentioned in the article referred to is the practice of the motormen, upon seeing a trespasser on the track, to throw a sealed letter out to him which reads as follows:

> Don't you realize there is serious danger to anyone walking these tracks, owing to the fact that our cars are run at high speed? If the motorman should fail to see you in bad weather, or while rounding a curve or for some other reason, you would be placed in imminent danger of being killed or injured. It is our desire to cultivate the safety work on this road to a point where every accident of an unavoidable character will be eliminated, and we hope that you will at once discontinue walking on these tracks so that the chances of your being injured or killed will be done away with.

Another interesting point related is the practice of the company in maintaining instruction signs for the motormen at numerous points along the right-of-way. Every approach to a curve, every highway crossing, every railroad crossing, every station and the speed at which the train should pass such points, is called to the motormen's attention 1,000 ft. away from that point. The signs read thus: "Curve 100 ft., 15 miles"; "Railroad crossing 1,500 ft., 20 miles." There is thus no chance for the motorman to forget danger points or what speed to operate in passing them.

The North Shore road is also extending its safety work to the communities through which it operates. It is organizing civic safety associations in each city and is sending its own woman lecturer into the public schools to give talks on safety to the children. Last year this woman made 667 talks in seventy-seven schools and thus reached 25,000 children along the company's right-of-way. Furthermore, the company is placing in the hands of the principal of every school in the territory served, a book entitled "Methods for Instruction in Accident Prevention for Use in Public Schools." The extent to which the co-operation of the public and community leaders in this work is being secured was well demonstrated by a recent meeting at which the Waukegan Civic Safety Association was organized, where the principal of the local high school, the editor of the local newspaper, the judge of the local court, the mayor of Waukegan and the mayor of North Chicago were present and pledged the fullest co-operation to the officers of the road.

Measuring Service to the Public

The Riding Public Is Interested in Three Things: Car Frequency, Speed and Fare —How the Status of the Winnipeg Railway Was Set Forth in These Particulars

BY C. H. D. DAHL, B. A.
Statistician for the Winnipeg Electric Railway

THERE are in the main just three things about a street railway system which interest the ordinary car rider. One is how long he must wait for a car on which to ride, the second is how much he must pay in order to ride, and thirdly, he is interested in the speed with which the cars travel. Oh, there are other factors which are important, such as the courtesy displayed by the conductor when making change; the general appearance of the car, its sanitary condition, its riding qualities and so on, and a number of other things perhaps—but these miscellaneous factors occupy only the periphery of the rider's interest.

SIGNIFICANCE OF CAR-MILES PER MILE OF SINGLE TRACK

The headway of cars is best gaged by the car-miles per mile of single track within a specified time. Usually a calendar year is employed for the time factor. The headway is inversely proportional to the car-miles per mile of single track per year. The accompanying table illustrates this. It is assumed that service is furnished by the cars for an average of eighteen hours per day.

TABLE I—SHOWING INVERSE RELATION BETWEEN CAR-MILES PER MILE OF SINGLE TRACK PER YEAR AND AVERAGE HEADWAY OR INTERVAL BETWEEN CARS

Car-Miles per Mile of Single Track per Year	Average Headway or Interval Between Cars
98,550	4 minutes
78,840	5 minutes
65,700	6 minutes
56,310	7 minutes
49,250	8 minutes
43,800	9 minutes
39,420	10 minutes

AVERAGE FARE AND SPEED

As a measure of the cost per ride there can, of course, be no better measure than the fare paid. The use of different fares by different classes of passengers, or in different periods of the same year as a result of changes in fares, or differences based on quantities of tickets purchased make it desirable to employ the average fare for the period as a gage of the ride cost. The average fare is obtained by dividing the total passenger revenue by the number of revenue passengers.

Perhaps nothing is quite so testing of the car rider's patience as finding himself on a car which stops on a passing track for any length of time. Delays in loading or unloading passengers are also annoying, for while the rider is willing to concede some time for this purpose, in fact his primary interest is wrapt up in himself—it may be that he is tardy for tea, for the theater, or some other appointment; possibly he is merely a victim of the contagious anxiety displayed by fellow riders to get somewhere quickly—at any rate, delays annoy him. It the jitney possesses any popularity as a means of urban transportation, then the speed with which it gets passengers to their destinations is very largely responsible for this popularity. Lack of equivalent speed in electric railway systems serves as a subsidy for the jitney.

USE OF ARRAYED DATA IN MAKING COMPARISONS

A. W. McLimont, vice-president of the Winnipeg Electric Railway, desired to place before the public of Winnipeg the facts with reference to the quality of service and fares of the street railway. To do this, comparisons of car-miles per mile of single track per year and average fares were made with nineteen selected electric railway systems of United States cities having populations and operating conditions somewhat comparable with that of Winnipeg. A table was prepared in which the cities were arrayed according to size from the largest down—the names of the cities occupying the middle column of a three-column table. The first column contained the car-miles per mile of single track for all cities, and the average fares were similarly arranged in the third column. In order to identify the car-mile of single track and average fare belonging to any particular system, a small exponent or index figure was placed over each, corresponding to the index down immediately above the name of the city in which the system was located. To bring special attention to the status of the Winnipeg system, heavy arrows were drawn from the name of the city to car-miles per mile of single track as shown for Winnipeg in the first column of the table and from the name of the city to the average fare for Winnipeg as shown in the third column.

This table appeared in June 15 issue of the *Winnipeg Electric Railway Public Service News*, a four-page paper published semi-monthly for the purpose of informing the public of the company's problems and fostering more amicable relations between the company and its patrons.

Table II on page 240 is a copy of the table in the company's paper excepting that instead of showing the names of the cities in which the transportation systems compared are located these are represented by the various letters of the alphabet. L represents Winnipeg, Canada. In the table as printed the words "high in service" were printed opposite the figures giving car-miles per mile of track for Winnipeg and the words "low in fare" opposite the figure showing the municipal fare. The figures in the two columns representing Winnipeg were connected with "L" by two arrows. All data were taken from traffic ratios received from the American Electric Railway Association and are therefore actual.

Table II affords a good means of conveying to the public, information concerning the kind of service rendered and the fare situation of a particular system compared with other systems, but it is just a step further to combine the car-miles per mile of single-track factor with the fare and speed factors and arrive at what may be termed an efficiency index.

TABLE II—SERVICE AND FARE STATISTICS FOR 1920 OF WINNIPEG AND OF NINETEEN UNITED STATES CITIES HAVING POPULATION OVER 100,000 BUT UNDER 800,000

Car Miles per Mile of Single Track	Cities Arranged in Order of Population	Average Fare (Cents)
98,380^{1}	A^{1}	7.5^{16}
93,650^{9}	B^{2}	7.3^{5}
67,701^{12}	C^{3}	7.2^{1}
84,440^{3}	D^{4}	7.2^{2}
78,550^{5}	E^{5}	7.0^{7}
73,910^{6}	F^{6}	6.9^{9}
72,170^{14}	G^{7}	6.4^{3}
71,230^{2}	H^{8}	6.2^{13}
70,570^{7}	I^{9}	6.2^{14}
64,470^{4}	J^{10}	6.2^{10}
60,480^{13}	K^{11}	6.1^{18}
59,990^{17}	L^{12}	6.0^{8}
58,700^{11}	M^{13}	6.0^{19}
54,030^{18}	N^{14}	5.8^{15}
47,690^{20}	O^{15}	5.6^{12}
46,400^{8}	P^{16}	5.6^{11}
43,320^{10}	Q^{17}	5.4^{17}
42,910^{19}	R^{18}	5.0^{6}
36,600^{15}	S^{19}	5.0^{4}
24,630^{16}	T^{20}	5.0^{20}
63,491	Average	6.2

The efficiency index is the product of three percentages namely, (1) the percentage which the car-miles per mile of single track of a particular system is to a given base; (2) the percentage which the average fare for this particular system is to a given basic fare, and (3) the percentage which the speed bears to a basic speed.

For convenience in computing the first-named percentage 100,000 car-miles per mile of single track is adopted as a base. Another merit of this base is that it is large enough to avoid rating practically any system over 100 per cent in point of service as measured by car-miles per mile of single track.

The second or fare percentage is reached by assuming 5 cents as the basic fare. Few if any electric railways will be rated over 100 per cent on this basis now. This basic fare is divided by whatever fare the percentage is desired for.

The third or speed percentage is arrived at by assuming 10 m.p.h. as base. This makes it simply necessary to manipulate the decimal point to get the percentage for any particular system, granted of course that the speed is given. Table III shows the efficiency indices for the twenty systems dealt with.

There are a number of advantages connected with the efficiency index as described in this article but perhaps the most important are as follows:

TABLE III—EFFICIENCY INDICES OF TWENTY ELECTRIC RAILWAY SYSTEMS FOR YEAR ENDED DEC. 31, 1920

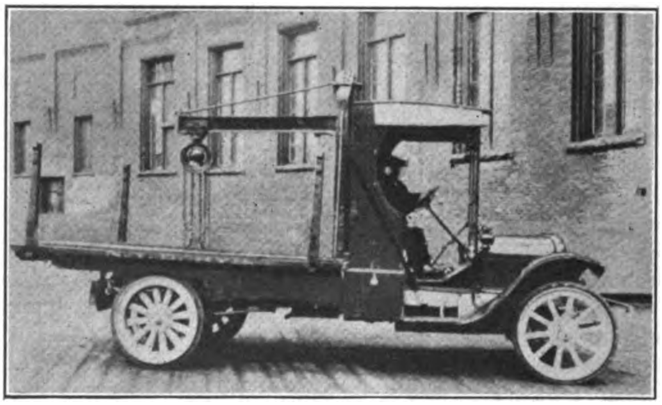
Location		Car Miles per Mile of Single Track Percentage (x)	Average Fare Percentage (y)	Speed Percentage (z)	Efficiency Index Per Cent (xyz)
1.	L	87.7	89.3	89.5	70.0
2.	D	64.5	100.0	101.8	65.6
3.	F	73.9	100.0	85.8	63.5
4.	A	98.4	69.5	92.8	63.2
5.	C	84.8	78.1	88.0	58.0
6.	I	93.6	72.5	84.6	57.5
7.	N	72.1	80.5	92.9	53.8
8.	E	78.6	68.4	91.7	49.4
9.	Q	60.0	92.5	88.1	49.0
10.	K	58.7	89.3	91.6	48.0
11.	G	70.6	71.5	92.8	46.9
12.	B	71.2	69.5	92.9	46.0
13.	M	60.5	80.5	93.4	45.5
14.	T	47.7	100.0	88.4	42.0
15.	R	54.0	82.0	86.2	38.2
16.	H	46.4	83.3	90.6	35.1
17.	J	43.3	80.5	89.9	31.3
18.	S	42.9	83.3	82.7	29.5
19.	P	36.6	66.7	90.5	22.1
20.	O	24.6	87.3	87.3	18.5
Average (simple)		63.4	80.5	90.1	46.0

1. The index is based on absolute units so that it may be used to compare different systems for the same period or the same system for different periods.
2. The index is a composite measure of the three factors concerning service which interest the car-rider, viz., headway, fare and speed.
3. The index is quite sensitive to differences in the measure of any one factor of service. This is evident by observing the range of the indices for the twenty systems considered in Table III.

It must not be inferred that a low efficiency index stamps a system as inefficient. There may be local conditions in the form of city by-laws, topography, or traffic characteristics which influence the operation of the cars. The speed factor is especially susceptible in these regards. But in a broad and general way the use of the efficiency index is a simple yet most effective means of measuring the service rendered for the riding public by a street railway system.

Truck Replaces Supply Car

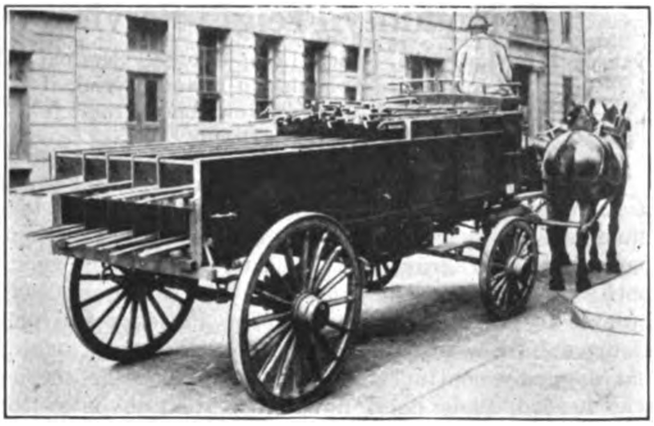
THE New York State Railways recently remodeled a 2-ton White truck, purchased in 1917, for use as a supply truck. As will be observed in the accompanying illustration, a frame built up of bar steel has been bolted to the body just behind the driver's compartment and is held vertically by two bars, one on each side, extending to the car chassis. An I-beam is hinged to the supporting frame, thus allowing heavy pieces of material and equipment to be picked up from the ground beside the truck and loaded by means of the chain hoist. This supply truck replaces a double-truck, two-man-operated supply car. The substitution of this means for transporting supplies has cut the cost of distributing materials and collecting scrap about 40 per cent.



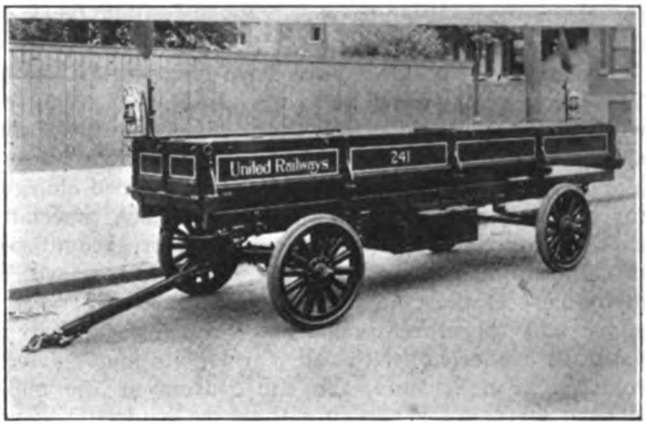
REMODELED TRUCK FOR HANDLING SUPPLIES

The New York State Railways already has a simple and effective plan for dispatching trucks and work trains, so that the adaptation of an auto truck for the purpose previously mentioned involved no changes in the general system of distributing supplies. This well-worked-out method of recording truck and work train movements was the subject of a paper in the issue of this paper for Jan. 5, 1918.

The American Institute of Electrical Engineers has submitted its standards (1921 edition) to the American Engineering Standards Committee for approval as an American standard. The standards submitted represent the latest revision of the A. I. E. E. standardization rules, revised during 1919 and 1920.



THE ABANDONED HORSE-DRAWN VEHICLE



THIS TRAILMOBILE IS USED TO CARRY HOSE BRIDGES

Hose Bridges Carried in Trailer

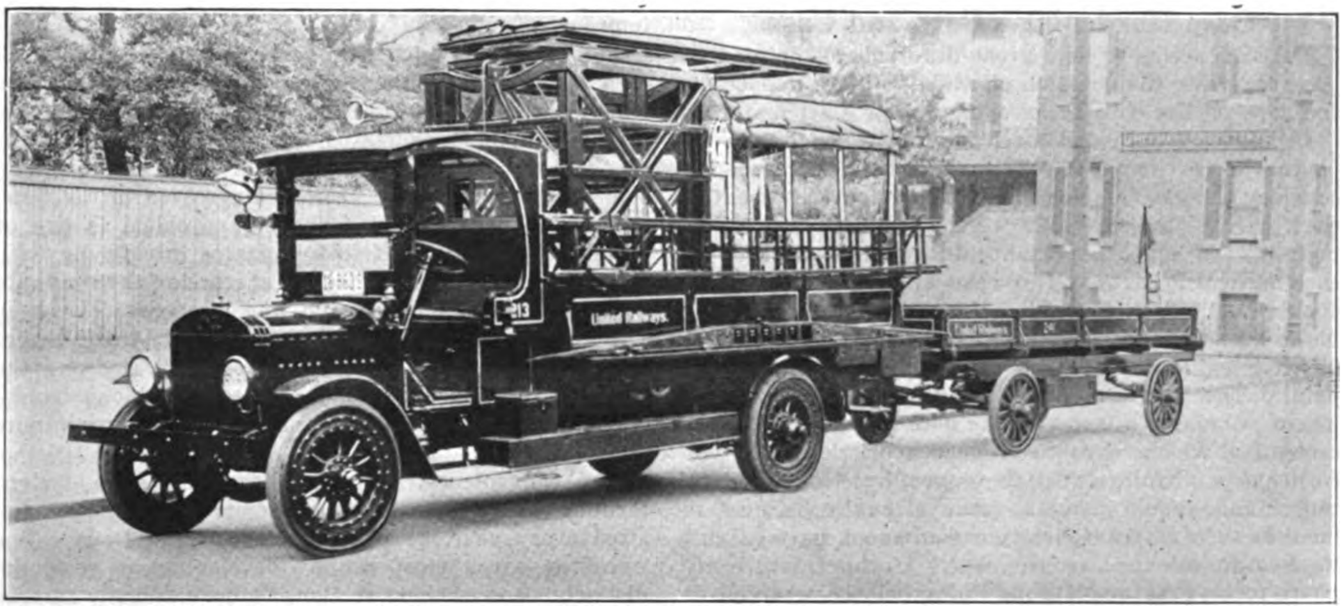
By Substituting a Trailmobile for a Horse-Drawn Vehicle The Baltimore Property Is Saving More Than $1,000 a Year

BY ADRIAN HUGHES, JR.
Superintendent of Power United Railways & Electric Company of Baltimore

THE employment of trailers in connection with broadening the fields of usefulness of motor trucks for many and divers purposes has for so long been the rule rather than the exception that it is difficult to find a new adaptation which would in itself be unique. It is probable, however, that all the possibilities of the trailer have not yet been exhausted or fully appreciated by many motor vehicle users.

The United Railways & Electric Company of Baltimore, for instance, has recently put in service a trailer for the purpose which it might be possible to term a new and unique application of this very useful motor vehicle appendage. The company was faced with the problem of replacing the heavy horse-drawn wagon in the trouble department for carrying hose bridges which are used to bridge over lines of fire hose to prevent blockades of traffic in the vicinity of a fire. All other horse-drawn trouble department equipment had been replaced with motor vehicles, and it was very undesirable and uneconomical to have to maintain two horses in the main trouble station merely for the occasional requirement of hose bridges, but the large investment and subsequent maintenance charges necessary for a motor truck to serve the purpose could not be justified, since the unit would be standing idle most of the time, inasmuch as fires requiring use of hose bridges are rather infrequent. Nevertheless it was absolutely essential to eliminate the horses and yet have a vehicle which would always be immediately available solely for the purpose of carrying the hose jumpers.

The answer of course was the trailer and, after the problem was carefully investigated, a 1½-ton "trailmobile" chassis was purchased and a body designed and built, having suitable compartments for the hose bridges, the spreaders, lanterns and other accessories. Each of the seven trouble trucks in the department is equipped with couplers so that the trailer may be attached to any of them when the hose bridges are needed. The draw-bar of the trailer is so arranged that it steers the front wheels, causing the trailer to follow around turns in the tracks of the motor truck and thereby making it unnecessary for the driver to use extraordinary precautions in maneuvering. In fact, the driver can practically ignore the presence of the trailer in all operations except backing. The difference in size of the two vehicles, as shown by the illustrations, is very interesting. The abandoned horse-drawn wagon carried ten sets of hose bridges and



THE EMERGENCY MOTOR TRUCK CARRIES TWO HOSE BRIDGES AND THE TRAILER CARRIES EIGHT the trailer carries eight sets. Each trouble truck is also equipped to carry two sets of hose bridges.

The results obtained have been very satisfactory. The bridges may now be transported when required with much greater dispatch than was formerly attainable with the heavier and slower horse-drawn wagon. Moreover, it is expected that the maintenance charges for the trailer will be practically negligible, especially as concerns the usually most costly item encountered in maintaining trucks, namely, the rubber tires, which, in the case of the trailer, are not subjected to tractive effort and therefore escape the severe wear that is naturally inherent with all forms of motor-driven vehicles. Furthermore, the substitution of the more modern method for carrying the hose bridges has released considerable valuable space formerly required for the horses and wagon at the Lombard Street trouble station, and the space is now available for more important purposes. The appreciable economy effected by the elimination of the horses for the comparatively infrequent service required is almost too apparent to warrant comment.

However, the following figures will indicate approximately the amount of the annual saving on the basis of an investment of $1,600 for the horse-drawn wagon and two horses and $1,200 for the trailer:

	Horses and Wagon	Trailer
Investment	$1,600	$1,200
Annual fixed costs at 12 per cent	192	144
Annual operating and maintenance costs	1,140	150
Total annual costs	$1,332	$294
Saving		$1,038

Thus a much more satisfactory and efficient vehicle has been provided to replace the horse-drawn vehicle, at about one-fourth the investment necessary for a motor vehicle, and at a saving sufficient to pay for the trailer in fourteen months.

There are many other purposes for which trailers could be used in electric railway work for carrying equipment which is not in constant use, such as devices for reeling and rereeling feeder and trolley wire, as well as derricks, gin poles and concrete mixers for use in connection with installation of poles, etc.

Case Hardening—Core and Case

THERE seems to be a great difference of opinion in regard to the question of which is more important, the case or the core in case hardening steel material.

In the case-hardened steel the seller usually dwells on the properties of the core, while the user seems to consider the case of more importance and the essential part. Dr. Aitchison, in a recent lecture, stated that both are of equal importance in the manufacture of case-hardened parts. The case should be hard but should also be tough, because to withstand abrasion or blows a material does not need to be intrinsically hard, but it must be durable and have a high value of yield point. The best test of the qualities of a case is the use of microscopic inspection to note the quality of free cementite, which tends to produce a brittle case. The core has a definite function to perform, it should be tough and should possess great strength because in manufacture of transportation equipment parts, lightness is an essential requirement. If the fracture appears to be gray and fibrous the article is regarded as sufficiently tough.

A Community Freight Service

Kansas City Railways Builds Local Freight Service and Interstate Commerce Commission Grants Terminal Rates to Patrons—Railway Now Has a Prospect of Making a Profit

AFTER operating a terminal freight line with electric locomotive for fourteen years under serious handicaps as to rates, the Kansas City Railways Company has been granted a readjustment under which both the railways company and the consignees will be able to proceed more profitably. Patience and persistence have won, and the railways company, which has doggedly continued its service because the service was needed, finds itself now in position to enter the period of radically increasing volume with a prospect of profit in this service. The readjustment consisted in the application by the Interstate Commerce Commission of the Kansas City, Mo., freight rates to Westport, Mo.

Westport is the title of a suburban community well within the city limits of Kansas City, Mo., served as to freight carriage by an electric line of the Kansas City Railways, cars being received by this company from the Missouri Pacific, the Frisco and the Kansas City Southern at Dodson, 8 miles south of the Westport station. Westport is the original settlement of Kansas City, Mo. It is on high ground 5 miles south of the Missouri river landing of those ancient days. In the old days a steam road with dummy engine equipment filled in a service to the Westport district, having its connections with the steam roads at Dodson and taking cars from the trains before these trains reached the union terminals. There has been no facility for transferring freight cars from the terminals to the Westport district otherwise than at Dodson.

In 1907 the Kansas City Railways (then the Metropolitan Street Railway) took over the dummy line and electrified it, maintaining and improving the freight terminals and incorporating the rail line with its passenger-carrying electric system. Passenger and freight cars use the same tracks for the 8 miles from Dodson to Westport, diverging at the edge of the terminal yards.

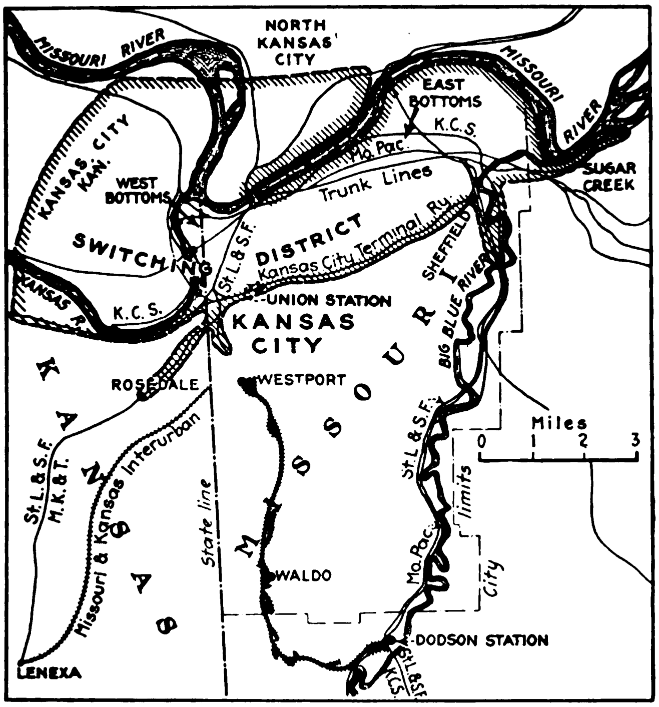
The company has, during the past year, been handling about fifteen freight cars a day over this line. This is considered an abnormally low level of business, and the average is expected to increase as business conditions improve.

The Country Club passenger line, with double-truck cars, has a three-minute headway in rush hours of morning and evening, during which periods freight cars are not run. The shortest headway throughout most of the day, excepting rush hours, is four minutes, and operation of the freight trains occurs even in the four-minute headway period. The only problem is one of power, the operation of freight trains interfering with schedules when passenger cars are under three-minute headway. The Country Club line is operated between Forty-third Street (Westport) and Sixty-third Street only. Between Sixty-third Street and Dodson, the southern terminus, passenger service is with one double-truck car making the round trip on thirty-minute schedule.

The convenience, even the necessity, of a freight terminal at Westport has been more and more emphasized every year. Within 2 miles of the Dodson line were the areas most rapidly developing as residence districts—one of these sections being nationally famous as the "Country Club District." Materials for residence construction and supplies, except for this freight line, would have to be hauled 5 to 10 miles up grade, sometimes even farther. The time element alone warranted attention to the Westport facilities, as every year was showing worse delays in passage of freight through the Kansas City terminals.

Through all these years, however, freight service into Westport over this line has been hampered by the rates. Dodson, 10 miles south of the Union Station at Kansas City, took the Kansas City rate on commodities from the south, and the local rate from Dodson to Westport was added for shipments into Westport.

For several years the Kansas City Railways received only a switching charge of $8 for handling the cars from Dodson to terminals. This was collected by the railways company from the consignee, who then could collect $4 of it back from the line haul road. On December 5, 1920, the charge was increased to $15 per car, still collected from the consignee, who still was able to collect $4 from the line haul road.



MAP SHOWING "DODSON LINE," WHICH IS THE BASIS OF AN INTERESTING FREIGHT RATE DECISION BY THE INTERSTATE COMMERCE COMMISSION

The Westport consignee therefore paid the Kansas City rate plus the net $11 of switching charge Dodson to Westport. A consignee who received commodities at the Kansas City freight terminals paid only the Kansas City rate and no switching charge (the charge being absorbed by the line haul road); the Westport consignee was therefore at a disadvantage of $11 per car. But despite this disparity, the industries grouped along the Dodson line persisted, and the railways company, despite its unprofitable operation, continued to give the communities the freight service, both interests being convinced that eventually their rights and the justice of the situation would be recognized.

The Interstate Commerce Commission, after continued hearings, issued an order, effective May 2, 1921, relieving the burden from the consignee and providing an adequate compensation to the railways company for its service. Under this order the freight rate to Kansas City, Mo., applies to Westport, Mo., on lumber and many other commodities, from many southern districts, including practically all points in Arkansas, Oklahoma, Louisiana and Texas, on the Missouri, Pacific, Kansas City Couthern, Frisco and connecting lines. This removes the differential and places upon the line haul roads delivering the cars at Dodson the absorption of the charge necessary to complete the entire transportation of the shipment to Westport via the Kansas City Railways—the same as to any industry within the Kansas City switching district.

The consignee, because of this readjustment, finds himself on a par as to charges with others of his industry in Kansas City and with a great advantage in the convenience of the delivery. The Dodson-Westport consignee finds his shipments close to his hand, the topography and conditions of the area permitting easy extension of tracks to yards or factories. These shipments avoid the occasional congestion and the regular delaying routine of the Kansas City switching district. It is estimated that by the changes just described from one day to a week are being saved by the consignee.

Removal of Glue Stains

CASEIN and vegetable glues containing caustic soda produce stains on certain kinds of wood, notably the oaks, maple, cherry, elm, ash, birch and beech. Some glues stain the wood more than others, and those that contain the most alkali are likely to be most injurious. The staining is due to the action of the alkali in the glue on the tannins and other constituents of the wood, whereby a substance related to ink is formed. No means have yet been found of preventing this chemical action. Precautions can be taken, however, the Forest Products Laboratory, Madison, Wis., believes, which will keep the discoloration from the finished surfaces.

Most trouble experienced with glue stain in woodworking is caused by the penetration of the glue solution through thin face veneers. This seepage is very likely to occur if the veneer is less than 0.05 in. thick and somewhat porous. The consistency of a glue in part determines whether it will be squeezed through the wood or not. It is quite obvious that under similar conditions a thin glue will penetrate farther than a thick glue. For this reason the quantity of water that is added to a glue might be diminished and "fillers" added when staining is feared. The amount of pressure exerted by the panels in the press is also a factor, but it would not be advisable to reduce the pressure in order to check the flow of the glue.

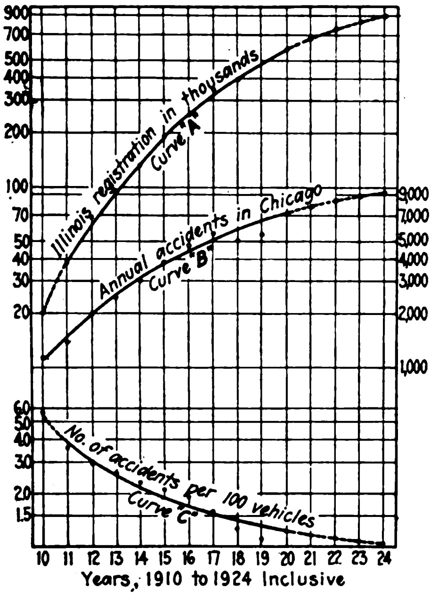
If a panel is dried promptly, the caustic soda solution will have difficulty in coming to the surface. Rapid drying can be brought about by removing the panels from the press as soon as it is safe to do so, and placing them on stickers. The amount of staining can also be decreased somewhat by placing a caul or some other flat object between adjacent panels in the press.

Casein and vegetable glue stains can be almost entirely removed by sponging the stained surface with an oxalic acid solution, prepared by dissolving 1 oz. of oxalic acid crystals in about 12 oz. of water. Still better results may sometimes be obtained by moistening the wood first with a sodium sulphite solution made up in the same concentration as the oxalic acid. In this way very stubborn stains can be almost obliterated.

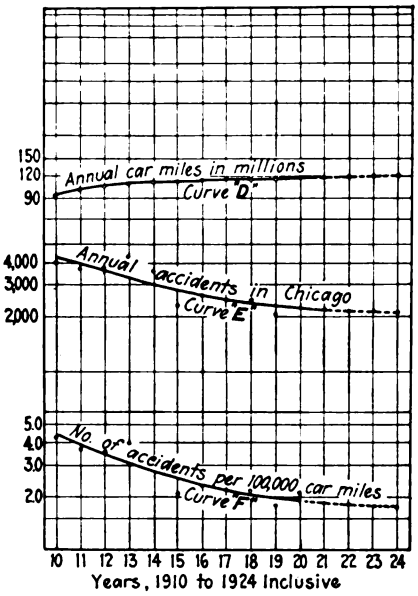
Accident Record Shows Improvement

A Study Made in Illinois Reveals That Safety-First Work Is Bearing Fruit—Greater Efficiency by Chauffeurs and Motormen Urged, Also Better Accident Record System

A MEASURE of cheer in the growing accident problems involving street cars and automobiles was brought out in a study of accident data in Chicago recently by R. F. Kelker Jr., engineer, Chicago. The results of this study are presented herewith in graphical form, from which it is seen that while the number of automobile accidents is greatly increasing, the number of street accidents per 100 motor vehicles is showing a very healthy decrease. Similarly, the number of accidents per 100,000 car-miles operated by the Chicago Surface Lines has shown a good decrease in the last ten years. As it was impossible to secure the number of automobiles used in Chicago alone, it was necessary to make use of the registration figures for the entire State of Illinois in making this comparison. From these curves it is seen that while the number of annual accidents reported by the Chicago police for automobiles increased from 1,130 in 1910 to 7,110 in 1920, the reported motor vehicle accidents per 100 registered vehicles decreased from 5.65 to 1.24, or a decrease in the ratio of 22 per cent. In 1910 the Chicago Surface Lines operated 92,809,508 car-miles and suffered a total of 3,969 accidents as reported by the Chicago police. In 1920 the number of car-miles operated was 117,118,072 and the number of accidents, 2,477, or a reduction in the ratio from 4.27 accidents per 100,000 car-miles in 1910 to 2.11 in 1920, or 50 per cent.



TREND OF ACCIDENTS TO MOTOR VEHICLES IN CHICAGO STREETS



TREND OF ACCIDENTS INVOLVING STREET CARS IN CHICAGO

These curves were plotted on logarithmic paper simply as a means of making them more compact. The purpose of the curve is mainly to show the trend and this is as well portrayed in a small space on this kind of paper as it is in a much larger space on regular co-ordinate paper.

Mr. Kelker attributed the improvement in connection with automobile accidents to the betterment in the mechanical design of the automobiles, to the greater skill on the part of drivers and to the increased alertness of pedestrians and drivers of horse-drawn vehicles. It is his view that the best means for securing a further reduction in these ratios is to raise the average of skill of motor drivers through the prompt prosecution of those drivers who by carelessness violate the law.

Mr. Kelker believes that the improvement shown in the number of accidents involving street cars is due to the greater alertness of pedestrians and patrons of the cars, to the replacement of horse-drawn vehicles by motor vehicles and the consequent improvement in uniformity of speed of all vehicles using the streets, and to better training and discipline of motormen. His view is that further reduction of this ratio can be secured only by special study to determine the location of dangerous places on the various lines, and by using accident data to forecast the probability of accidents so that the causes may be guarded against or eliminated.

RECOMMENDATIONS FOR ACCIDENT PREVENTION

Mr. Kelker has for many years been closely connected with street railway operations in Chicago. He is of the opinion that the system of keeping accident records, outlined below, will greatly facilitate the study of accident conditions and therefore tend to reduce the number of accidents. In the main, two things are sought in the plan proposed: First so to visualize the accidents taking place to the man responsible that repeated accidents at any location will promptly be noted; and second, to make readily accessible the data on any class of accidents on any line.

To accomplish these things it is suggested that a large scale map of the car lines (about 3 in. to the mile) mounted on a soft pine board, be used for locating with colored pins the various accidents. The map should be divided into sections to show the various operating divisions and then subdivided on a co-ordinate system for purposes of reference and for use in filing reports. All accidents would be grouped according to class and colors assigned as follows:

Group Letter	Description	Color
A	Alighting and boarding........	Green
B	Collision with vehicles........	Red
C	Struck by cars...............	White
D	Operating defects.............	Blue
E	Collision with cars............	Yellow
M	All other accidents...........	Orange

When an accident is reported, a pin of the proper color would be stuck in the map in the proper co-ordinate section. Besides the pins mentioned, which would have solid colors, there would be other pins with a black dot on the head to indicate accidents at any street intersection, the solid colors being used for those occurring at all other places.

Then the accident reports or the memoranda on any accident would carry the name of the line, the co-ordinates of the location on the map, and the group letter to determine the proper filing place. Thus the key for file of any record would be something like this: "Madison H4 B," Madison being the name of the line, H4 the map co-ordinates, and B the class of accident. All accident records would be filed first by line, then subdivided by location and further subdivided by class of accident. By this scheme the data for a study of a certain class of accidents on one line or for the whole system could be readily produced. It should be understood that in this scheme it is accidents and not claims that are being filed, for the latter would only encumber the file and be of little value in any study of the situation to reduce the number of accidents.

New Processes for Treating Coal

Dirty Coal an Economic Waste—High Cost of Coal Makes Processes Possible—Flotation and Gravity Utilized in Treatments—Oil Used as a Reagent in New Trent Process

WAR conditions forced every power producer to use any and all kinds of coal that he could get. But these same conditions caused a closer study of the economies of power production and plant operation to counteract rising costs of all sorts. It was soon generally recognized that it is a waste to have transportation facilities used to transport fuel that is dirty and high in ash content; to put dirty or high ash coal under boilers; and to fight clinkers and transport ash cars. But one good result of an economic situation of this character is that it usually produces remedies.

In the coal situation the first remedy was to wash out the dirt. This can be done very rapidly if the coal is large size but is difficult to accomplish with slack coal. One new process for treating coal, recently developed in Belgium, is called the Rheolaveur process, and is described by R. Nelson in the *Electrician* for July 8, 1921. A strong and steady flow of water forces the coal along a trough and the coal shale and dirt separate by stratification, the rate of flow and length of trough being made suitable for complete stratification. The dirt is drawn off at intervals through the insertion of cast-iron boxes which are equipped with hand valves for controlling an upward flow of water which prevents the coal coming off with the dirt. At the end of the trough the clean coal is delivered to hoppers. In washing nut coal only two boxes are necessary, the first to draw off most of the shale and the second to draw off the rest of the shale and some coal which is later reclaimed by rewashing. In washing small coal, four boxes and two troughs are necessary. The process claims low initial cost, low maintenance cost, easy control, simplicity of operating parts and economy of space.

FLOTATION PROCESS

In the treatment of fine or slack coal, the newer processes use an adaptation of methods developed in the ore industry. One of these described by Mr. Nelson is independent of gravity. The coal to be treated is ground until it all passes a $\frac{1}{10}$-in. mesh screen. The coal is then mixed with three or four times its weight of water and a small quantity, 1 lb. per ton of coal, of some reagent such as oil or a coal tar product. The mixture is then agitated by a power mixer to produce a multitude of air bubbles. The coal attaches itself to these bubbles and floats to the top in the form of a thick layer of froth. The dirt and ash-forming material sinks to the bottom and is drawn off and rejected. Scrapers remove the froth and the coal is then dried.

The machine consists of from five to ten "mixing" boxes, each with a "froth" box. The material passes from mixer No. 1 to froth No. 1, to mixer No. 2 to froth No. 2, etc. A machine capable of dealing with 1,000 tons of coal a day is about 37 ft. x 16 ft. x 15 ft. in size. In a typical separation of Derbyshire slack the process reduced the ash from 29.5 per cent in the cinder fuel to 9.86 per cent in the cleaned coal.

USE OF OIL AS REAGENT

The latest development in coal cleaning was brought about by the co-operation of the Bureau of Mines and the Trent Process Corporation of Washington, D. C., and is described in *Coal Age*, July 28, 1921. A mixture of pulverized coal and water is stirred with oil whose weight is about 30 per cent the weight of the fuel. Due to this agitation the coal particles form a pasty amalgam with the drops of oil which is heavier than water and sinks; the ash and non-combustible materials which have been separated by the pulverizing, remain in suspension in the water, are not affected by the oil, and may be drawn off. The coal amalgam is then treated to remove the water and then used as fuel either wet or in dry briquets. This process is new and is apparently very efficient for bituminous coals but has not as yet been developed on a commercial scale.

The Situation in the Petroleum Industry

THE rate of growth in the petroleum industry in recent years and the prospects for further development are matters of special concern at present, says the *Wall Street Journal*, so prominent is the position which the industry has attained in world affairs. Figures obtained from the United States Geological Survey on production in the United States, as well as in the world, throw much light on the general question and are especially pertinent to the question of generating electric power by oil. The figures for the year 1920 indicate that the production of crude oil in the United States was about 443,000,000 bbl., or about 65 per cent of the world's production, while the consumption in this country was over 530,000,000 bbl.

Dr. David White of the Geological Survey, in an official publication, says that by unexpected good fortune in the search of new supplies, or even less unexpected curtailment of consumption, the petroleum production of the United States is likely not only never again wholly to meet our requirements, but even is liable to start soon on the long decline to waning output. He also mentions a dangerous growth of consumption demand, such as motor cars, the use of oil under steam boilers, the turning from coal to oil, produced by the coal strike, and the program of the Shipping Board.

Speaking about the effect of the industrial slump on the petroleum industry, A. W. Ambrose, chief petroleum technologist of the Bureau of Mines, says that he thinks the petroleum industry will recover far more rapidly than many other commodities. The increased consumption of gasoline, accounted for by the enormous growth of the automotive industry, is back of the sustaining of the petroleum industry. The oil industry today is living on its gasoline sales and nothing else. He declares that as soon as the economic depression is relieved the petroleum industry will be one of the first to benefit and demands for petroleum will advance rapidly and go beyond war-time consumption.

The real motor-fuel problem is not concerned with the swings of the business pendulum, although the present abundance of fuel is pointed to by superficial critics as showing how wrong have been the predictions of of those who have warned us of a future shortage. At present the underground petroleum reserve in the United States is only about 5,800,000,000 bbl. Were this oil to be extracted from the ground at a rate equal to that of the year 1920, a feat that is not out of the question from a practical standpoint, the reserve would last but thirteen years. It is thus evident that after a few years we must expect a decline in the domestic production of petroleum.

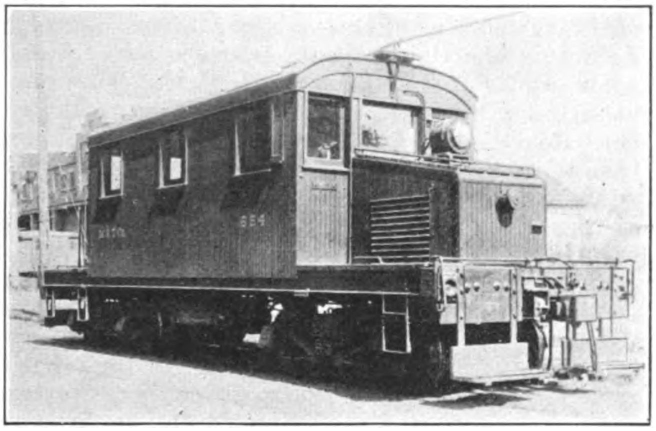
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Operating Company Builds Switching Locomotive

A 45-Ton Switching Locomotive Constructed in the Shops of the Monongahela Power & Railway Company Was Built from a Discarded Ruined Freight Car

A CONTRACT between the Baltimore & Ohio Railroad and the Monongahela Power & Railway Company provides for the switching over the tracks of the latter company of freight in carload lots from the yards of the Monongahela division to the tracks of the Little Kanawha Railroad, controlled by the Baltimore & Ohio Railroad, and to industries in South Parkersburg. This switching service increased at such a rapid rate that in 1920 the Monongahela Power & Railway Company found itself without adequate motive power to handle the carloads of freight offered for delivery. The purchase of a new and heavier electric locomotive was necessary, and accordingly inquiries were sent to the principal electric companies for a 40 to 45-ton electric locomotive arranged for 600-volt direct-current operation. The bids received were so unsatisfactory that the company decided to construct a locomotive in its own shops.



Locomotive Constructed from Old Equipment

The locomotive, as shown in an accompanying illustration, was built along lines of a standard steeple cab-type locomotive. A standard steel box-car center with steel bolsters riveted in place with wing gusset plates was used. This frame was purchased on a pound basis from a discarded and ruined freight car equipment and results have shown that it possesses the required stiffness, strength and other essentials.

The longitudinal sills of the engine body consist of six 7-in., 90-lb., T-rails, spaced three on each side of the steel center, and an insert of concrete, filled with scrap iron, was placed between these sills to give added weight to the locomotive. The floor of the locomotive is therefore a somewhat massive construction, but it has the weight and bulk necessary to furnish tractive power to the engine.

The trucks used were formerly standard freight trucks of the arch-bar type. The original arch bars were replaced with longer bars, so as to lengthen the wheelbase and provide space necessary for hanging brakes and motors. Cast-iron wheels of M. C. B. standard design of wheel, flange and tread were used. The electrical equipment consists of four G. E. No. 73 motors with a gear ratio of 17:73. These motors were carefully constructed with new commutators and some other additional repairs were made which were found necessary. Two controllers, type K-34, equipped with G-2 auxiliary ratchet switches, control the current in the power circuit.

The air brake equipment consists of two A-6 air compressors, each of 18-cu.ft. capacity, which work in unison to provide the air supply. The compressors are located one under each hood, while all the additional air-brake equipment except the brake cylinder and main reservoirs are located inside the cab. The brakes are Westinghouse type A.M.M. with M-22-A brake valves and M-1 triple valves. The locomotive is provided with air sanders which deliver sand to the front wheels of each truck. The general dimensions of the locomotive as constructed are:

Length	34 ft. 8 in.
Width	9 ft.
Height, rail to running board	12 ft. 4 in.
Wheelbase	6 ft. 10 in.
Trucks, center to center	20 ft. 8 in.
Axles	5½ in.
Journals	5 in. x 9 in.
Brake cylinder	12 in. x 12 in.

This locomotive as constructed is giving very satisfactory service and the entire cost was but $8,385.71. It is in constant service and handles from six tq twelve freight cars.

New Oil Circuit Breaker

AS AN ADDED economy in space for equipment of power houses and substations, the Condit Electrical Manufacturing Company has placed on the market the type D-17 oil circuit breaker with a relatively high interrupting capacity but of comparatively small overall dimensions.

A heavy and rugged frame construction is used throughout, with double tanks, supported by a heavily ribbed cradle, which in turn is hung by strong bolt construction with resilient features. The purpose of this type of construction is to absorb the mechanical shock incident to rupturing a heavy short circuit, and to reduce to a minimum the hazard which usually follows the throwing of hot oil and gases emitted on heavy short circuits. Double tanks as furnished on the type D-17 oil circuit breaker take care of this hazard. The inner tank contains the oil in which the switch contacts are immersed and is heavily reinforced at the top by a deep web on the frame. The outer tank in connection with the resilient features is so arranged as to chill the gases and to prevent the hot oil from being discharged from the breaker.

Type D-17 oil circuit breakers are built in single units for 500 to 1,200 amp. capacity at 15,000 volts and 500 to 800-amp. capacity at 25,000 volts, single throw, and can be furnished for single or multiple operation.

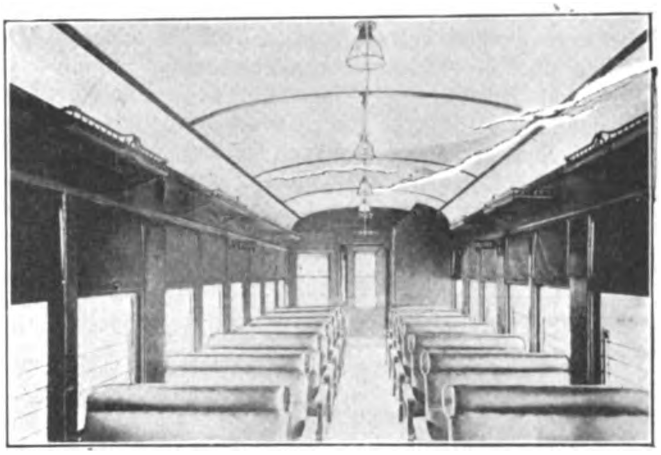
New Cars for Texas Electric Railway

Four Interurban Cars Arranged for Operation on Both 600 and 1,200 Volts Placed in Service—Equipment and Car Construction Provide for Hauling Two Trailers

THE Texas Electric Railway, operating 277 miles of line between the cities of Dallas, Waco, Dension and Corsicana, recently placed in service four new interurban passenger cars. The car bodies were built by the St. Louis Car Company and the trucks by the J. G. Brill Company. The cars are equipped with four GE-225-B motors and PC-101-B control, arranged for operation on 600 and 1,200 volts. Air brakes are Westinghouse AMM type, with 12-in. x 14-in. brake cylinders. The air compressor is of the General Electric Type CP-78-B1, arranged for operation on 600 and 1,200 volts.

Current for operating the control apparatus and supplying the lights is furnished by a 32-volt, 1.5-kw. motor-generator with compound winding, which permits its operating on either 600 or 1,200 volts. Two General Electric J-37 headlights with 250-watt, 32-volt special bulbs are used. The interior of the car is lighted by eight 50-watt, 32-volt lamps with Holophane reflectors.

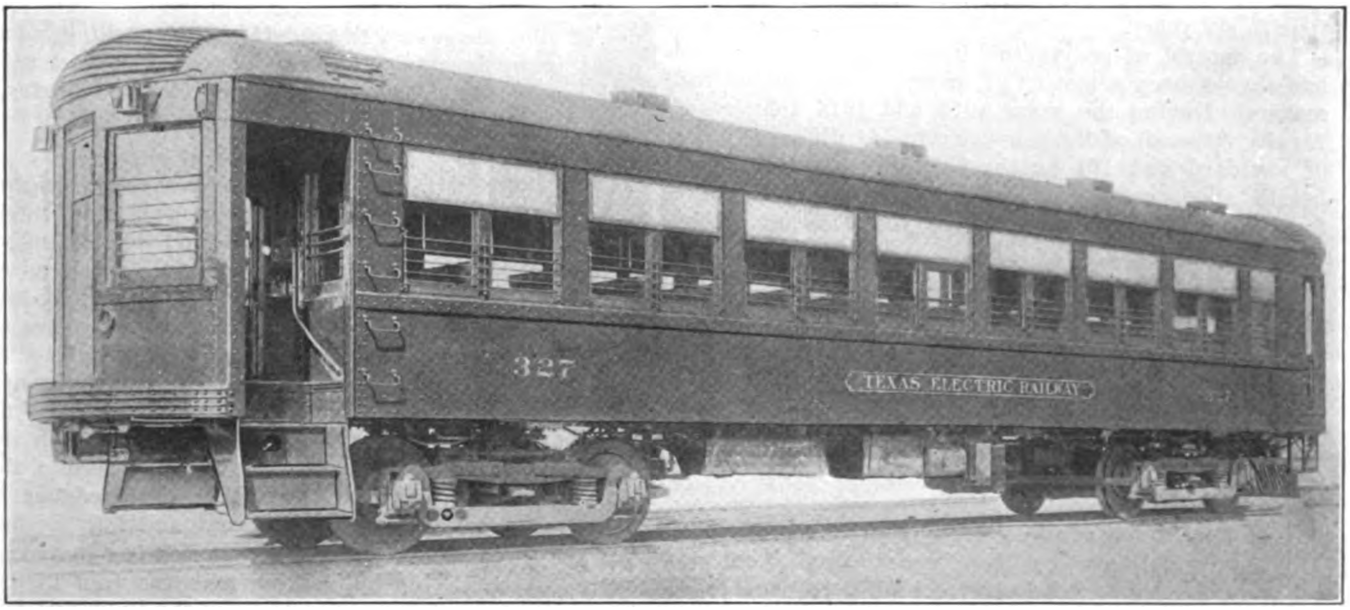
The cars have steel underframing and steel superstructure and as they were specified for service at 65 miles per hour, pulling two trailers, the underframe was constructed with six longitudinal sills, four of which are continuous from bumper to bumper. The side sills are 8-in., 13.75-lb. channels; center sills, 8 in., 18-lb. I-beams; intermediate sills, 8-in., 11.25-lb. channel and bumpers, 8-in.; 13.75-lb. channels bent to radius and reinforced with four ribbed Hedley anti-climbers. The bolsters are 12-in. x 1-in. soft steel. The side pier posts are 2½-in. x 2-in. angles; side window posts, 2 in. x 2 in.; tees and vestibule corner and end posts, 3½-in. x 3½-in. The side sheets and letter board are of ⅛-in. patent beveled plates, insulated with pressed cork board.



INTERIOR OF NEW INTERURBAN CARS FOR TEXAS ELECTRIC RAILWAY

The roof carlines are ½-in. x 2-in. soft steel, to which is applied suitable furring for nailing the ⅜-in. poplar roof, which is covered with No. 8 canvas duck. The sash and doors are made of quarter sawed oak and the floors of hard maple, with the exception of the toilet room, which is covered with Mastic flooring. The front and rear window sash and lower side sash are glazed with $\frac{3}{16}$-in. plate glass. The upper Gothic sash are glazed with Imperial prismatic glass of special design. Trucks are the Brill 27-MCB-3X type with 5-in. x 9-in. journals, 6-in. axle bearings, forged side frames and 37-in. rolled steel wheels.

The enamel system was used in painting and the cars are finished in Pullman green body color with white enameled ceiling. The interior finish of the car is dark oak. The signal system, supplied by the Ohio Brass Company, is arranged automatically to cut in the storage battery lights upon any failure of line voltage. The accumulator is arranged for constant



EXTERIOR OF TEXAS ELECTRIC RAILWAY CARS

recharge at 600 volts when the car is operating on either 600 or 1,200 volts. The seats, supplied by Heywood Brothers & Wakefield, are upholstered in Fabrikoid and built to the railway company's specifications. The trap doors and sash fixtures were furnished by the O. M. Edwards Company, couplers and trolley catchers by the Ohio Brass Company and the heater equipment by the Holden & White Company.

The principal dimensions of these cars are:

Length over bumpers	55 ft. 11 in.
Length over vestibule sheeting	53 ft. 11 in.
Width over side sheets	9 ft.
Length of smoking compartment	17 ft. 6 in.
Length of main compartment	21 ft.
Seating capacity, main compartment	38
Seating capacity, smoking compartment	22
Weight, completely equipped	86.600 lb.

Titanium-Treated Rails

Service Tests of Titanium-Treated Rails Extending Over Six Years Confirm Earlier Test Results—Thirty-seven Failures per 100 Track-Miles During This Period

THE result of an extended series of investigations begun in 1913 to determine the effect of the use of titanium in rail steel has been published in bulletin form by the Titanium Alloy Manufacturing Company, Niagara Falls, N. Y. In the eight bulletins of the series which have been issued previously there appeared the result of metallographic and physical testing work which demonstrated the clearness and uniformity of titanium-treated rail steel and the physical superiority of this more uniform steel. The service results, which have now been added, prove conclusively that the evidence brought out earlier is reliable and that a uniformly good steel will make possible greatly improved rails.

REASONS FOR THE INVESTIGATION

The purpose of these investigations was:

1. To show in detail the exact structural and physical differences between titanium-treated and untreated rails.
2. To find a simple, practical method for determining the efficiency of titanium treatment so that occasional improperly treated steel may be identified and separated from that free from excessive segregation.
3. To follow through the many thousand tons of titanium-treated rail which have been in service from four to six years.

The control of segregaton in open-hearth rail steel has always been a matter of great concern to the rail makers. During the years 1913 and 1914 samples of A-rails (top rail of the ingot) from 111 different heats of standard and 101 heats of titanium-treated open-hearth steel, made for six different railroads, were forwarded to the laboratories of the Titanium Alloy Manufacturing Company. Here the Pennsylvania Railroad segregation specification was applied to each of the A-rail samples from the 212 heats. A-rails from only 37 per cent of the heats of standard open-hearth steel passed the requirements, whereas A-rails from 93 per cent of titanium-treated heats passed the specification.

The determination in steel of titanium insoluble in hydrochloric acid is an index of the efficiency of the treatment and allows the identification of heats in which excessive segregation has occurred. The process is very simple and can be made quickly and accurately. This determination will ordinarily make further analytical work unnecessary because so high a percentage of titanium-treated rail steel will meet the required specifications for segregation. It has been suggested that in order to conform to regular mill practice all rails that pass the usual physical requirements be accepted by the purchaser. Samples for titanium determination should be taken by the inspector for the purchaser and sent to the laboratories or those of any agency it might employ.

The adoption of this simplified method should accomplish the following results: (1) Eliminate the majority of rail failures; (2) assure the purchaser of rails of more uniform steel throughout all the ingots of a heat; (3) permit a larger yield of acceptable rail by eliminating serious segregation in the upper portion of the ingots; (4) since segregation can be effectively controlled, make it desirable to raise the carbon content of the steel slightly, which would result in better wearing steel.

TITANIUM-TREATED STEEL HAS LEAST FAILURES

A comparative test over six years in service seems to indicate that the titanium-treated steel has the least failures. In 1913 the Chicago & Alton Railroad obtained and laid in tracks 14,310 tons of standard 90-lb. A. R. E. A. open-hearth rail steel from four different mills and 6,000 tons of titanium-treated open hearth of the same weight and section. This tonnage was laid so that the service for all rail was approximately the same. Of the standard open-hearth steel there occurred 116 failures in the 101 miles of track, or 114 failures per 100 track-miles. On the other hand, the titanium-treated open-hearth steel showed an average of but sixteen failures in 42 miles of track, or thirty-seven failures per 100 track-miles.

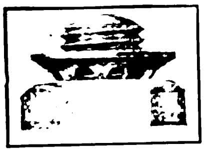
Similar analyses of the rail failure statistics of the American Railway Engineering Association for 1918 showed average failures per year in service per hundred miles of track to be 13.7 for standard open-hearth rails as compared with 6.8 for titanium-treated open-hearth rails. Similar figures from the rail failure statistics contained in the report for 1919 show 14.6 and 4.9 failures respectively.

Attention is also called to the fact that the yield from standard open-hearth steel was 19.6 per cent less than that from titanium-treated steel, due to the greater freedom from segregation in the upper part of the ingots of the latter.

The war caused a great increase in the knowledge and use of alloy steels and these data should result in some great improvements in the quality of the steel rails and special track work used in the railway industry.

Fin Nut Lock

AN INGENIOUS form of nut lock is being used on nuts of the third rail shoes used by the Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company in New York, as well as at other places where a very tight lock is desired. The nut lock is made of annealed steel and consists of a disk or washer with inwardly projecting fins bent up so as to be of cone form. After this washer is screwed on the bolt, with the fins fitting into the thread, the lock is flattened out in its original form, jamming the fins into the thread of the bolt. The nut lock is removed by being cut off. This nut lock is manufactured by the Nutlock Corporation and is known as the Hold Tite Nut Lock.



HOLD TITE NUT LOCK

American Association News

Executive Committee Holds Important Meeting

Approves the Report of the Reorganization Committee with Some Modifications —Appoints J. W. Welsh to Secretaryship—Considers Convention Program

THE executive committee of the American Association held an important all-day meeting at association headquarters on Friday, Aug. 5. The morning session was devoted to a consideration of miscellaneous association matters of importance, and the afternoon session to a consideration of the report of the special reorganization committee.

The first business of importance was the appointment of a permanent secretary to fill the vacany caused by E. B. Burritt's resignation. The reorganization committee had recommended that J. W. Welsh be appointed to that position and after a thorough discussion of the situation, the executive committee took unanimous action in line with this recommendation.

The following applications from companies for membership in the association that have been received since the 1920 convention were presented:

RAILWAY MEMBER COMPANIES WITHIN THE BORDERS OF THE NORTH AMERICAN CONTINENT

Brooklyn City Railroad Brooklyn, N. Y.	Joined June 11, 1921
Valdosta Street Railway, Valdosta, Ga.	Joined July 14, 1921
Sherbrooke Railway & Power Company, Montreal, Canada	Joined July 18, 1921

RAILWAY MEMBER COMPANY BEYOND THE BORDERS OF THE NORTH AMERICAN CONTINENT

Pernambuco Tramways, Light & Power Company, Pernambuco, Brazil, Joined March 2, 1921

RAILWAY MEMBER COMPANY REINSTATED SINCE THE 1920 CONVENTION

Chicago & Interurban Traction Company, Chicago, Ill.	Resigned July 11, 1921

This company resigned in letter of June 5, 1920. In letter of July 11, 1921, indicated that it wished reinstatement and asked for data sheet on which to compute dues owing, which are for the years 1920 and 1921.

MANUFACTURER MEMBER COMPANIES WHO HAVE JOINED SINCE 1920 CONVENTION

C-J-H Service Corporation, Buffalo, N. Y.	Joined October, 1920
William V. Dee Company, Bridgeport, Conn.	Joined Feb. 7, 1921
Kellogg Switchboard & Supply Company, Chicago, Ill.	Joined April 21, 1921
McKinnon Automatic Lubricating Vacuum Company, Holyoke, Mass.	Joined October, 1921
Milwaukee Tank Works, New York, N. Y.	Joined Dec. 7, 1921
Republic Truck Sales Corporation, Chicago, Ill.	Joined July 15, 1921
Standard Oil Company, Chicago, Ill.	Joined June 30, 1921

The applications of all of the above companies were formally approved.

Resignations of a few railway companies and of some manufacturing companies were received. Most of these have not paid dues for the past one or two years. The secretary stated that an effort was being made to secure the continued membership of some of these companies.

It was suggested that when companies present their resignations without having made payments of dues in full to date of resignation, the secretary of the association should have the case of these unpaid dues taken up by counsel, and that those companies not making payment in full be dropped from the membership list.

President Gadsden made a statement to the executive committee with reference to W. O. Gibson and the final result of the analysis of the association's finances made by W. R. Boylan. Mr. Gadsden stated that Mr. Gibson had pled guilty in court on Thursday, Aug. 4, and would be sentenced on Wednesday, Aug. 10. He also presented a statement by Mr. Boylan.

With the defalcation matter closed in this manner anyone else is officially cleared from any criminal connection with the defalcation.

The executive committee considered the status of several committee reports, advising those committees as to policy in making their final and complete reports.

A complete discussion of the convention program as now proposed was next had. There was an evident desire on the part of the entire executive committee to put into force the suggestions made by President Gadsden at the Chicago conference that there be ample provision for discussion at annual conventions. The subjects committee was advised by the executive committee that it desired to have the program shortened and some suggestions along this line were made; that it desired to have authors of most of the papers limited to ten to fifteen minutes to present the high points or an abstract of their papers which would have been usually printed and distributed and that ample time be scheduled for discussion of the subjects presented. Provision is also to be made for one entire session which may be devoted to a consideration of the changes in the constitution and by-laws recommended by the executive committee following the report of the reorganization committee.

Reorganization Report Considered

The committee devoted the entire afternoon to a consideration of the report of the special reorganization committee. The principal points of this committee's report were outlined in the ELECTRIC RAILWAY JOURNAL for July 16, page 105. The executive committee adopted the report of the reorganization committee with some modifications, and will present an amended constitution and by-laws to the membership for action at the October convention. The report of the executive committee recommending these changes is now being printed, with the amended constitution and by-laws, and will be distributed to the membership at an early date.

The modifications which the executive committee made in the report of the reorganization committee follow:

A redefinition of the officers and membership of the executive committee as follows:

A president, to hold office for one year, eligible to re-election, *as recommended.*

Four vice-presidents, elected each year for a term of one year, designated first, second, third and fourth vice-president, eligible to re-election, *rather than to have two elected each year for two-year terms not eligible to re-election, and without designation, as recommended.*

Twelve members at large, six representing manufacturing companies, six representing operating companies, two of each to be elected each year for three-year terms, and not eligible to re-election to the same office, *as recommended.*

A treasurer, to hold office for one year, subject to re-election, *as recommended.*

The four presidents of the affiliated associations, *as recommended.*

All of the living past presidents, ex-officio members without power to vote; *rather than to have only the two junior living past-presidents, with power to vote, as recommended.*

The executive secretary, who is not a member of the executive committee, but who attends its meetings; he may not be the same person as the treasurer, *as recommended.*

A new provision that any elected member of the executive committee who is unable to attend a meeting of the executive committee may have the privilege of sending as a proxy any officer or employee of the same company member which that committee member represents. The further provision that if any elected member of the executive committee is absent and unrepresented by proxy for three consecutive meetings of the committee, his office shall automatically be vacant, is also added.

A modification of the definition of a quorum of the executive committee so that seven voting members are a quorum rather than a majority.

Provision that a majority of the finance committee and a majority of the policy committee rather than the full membership of both of them shall be chosen from the voting members of the executive committee.

The executive committee approved the suggestion of the reorganization committee that a special amendment be adopted at the 1921 convention which would not limit consideration of amendments to the exact wording presented by the executive committee, but that new and reworded amendments would be given official status on the floor of the convention in order that the most complete expression of the will of the membership of the association might be obtained.

The executive committee also approved the recommendations of the reorganization committee, given below:

That provision for membership of trackless transportation companies be made.

That a separate classification of membership be provided for consulting engineers, management and holding companies, investment bankers, etc.

That individual members from non-member companies eligible to election be not admitted.

That the executive committee hold regular monthly meetings.

That nominations for officers be made by a nominating committee and announced to the association at least thirty days before the annual meeting, but that other nominations may be offered any time before the actual election.

That definite provision be made for a mid-year meeting now held as a mid-year conference, but without any special provision.

That certain standing and continuing committees be provided by the by-laws.

That dues now stated in the by-laws shall be maximum, which may be lowered, but after once lowered not raised, by the executive committee.

That more careful provision be made with reference to members in arrears and members desiring to withdraw.

That *Aera* be continued as a magazine, with the secretary advised against unnecessary duplication.

That definite steps be taken with reference to better handling of the funds of the association.

All of the above are provided for in the amended constitution and by-laws.

With reference to the other recommendations made by the reorganization committee, the executive committee approved all of them.

The reorganization committee had made no recommendations with reference to the admission of municipally-owned railways, but asked the executive committee to consider it in its own meeting. The executive committee did so, but voted not to recommend to the membership that municipally owned railways be admitted to membership.

The reorganization committee had suggested, in response to questions raised by certain members, that the executive committee consider the advisability of incorporating the association. Meanwhile the reorganization committee had made further study of the matter and recommended to the executive committee that the association do not incorporate. The executive committee approved this latter recommendation.

In line with its recommendation that there be a definite by-law provision for nominations in advance of the convention, the executive committee authorized President Gadsden to appoint a nominating committee of seven immediately which would report nominations for the 1921 election as soon as possible.

Those present at the morning session were President P. H. Gadsden, Vice-Presidents R. I. Todd and C. D. Emmons; President W. G. Gove, Messrs. F. R. Coates, H. R. Mallison, J. N. Shannahan, W. H. Sawyer, E. F. Wickwire, B. A. Hegeman, M. B. Lambert, proxy for H. D. Shute, John Barry, proxy for J. R. Lovejoy; Past-Presidents G. H. Harries and C. L. Henry, and the following who had been especially invited: J. K. Choate, E. C. Faber, J. F. Hamilton, H. B. Flowers, Harlow Clark and H. V. Bozell, and J. W. Welsh, secretary. Of these, Messrs. Gadsden, Emmons, Sawyer, Lambert, Barry, Clark and Bozell were members of the reorganization committee. Those present at the afternoon meeting were all of the above except Messrs. Coates, Hamilton, Flowers, Gove and Hegeman and with the addition of J. H. Pardee, past-president and member of the reorganization committee.

Vernon Room Where the Meetings Will Be Held

ACCOMPANYING illustrations show the pavilion of Haddon Hall and the seating arrangement of the room in which the convention of the American Electric Railway Association will be held in October The hall is known as "Vernon Room" and is of ample size for metings of the association, measuring 85 ft. x 51 ft. Haddon Hall adjoins the Chalfonte Hotel, which appears at the left in the photograph.

The convention of the association will be held on Oct. 3-6.

W. O. Gibson to Be Sentenced

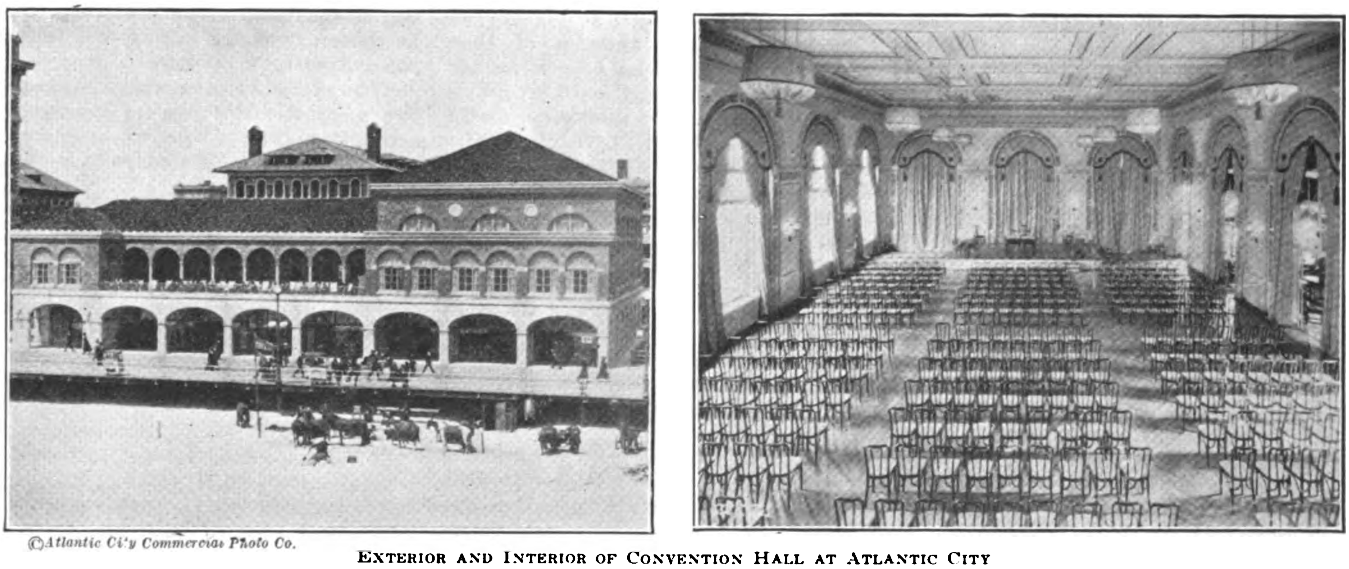
THE former bookkeeper of the association, W. O. Gibson, pleaded guilty to the charges against him on Thursday, Aug. 4, as was announced by President Gadsden at the executive meeting on Friday, the 5th. On Wednesday, Aug. 10, he was in court to receive sentence. Mr. Gibson requested a stay of sentence for two weeks. This was granted him, but his bail was cancelled and he was remanded to jail.

As the case now stands Mr. Gibson will receive his sentence on Aug. 24, and this should close the case so far as the association is concerned.

Tax Plea Commended

THE argument presented by President Gadsden on public utility taxation before the Ways and Means Committee of the House of Representatives and reported in last week's issue of this paper is the subject of editorial comment in the *Public Ledger* of Philadelphia for Aug. 10. The editorial says in part:

> The plea that public utility companies be * * * put in a special class for the purposes of taxation, comes with more than the amount of plausibility usually assigned to arguments in avoidance of taxation. The plea is made by Philip H. Gadsden, * * * one of the country's foremost authorities on public utility questions. * * *
>
> It is an argument that carries weight. Viewed theoretically, there may be a fundamental weakness in certain of its clauses, for the regulatory bodies in charge of public utilities are supposed to allow for some of the objections made by Mr. Gadsden in setting and revising rates. But any one will admit that there is usually a difference between theory and practice. In practice it is an expense and a detriment to the conduct of the utilities companies' business every time they are forced to apply for a revision of rates. So the fact that the law would presumably allow, for instance, for an increase of rates to offset increase of taxation is not a convincing answer to Mr. Gadsden's argument, especially when it is taken into account that such an increase of rates would amount to an indirect tax on the general public using the products of the utility companies.
>
> Utility companies would be bound to pass on this tax to the public undiminished while there is enough elasticity in general business to make it possible that in many instances the tax would be absorbed by the industry and not passed on to the public; while in other instances it would be passed on only in diminished amount. Public utilities, as legally regulated industry, are actually set aside by law as a special class in the interest of the public. Why it is not logical to perpetuate this distinction in the field of Federal taxation?



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EXTERIOR AND INTERIOR OF CONVENTION HALL AT ATLANTIC CITY

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

"L" Lease Negotiations

Philadelphia Rapid Transit Anxious to Operate New Line, but Seeks to Avoid Previous Mistakes

Conferences are being continued at Philadelphia over the operation of the Frankford elevated and so-called Bustleton line by the Philadelphia Rapid Transit Company. The attitude of the railway is that it is not willing to repeat the experience of 1918 in this same matter when the city and the company agreed to the terms of the contract only to have the Public Service Commission after a year's consideration of the matter deny approval to the lease. The company insists that a representative of the commission shall sit in at the conferences so that body may be thoroughly informed as to the angles which the negotiations take.

So much misstatement appeared following the conference on Aug. 1 that at the conference on Aug. 9 the railway set forth its attitude as a matter of record. The position of the company right along has been that it would operate the Rhawn Street extension of the Frankford "L" and also the Byberry extension of the Bustleton line, if desired by the city, but in such event the Department of City Transit, with the company's engineers, should jointly prepare the best estimate possible as to the cost of these extensions and the loss to be sustained from their operation; this being necessary in order to prevent later misunderstanding.

The Philadelphia Rapid Transit Company has argued against the city building its own powerhouses entirely for reasons of economy. Since the city is now to supply its lines completely equipped for operation, the attitude of the Philadelphia Rapid Transit is that the added investment should be determined and the increased obligation to be assumed by Philadelphia Rapid Transit in paying 5 per cent interest upon city investment should be figured out. A further estimate should be made in this connection, as of the latest date possible, to determine more closely the deficit, heretofore figured at $925,000, which Philadelphia Rapid Transit will sustain in the operation of the Frankford "L" line to Bridge Street and the Byberry line as far as Bustleton.

In short, the plan of the Philadelphia Rapid Transit contemplates the early operation of the Frankford elevated and Bustleton line, with free transfers between the Frankford elevated and surface feeder lines, the city to receive 5 per cent annually upon its investment, while the railway, in order to save the city an expenditure of $1,318,000, agrees to outlay $632,000 in enlarged facilities. This amount, added to the $925,000 deficit from operation, makes a total of $1,557,000 to be overcome at the outset.

As a further help to a better understanding of the issues involved the railway has included in a pamphlet which it issued recently the correspondence and contract embracing negotiations up to the time of submitting the draft of the lease to the City Council on March 31, 1921, including the joint reports of city transit and Philadelphia Rapid Transit engineers.

Way Cleared for Extension

The last obstacle to the extension of the line of the Tacoma Railway & Power Company from Sixth Avenue along Washington Street into the Stevens Street district was removed recently when Attorney-General L. L. Thompson at Olympia ruled that the City Council had the the right to exempt the railway from the payment of 2 per cent gross sales tax and from the payment of street assessments. It remains now for the City Council and the company to settle details.

Mayor Riddell expresses himself as opposed to granting a release of the railway from its franchise obligations to pay the city a gross earnings tax and to pave between the rails. He does not believe the City Council has the power the Attorney-General says it has.

The company proposed some months ago to undertake construction of a line to serve the college of Puget Sound and Stevens Street district, provided certain relief was extended.

In his decision, the Attorney-General states:

> The Supreme Court has held in numerous cases that the city charters placing further restrictions upon granting of franchises than those provided by the state law are inoperative and that the legislative body of the city is restricted in its rights only by state law.

Mr. Cunningham Discusses the Railroads

William J. Cunningham is contributing a series of articles on the railroad problem to the New York *Evening Post.* One of the series appears every Tuesday. The articles will run for an indefinite period. They are both informative and interesting. The idea actuating the *Post* was to secure an expression of opinion by a recognized authority on this important subject, and no other man that the *Post* could find combined so well the necessary practical experience and the detached point of view of the student. Mr. Cunningham has been a practical railroad man and has a national reputation as a railway statistician. During the Government administration of the railways he filled a position of great responsibility at Washington and he is now filling the James J. Hill chair of transportation at Harvard University.

Mayor Signs Ouster

Detroit Railway Confronted With Accepting $388,000 for Lines or $800,000 to Scrap Them

Disregarding the protests of the merchants located on Fort Street and Woodward Avenue, the Detroit City Council passed the ordinance ousting the Detroit United Railway from these two streets, where franchises have expired. The ordinance has been signed by Mayor Couzens. The Mayor and the city officials still believe that the city's offer of $388,000 for these lines will be accepted by the company and that the tracks will not be torn up.

A possible settlement of the controversy was seen in the Mayor's announcement that the Detroit United Railway would be permitted to operate its cars over the Fort Street and Woodward Avenue lines after the lines have been acquired by the city. The arrangement, the Mayor maintained, would have to be on a day-to-day agreement on a car-mile basis. The company had previously suggested that the city would be permitted to operate its cars over the company's tracks on Fort Street and Woodward Avenue, but the city is insistent that title to the lines in these streets shall lie with it.

The offer which the city has made for the Fort Street and Woodward Avenue lines is apparently the city's final action with regard to these lines, and unless some further proposition is made by the company, the city will insist on enforcing the ordinance which orders the company off the two streets.

Engineers for the Street Railway Commission started work the morning after the ordinance was passed surveying Fort Street for municipal lines. Plans will be laid for both temporary and permanent tracks so that as little delay as possible will result whatever action is taken by the company. The ordinance goes into effect thirty days after the signing by the Mayor and in ten days thereafter service must be discontinued by the company. Ninety days after the ordinance goes into effect the tracks must be removed from the streets.

Alex Dow, director of the company, has stated that the city's offer will not be accepted, and has intimated that the passing of the ordinance might mean discontinuing service immediately on the lines in question. In a few words the company is confronted with the problem of accepting the city's offer of $388,000 for the lines or spending a large sum to tear up the tracks and restore the streets.

Arbitration with regard to taking over by the city of the day-to-day agreement lines of the Detroit United Railway has been temporarily halted by the adjournment of the board of arbitrators until September when the board will again meet. In the meantime the engineers for the Street Railway Commission will have an opportunity to survey the cars and equipment which the city may acquire with the lines. Owing to the difficulty in specifying just what cars were provided by the company for use on the day-to-day lines, many cars have been designated for selection.

$325,000 for Track Maintenance

According to a statement of F. I. Fuller first vice-president of the Portland Railway, Light & Power Company, Portland, Ore., the company expended $361,931 for maintenance and reconstruction on track, paving, overhead lines, cars, etc., on the city lines, exclusive of depreciation charges, and $160,619 on track maintenance and reconstruction and paving only on city lines during the first five months of 1921.

Mr. Fuller's statement calls attention to the efforts of the company to take care of necessary features connected with the maintenance of its lines, as set forth by its representatives when the Public Service Commission was hearing its petition for an increase in fares. He declares the corporation acted in good faith, and is fulfilling its obligations to the public as rapidly as possible considering all phases of the situation.

For the ensuing five months of June, July, August, September and October the expenditures for maintenance and reconstruction on track and paving on work already ordered and in sight will amount to over $325,000, or an average of $65,000 a month, about three times the expenditure for the same period in 1920.

Altogether the maintenance work on the city lines and equipment of the company is being carried on on a much more extensive scale than at any period in the last five years.

Suburban Men Again on Strike

The employees of the Syracuse & Suburban Railroad, Syracuse, N. Y., went on strike on Aug. 4. The men dispute the statements attributed to officials of the company to the effect that the men had agreed at a meeting with the officials on July 22, to arbitration proceedings. They declare that at that time C. Loomis Allen, the president of the railway, was told that they could not accept the provisions of the arbitration agreement as drawn up by him, and that they did not sign.

This is the third suspension of operation by the road in a period of a little more than a year. There was a strike in May, 1920, which the men won after a tie-up of several days. From Jan. 1 to March 11 the road quit operation under the claim that it could not operate until certain franchise conditions were altered and wages lowered. The company was successful in the former and temporarily so in the latter contention, although it is that dispute which is the cause of the present strike.

Arbitration Demanded

Montreal Company Formally Notified to This Effect—Wages Cut Only 12½ Per Cent

The Montreal (Que.) Tramways was officially notified on Aug. 8 by the Federal Department of Labor that the employees' union had applied for a board of arbitration in the matter of the reduction of wages proposed by the company. The men have chosen as their representative Arthur Sauve, a member of the Quebec provincial parliament, but he has not yet signified his acceptance. The company has not yet announced any decision as to its nomination of an arbitrator on its behalf. Failing such action by the company, the Federal Act gives the Labor Department power to nominate a representative for the company, and the two nominees will then choose a third. The company, however, is under no compulsion to accept any award made by such an arbitration board.

Meanwhile the company has posted notices that a wage reduction of 12½ per cent will go into effect on Aug. 16. This is a substitute for the 20 per cent reduction proposed by the company and the 10 per cent reduction which the men's delegates were willing to submit to the union for acceptance.

Under the 12½ per cent reduction, first-year motormen and conductors will receive 39½ cents an hour, second-year men 44 cents, and those employed more than two years 48 cents an hour. One-man car operators will receive 4 cents an hour extra. This proposed scale is intended by the company to run from month to month, subject to change in accordance with circumstances. The management points out that earnings have been reduced by the industrial depression, resulting in a substantial decrease of the use of cars by the working classes.

The company is facing the necessity of raising between $5,000,000 and $10,000,000 within the next year. Part of this is needed to retire maturing obligations of $3,000,000, and part for extensions and improvements, on which about $1,500,000 is being expended this season, with others planned for next year.

So far, although both sides to the dispute are maintaining a firm attitude, there is no serious talk of a strike.

Special Master in New Orleans Fare Case

Judge Henry D. Clayton, who is presiding in the Federal District Court for the eastern district of Louisiana, in the pending litigation between the New Orleans Railway & Light Company and the city of New Orleans, has appointed D. B. H. Chaffe, New Orleans, as special master to hear the evidence.

It will be recalled that Judge Rufus E. Foster, at the request of parties at interest, excused himself in this suit, which was brought by the city on the ground that the railway was without authority to continue charging an 8-cent fare as the ordinance giving it that right had expired by limitation.

In naming Mr. Chaffe, Judge Clayton announced that it would be impractical for the court to hear all the evidence. Mr. Chaffe was ordered to proceed at once to take testimony.

Municipal Road "Saved" by Councilmen

Charles M. Robbins, Attleboro, Mass., is a peppery individual. He dislikes to vote away other people's money. As a member of the City Council there, he spoke right out in an open meeting recently giving his views about the municipally owned Norton, Taunton & Attleboro Street Railway. He said that he felt "that we (the councilmen) ought to unite and pray that some night the earth would open up and swallow the confounded road."

Mr. Robbins, as these remarks indicate, was vexed. He had reason to be vexed. His utterance preceded a vote by him to appropriate $2,000 of the funds of his fellow townsmen to meet a deficit in the operating expenses of the road. The other towns involved with Attleboro in the responsibility for running the road had previously voted proportionate amounts, so that there was little else for Attleboro to do than to shell out. Mr. Robbins might have to vote on the matter; he might even have to do so against his best judgment, but he did not have to be silent about it.

It seems that this road has been a source of constant annoyance ever since it was taken over by the municipalities. The private company was unable to make the road pay, and the cities, as might have been expected, have been no more successful at the task of keeping expenditures within income. Creditors are no respectors of persons, so the coal man, whose patience had been exhausted after he had made futile efforts to have his bill honored, brought suit for a receiver for the property. This would look like another rapacious act of the coal man, but that individual has enough sins charged against him. If the coal man hadn't acted, some other creditor undoubtedly would have done so. The coal man was first. That is all.

After the money had been set aside to pay the coal man, the meeting turned to other phases of the road's activities. Members of the Council began to delve into the operating figures of the road, but the results were by no means unanimously agreed upon. Howard G. Smith discovered the road to be a losing proposition. Councilor French saw a deficit of $30,000. Others insisted that the road was making money. Mayor Brady resented charges of mismanagement. Even the name of the Public Service Commission was taken in vain in connection with the matter, although the responsibility of that body for the plight of the road was not readily discernible.

Service-at-Cost Recommended for Milwaukee

Committee Reports Insuperable Obstacles to Immediate Public Acquisition of Local Utilities Under Present Available Methods—Construction of Competing Plant Deemed Not Advisable

The city of Milwaukee, Wis., is recommended by the Milwaukee Street Railway & Electric Power Acquisition Committee to enter into negotiations with the Milwaukee Electric Railway & Light Company for the operation of the company's local electric railway and electric light and power properties under a service-at-cost agreement, with provisions which would result in the ultimate municipal ownership. The committee held that there were insuperable obstacles to the immediate public acquisition of the properties under the methods now provided by the law for such acquisition, primarily because of the inability of the city to obtain sufficient funds to consummate such a purchase.

THE construction of a competing plant, aside from the questionable wisdom of such a course, was not thought to be an alternative open to Milwaukee because the Milwaukee Electric Railway & Light Company is operating under an indeterminate permit which amounts to a perpetual franchise that can be terminated only by municipal purchase. The city could not build a competing line without obtaining a "certificate of convenience and necessity" from the State Railroad Commission, which would require a showing to the satisfaction of the commission that the company was not rendering adequate service. The committee considered it beyond the range of probability that such a certificate could be obtained.

While the committee expressed the view that it could not assure the city of the success of the proposed "service-at-cost-and-acquisition" contract, it was unanimous in its opinion that this offered the most promising course for an attempt to better conditions and was the only practical method, in view of the city's financial situation and under existing laws by which ultimate acquisition was possible.

The committee suggested that if the 1914 appraisal of the property by the Wisconsin Railroad Commission, with additions to property since that date, were accepted both by the company and the city as a basis of negotiations on the subject of value, the prospect of ultimate agreement on this point would be hopeful.

The committee pointed out that while other means of transportation will be increasingly used in the future electric transportation on rails will continue to be the chief reliance for mass transportation over city streets for an indefinite period of time.

While the committee found that the city had the legal right to purchase the local public utility properties at any time, this was at the present time considered an empty right because of the city's inability to finance the purchase. The construction of a competing plant was not considered an alternative. The committee concluded, therefore, that:

> The question, therefore, as to the desirability of the public ownership of public utilities, for the present or immediate future, so far as the city of Milwaukee is concerned, is purely an academic question, since there is no practical method under the law as it has existed by which such public ownership can be brought about.
>
> It was the consideration of this fact, among others, which led the committee to inquire as to the feasibility of other methods of improving the public utility situation in Milwaukee, both by bettering the relations between the public utilities and the citizens of Milwaukee while the utilities are under private ownership, and by bringing about a situation under which the city can with less difficulty acquire such utilities at such time as the city may decide to do so.

The committee finally decided that a so-called "service-at-cost-and-acquisition" contract, if successfully negotiated by the company with the city, might tend to accomplish the end sought by the investigation. A bill permitting the city to negotiate such a contract with the company was therefore framed by the committee and upon receiving the approval of the Common Council was submitted to the State Legislature. There it was amended to provide that such a contract must receive the approval of the State Railroad Commission before becoming effective. The bill as amended became a law.

The essential features of the proposed contract as outlined in the committee's report are as follows:

1. Agreement as to the value of the properties made subject to the contract and a definite rate of return on such value.
2. Right to purchase the property by the city at the basis of value agreed upon whenever the city decides to do so.
3. The city to have the right to designate the service required of the utility, providing of course that the service will be of such a character and be rendered at such rates as will yield the return agreed upon, on the fixed value of the properties.
4. The city to have access to the books of the utility and its expenditures to be subject to the city's approval.
5. Right of the city to participate in the financing of the property.
6. The management of the properties to remain in the hands of the utility until such time as it is taken over by the city.

In discussing the fifth point the report stresses the importance of utilization of municipal credit in financing public utilities. In this connection the report says that a saving of more than $6,000,000 in interest charges might have been made during the period from 1911 to 1919 inclusive had the interest charges of the electric company been at rates equivalent to those paid by the city during the same period.

The conclusion is reached that

> Your committee believes that the time has come when an attempt should be made to relieve the cost of service rendered to the citizens of Milwaukee by public utilities of excessive interest charges. We believe this could be accomplished by a fair "service-at-cost-and-acquisition" contract, which would permit the city to participate in the financing of the utilities if it so desired, thus taking advantage of its superior credit to obtain money at low rates. No burden would be added to taxes, because the interest could be paid by the patrons of the utilities. At the same time, any excess beyond necessary requirements which might be accumulated in any reserve fund, instead of being applied toward the reduction of rates, could be applied toward the purchase of bonds of the utility or otherwise used to cut down the capitalization on which the return to the utility is calculated. This would result in the gradual acquisition by the city of an equity in the property of the utility, which would make it less burdensome for the city to take over the entire property whenever it should decide to do so.

The committee points out that all attempts to increase patronage should proceed along lines of approved business principles, the details of which will have to be worked out after the main provisions of the proposed "service-at-cost-and-acquisition" contract have been put into effect. The committee's answer to the question whether the service problem could not be better worked out under public ownership was of the same import. The committee thought that the service can and should be improved alike under public and private ownership. The question of electric railway service was reviewed in some detail in the committee's report on that subject.

In conclusion the committee stated that it was of the opinion that the most hopeful line of procedure for the city of of Milwaukee to follow in an endeavor to improve the relations between the city and its utilities and secure better co-operation and understanding while the ownership remained in private hands, was in an attempt to negotiate a "service-at-cost-and-acquisition" contract. The committee stated that it believed this to be the only practical method under the law as it now exists by which, should the city desire, public ownership of such utilities might be brought about.

The committee's report on the financial history of the company alleged that as a result of certain transactions in the past, "water" had been injected into the capitalization of the company, which it was claimed—"total $9,753,832 or nearly the total face value of the common stock outstanding, which is $9,850,000." The criticism was also made that in the years 1918 and 1919 the company took approximately $1,000,000 out of some fifteen reserve accounts and added the amount to surplus which made it available for dividend purposes. In 1920 the report stated the company paid 7¼ per cent on its common stock out of current earnings and 4¾ per cent out of reserves previously created. The common stock thus received a return of 12 per cent.

In advertisements published to further the sale of a recent $3,000,000 issue of preferred stock, the company has made the following comment on the report of the Public Acquisition Committee:

> Within the past ten days the company has received another indorsement of equal interest to its investors, present and prospective. This second indorsement was contained in the report of the city of Milwaukee's committee on municipal purchase, etc. In this report, covering more than a year of inquiry, the committee submitted findings which may be briefed as follows:
>
> 1. The company's indeterminate permit is in effect a perpetual franchise, which can be terminated only by municipal purchase of the property and business.
> 2. The city has no means of raising the huge sum needed for such purchase.
> 3. The state would not permit the city to build competing systems, if the city had funds for that purpose.
>
> With regard to the value of the company's property, the report confirms the State's inventory as of Jan. 1, 1914, which showed

> actual values larger than the total outstanding securities and obligations. Whatever excess of capitalization may have taken place twenty years or more ago, the stockholders have long since replaced with solid property values, at their expense, out of earnings which were less than a fair return. The report's criticism of the transfer of surplus from reserve to dividend fund calls for this comment: that surplus was legitimately earned years before State regulation became effective, and was the undisputed property of the company's stockholders.
>
> The company recognizes the city's legal right to purchase its property and business, at their full fair value, any time the city may be able to find the purchase price. The company, in such event, will place no obstacle in the way of municipal purchase, being absolutely assured that every dollar of investment, past or future, represented by its securities, is amply protected against a penny of loss in case of such purchase. Pending action to purchase, which may be many years in the future, the company v welcome the city's co-operation in all measures calculated to get for the public increased good service at its lowest fair cost.

It is expected that the members of the Public Utilities Acquisition Committee will be appointed members of a committee whose function it will be to negotiate a "service-at-cost-and-acquisition" contract with the company.

The Public Utilities Acquisition Committee, as it is popularly known in Milwaukee, was appointed in July, 1919, by the president of the Milwaukee Common Council in response to a resolution calling for an investigation of the feasibility and advisability of the city acquiring the local electric railway and electric light and power utilities. The committee consisted of the following: Fred S. Hunt, a local manufacturer, chairman; William E. Black, an attorney at law; J. J. Handley, secretary Wisconsin State Federation of Labor; Lyle H. Olsen, general manager of the American Appraisal Company; and three members of the Common Council, namely, J. W. Radtke and Albert Janicki, Non-Partisan, and John Doefler, Jr., Socialist. The committee's report as submitted represents eighteen months' study of the local utility situation by the committee and by a staff of investigators working under the supervision of its permanent secretary, M. G. Glaeser of the Economics Department of the University of Wisconsin, assisted by H. G. Abendroth, an accountant.

Surface Men Accept Cut

Following the reduction in wages of employees of the Interborough Rapid Transit Company, New York, N. Y., the receiver of the New York Railways, operating the lower Broadway and other important surface lines, conferred with the general committee of the Brotherhood of New York Railways Employees, to whom he explained the necessity of a reduction in operating costs.

The receiver asked the co-operation of the employees in this matter. The Brotherhood thereupon called meetings of its various locals. As a result, about 92 per cent of the members voted to accept a voluntary reduction of 10 per cent in the existing scale of wages, to take effect Aug. 7, 1921. The general committee in turn voted unanimously to accept on behalf of the Brotherhood such 10 per cent reduction in wages.

The maximum and minimum wages have been approximately as follows: motormen and conductors 59 to 67 cents an hour; engineering and shop force, 52 to 70 cents an hour; motor power, 52 to 90 cents an hour. There will be no change in hours or working conditions. Motormen and conductors work an average of ten hours a day and shop workers nine hours. Time and a half will still be granted for overtime.

Mutual Insurance in Boston

Elevated Railway Endeavors To Reduce Cost of Workmen's Compensation Insurance

Twelve officials of the Boston (Mass.) Elevated Railway have associated themselves together for the purpose of forming a new liability insurance company. A charter was obtained on March 8, 1921, authorizing the Transit Mutual Insurance Company to conduct a general insurance business on the mutal plan. On March 13 the State Insurance Commissioner issued a certificate to this company to do business.

The reason for forming the new insurance company was to attempt to reduce the cost of workmen's compensation insurance, on the Boston Elevated, the advance premium of which has grown from $115,000 in 1912, to $237,000 in 1921. The reason for this increase has been due partly to the increased benefits conferred by the Legislature by way of increasing the benefits to employees.

The Transit Mutual Insurance Company commenced business on April 1, 1921, taking two offices in the same building with the Boston Elevated Railway. The business is conducted by four employees, manager, stenographer, bookkeeper and investigator. It is the intention of this company for the first year not to solicit or accept business other than its present policy holders which consist of the Boston Elevated Railway as a subscriber under the Workmen's Compensation Act, and several automobile owners, landlords and tenants public liability policies.

All accidents to employees occuring over the entire system of the Boston Elevated Railway are reported in duplicate to the insurance company, one copy being filed in the office of the insurance company and the other being filed with the Industrial Accident Board, which has jurisdiction over the administration of the Workmen's Compensation Act.

The Boston Elevated Railway Company has approximately 10,000 employees and the officials having charge of these employees are all directors of the Transit Mutual Insurance Company. Through the close relationship existing between the two companies very effective safety work has been done since the insurance company started business. The cost of accidents to employees is set against the record of the foreman or superintendent in charge of each plant or location and this has a tendency to promote safety activities in each department to maintain a good record in accident prevention work.

The personnel of the board of directors and officials is particularly favorable to the success of the new company, all having had a wide experience in business and professional activities. The directors and officials of the Transit Mutual Insurance Company serve without compensation. The names of the directors and officials of the Transit Mutual Insurance Company are: Russell A. Sears, president; Stanley R. Miller, vice-president; John F. Stevens, vice-president; John H. Moran, secretary; Henry L. Wilson, treasurer; H. Ware Barnum, Edward Dana, Frederick S. Freeman, John Lindall, H. Bertram Potter, James Smith and Harry M. Steward.

Ralph C. Bush was appointed manager of the Transit Mutual Insurance Company at a meeting of the board of directors held on March 17, 1921. Mr. Bush is a lawyer and has been employed in the legal department of the Boston Elevated Railway since 1912. During that time he had charge of workmen's compensation matters and during the last year was engaged in the trial of accident cases.

Employee Activities Successful at Kansas City

Annual elections have taken place among employees' organizations and committees of the Kansas City (Mo.) Railways. The first in importance of these events was the election for service during the third year of the plan of committeemen to serve under the representative plan. This election aroused keen interest among employees at all points and visions of the system. In most instances there were several candidates for positions, although close and exciting races resulted the best of feeling prevailed in the contests. There was no question of "policy" involved in any contest, the aim of voters being to select the employees best qualified to fulfill duties.

The Kansas City Railways Building, Savings & Loan Association held its annual meeting recently. F. G. Buffe, general manager of the company, was elected president, and E. E. Stigall, purchasing agent, vice-president. I. B. Nordyke continues as secretary, and L. M. Boschert as treasurer. Twelve hundred of the company's employees are members of the association, paying in an average of $10 a month. Applications for loans, chiefly for home building, are increasing as members establish savings sufficient to begin home planning.

The Railways Employees Brotherhood has a membership of 2,600 out of a possible 3,000. Dances or other entertainments are arranged by brotherhood committees in each division at least once in two months. The Brotherhood Baseball League has this year eight teams, an increase of two teams over last year. Games are being played at Tramway Park, provided by the company. The Brotherhood operates successfully a grocery store—successful not only in giving service, but in making a profit.

News Notes

Wages Cut in Dallas.—The Dallas (Tex.) Railway has announced a 10 per cent reduction in wages, effective at once.

Reduced Three Cents an Hour.—A reduction in the wages of the motormen and conductors in the employ of the Beech Grove Traction Company, Indianapolis, Ind., will take effect on Aug. 16. Trainmen will be reduced from 41 cents an hour to 38 cents, trackmen from 38 cents to 30 cents, and one-man car operators from 46 to 43 cents an hour.

Railway Man Flies.—Horace Lowry, president of the Twin City Rapid Transit Company, Minneapolis, Minn., has just completed an airplane trip from Minneapolis to Chicago. The trip was made without event, except for a stop for fuel at La Crosse. Mr. Lowry, who is interesting himself in aviation, wished to try out an experimental trip. With A. L. Drum, construction engineer, he reached Chicago in time for the opening of the Progress pier celebration.

Transportation in Shanghai.—In a speech before the Civic League of Shanghai, Donald McColl, manager of the Shanghai Tramways, gave some very interesting material regarding transport in cities. His talk was applied especially to conditions in Shanghai and is unique in its charts, maps and diagrams depicting conditions in that city. The address has been printed in pamphlet form with all illustrations, and makes a valuable addition to the transportation literature of China.

Men's Wages Cut Again. — For the second time within a year the wages of conductors and motormen in the employ of the Rockford (Ill.) Traction Company have been reduced. The reduction which took effect on Aug. 1 amounts to 5 cents an hour. About the middle of January this year when the fare was advanced from 7 cents to 8 cents the pay of the trainmen, shopmen and office force was cut 7 cents an hour. The details of this cut were given in the ELECTRIC RAILWAY JOURNAL, issue of Jan. 22.

Railway Sued in Wage Case.—One of the railways at Dayton, Ohio, that did not effect a wage settlement with its employees was the City Railway. That company finds itself confronted now with a petition filed in the Common Pleas Court in which it is alleged by five employees that there was a breach of contract on the part of the company through abrogation of its bulletin of July 6, 1920. It is alleged that the bulletin, whose terms were to have been in effect a year, provided that questions "in dispute shall be immediately submitted to a board of arbitration."

City Starts Tearing Up Tracks.—Judge Koch at Pottsville, Pa., on Aug. 3 issued an injunction against the chief burgess and fifteen members of Ashland Borough Council prohibiting them from tearing up the tracks of the Schuylkill Electric Railway until a hearing in court. The trouble arose over a demand that the tracks be placed in the center of Center Street instead of on one side, where new paving is in progress. The railway asserts it is financially unable to meet the demands for municipal improvements, coming from virtually every town on its route.

Court Action Started on Alleged Improvements.—Court action has been started in the Superior Court to compel the city of Seattle to construct additional car lines on East 55th Street, beyond Twenty-ninth Avenue N. E., for which, among other improvements, it is alleged a bond issue of $790,000 was sold May 21, 1919. The plaintiff is G. E. Hayes, for himself and other owners of the University Heights district, who claim they purchased real estate on the assumption that values would be raised by the improvement. A mandatory injunction to compel construction of the line is asked.

Voluntary Reduction of Wages Accepted.—Voluntary reduction of wages is proposed by members of the local union at Wilmington, Del., with a view of co-operating with the Wilmington & Philadelphia Traction Company, in the hope of helping to restore prosperity. Resolutions have been adopted that whenever the number of paying passengers carried in any month is lower than that of the average earned in the corresponding month of the years 1919 and 1920, with other conditions as at present, the employees will accept a reduction of 5 cents an hour for that month.

Wages Cut in Harrisburg. — Announcement has been made by officials of the Harrisburg (Pa.) Railways that effective on Aug. 16 the wages of all carmen will be cut 10 per cent, or 5 cents an hour. The new scale will give first-year men 43 cents an hour, second-year men 44 cents, and third-year men 45 cents. The reduction cancels the voluntary 5-cent increase made on March 20, 1920. The reason given for the reduction was the decline in riding. The Valley Railways also announced a similar reduction to take effect the same date. These two companies serve Harrisburg and adjacent counties.

State Rulings Supreme. — According to a recent ruling of Judge John H. Cotteral, in the United States Court of the Western Oklahoma district, the State Corporation Commission has undisputed power to modify or abrogate contracts made between two public utilities. This decision was rendered in the case of the Oklahoma Gas & Electric Company, seeking an injunction to restrain the Corporation Commission and the Oklahoma Natural Gas Company from carrying into effect the city gate rate order governing charges for natural gas delivered to local distributing companies. The court held that the power of the state is supreme and that it can change existing contracts.

Referee Suggested at New Orleans.—The Electrical League of Louisiana has injected itself into the New Orleans trolley tangle. It has addressed a communication to the Commission Council suggesting the appointment of a referee to whom shall be presented every phase of this now nationally known controversy, and it proposes that his ultimate decision shall be binding upon both the city and the New Orleans Railway & Light Company. It is suggested that a man with a national reputation as a utility expert be appointed. Along these lines the communication names Samuel Insull, Chicago; Henry L. Doherty, New York; Charles H. Edgar, Boston, and A. Merritt Taylor, Philadelphia.

Franchise Amendment in Hamilton.—A new amendment to the present franchise of the Cincinnati & Dayton Traction Company operating in Hamilton, Ohio, will become effective as soon as the company is able to provide new and modern safety car equipment. This amendment provides for the operation of one-man safety cars and simultaneously an increase in fare of from six tickets for 25 cents, and half fare for children, to 5 cents straight fare for adults and children, for a period of six months. If at the end of six months the straight 5-cent fare does not provide sufficient revenue to pay all operating expenses and fixed charges, with a proper return on the investment, then the fare will automatically go to 6 cents.

New Franchise in Highland Park.—The Chicago, North Shore & Milwaukee Railroad has succeeded after several years of negotiations in securing a new thirty-year franchise through Highland Park, Ill. The franchise was approved by the City Council and later passed by the people at a special election. The former franchise expired several years ago. Among some of the more important provisions of the new franchise is the requirement that in case the Chicago & Northwestern Railroad, whose tracks parallel those of the electric line, should elevate or depress its tracks through Highland Park at any time, the electric line shall likewise elevate or depress its tracks simultaneously. In case such grade separation is built the franchise becomes perpetual. The franchise calls for a number of improvements in the way of paving, a new station, etc., to be built within the next two or three years. All poles set in the future as the old ones are replaced must be of ornamental steel or concrete. Two main tracks through the city are permitted, those now existing; but in case of elevation or depression, the company is to be permitted to build four tracks.

Financial and Corporate

Bill Would Handicap Financing

Investment Bankers Opposed to Passage of Dennison Bill Introduced in House of Representatives

Several bills now pending before Congress have for their purpose suppressing the fraudulent offering and sale of securities. These are typical blue-sky bills, seeking to have the Federal Government take the same jurisdiction over the regulation of security offerings that is now taken by some states.

One of these bills, known as the Dennison bill, which is pending in the House Committee on Interstate Commerce, if passed, would entail great hardship on all public utilities in any financing activities. The Investment Bankers' Association of America has taken a stand against this particular bill. That body contends that if the measure now pending is enacted into law, it would compel every corporation issuing stock and every borrower issuing bonds as well as all offerers of securities to secure the advance approval of such issues in each and every state where the offering is advertised, through the public press, the periodicals of country-wide circulation, is sold through the mails and is arranged for sale by telegraph or telephone in states having blue-sky laws.

The Investment Bankers' Association further explains that if this bill becomes a law, long-established methods of selling securities would have to be changed, or banks and dealers offering the issues would become involuntary criminals. In short, before any securities intended for country-wide distribution could be offered for sale they would have to be approved in advance in practically every one of the thirty-eight states having blue-sky laws in force. Aside from the fact that legislation of the Dennison bill type is considered impractical, it would add an unwarranted cost to legitimate borrowing by the business interests of the country.

The association is supporting another bill, known as H. R. 7868. This measure is intended to curb the sale and offering of fraudulent securities through the agencies of special committees in each Federal Reserve Bank district. These committees would be so organized that as soon as the offering of a fraudulent security came to their attention they would inform the Federal Department of Justice, so that the legal machinery could be set in motion not only to stop the further offering of such securities, but to punish the offender if he continued to offer them. This bill provides that there shall be no interference in any way with any state blue-sky law now in force or that may be adopted, but that it shall supplement such blue-sky laws. The bill proposes a somewhat similar type of legislation to that recently adopted by some of the states, notably New York, Maryland and New Jersey.

$12,000,000 Increase in Net in Seventeen Years

Stone & Webster, Inc., has issued a chart showing the combined earnings of all the companies under its management, the relation of these earnings each year to the outstanding capital and the resulting effect upon security values as reflected in market quotations. The operating expenses and taxes are shown in one color, interest charges in another, dividends in a third, and balance for reserves and replacements in a fourth color.

The chart shows that the gross earnings have increased from $9,000,000 in 1904 to $40,000,000 in 1920, and the net from $3,000,000 in 1904 to $15,000,000 in 1920. During this period of seventeen years there have been only two years, 1915 and 1919, when gross and net earnings were not larger than in the previous year.

The capital outstanding, consisting of bonds, coupon notes, preferred and common stock, has increased from approximately $73,000,000 in 1904 to $219,000,000 in 1920. In 1904 for each dollar of the gross earnings there was outstanding $8 of capital, divided between $3.50 of debt and $4.50 of capital stock. In 1920 for each dollar of gross earnings, there was outstanding $5.40 in capital divided between $2.60 of debt and $2.80 of capital stock.

The statement declares that during the past five years, out of a combined balance after interest charges of $35,000,000 only $15,000,000 was distributed in dividends and more than $20,000,000 was turned back into the properties.

Stock to Retire Debentures.—The stock of the Texas Electric Railway, Dallas, Tex., has been increased from $10,000,000 to $12,500,000 to provide for an issue of first preferred stock to retire debenture.

City Expert's Report Expected

Utility Expert Ballard, who has been employed by the city of New Orleans, La., to make another valuation of the property of the New Orleans Railway & Light Company, is now actively engaged at the task and is being assisted by a corps of aids. Mr. Ballard is credited with the statement that from the present outlook he will not be ready to submit his report to the Commission Council before Sept. 1.

The city authorities do not look for a settlement of the railway problem before January, 1922, even if the report of Mr. Ballard should be ready for submission to them in September. The officers of the railway themselves say that it will require from four to six months to install the needed machinery and power equipment required to bring the plant up to the standard of efficiency desired, after the matter of valuation, rate of return and fare has been decided.

Dangerous Tendency Shown in Recent Financing

The interim report of the subcommittee on electric securities of the Investment Bankers' Association on "The Importance of Adequate Junior Financing," referred to in the ELECTRIC RAILWAY JOURNAL for July 2, contained the accompanying table prepared for the association by Frederick M. Peyser, of the *Commercial & Financial Chronicle*. This table was secured by going over the files of the *Chronicle* for the past fifteen years, listing all the offerings or notices of issue of securities by note percentages were 88.58 as against stock percentage of 11.42. electric light and power, gas, traction, waterworks, and telephone companies, and then classifying them into tables of the total bonds, notes, preferred stock, and common stock.

COMPILATION SHOWING PERCENTAGES OF SECURITIES USED IN FINANCING

	Common Stock	Per Cent	Preferred Stock	Per Cent	Notes	Per Cent	Bonds	Per Cent	Total
1906 1907 1908	$195,399,687	21.23	$21,381,475	2.32	$156,624,000	17.02	$547,007,400	59 43	$920,412,562
1909 1910 1911	246,292,890	19.86	89,041,700	7.18	161,655,000	13.04	742,881,503	59.92	1,239,851,093
1912 1913 1914	164,458,440	10.64	133,919,400	8.66	288,493,888	18.66	959,224,661	62.04	1,546,096,389
1915 1916 1917	190,972,883	14.02	113,460,621	8.33	351,234,625	25.78	706,686,472	51.87	1,362,354,601
1918 1919 1920	99,226,400	6.63	71,731,321	4.79	684,407,513	45 69	642,423,104	42.89	1,497,788,338
Total for 15 years	896,330,300	13 65	429,534,517	6.54	1,642,415,026	25.01	3,598,223,140	54.80	6,566,502,983

The figures as given for the total of fifteen years show a combined note and bond financing of 79.81 and a combined stock financing of 20.19 as against the theoretical 50-50.

The figures were prepared for each year and then arranged in three-year periods, with percentages for each class of security for each period, and also with percentages of each class of security for the fifteen-year period.

During the last three-year period (1918-1919-1920), the total bond and

San Diego's First Quarter Good

14 Per Cent More Riders at 5 Cents, 10 Per Cent More at 7½ Cents, and Only 1½ Per Cent Fewer at 10 Cents

Operating statistics of the San Diego Electric Railway for the first quarter of 1921 appear below. The figures for 1920 were printed on page 875 of the issue of this paper for May 7. The statistics are particularly interesting because of the zone system of fares used on this property. The revenue from transportation, compared with the first three months of 1920, increased from $317,865 to $346,962 or 9.15 per cent, this being due to an increase of approximately 9 per cent in revenue passengers. This average came through a 14.01 per cent increase in 5-cent short-haul riders, a 10.48 per cent increase in 7½-cent (four tickets for 30 cents), two-zone riders, a 1.48 per cent decrease in 10-cent cash two-zone riders, and a 0.75 per cent decrease in miscellaneous ticket riders. The fact that the 7½-cent tickets sold in larger numbers while the equivalent 10-cent cash fare decline is evidence of the popularity of the company's plan to improve fare collection and schedules, as well as to stimulate riding, through the sale of easy-to-use and easy-to-spend transportation.

At the same time it was found possible to decrease car-miles by 11 per cent and thus to increase the density of traffic (passengers per car-mile) by 23 per cent. This is also reflected by the fact that the seats offered were reduced from 11,391,482 to 9,164,314 or 19.55 per cent, while leaving 1.43 instead of 1.94 seats per passenger carried—a decline of 26.29 per cent. Detail operating data presented in the two accompanying tables show also the increase in revenue per car-mile from 35.09 cents to 42 cents, or 17 per cent.

GENERAL OPERATING STATISTICS OF SAN DIEGO ELECTRIC RAILWAY

	January-March 1921	January-March 1920	Per cent Change
Revenue from transportation	$346,962	$317,865	9 15
Revenue from other railway operations	1,412	17,945	*92 11*
Non-operating income	2,787	3,240	*13 97*
Total income	$351,162	$339,050	3 57
Revenue Passengers Carried:			
Cash Fares			
5 Cents	2,176,534	1,909,012	14 01
10 Cents	178,366	181,049	*1 48*
Other	8,500	8,474	0 31
Total cash fares	2,363,400	2,098,535	12 62
Revenue Tickets			
7½ Cents	2,171,606	1,965,491	10 48
Other	932,059	939,119	*0 75*
Total revenue tickets	3,103,665	2,904,610	6 85
Total revenue passengers	6,384,604	5,859,237	8 97
Car-Miles and Car-Hours			
Car-miles operated	833,793	943,854	*11 66*
Car-hours operated	89,410	99,210	*9 88*
Car-miles per car-hour	9 32	9 51	*2 00*
Revenue passengers per car-mile (exclusive of transfers)	6 56	5 30	23 72
Total passengers per car-mile (inclusive of transfers)	7 66	6 21	23 35
Seats offered	9,164,314	11,391,482	*19 55*
Seats per passenger	1 43	1 94	*26 29*

CAR-MILE STATISTICS IN CENTS PER CAR-MILE, SAN DIEGO ELECTRIC RAILWAY

	January-March 1921	January-March 1920	Per cent Change
Revenue from transportation	41 61	33 68	23 05
Revenue from other railway operations	0 17	1 90	*91 05*
Non-operating revenue	0 33	0 34	*2 94*
Total income	42 11	35 92	17 23
Revenue Passengers Carried per Car-Mile			
Cash Fares			
5 Cents	2 61	2 02	29 21
10 Cents	0 21	0 19	10 53
Other	0 02	0 01	10 00
Total cash fares	2 84	2 22	27 93
Revenue tickets			
7½ Cents	2 60	2 09	24 40
Other	1 12	0 99	13 13
Total revenue tickets	3 72	3 08	20 78

Note—Italics denote decrease.

Pacific Electric Would Abandon Its Harbor Lines

The Pacific Electric Railway, Los Angeles, Cal., has asked the California State Railroad Commission for permission to abandon its entire local railway system of some 5 miles of single track in the Los Angeles Harbor District if the property owners of the harbor district continue to insist that the company double-track its system on Sixth Street at a cost of $80,000. Announcement to this effect was made on July 27 by H. B. Titcomb, vice-president of the railway. The company is operating its local lines in the harbor district at a loss, and additional expenses heaped upon the company at this time will merely add to these losses.

Mr. Titcomb said:

> The city has granted permits for the operation of jitneys on Pacific Avenue and Sixth Street, and these buses operate over the very pavements we have paid for and on which we pay taxes. It costs the Pacific Electric 33 per cent of its gross for taxes and upkeep, while it costs the jitneys little or nothing by comparison. We cannot continue operating at a loss, and we hope the Railroad Commission will be able to see the predicament in which our system has been placed in the harbor district. The jitney has taken a large toll of our harbor city travel, and if we are compelled to make further heavy expenditures there we will be compelled to abandon our San Pedro system.

Business Poor on Electrified Line in South Jersey

According to the twenty-fifth annual report of the West Jersey & Seashore Railroad for the year 1920, the net income showed a deficit of $463,148. The company either owns or operates under trackage rights 361 miles of track and two ferryboat lines of 2 miles. The combined compensation and operating results for 1920 show a decrease of $1,094,000 compared with 1919.

The total railway operating revenues were $13,914,442 and operating expenses $13,999,620, leaving a net deficit from railway operation of $85,177. Deducting railway tax accruals amounting to $571,832, which amount is equivalent to nearly 5 per cent return upon the capital stock, and net hire of equipment and joint facility rents—which amount to $382,000, makes the net operating deficit $1,039,063; other operations, however, netted a profit, so that the deficit for the year was only $363,699 before setting up the sinking fund reserve.

More than 60 per cent of the gross revenue is derived from passenger traffic. The company relies mainly upon its summer business to earn fixed charges and dividends and to offset the operating deficit that accrues during the balance of the year.

I. R. T. Notes Extended—$4,000,000 Saving in Expenses

The Transit Commission at New York City has authorized the Interborough Rapid Transit Company, New York, N. Y., to extend to Sept. 1, 1922, its $38,144,400 of outstanding 7 per cent convertible gold notes which become payable on Sept. 1, 1921. The renewal will be at the interest rate of 8 per cent. In a circular to the noteholders, the company declares it is unquestionably to the interest of the holders of the 7 per cent notes to preserve the existing status by agreeing to renew the notes "rather than to precipitate a receivership when the company is apparently on the eve of a recovery of its credit."

Chairman McEneny, of the commission, stated that the commission was of the opinion that the interest of all concerned will best be served by reasonable extension of these notes.

Concerning the company's condition and prospects, the circular to noteholders says:

> The company has completed a readjustment of its wage rates, effective July 24, 1921, by which its employees, to help avoid a receivership, have agreed to accept a reduction of 10 per cent, thus effecting a saving at the rate of $2,600,000 a year.
>
> Reductions in the price of coal and supplies, together with operating economies due to mechanical improvements devised by the management, will effect a further annual saving of at least $1,500,000, or an aggregate reduction in expenses at the rate of more than $4,000,000 per annum for the present fiscal year ending June 30, 1922.
>
> The total of these expected economies very closely approximate the $4,464,000 by which the company failed to meet fixed charges for the fiscal year ended June 30, 1921, during which period, however, the peak of extraordinary costs was passed.
>
> It is reasonable to expect that with these

economies of more than $4,000,000 the company will be able to pay fixed charges, including interest on the 5 per cent bonds and these notes, and also to provide for current expenses.

Thus with the notes extended and the continued indulgence of its general creditors, the company should be able to maintain, and probably gradually improve, its present position until the Transit Commission shall have had an opportunity for action in the premises.

Financial News Notes

Haytian Property Sold.—An order has been signed by Federal Judge Mack authorizing the sale of the assets of the Haytian-American Corporation to five creditor banks for $650,000. This was the only bid received. The banks are the Irving National Bank of this city, the Fletcher American National and the Continental National of Indianapolis, and the National Exchange and the Second National of Baltimore.

Value Placed on Massachusetts Property.—The Interstate Commerce Commission has found $150,000 to be the final value of the Conway Electric Street Railway. The line extends from Conway to Deerfield, Mass. The commission finds that it would cost $192,505 to reproduce the line. The corporate operations of the carrier from April 2, 1895, to June 30, 1914, the valuation date, resulted in net earnings of $61,208. The carrier never has paid dividends. The investment in road and equipment was found to be $234,305.

Detroit Bonds Taken Up.—Announcement has been made that the $1,400,000 first consolidated mortgage bonds of the Detroit & Flint Railway, which matured on Aug. 1, 1921, will be taken up from the present holders upon presentation to the Central Union Trust Company, New York. The Michigan Public Utilities Commission has approved the issue of $4,000,000 of Detroit United Railway first mortgage collateral 8 per cent sinking fund bonds. These bonds were placed for refunding purposes.

Tacoma Seeking to Get From Under.—The city of Tacoma, Wash., has been promised a hearing before the United States Shipping Board in connection with its claim for cancellation of the debt of $232,000 advanced by the Shipping Board for double-tracking the municipal railway to the tide-flats, constructed as a war measure. The city takes the position that the line was put in as a war measure and that the Federal government should not require the city to shoulder the burdensome line, which since the war has been a continuous liability.

Lines Running to Princeton Consolidated.—Four electric railways operating between Trenton and Princeton, N. J., which have been affiliated for some time, have been consolidated as the Trenton-Princeton Traction Company. The lines amalgamated are the New Jersey and Pennsylvania Traction Co.; Trenton, Lawrenceville & Princeton Railway; Trenton, Lawrenceville & Princeton Railroad and Princeton Street Railway. The lines were built by Albert and Tom L. Johnson and their associates. The consolidation is mostly in the interest of economy in administering the affairs of the companies.

Another Customer Ownership Campaign.—The Evansville Gas & Electric Company, operating the city railway lines and the gas and electric light plants at Evansville, Ind., has circulated folders and letters appealing to the people of Evansville to buy stock in the company. The 500 employees of the company are aiding in selling the stock. Frank J. Haas, vice-president and general manager of the company, says that about 30 per cent of the stockholders of the company are women. In the present stock campaign an especial appeal will be made to housewives to buy the stock offered by the company.

Change in Status of Bonds.—A meeting of holders of French currency bonds of the Quebec Railway, Light, Heat & Power Company, Quebec, Canada, was set for Aug. 11, to consider the proposal of the company for the payment of overdue interest coupons and the conversion of the outstanding bonds into income bonds, after the making of the partial cash payment. The two bond issues affected are those forming part of an authorized issue of 60,000,000 francs, French currency, executed in March, 1920, and part of an authorized issue of 13,000,000 francs executed in January, 1911.

Railway Loses $342,681.—For the six months ended June 30, 1921, the International Railway, Buffalo, N. Y., increased its operating revenue over the same period a year ago from $5,126,729 to $5,274,178. Operating expenses and taxes increased more than $500,000, which left an operating income of only $388,973, against $770,183 a year ago. The deficit for the six months period is $342,681, against a deficit for the first six months of 1920 of $34,722. The gross revenues failed by $916,683 to provide for depreciation, taxes, etc.

Sale Under Foreclosure Ordered.—Public sale of the property of the Vincennes (Ind.) Traction Company was ordered by Judge Francis E. Baker, United States district judge, in a decree of foreclosure filed in Federal Court at Indianapolis on July 22. According to the terms of the decree the sale will be held about the middle of September. It is ordered that no bid of less than $150,000 be accepted. The decree is the result of a petition of the Mercantile Trust Company, St. Louis. According to the decree there are now outstanding bonds amounting to $282,251, principal and accrued interest. These bonds were put out in two issues, the first for $200,000 in January, 1903, due in 1923; the second for $50,000 in May, 1906, due in 1931.

$55,789 Increase in Balance.—The Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., reports for the year ended Dec. 31 total operating revenue of $1,431,562, compared with $1,251,651 for the previous year. Operating expenses $920,879, against $903,399; railway operating income $456,786, against $383,688; net income available for dividend $111,576, compared with $55,787. After deducting dividends on preferred stock amounting to $30,000 there was left a balance to profit and loss of $81,576, against $25,787 for 1919.

Marietta Line Run at Loss.—The Monongahela Power & Railway Company lost the sum of $924.61 in operating its railway system in Marietta, Ohio, during the month of June, according to figures submitted to the City Council. The line included in the statement is designated under the sixty days' trial period as Route No. 1. Council ordered the company to proceed immediately with the removal of the rails on streets where the lines have been abandoned. City Solicitor Ward was asked for an opinion regarding proper procedure and he stated that it was his understanding that the railway had given up its rights and if a majority of the residents favored removal of the tracks he did not see why Council should not decide favorably and order the company to comply.

New Bond Issue for Chicago Motor Bus.—The Lake Shore Motor Bus Corporation, which is the successor to the Chicago Motor Bus Company, is offering through the Stanwood Company, investment bankers of Chicago, an issue of $750,000 of 8 per cent first mortgage and collateral trust sinking fund bonds. The amount now offered is half of an authorized issue of $1,500,000. The bonds are due Dec. 1, 1935, and are being sold at 97½ to yield about 8.40 per cent. The prospectus of the company states that for the first six months of the current year the bus company carried 3,541,747 passengers, an increase of 810,074 over the same period in 1920. It also states that as soon as feasible, service will be extended to the South Side in Chicago. The company holds a franchise for this extension.

$9,172,500 of Notes Paid.—The Philadelphia Company, operating the Pittsburgh Railways, has called for payment before maturity the outstanding $9,172,500 of three-year 6 per cent secured gold notes, due Feb. 1, 1922. This clears off a part of the refinancing program which the company must carry out during the next year. In addition to the three-year notes, which have been called for payment on Oct. 1 at 100½, the company has an issue of $9,794,000 ten-year 5 per cent debenture bonds falling due May 1, 1922. Payment of the three-year notes has been provided for through funds which came into the company's treasury through the recent issue of $10,000,000 bonds by the Duquesne Light Company, the proceeds of this issue having been turned over to the parent company in payment for properties acquired by the light subsidiary.

Traffic and Transportation

Trackless Trolleys Opposed

The International Railway, Buffalo, N. Y., may withdraw its petition asking permission to operate trackless trolleys on Bailey Avenue as a result of the opposition to the plan. At a recent hearing this method of transportation was strongly objected to on the ground that serious damage would be done to the pavement.

Herbert G. Tulley, president of the International Railway, and Thomas Penney, attorney for the company, appeared at the hearing in support of the petition. Mr. Tulley said that he wanted the experiment tried until January, 1923, but he would not guarantee the property owners against damage. He said further that it was for the purpose of supplying some kind of service in the northeastern section of the city that he wanted to try the trackless trolley.

Mr. Penny declared that if the people were averse to the plan the petition would be withdrawn. The Council decided to defer action on the matter until Sept. 9.

Traffic Laws Must Be Observed

Traffic congestion has become one of the biggest problems that is facing the Dallas (Tex.) Railway. The Dallas Safety Council, which was organized several months ago, is co-operating with the railway and has suggested a rearrangement of the tracks in the east section of the business district. The city of Dallas has the backing of the railway and the Council in the matter of enforcing traffic rules as a means of reducing accidents.

The city, through the chief of police, recently requested the railway to instruct motormen to stop their cars so that the rear doors would open on the safety zones that have been lined off in the business district, and also that when the doors of cars are once closed and the motorman is signalled to go, the car be not stopped to let any other person board it or for other reasons except grave emergency. The Council has been waging an intensive campaign against reckless auto driving. It announced that one of the first evils to be eliminated is the passing of street cars by autos while the cars are discharging or taking on passengers.

St. Paul Fare Hearing Deferred

After a morning hearing before the Minnesota Railroad Warehouse Commission on July 28 the application of the St. Paul City Railway for an emergency fare of 7 cents and four tokens for a quarter, postponement was allowed to Aug. 23, the day set for the postponed hearing of the Minneapolis Street Railway's application for a similar emergency rate. Both cities now have a 6-cent rate.

The postponement was made on plea of Corporation Counsel Arthur E. Nelson that the city wanted time to analyze the company's exhibits and to prepare a brief. The counsel had already attacked the validity of the law, which was passed by the 1921 Legislature placing the rate-making power for electric railways in the commission. If the commission grants the rate this attack will be taken into the courts for determination of the constitutionality of the law.

E. W. Bemis is the expert retained by the city to support its side of the fare controversy. Mention of the postponement of the Minneapolis Street Railway's case was made in the ELECTRIC RAILWAY JOURNAL, issue of Aug. 6.

Points Before Court in Louisville Case

The City Attorney of Louisville, Ky., has announced the questions which have been certified to the Supreme Court of the United States by the Circuit Court of Appeals in the case of the City of Louisville in its appeal from the injunction obtained by the Louisville Railway restraining the city from interfering with it in the collection of 7-cent fares. According to him they are:

1. Whether the acts of the Kentucky Legislature prior to the present constitution gave the city power to contract for a rate of fare.
2. Whether the consolidation of the companies in 1890 abrogated the contract.
3. Whether the acceptance of the present constitution by the Louisville Railway abrogated the contract.

Attorney Lawton stated that these three questions will be certified to the Supreme Court as soon as it convenes in October. The questions other than those certified to the Supreme Court will be passed on by the Circuit Court.

Everybody concerned appears to be very well pleased with the action of the Circuit Court of Appeals in certifying to the United States Supreme Court the questions involved in the 7-cent fare suit of the city. It is pointed out that the case would have gone to the Supreme Court in any event and that by the action of the Circuit Court decision will be rendered more promptly and the procedure will be less expensive.

In the meantime the company continues to collect 7-cent fares and is issuing rebate slips for the additional 2 cents. It is anticipated that so far as the company is concerned it will benefit materially in earnings, even if the decision is against it.

A local newspaper has taken up the cudgels in defense of the railway, declaring:

> If the city should finally win, all those who will have paid 7 cents and have no means of recovery will remember that machine politics at the City Hall threw into the courts a matter that proper city administration should have handled in an administrative way. If the company should finally win, a way out will have been shown to all utilities subjected to political persecution.

Routes of New Five-Cent Lines Announced

Edward Dana, general manager of the Boston (Mass.) Elevated Railway, has announced that additional experimental districts with 5-cent local fares, without transfer privileges, will be operated commencing Aug. 13. In Charlestown, all surface cars will be operated to Brattle Street station, it is stated, the local 5-cent fare to be collected pay-enter inbound and pay-leave outbound. Ten-cent fares will be collected from passengers transferring to elevated or Haymarket Square subway stations.

In Cambridge, surface cars operated to the Harvard Square subway station, lower level, will be run pay-leave inbound and pay-enter outbound. Local fares will be 5 cents, without transfer privilege. Inbound 10-cent through fares will be collected at Harvard Square subway station.

Dorchester inbound passengers riding to Andrew Square, Eggleston Square or Dudley Street, east loop or lower level, will pay 10-cent fare, and if alighting before arrival at the station will be entitled to a return coupon, good on outbound cars only on the date issued and the next day. Outbound 5-cent local fare or return coupon will be collected without privilege of transfer.

No change will be made on night and early morning cars.

Eight Cents in Birmingham

Eight-cent fares with a 2-cent transfer charge were granted the Birmingham Railway, Light & Power Company by the Alabama Public Service Commission in an order made public on July 31. The increased fares took effect on Aug. 2.

Plans for a fight against the increased rates granted by the Public Service Commission and an attack upon the constitutionality of the Public Utilities Act of the last Legislature of Alabama, which gives the Public Service Commission complete and exclusive control of the rates charged by all public utilities, are being discussed by the City Commission of Birmingham.

Tickets, according to the terms of the order of the commission, are being sold at a rate of fifteen for $1, or at 6⅔ cents each for a minimum of fifteen tickets. Stations for the sale of these tickets have been established by the company throughout the business district, and the first day of the sale several thousand people purchased tickets. By the use of tickets, where no transfer is made, regular riders secure a reduction of one-third of a cent a ride under the new rates, a 7-cent fare having been in effect for several months.

The 2-cent transfer charge applies on all transfers except from several lines which are in effect extensions of main lines. In these specific cases the transfers are issued without charge, and riders are entitled to a further transfer to other lines on the payment of the regular 2-cent charge.

Reduced Rates to Win Patrons

Announcement has been made of a restoration of reduced round-trip fares over a large portion of the Oregon Electric Railway lines in the Willamette Valley, and on the Spokane, Portland & Seattle line to lower Columbia River points. The new schedule is aimed at competing auto-bus lines and has been established in an effort to restore the passenger traffic to its former basis. The new rates, which include one-day round-trip fares and week-end round-trip fares, became effective July 14 and July 16 respectively. They have been announced to expire Sept. 30, 1921, unless cancelled or extended.

The new rates for the week-end round-trip tickets are approximately 25 per cent lower than the present rates. The one-day round-trip tickets are 15 per cent under the present rate. The new rates are for round trips only and have no effect upon one-way service.

"Pull Together" Campaign Successful

"Let's Pull Together," is the slogan in bold face type on cards recently handed to passengers on lines out of Camden by the conductors in the employ of the Public Service Railway. The appeal continues with:

> Boost for better car service.
>
> We appreciate your patronage and support.
>
> We want to give you the best trolley service that is possible.
>
> We conductors and motormen are anxious to please you.
>
> We want better feeling and closer understanding between you and us.
>
> We want to ask you for suggestions as to how we can serve you better.
>
> We want to send you from time to time statements regarding our plans.
>
> We want the interest and good will of our car riders.

An urgent request follows for passengers to sign the cards and return them to a member of the crew.

The effort to enlist the co-operation of patrons has resulted in gratifying response. Up to Aug 3 9,524 names with addresses were turned in and many helpful comments were made. It is interesting to note that approximately 85 per cent of the persons who responded to the company's invitation lived in New Jersey and about one-third of these came from Camden. Most of the other persons signing cards lived in Philadelphia and other places in Pennsylvania. Only four signers made any complaint about the rate of fare. Some of the remarks were commendatory.

Long Distance Limited Service Planned

The interurban service from Fort Wayne, Ind., is to be augmented by the establishment of the longest distance limited service in the country in a short time. The Wabash Valley flyer, which operates between Fort Wayne and Indianapolis, will be extended to take in Lima, Ohio, making a complete interstate run on limited time.

The route within a short time, officials say, will continue to Cleveland, Ohio, the present schedule being altered to make all connections. This will make Fort Wayne one of the leading traction centers of the country. The new line will be the only direct route connecting the Ohio cities and the Indiana capital. It is planned to establish the Lima-Cleveland service by Oct. 1.

The Lima road of the Ohio Electric Railway, under the receivership of Henry C. Paul, Fort Wayne, has been improved financially and physically. The Indiana Service Corporation is leasing part of the road from the receiver.

Seattle Confident in Fight Against Jitneys

Following the decision of the State Supreme Court, in which the rights of the city to ban the jitneys from the street were upheld, Superintendent of Utilities Carl H. Reeves issued an order forbidding the operation of any jitneys in Seattle. From this ruling sixty-five drivers are protected as participants in the McGlothern suit. This action covers a petition for rehearing of the jitney case, in which a temporary injunction, until Aug. 20, has been issued. Forty-three other jitney drivers have been allowed to join the sixty-five now protected, but they will not be protected by the injunction that affects the original sixty-five.

Since the order by Superintendent Reeves, one jitney driver has been arrested and fined $25 for operating without a permit, and in the case of seventeen others arrested judgment has been suspended at the request of W. B. Crawford, attorney for the Sound Transit Company, the organization of drivers. Mr. Crawford contends that the men under arrest are entitled to the thirty-day immunity granted by the injunction to Mr. McGlothern and others.

In a court order issued by Chief Justice Fullerton of the Supreme Court the forty-three drivers are permitted to join with the original sixty-five in filing a petition for a rehearing and a motion for modification of the court order issued by the Supreme Court on July 22.

About 120 jitneys have been barred from the streets by the order of Mr. Reeves. The ousting of the jitneys is believed by city officials to be the beginning of the end of the city's long fight to prevent the jitneys from competing with the Municipal Railway.

Several applications have been filed with the City Council for permits to operate 5-cent "feeder line jitneys" from the end of the railway lines. Mr. Reeves favors granting such feeder line permits in reasonable numbers.

Suburban Fares Reduced.—E. G. Shoup of the Peninsular Railway, San Jose, Cal., recently announced lower fares to the suburbs. The cuts are from San Jose to Los Gatos, round trip from 52 cents to 40 cents; San Jose to Campbell from 30 cents to 24 cents; from San Jose to Saratoga from 52 cents to 40 cents.

Court Reverses Itself

Emergency Rate Allowed In Evening Rescinded Next Morning— Everybody Wondering

Judge John Rellstab of the United States Court at Trenton, N. J., issued an order on the afternoon of Aug. 9 authorizing the Public Service Railway to increase its fare from 7 to 8 cents, with 2 cents for a transfer. On the morning of Aug. 10 the judge rescinded that part of his order permitting the increase to become effective.

Judge Rellstab's latest order states that "after further reflection upon the consideration of the authorities and in view that an early date for the hearing has been set in this case, so much of the rule to show cause which authorizes the company to increase its fares is vacated."

Application for a preliminary injunction to restrain the Public Utility Commission from interfering with the collection of a rate of fare greater than the 7-cent rate with 2 cents for transfers authorized by the commission was made to Judge Rellstab by the Public Service Railway on Aug. 9 under the provisions of an act of Congress passed in 1911.

Counsel for the company convinced Judge Rellstab that a condition existed which would result in confiscation of the company's property, and the advanced rate was granted, to become effective when the company had filed stipulations providing for a refund of the excess fare in the event that the appeal was finally determined so as to provide for a rate of fare less than 8 cents.

The recital of the bill by the railway is in a large measure a reiteration of statements already made before the Public Utilities Commission and the courts in previous rate cases. Statements of the commission that the rate allowed by the board will provide a 7 per cent return on the value of the company's property are branded in the bill as palpably incorrect.

Under Section 266 of the Federal Judiciary Act three judges must hear the appeal. The date has been set as Aug. 18 and Judge Rellstab has selected Judge J. W. Davis of New Jersey and Victor Wooley of the Delaware Circuit Court to sit with him.

Governor Edwards said that it was difficult for him to understand why the railway did not exhaust its logical resources in the State before taking its case to the Federal Courts.

Counsel for the New Jersey Auto Bus Owners' Association said that the only solution was to let the railway charge all it desired and let the people choose between it and the jitneys.

The commissioners were away from the State on a short vacation when the court announced its ruling. Mr. Herrmann, counsel for the commission, said, however, that from the little information he had, he doubted the legality of Judge Rellstab's act. This statement by Mr. Herrmann was made before the supplemental order of the court had been announced.

24,343,493 Jitney Passengers in Newark in Six Months

During the first half of this year the jitneys in Newark, N. J., carried 24,343,493 passengers, compared with 19,625,797 for the first half of 1920. The report of the Department of Revenues and Finance disclosed that jitney owners collected fares aggregating $1,217,171 this year against $981,289 for a similar period last year. The figures show that approximately the same number of buses were operated during each of the competitive periods.

Wheeling Company Acts Against Buses

Exciting scenes resulted on July 30 when C. P. Billings, general manager of the Wheeling Traction Company, had warrants issued for the drivers of the buses operating between Wheeling and Bellaire, Ohio, and Martins Ferry, Ohio. Mr. Billings charged the operators of the buses with violating the new state traffic ordinance by failure to pay license. The drivers were arrested, and after being freed on bond the men ran the buses, giving free rides. It later developed, however, that the statute under which the arrests were made did not become effective until Aug. 9.

Mobs gathered where the drivers were arrested and threatened the constable making the arrests. Later, at Aetnaville, Ohio, parts of the railway tracks were torn up, and in Martins Ferry, just above Aetnaville, the tracks were greased. The traction system was tied up.

There was a riot when Mr. Billings appeared in Bridgeport in response to reports street cars were being interfered with. So threatening did the attitude become against him that the police felt called upon to protect him from the mob.

The trouble was the climax of the fight between the traction company and the bus lines which are springing up on all sides in competition with the trolley. Recently the Wheeling City Council passed an ordinance restricting the bus lines.

Jitney Measure Modified—Property Consents Now Necessary

The first ordinance regulating jitney traffic in Kansas City, Mo., became effective on April 16. It prohibited jitneys from using streets on which street cars operated. The second regulatory ordinance was passed by the City Council on July 11, was signed by the Mayor on July 13. It becomes effective on Aug. 12. This second ordinance represents a response of the city to the demands of the public that consent of property owners be secured before jitney routes are established.

The new ordinance provides that written consent of a majority of front feet property owners on proposed jitney routes shall be filed before such proposed route can be established. The majority is of front feet, and the property owners signing must reside in Kansas City. There are other restrictions on routing. A route so established may be maintained for one year; the license continuing unless withdrawals of consent by property owners shall reduce the consent-footage below a majority.

The type and number of jitneys to be operated are under control of the inspector of jitneys—no more than those designated in the application and approved, to be allowed on any route.

The new measure is in the nature of an amendment to the previous ordinance and continues in effect the ruling that autos for public hire in so-called jitney service shall not be operated on streets where railway facilities are provided.

Commission Issues Jitney Certificate

The first jitney certificate was issued by the Maine Public Utilities Commission recently to Packard & Dunbar for the operation of a bus line between Grennville and Lily Bay, and from Greenville to Bangor. By a new law the Public Utilities Commission took over the supervision of the jitney, which is in charge of G. R. Armstrong, the commission's expert electrician.

According to rules and regulations adopted, time and fare schedules must be posted in the bus, and passenger capacity cannot be exceeded. The fare between any two points must not be less than the fare charged by any steam or electric carrier. Licenses can be revocated at any time after a hearing when it is shown that the public good no longer requires the jitney service or when rules have been violated.

Jitneys Banned in Albany

Pending a decision on the application of the United Traction Company, Albany, N. Y., for a permanent injunction, jitney operators have been restrained from competing with the railway. The order curbing the jitneys was made by Supreme Court Justice Harold J. Hinman of the Third Judicial District, New York State. It specifies by name 211 jitney men who have been running buses for hire without securing certificates of "necessity and convenience" from the Public Service Commission. The order is returnable on Sept. 10, when the railway case will be argued. The company has until Aug. 19 to serve the injunction. Those not mentioned in the injunction may continue the operation of buses until enjoined.

The company contends through H. B. Weatherwax, the vice-president, that jitneys have been operating in Albany, Troy, Watervliet and Cohoes in violation of Section 26 of the transportation law. The buses have been doing a good business in the cities affected by the strike of the union employees of the railway now in its seventh month. The company's cars are now being operated by non-union employees.

Low Fare Experiment Abandoned

A low rate of fare for a limited zone in the down-town district of the city does not stimulate the riding habit. That is the conclusion of officials of the Cleveland (Ohio) Railway, who on Aug. 8 discontinued the experiment of charging only 3 cents cash for fare, with a 2½-cent ticket rate, in the down-town part of Cleveland. The plan had a thirty-day test, but proved a failure. Instead of stimulating the riding habit and thus bolstering up the falling receipts of the company, the plan turned out to be a losing venture.

Starting on Aug. 9, a ride in the down-town section of Cleveland costs the same as a ride any place else; namely, 6 cents and a 1-cent charge for transfer, with nine tickets for 50 cents and 1 cent for each transfer.

The failure of the plan was discouraging to officials of the railway and to Fielder Sanders, city street railway commissioner, who had hoped that it would mean increased revenue to the company.

In commenting upon the failure of the plan, the Cleveland Plain Dealer on Aug. 7 said in an editorial:

> The down-town low fare experiment has proved a failure and comes to an end tomorrow. The idea was that if people could ride within a restricted area in the congested section at a reduced rate fewer would walk these short distances and a profitable short haul business might be built up. But the public failed to respond, people continue to walk about the down-town section and the company finds the experiment a losing one.
>
> While the general results of the test are not to be questioned they are disappointing in their relation to two car lines confined wholly to the congested area. There should be some plan possible for keeping a reduced fare in force on the Union station line and the pier line.
>
> Here are the cars with which Cleveland meets its visitors. Six cents seems unnecessarily high for a ride from the station to the Square or to one of the downtown hotels. Six cents is too much to charge passengers riding from the foot of East Ninth Street to the Square. Such a charge gives the stranger an unpleasant impression that the city is inhospitable.
>
> It is taken for granted, of course, that with a reduced fare on these two lines no transfers could be issued. The average traveler from station to hotel wants no transfer. Those who do wish to take some other line from the Square would not object to paying the higher fare and the transfer charge in addition.
>
> The pier line used to carry passengers for 1 cent. That was probably too low, but somewhere between 1 cent and the present 6-cent charge it ought to be possible to find a figure at which passengers could be carried at a profit reasonable but not excessive. The same considerations hold for the Union station line.

Six Cents Predominant Fare in Ohio

Figures compiled by the Ohio Committee on Public Utility Information on fares in effect in twenty-three Ohio cities having a population of more than 14,000 each show that 6 cents is the prevailing car fare in that State.

Of the twenty-three cities eleven have a 6-cent fare, while four charge 7 and four 8 cents. In Cincinnati and Youngstown a 9-cent rate is in effect, while Tiffin charges 10 cents.

A report of the Ohio Public Utilities Commission recently published showed that the interurban railways of Ohio operated at a loss during 1920.

Decision Reversed in Connecticut Jitney Case

Judge Edwin S. Thomas of the Federal Court at New Haven rescinded on Aug. 8 his restraining order of July 30 and gave notice that the jitneys would have to cease operating at 12 o'clock that night. The ruling of the court is that the jitneys must not attempt to operate again until the Federal Court of three judges had passed upon the application of the jitney men for an interlocutory injunction.

The court pointed out that there was no good claim to the theory of the jitney men that the court having issued a restraining order has not the power to vacate or modify its ruling. The court found that the rights of the plaintiff as set up were not free from doubt. As to the main issue, namely, the constitutionality of the state law, Judge Thomas left that to the higher court, which is to sit at New Haven on Aug. 16. The court was not convinced that the injury to the jitneymen would be irreparable if they were compelled to stop operating.

Judge Thomas had on July 30 issued an injunction which temporarily terminated the jitney ban and prevented the police from making arrests. In this decision Judge Thomas overruled Judge Keeler of the Superior Court, who had previously refused to issue an injunction to prevent the police from interfering with the jitneymen.

George D. Watrous, who appeared in behalf of the Connecticut Company, at a hearing on Aug. 5, pointed out that the company was losing from $6,000 to $10,000 daily as the result of jitney competition.

Transportation News Notes

Authorize Ten-Cent Rate.—The State Railroad Commission of Montana has granted the application of the Butte Electric Railway for a cash fare of 10 cents. Commutation tickets at 6¼ cents in books of any multiple of four will be provided under the board's ruling.

Pennsylvania Line Cuts Rates.—The Pittsburgh, Harmony, Butler & New Castle Railway, Pittsburgh, Pa., has filed notice with the Public Service Commission of decrease in its rate for agricultural and other lime and also for various kinds of shipments in smaller lots.

Seven-Cent Fare Only Allowed.—The City Council of Somerset, Ky., has authorized the Kentucky Utilities Company to collect a 7-cent fare in that city. The company asked for a 10-cent fare, stating that it could not operate for less. The company has not announced whether it will accept the Council's offer and resume the operation of cars.

Interurban Rates Advanced. — Cash fare, round-trip and commutation rates on the interurban lines of the Denver (Col.) Tramway were increased 20 per cent on Aug. 1 by authority of the Colorado Public Utilities Commission. The order further provides for a minimum cash fare of 10 cents and a minimum round-trip fare of 25 cents.

Freight Service Established.—A new traction freight service between Fort Wayne, Ind., and Lima, Ohio, was started by the Indiana Service Corporation on Aug. 1. The object of the new service is to enable Fort Wayne shippers to send freight over this line one day and have it distributed out of Lima to western Ohio points the next day.

Première of Snapshots.—An interesting illustrated newspaper "snapshots" giving sidelights on the employees during the busy day and in off moments is being published by the Georgia Railway & Power Company, Atlanta, Ga. It appeared for the first time on July 23 and will hereafter be published on the second and fourth Saturdays of each month.

Wanted — Uniforms to Press. — To co-operate with the men in maintaining neat appearances the Los Angeles (Cal.) Railway will operate its own uniform department in the near future. "Two Bells," the official publication of the railway, announces that Clayton C. Beers will be appointed superintendent of this department. A feature of special interest will be the cleaning and pressing service.

"Partners" To Appear Semi-Monthly.—*Partners*, the official publication of the Dallas (Tex.) Railway, has grown in size and in numbers. It was announced in the Aug. 1 issue that *Partners* would be published semimonthly instead of monthly "so that employees might have the news while it is hot." The editor announces that the former policy will be continued; i.e., constructive criticism and descriptive articles. New features will be added.

Lower Rates in Effect.—A reduced fare schedule on the Connecticut Company's line between Rockville and Hartford went into effect recently. The new fare will be 30 cents while the interurban line rate will remain at 40 cents. It is believed that the Common Council of Rockville will secure permission for a 20-cent fare between Rockville and Crystal Lake. The present fare is 30 cents.

Prepared to Submit Data.—Armed with information regarding legislation and regulation of jitney traffic in western cities, members of the Indianapolis City Council who accompanied the jitney junketing party have returned prepared to submit to the Council recommendations designed to clear up the jitney situations in Indianapolis. Investigation of conditions was made in Sioux City and Des Moines, Ia., and Kansas City, Mo.

City Fights Fare Rise.—Charles L. Jewett, head of the city law department of New Albany, Ind., appeared before the Interstate Commerce Commission in Washington to submit oral arguments in protest of the advance in fare from 7 cents to 10 cents, effective Oct. 1, by the Louisville & Northern Railway & Light Company, which operates the "Daisy" line between New Albany and Louisville. Last January the commission made a tentative award of an 8-cent commutation fare and a 10-cent cash fare, whereupon the company filed exceptions.

Allows Eight-Cent Rate. — Under a recent ruling of the Public Service Commission the Hudson Valley Railway has been authorized to put an 8-cent fare into effect between points in and through each zone except in Troy and in the urban zones of the cities of Saratoga Springs and Glens Falls. The company will also be permitted to increase the twelve and twenty-four-trip commutation tickets and forty-ride commutation ticket books good between Hudson Falls and Schuylerville, Glens Falls and Thomson and Glens Falls and Wilton may be advanced from $10 to $15.

Surface Lines Hearing Deferred.—Hearing of the Chicago (Ill.) Surface Lines fare case has been deferred until Sept. 14. At a session before the Illinois Commerce Commission on July 27 State Attorney Crowe renewed his demand for the corporate books of the companies. Counsel for the Surface Lines said he recognized the authority of the commission to examine all books, but he objected to anyone else claiming this as a right. It was agreed that this matter would be taken up when the hearings begin.

Would Couple Wages With Fares.—As soon as the announcement had been made that the wages of the trainmen and other employees of the International Railway, Buffalo, N. Y., would be reduced, Frank C. Perkins, commissioner of public affairs, asked the City Council to apply to the Public Service Commission for a rehearing on the fare case. Corporation Counsel Rann opposed such a move, holding the time was inopportune for a rate case and that the city might lose such a proceeding in view of the financial condition of the railway. The reduction in wages was noted in last week's issue.

Government Utilizes Traction Cars.—Traction cars of the Louisville & Southern Indiana Company and the Louisville & Northern Lighting & Power Company are being utilized for transporting the United States mails, as the result of an agreement which has just gone into effect with the Post Office Department. The transportation of the mails has hitherto rested solely with steam trains between Louisville, New Albany and Jeffersonville. The new arrangement offers a speedier service, cutting down the time by a half day. Mail from New Albany to Indianapolis will be carried to Jeffersonville by electric railway cars in time to catch the afternoon train to Indianapolis.

Legal Notes

CALIFORNIA—*Assault by Employee on Passenger Who Had Left the Car.*

A passenger who had had an altercation with the conductor over the question of a transfer was assaulted by the motorman after he had left the car. The court held that it was not a prerequisite to the right to recover that the passenger relation should be established, provided the employee was acting with the scope of his employment. [Galloway vs. United Railroads, 197 Pacific Rep., 663.]

FEDERAL DISTRICT COURT—*Carrier of Passengers Must Pay for Examination of Baggage on Sundays and Holidays*

The ruling of the Treasury Department requiring baggage brought in by trolley car passengers on Sundays and holidays to be impounded for inspection on the next working day, unless the trolley company pays the extra compensation for inspection, is a reasonable exercise of the department's power to make regulations for the enforcement of Rev. St. Sec. 3100, and the court cannot substitute its judgment for his. [International Railway vs. Davidson, Collector of Customs, 271 Federal Rep., 313.]

FEDERAL SUPREME COURT—*A State May Tax a Railway Franchise of a Company Engaged in Interstate Commerce*

A company owned 0.865 mile of track on the Eads bridge over the Mississippi and the Missouri State Board of Equalization taxed the 0.346 mile of track in the state on the basis of value per mile of $537,630, made up as follows: Rolling stock, poles, wires and cash, $32,630; roadbed, $5,000, and "all other property," $500,000. The company claimed this last item consisted of its franchise to conduct interstate passenger traffic and that such taxation was unconstitutional. The court held, however, that this value was not merely a franchise to do an interstate business, but the company's exclusive right to operate over the bridge, as well as the connections which it had with railways, at the end of the bridge, and as the company was capitalized at $1,000,000 and paid a return thereon, it was proper for the state to impose an ordinary property tax upon property having a situs within its territory. [St. Louis & East St. Louis Electric Railway vs. State of Missouri, 41 Supreme Court Rep., 488.]

GEORGIA—*Rule of Comparative Negligence Stated.*

The law in Georgia gives a right of recovery to an injured party although his own negligence may have been a contributing cause of the injury, provided the defendant's negligence constituting the proximate cause of the injury is greater than that of the plaintiff; the damage to be diminished in accordance with the plaintiff's contributing negligence. [Fairburn and Atlanta Railway & Electric Company vs. Latham, 107 Southeastern Rep., 88, and Georgia Railway & Power Company vs. Reid, 107 Southeastern Rep., 100.]

INDIANA—*The Driver of a School Wagon is an Agent of the Parent So That His Negilgence Will Be a Bar to Recovery for a Child's Death at a Crossing.*

The driver of the wagon, which is furnished by the township trustees to transport children to school under a statute which requires the trustees to furnish a wagon but does not require a parent to avail himself of the means so furnished, is the agent of a parent who intrusts his child to the driver for transportation. Hence the contributory negligence of the driver in crossing a railway track bars the parent's right to recover for the child's death from injury in a collision. [Union Traction Company of Indiana vs. Gault, 130 Northeastern Rep., 136.]

IOWA—*Alleged Oral Promises and Representations Held Not to Invalidate Contract for Right-of-Way.*

A property owner agreed to convey to the public for highway purposes 10 ft. in width of his lot to enable an electric railway company to build its tracks, but after the road was constructed he claimed that the oral promises of the company's agent in regard to the type of ballast to be used, stops to be made by the cars, etc., were not carried out, and that the contract should be declared invalid. The court held, however, that definite contracts should not be treated lightly, and that the claims made did not constitute evidence of fraud. [Smith vs. Waterloo C. F. & N. Ry., 182 Northwest Rep., 890.]

MASSACHUSETTS—*Failure of Conductor to Assist Passenger Held Not Negligence.*

The failure of the conductor to assist a woman passenger who had a child in her arms to alight from the car does not, in the absence of any showing of a rule or custom in that respect or of a request by the passenger for assistance, show negligence authorizing recovery for injuries caused by the passenger's falling. [Gatchell vs. Boston Elevated Railway, 130 Northeastern Rep., 94.]

MASSACHUSETTS—*A Truck Owner Who Uses Part of Street Reserved for Electric Cars Must Protect Himself Against Collision.*

A motor truck in winter, when there was deep snow on the highway, was traveling on the track of the electric railway which though on the street was on its southerly side and separated from the traveled way by a guard fence and was not paved. The truck broke down and while it was thus stalled a car ran into it. There was no red light on the back of the truck. Two employees of the railway company who were injured brought suit for damages against the truck owner. The company also sued for damages to its car and the Supreme Court upheld the verdicts for the plaintiffs in all three suits. [Bay State Street Railway vs. McCormick, 129 Northeastern Rep., 598.]

MINNESOTA—*Release May Be Voided for Mutual Mistake*

A release from all damages arising from an accident may be voided if there is clear proof of mutual mistake as to an unknown injury caused by the accident, existing at the time of the settlement and not intended to be included therein. [Nygard vs. Minneapolis St. Ry. Co., 179 Northwestern Rep., 642.]

NEW YORK—*Complaint by Railway Held to State Cause for Injunction Against Operation of Motor Bus Routes.*

Complaint by a street railroad company in New York City to enjoin the operation of motor bus routes attempted to be authorized by the board of estimate and apportionment, was held to state a cause of action for injunction. [Brooklyn City Railway vs. Whalen, 229 New York Supp., 570.]

NEW YORK—*Right of Street Railway to Charge Two Fares Not Affected by Acts of Lessee, Annexation or Consolidation.*

A street railway, on termination of its lease of a line on which it had right under its charters to charge two fares, resumes possession with such right unaffected by the fact that its lessee had voluntarily charged only one fare thereon. If originally it extended through a city and a town, and under its franchises had a right to collect a 5-cent fare in each, such right was not affected by the annexation of the town to the city, or by the subsequent consolidation of the city with another city. [People ex rel. Brooklyn City R. Co. vs. Nixon et al., 184 N. Y. Supplement, 369.]

WISCONSIN—*Power of Cities to Require Railways Operating Over Right-of-Way to Move Tracks Is Limited.*

An interurban railway which owns the portion of the street on which its tracks are situated, subject to the right of the public to use it for highway purposes, is in a different position from a company operating on a public highway. To require it to move from its present location to other property on which it has no property rights would amount to taking away the property right that it now has. Cities under the general charter laws, section 925-52, subdivision 31, or 925-52, subdivision 51, do not have the power to require a company to move its track under such conditions. [State ex rel. City of West Allis vs. Milwaukee Light, Heat & Traction Co., 180 Northwestern Rep., 938.]

Personal Mention

I. C. C. and Shipping Board Have Joint Committee

Commissioner Charles C. McChord has been selected chairman of the joint committee composed of three members of the Interstate Commerce Commission and the United States Shipping Board which has been appointed for the purpose of providing a liason between the two governmental bodies and considering overlapping duties of the board and the commission due to amendments to the Interstate Commerce Act and the passage of the Merchant Marine Act.

The joint committee is at present considering the question of a uniform through export bill of lading but so far no final conclusions on the matter have been reached. Chairman McChord said on July 30 that this subject will be taken up again at another meeting which he plans to call later, although no definite date for it has been determined upon.

Members of the committee in addition to Chairman McChord are Commissioners Hall and Esch representing the I. C. C. and Commissioners Edward C. Plummer, Frederick I. Thompson, and Meyer Lissner representing the shipping board.

Changes on Kankakee Interurban

Edward J. Blair, formerly assistant to the president, Chicago & Interurban Traction Company, which connects Chicago with Kankakee, Ill., was elected vice-president of the company at the meeting of the directors on July 22. W. W. O'Toole, formerly assistant auditor, was elected auditor. A. G. Nelson was made assistant secretary and assistant treasurer Other officers re-elected were Samuel Insull, chairman of the board of directors, Britton I. Budd, president, and W. W. Crawford, secretary and treasurer. Samuel Insull and W. W. Crawford were elected directors for a term of three years at a meeting of the stockholders held on the same day.

C. D. Emmons, president of the United Railways & Electric Company, Baltimore, Md., and H. B. Flowers, second vice-president and general manager of that company, expect to sail, on Aug. 13, for Europe, where they will study more particularly the use of trackless trolleys and the bus.

J. G. Phillips has resigned as general superintendent of the Mobile Light & Railroad Company, Mobile, Ala. Mr. Phillips was previously general manager of the Gary (Ind.) Street Railway. Prior to that connection he was engaged on valuation work with Ford, Bacon & Davis, engineers. At one time he was connected with the Hudson Valley Railway, Glens Falls, N. Y., as superintendent of rolling stock and later as assistant general manager. Mr. Phillips has not announced his future plans.

Mr. Van Ness Made Manager

Well-Known Electrical Engineer Will Direct Middle West Interurban for Receivers

The Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio, has undergone a reorganization of its personnel to the extent of the officials in charge of operations. L. G. Van Ness, one of the best-known electrical engineers in the Middle West, has been appointed general manager for the receivers, Edgar Stark and C. E. Hooven. Mr. Van Ness succeeds E. M. Gumpf, who resigned the general managership of the traction company some time ago, but who remained on the job until his successor took active charge. The railway has been in the hands of a receiver since 1913, but was apparently emerging from its financial troubles when the War Labor Board increased the pay of interurban and steam railroad employees.

F. E. Nichols, for many years connected with the General Electric Company, has been put in charge of operation of the road under the supervision of Mr. Van Ness, who has been a consulting engineer in Cincinnati for the last three years, with an office in the Union Trust Building.

Mr. Van Ness was graduated from the University of Wisconsin in 1896, and after leaving college served two years in the manufacturing field. From 1898 until 1904 he was employed as a consulting engineer by Emerson McMillan & Company, New York, operating the American Light & Traction Company. After severing his connection with this corporation, Mr. Van Ness joined the engineering staff of the North American Company.

During the year 1906, Mr. Van Ness went to Memphis, Tenn., where he supervised the construction of a light and power plant and remained on the grounds until the plant was in operation. He went to Cincinnati in the fall of 1918 and opened an office in the Union Trust Building.

Mr. Nichols is a graduate of the University of Kansas, and was an engineer in the employ of the General Electric Company from 1902 until last June.

Since Mr. Van Ness has taken charge the Cincinnati, Lawrenceburg & Aurora line has not undergone any material change in operation, but the new management has several plans under consideration to increase the earnings of the company, among them being the installation of a freight package system.

T. T. Fitzpatrick, who has been connected with the Monongahela Power & Railway Company, Fairmont, W. Va., for some time, has been appointed superintendent of transportation on the Clarksburg division. He succeeds Carl B. Johnson, resigned.

A. W. Buckley has been appointed superintendent of substations on the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind. He has been with the company since Dec. 16, 1920. Before that Mr. Buckley was employed by the Indiana & Michigan Electric Company, South Bend, at the substations of that company which furnishes power for the Chicago, South Bend & Northern Indiana Railway.

Brigadier General George H. Harries, vice-president of H. M. Byllesby & Company, Chicago, Ill., who acted as chief of the allied commission in charge of prisoners of war in Germany after the armistice, has been decorated with the order of Leopold by the Belgian Ambassador, Baron deCartier, in recognition of his services in behalf of the Belgian prisoners. The ceremony took place on July 22, at the Belgian embassy in Washington in the presence of officers of the Belgian and American armies.

Obituary

Edward Carmin, engineer at the Union Traction Company's power plant in North Anderson, Ind., was shot and instantly killed recently by George Ewen of Summitville, who had been employed about the power plant as a laborer and had been discharged by Carmin.

George D. Munsing, for several years manager of the old Consumer's Electric & Street Railway, now the Tampa Electric Company, at Tampa, Fla., died in Red Bank, N. J. Mr. Munsing came to Tampa in 1895 and was there until 1902, serving under both the Consumer's Electric Street Railway and the Tampa Electric Company.

Hart A. Fisher, formerly of Joliet, brother of F. E. Fisher, general manager of the Chicago, Ottawa & Peoria Railway Company, Ottawa, Ill., and a constructor and operator of steam and electric railroads, died recently in Crockett, Texas. He came to Joliet in 1903 from Columbus, Ohio, where he had promoted and constructed three or four of the most successful interurban railways of that district. With his brother, F. E. Fisher, and his son, L. D. Fisher, he formed the Fisher Construction Company. This company promoted and built the Aurora, Plainfield & Joliet Railway and the Joliet & Eastern Railway. Prior to entering the field of electric railway development, Mr. Fisher was in steam railroad promotion and operation for many years. He was the builder of the Chicago, Peoria & St. Louis Railroad.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Improved Business Condition Coming

Credit Conditions Show Evidences of Improvement and Return to Normal Level Should Come Soon

The United States is practically through the period of violent business disturbance which began in May, 1920, according to a review of business conditions by the National Bank of Commerce in New York. "We will from time to time have visible evidences of the distressing conditions through which the country has been passing," the review continues, "but these occurrences should be regarded not as indices to forward conditions but as relating to the past. The changes which have taken place have not as yet been recognized by the business public for two main reasons. The period of normal midsummer dullness now at hand has obscured the certain evidences of improvement and thorough comprehension of credit conditions is lacking.

"Failure to recognize the passing of the period of insufficient credit has resulted from lack of recognition of the fact that for a long time the credit shortage has been apparent rather than real and due in large part to the unsatisfactory character of some of the risks offered. There is now no bank credit available for operations designed to hold prices at fictitious levels. Orderly organized marketing, if fair, succeeds, but attempts to hold prices above the levels determined by international supply and demand are certain eventually to fail.

"The main requisite for a return toward normal conditions is the will to try for business on a level where it can be had. The period of general liquidation of the raw material markets of the United States has passed. Recent declines are due to conditions of supply and demand in specific lines. This is a normal condition. Wholesale prices of many classes of manufactures have been fully deflated. This is not true in all lines, but recent cuts in the price of steel and widespread reductions in wages indicate that adjustment in wholesale prices will not be long delayed. Price stabilization is, therefore, not far ahead."

Electrification of the Japanese Railways

Japan intends electrifying the entire railroad system of the country, writes the ELECTRIC RAILWAY JOURNAL correspondent in Switzerland. A report from London is to the effect that German manufacturers of electrical machinery and appliances are already in the field endeavoring to secure orders. Of a total length of 12,000 km. of the Japanese railways only 95 km. have been electrified thus far. Work on the electrification of a line of 205 km. will be started at once. A large power station for this line is to be erected in the neighborhood of Yokohama and another one near Tokyo. The expenditure for these two stations will be about 60,000,000 yen. A special company has been formed for the purpose of financing the electrification of the railways.

Fewer Idle Cars

Freight cars temporarily out of service due to the business depression totaled 555,168 on July 23, according to reports just received from the railroads of the United States by the car service division of the American Railway Association. This is a reduction of approximately 10,000 since July 15. In reaching this total, the car service division takes into account the total number of cars now in excess of current freight requirements as well as the number of cars now awaiting repairs above 7 per cent of the total. Officials of that organization believe that this percentage, while higher than the accepted maximum of the pre-war period, probably represents a better standard for present comparisons due to the difficult conditions respecting labor and materials during the past three years.

The surplus cars on July 23 numbered 350,772, which was a reduction of 21,278 cars compared with the total on July 15. This reduction was due principally to the increased demand in the central Western region for grain cars. Surplus box cars totaled 119,442, which was a decrease of 16,191 compared with the earlier date, while surplus coal cars were reduced 5,049 to a total of 168,568.

Cars in need of repairs on July 15 totaled 365,092, or 15.9 per cent of the cars on line compared with 354,611 or 15.4 per cent on July 1. Allowing for 7 per cent being normal, cars in need of repairs above normal totaled 204,396, which added to the total surplus means 555,168 cars out of service because of business conditions.

Railroad Crossing Frogs Cheaper

A 15 per cent reduction in the price of manganese steel castings for Balkwill articulated cast manganese railroad crossings, effective after Aug. 1, has been made by the American Manganese Steel Company, who furnish the manganese castings to most of the railroad crossing makers of the United States. This is the second reduction this year, and it is hoped will stimulate buying badly needed crossings.

Jamaica Proposes to Electrify Railway

The government of the island of Jamaica proposes to borrow from $6,000,000 to $7,000,000, it is reported, for taking over the electric railway and lighting system of Kingston and for electrifying the government-owned Jamaica railway, which extends 127 miles. American manufacturers are preparing to submit bids on the project, funds for which will probably be obtained in London, it is stated.

Census Bureau Reports on Wire Production

Figures Are Based Upon Returns from 117 Establishments as Compared with 99 Establishments in 1914

A preliminary statement of the 1920 census of manufactures with respect to wire drawing mills has been prepared by the Bureau of the Census, Department of Commerce. It consists of a detailed statement of the quantities and values of the various products manufactured during the year 1919.

CENSUS BUREAU'S SUMMARY CONCERNING THE WIRE INDUSTRY—1919

	1919		1914	
	No. of Establishments	Value of Products	No. of Establishments	Value of Products
Total	117	$409,058,300	99	$172,600,500
Wire mills	66	162,151,200	54	81,841,000
Iron and steel rolling mills, wire departments	25	191,997,200	24	90,759,500
Brass and copper rolling mills, wire departments and other concerns	20	54,909,900	21	
	Quantity	Value	Quantity	Value
Wire and manufactures of	....	$401,376,400	....	$166,999,900
Steel and iron	....	264,778,000	....	116,215,500
Plain wire, tons	2,508,890	....	2,435,500	....
For sale, tons	592,430	58,756,500	459,900	22,316,800
Consumed in works, tons	1,916,460	....	1,975,600	....
Galvanized wire, tons	922,970	....	374,480	15,949,500
For sale, tons	343,000	32,383,500		
Consumed in works, tons	579,970	....		
Other coated wire, tons	83,730	....		
For sale, tons	49,925	5,257,700		
Consumed in works, tons	33,805	....		
Bare wire, tons	193,370	....	....	....
For sale, tons	161,660	68,011,300	84,920	26,206,000
Consumed in works, tons	31,710	....	....	....
Rubber insulated cable, *tons	24,570	18,738,100	48,390	15,709,300
Paper insulated cable, *tons	20,200	11,451,400		
Insulated wire, *tons	29,470	15,216,700		
Brass wire, pounds	50,521,000	16,024,500	39,614,500	6,366,300

* Not including insulated wire and cable made in establishments purchasing the wire, value $84,216,900. Total production, 1919, rubber insulated cable, $39,386,900; paper insulated cable, $25,664,300; insulated wire, $64,571,900; aggregate, $129,623,100.

Rolling Stock

The Denver (Col.) Tramway advises that it is not in the market for purchase of additional rolling stock at this time, as was intimated in these columns in an item in the July 23 issue.

The Southwest Missouri Railroad, Webb City, Mo., has just placed an order for eight one-man safety cars with the National Safety Car & Equipment Company. The operating equipment will be furnished by the General Electric Company, and Cincinnati trucks will be used.

The West Penn Railways, Connellsville, Pa., is equipping several cars for use on various branches of the system. Five new 700-type cars are under construction for the Coke Region division and ten double-truck passenger cars for the McKeesport division. The bodies of these cars are being built by the Cincinnati Car Company. Five double-end type 200 cars are also being built for the Kittanning division, the first of which will be shipped about Aug. 10.

Massachusetts Northeastern Street Railway Company, Haverhill, Mass., advises that it has equipped all its cars with life guards and complete sander equipments. Twelve cars carry air-operated sanders and 133 have the mechanical type. Both the sanders and the life guards have been installed in accordance with the Department of Public Works order No. 300, it is stated.

Detroit (Mich.) Municipal Railway, mentioned in the issue of July 23 as ordering 100 Birney safety cars from J. G. Brill Company on May 4, states that delivery of twenty-five cars is to be made by Aug. 1; twenty-five more by Aug. 15; the third lot of twenty-five by Sept. 1, and the remained by Sept. 15. Half of the cars will be equipped with Westinghouse air brakes, DH-16, and half with General Electric brakes, CP-27. Fifty of the motors are likewise Westinghouse, No. 508 and the other fifty are General Electric, No. 264. Other equipment specified on the cars is the same as on the 100 safety cars previously described.

Track and Roadway

San Francisco-Oakland Terminal Railways, Oakland, Cal., is now engaged in the construction of 1,500 ft. of additional second track along Fourteenth Avenue. The track will be built with 70 lb. standard "T" rail. The cost is approximated at $15,300.

Hydro-Electric Power Commission, Ontario, Can., will have construction work on the railways in Windsor started within a montn, the hydro-radial by-law having been passed.

Southern Indiana Gas & Electric Company, Evansville, Ind., is considering a proposal to move the tracks at Mesker Park in the western part of the city in order to facilitate the building of Little Cynthiana Road. The county commissioners have approved the plan.

New Brunswick Power Company, St. John, N. B., is considering the expenditure of $150,000 on track construction during the current year.

New York State Railways, Syracuse, N. Y., has agreed to do its share in the paving plan in Manlius Street, Cortland Avenue and Gifford Street. The railway's plea that it lacked the funds has held up this improvement for more than two years.

North Carolina Public Service Company, Salisbury, N. C., is relaying its tracks on Harrison Street from Main to Fulton Streets. The track was torn up to permit grading work.

Tulsa (Okla.) Street Railway, announces that from May 31, 1918, to May 31 of this year it expended $181,025 in extensions of lines, construction of carhouse and office building, double-tracking and installing new cars. Work is now in progress on a $10,000 addition to the company's shops and upon repairing and double-tracking the Kendall division at a cost of $40,000.

Brantford (Ont.) Municipal Railway, has received approval from the City Council for the proposed extensions in Eagle Place and the North Ward.

Scranton (Pa.) Railway, must move its tracks to the center of the street in Dupont according to a recent opinion handed down by Judge Woodward. This expense together with the paving of the road will cost the railway a considerable sum of money.

Knoxville Railway & Light Company, Knoxville, Tenn., is repairing and overhauling its line between Arlington and Fountain City. The president of the company has announced that a local construction company is doing extensive work for both the company and the city on the Burlington line, Park Street and the north end of Gay Street.

Nashville Railway & Light Company, Nashville, Tenn., will discuss with the councilmen and city representatives the possible extension of the Buena Vista line from Twenty Third Avenue and McDaniel Street beyond the end of the bridge over the Hyde's Ferry Pike in Bordeaux, a distance of 1¼ miles.

Power Houses, Shops and Buildings

Los Angeles (Cal.) Railway has received some of the electrical equipment for the new Vernon automatic substation and work has started on the foundation of the second substation, which will be located in Garvanza. The Vernon building will be 42 ft. by 52 ft. The 1,000-kw. synchronous converter to be installed is of Westinghouse design. The feeders and high-tension lines will cost an additional $20,000. It is planned to have power delivered Nov. 1.

Portland Railway, Light & Power Company, Portland, Ore., has applied to the federal power commission for a preliminary permit for a proposed future addition to its Oak Grove project on Oak Grove Creek near the mouth of the Clackamas River, in Clackamas County, Ore. The development contemplates the construction of a low diversion dam in the Clackamas River and a tunnel or canal 4 miles long connecting with the Oak Grove conduit.

Trade Notes

Robert S. Hammond, Pittsburgh district sales manager of Whiting Corporation, Harvey, Ill., manufacturer of cranes, foundry equipment and railroad specialties, has been transferred to the Chicago office in the same capacity.

The Consolidated Electric Lamp Company, Inc., Danvers, Mass., has acquired the business of the Chicago Electric Lamp Company and will conduct its business of lamp distribution from the factory offices at Danvers.

Pacific Clay Products Company, Los Angeles, Cal., will replace its plant at Los Nietos, Cal., for the manufacture of firebrick and other refractory products with a plant that will have an initial capacity of about 25,000 firebrick daily.

Morrison & Risman, Inc., jobber and dealer in new and used track equipment, has moved its New York City office to 26 Cortland Street, with R. S. Maddocks in charge. The company's main office is at Buffalo, N. Y., with district offices also at Pittsburgh and Philadelphia.

The Universal Crane Company, Cleveland, Ohio, announces that the Allied Machinery Corporation of America, 51 Chambers Street, New York City, has been appointed its foreign representative in all countries except the United States and Canada.

The Arrow Pump Company, with general sales offices in the Buhl Building, Detroit, announces that it is now prepared to manufacture centrifugal and other rotating types of pumps in which there will be incorporated a unique design of packing gland with ring oiling principle.

F. E. L. Whitesell has been appointed New England representative of the Railway & Industrial Engineering Company, Greensburg, Pa., with offices at 136 Federal Street, Boston. Mr. Whitesell has been in the company's sales department for a number of years.

The Triangle Conduit Company, Inc., 50 Columbia Heights, Brooklyn, N. Y., announces an organization change. Thomas H. Bibber becomes general manager of the company's Western business. Mr. Bibber will continue to handle the production and sale of Tri Cord, in addition to his new duties.

The Crane Company, 636 South Michigan Avenue, Chicago, manufacturer of power house specialties, has awarded contract for a new pipe and pipe-bending shop, with new warehouse adjoining, at Thirty-fourth Street and the Allegheny Valley Railroad, Pittsburgh. The new plant, it is stated, will cost about $800,000.

Robert D. Black, formerly assistant sales manager, Black & Decker Manufacturing Company, Baltimore, Md., has been made manager of the company's branch office at Philadelphia, 318 North Broad Street, succeeding W. C. Allen, who has been made a special factory representative with headquarters at the company's Cleveland office, 6225 Carnegie Avenue.

The Mica Insulator Company, held its annual sales convention at its works in Schenectady, New York, during the entire week of June 20, with representatives in attendance from New York, Cleveland, Cincinnati and Chicago. The convention was marked with great enthusiasm throughout and the consensus of opinion was that the future outlook for the mica insulation industry was very bright.

Topping Brothers, 122 Chambers Street, New York City, jobbers in railway track supplies and other heavy hardware, is having a new four-story and basement, reinforced-concrete warehouse and office erected on the 100-ft. x 125-ft. plot corner of Varick and Vandam Streets. The company plans to move into the new building, which will afford about 67,000 sq.ft. of floor space, before May 1 next.

New Advertising Literature

The Fitchburg (Mass.) Steam Engine Company has issued a forty-page catalog covering its different types of steam engines.

The Greenfield Tap & Die Corporation, Greenfield, Mass., is distributing catalog No. 46, covering its small tools and pipe tools.

The Combustion Engineering Corporation, 43 Broad Street, New York City, has put out a forty-one page pamphlet entitled "The Use of Powdered Fuel Under Steam Boilers."

The Turner Brass Works, Sycamore, Ill., is distributing Bulletin No. 5 covering its "New Line" torches, and also a four-page leaflet describing the "Turner" gasoline-kerosene torch.

The Hygrade Lamp Company, Salem, Mass., has issued a new standard price schedule book, in which it describes and illustrates its different types of incandescent lamps.

The American Chamber of Commerce in London, 8 Waterloo Place, has issued a year book for 1921 in which are listed the names and addresses and business classification of about 1,000 American and British firms including electrical manufacturers, interested in developing business between the two countries.

Signals — The Consolidated Car-Heating Company, Albany, N. Y., has issued bulletin No. 11-A, giving information in regard to its starting and stopping signals for single car and train operation, also information and catalog details of their signal light system, high-voltage buzzer system, high-voltage bells, push buttons, switches and electric couplers.

Welding Material and Equipment — The Wilson Welder & Metals Company, Brooklyn, N. Y., has issued Bulletins No. 100 and 101, together with a reprint from the *Iron Age*, describing the welding of a large tank car. Bulletin No. 100 describes the various grades of certified welding metal, and bulletin No. 101 describes their small light-weight portable welding instrument.

The Electric Storage Battery Company, Philadelphia, Pa., has just issued bulletins Nos. 180 to 185 inclusive. These contain information and descriptions of the latest development in the Exide storage battery construction and describe their adaptability for use with electric trucks, tractors, mine and industrial storage battery locomotives, as well as in railway signal service. Bulletin No. 181 gives the operating characteristics of lead acid storage battery and contains much information of value to those responsible for the maintenance of this type of equipment.

Cars and Car Equipment—The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued an eighty-eight-page booklet describing the various types of electric cars now being used by numerous electric railway companies. This contains data as to the seating capacity, electricity, electrical and mechanical equipment, weights and dimensions of these cars, as well as operating characteristics of the various railways and halftones of the exteriors and floor plans for the various cars. This book should be of value to electric railway men contemplating the purchase of new cars.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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Most Power Plants Afford Some Opportunity for Saving

EVERY worth-while power engineer is keen to find and eliminate some energy or labor loss. This is his real job, even if he is mainly an operator rather than a designer. And there are losses enough in the best of power plants, some inevitable, many otherwise. Here is where the engineer who deals with dynamics, with motion, has an advantage over the one whose work lies principally with statics; that is, stresses in structures such as buildings and bridges. The power expert can see immediate effects of his work, say in reduction in rate of fuel consumption. On the other hand, while good work in bridge design, for example, is reflected in construction cost, the structure, once built, loses interest for the designer. He cannot be constantly at work improving it. Power plant work is, therefore, a peculiarly fascinating branch of engineering.

That there are so many chances to save in the power plant is due to several causes that do not necessarily reflect discredit upon the engineers of the past. Great improvements have recently been made in all elements of power-plant equipment. This is particularly true with those which have been the most notorious energy wasters, the prime movers. Moreover, the power plant has come to be considered more intelligently as a unit, all parts being expected to contribute to the general efficiency. For example: energy necessarily wasted in auxiliaries has been reclaimed in other parts of the plant, thus maintaining "heat balance." And again, the economies of the power plant have been upset, due to relative changes in costs of construction materials, fuel, money and labor among themselves and to the diminishing rates of cost of producing a unit of energy to its selling price. This last-named item is in effect the same whether the utility sells the energy generated or uses it in furnishing transportation service. These three factors in combination make possible such savings as were chronicled in the article in the Aug. 13 issue and which were made in the power plant of the Philadelphia & Wilmington Traction Company.

This performance suggests a brief review of the problems which confront the power-saving engineer. His first task is to trace the heat losses to their sources, in the flue gases, in the condenser circulating water, in radiation, in leakages, etc. Out of every pound of coal burned he finds the first taking possibly 25 per cent, the second 60 per cent and the others variously dividing among them, say, 5 per cent of the remaining 15 per cent of the heat in the coal. His first question is as to the reasonableness of these several losses. If one looks large compared with that in similar plants he knows he has "found the scent."

The next step is to locate the possibilities of loss reduction. If the flue gas losses are too great the gases are too hot, too voluminous or of wrong composition, possibly all of these. This means better design and operating practice in the boiler room. If the rejection of heat from the prime movers is excessive there is something wrong in the turbine or condenser design, in the circulating water, in the pumps or in the operating practice. The remedy may be so drastic here as the purchase of a new unit. The smaller losses are not so important as those mentioned. But lagging to control radiation, lubrication to minimize friction and good joinery and packing to eliminate leakage, all play their part. Moreover, radiation, friction and leakage all come out of the coal pile, no matter where they occur in the power plant. This point is emphasized since a heat-working auxiliary may be overlooked because it is obscure. Its remote location may lead to the inference that it produces insignificant losses, but the fallacy of this is self-evident.

So much for thermal, thermo-dynamic and dynamic losses. Now as to that more tangible loss, human energy. At present labor is mainly used in the power plant in handling materials, *i.e.*, coal, ashes, etc., and in lubricating, cleaning and overhauling machinery. The former work offers the principal opportunity for saving. In the past power plants generally have been overmanned. Some are overmanned today, in the sense that machines could be had to do their work. No power plant engineer can afford to overlook the progress that has been made in the past few years in the development of labor-saving machinery.

The upshot of this whole matter is that, in connection with every power plant organization, some one person should have the responsibility of studying constantly the opportunities for saving. He may be one of the staff or an outside consultant. Plans should be in hand for contemplated improvements even if these are in the distant future, so that each detail can be worked out in harmony with the ultimate aim. Only thus can the tearing out and replacement process be reduced to a minimum.

Must Operations Cease to Prove Essentiality?

DES MOINES' predicament in final analysis is about the same as that which prevailed at Bridgeport, Conn., a year or so ago when the citizens were compelled by the shutdown of the local lines of the Connecticut Company to choose between street cars and jitneys. But the present indications are that the people of Des Moines are going to take a longer time than did the citizens of Bridgeport to learn how much more serviceable to them are the street cars than the buses.

Conditions in Des Moines have been gravely aggravated by a malicious press and by a former city corporation counsel whose greatest ambition seem to be to harass the utilities and to exact the city's pound of flesh even to the destruction of the company. Having but recently bound itself to a 5-cent fare, the Des Moines City Railway has been particularly susceptible to the activities of this shrewd lawyer and to the continual harping of the papers that it was not living up to its contract. The facts, however, fail to disclose that the company has been particularly remiss in this respect.

Among other things, the company agreed in the 1915 franchise to spend $1,500,000 in specified improvements in the next three years. Actually it spent $2,500,000, but on account of the great rise in cost of materials and equipment, even $1,000,000 in excess of the agreement was not sufficient to complete the program, and some promised new track apparently much wanted by the residents has not been built. Then, of course, the contract fare of 5 cents has not prevailed, but not by the grace of the city. The courts interfered and established a 6-cent fare, and later an 8-cent fare. Thus foiled in its demand, the city authorities sought recourse by opening wide the doors to jitney and bus competition. The invitation was promptly accepted to such an extent that 20,000 people a day, or 25 per cent of the total, were soon taken from the street cars. A further blow came when the court allowed the manufacturer to remove electrical equipment not paid for, thus shutting down three substations and a large generator at the power house and necessitating a 50 per cent cut in cars used. At this disadvantage, and with competition increasing, continuation of railway operation was of course impossible.

Thus far, then, the city has won its battle, but what of the future? The company will not start up again until the ruinous competition of the buses has been removed. If the buses cannot carry all of Des Moines' traffic, they can ruin the railway's ability to be self-supporting. If buses can supply all the transportation for a city of 126,000, which seems improbable without intolerable congestion on the streets and in the buses, though some of the characteristics of Des Moines are favorable to bus operation, it is quite certain that they cannot do it on a 5-cent fare. Evidently some solid doubts of this nature have been in the minds of the members of the City Council, for that body has not seemed to take very seriously the several propositions offered by the bus people, which is about the only creditable thing that can be said of its recent actions and inactions.

It will not take many weeks of the present congestion and grave shortage of transportation facilities to convince the great majority of the people that they want the street cars back. It may take some little time, however, for this feeling to be manifest with sufficient insistence to crystallize the indecision and lack of any plan on the part of the Council. Meanwhile, the city suffers immeasurable discomfort, inconvenience and financial loss.

It seems incredible that things should have to come to such a pass before public officials will comprehend the plain economics involved and what is really for the best interests of the people. Yet Toledo had to go through a cessation of car service before it could understand that the company was in earnest about its need for a fare increase; Bridgeport learned by the same process that it had to regulate the jitneys, and now Des Moines, with a very similar case in Bay City and Saginaw, Mich.

Are companies to be forced to these tactics in the many other cities where the patience of man and the endurance of the company have about been exhausted—New Orleans, Indianapolis, Akron, New York, Louisville, Chicago, Dallas, Detroit, Birmingham, etc.?

Serious as is the situation for the company and Des Moines, it nevertheless has placed the railway at an advantage in securing equitable conditions before resuming operations. There is no disposition to "stick" the city because of this position, but undoubtedly the city will have to agree to certain fundamental requirements of the company before the street cars will run again. Unfortunately, even with all requirements satisfied, it will take from two to three months before full service can be restored on account of the time required to finance and replace the electrical equipment that has been removed. It is certainly to be hoped that the officials of other cities will profit by the experience had in Des Moines and evolve a policy which will protect the public but at the same time enable the local railway company to continue uninterrupted its faithful and essential service. If the shutdown in Des Moines is a strategic move, it is so only incidentally, for the company could not have continued under the circumstances. And it cannot be expected that the beautiful weather, courtesy of private automobiles, the good nature engendered all around by the novelty of the experience and the exceedingly small amount of riding as compared to normal will continue long to lighten materially the task confronting the buses.

Boston's Prospects Much Better

BOSTON newspapers were all in accord in their comment on the report of the Boston Elevated Railway for the year closed recently. They see in the accumulated deficit of $4,980,000 a formidable barrier, precluding any immediate prospect of relief from the 10-cent fare, but they also see in the change for the year to a profit of $550,253 from a profit for the previous year of $17,079 a most encouraging sign for the future.

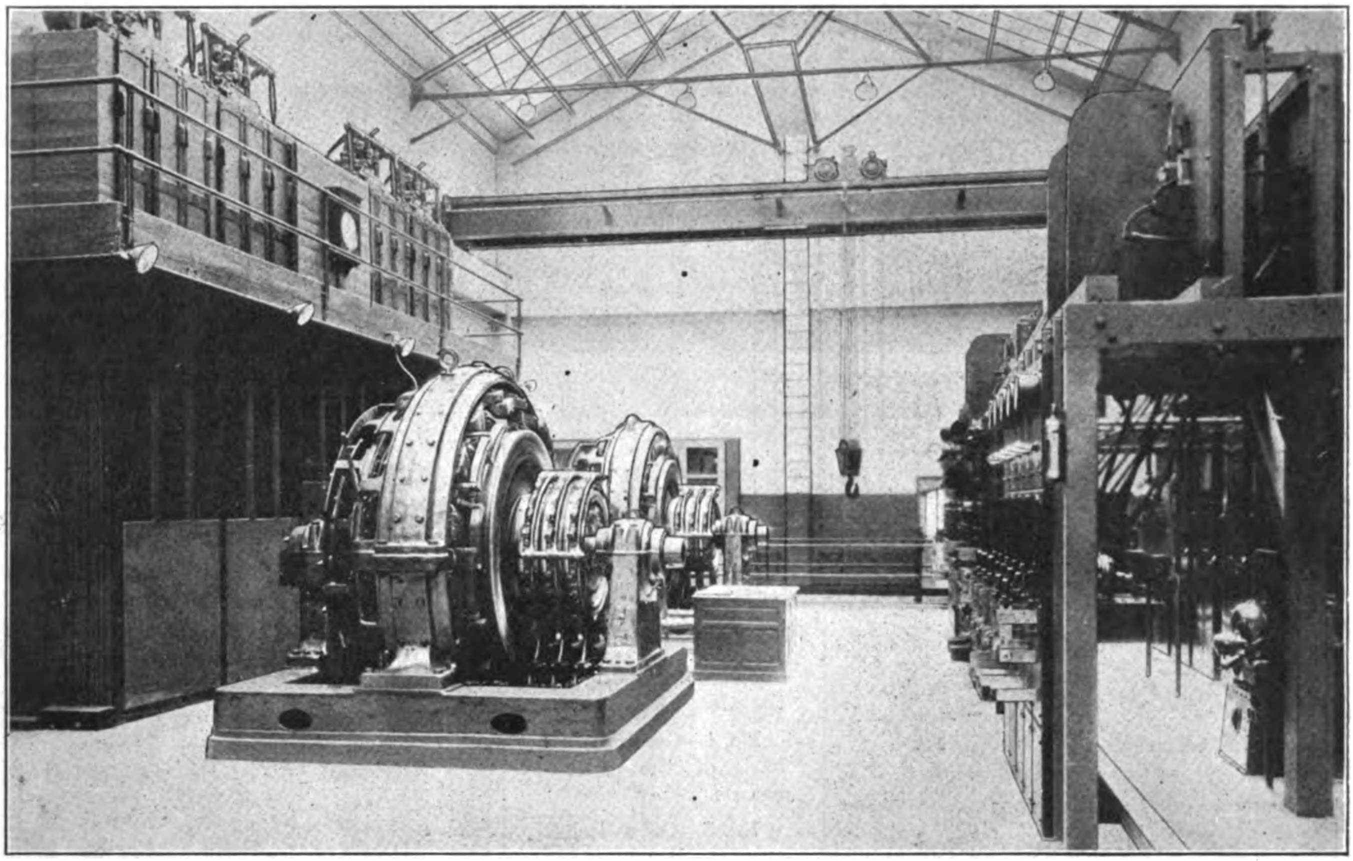
It was during the trying period in 1919 that the large deficit was accumulated. Since then the record has been progressively good. Ten cents seems large for a ride where 5 cents had prevailed, but the 5-cent, then the 7-cent and the 8-cent fare failed to prove adequate. It was the 10-cent fare that saved the situation. This the trustees are anxious to reduce. They labor under the necessity, before that can be brought about, of building up the reserve fund to $1,000,000 and of reimbursing the cities and towns in which the company operates to the tune of $3,980,000, advanced by the communities in the lean days of 1919. Just as the tide of rising costs in that year ran against the company and the communities, so the tide now is in the other direction. It is always dangerous to prophesy, but it is not unlikely that for the coming year the excellent showing for the period recently closed will be bettered materially.

One thing the statement of the trustees has done, it has made plain beyond the possibility of misconstruction the actuating ideas behind the extension by the company of the limited 5-cent fare service. The trustees have clearly in mind building up the property so that it will be of the greatest public service, but they state definitely that the 5-cent service cannot be continued if it interferes with or delays an otherwise possible reduction of the basic flat fare for travel throughout the system. Should a reasonable test prove that this service invades or seriously threatens an invasion of the net revenues of the railway, the trustees say they will be forced to advance the local 5-cent fare or else to abandon the experiment.

Downtown Substation in San Francisco

The Market Street Railway Has Constructed a New Substation for the Heavy Traffic District of San Francisco to Take Care of Excessive Voltage Drops During the Peak Hours

BY J. E. WOODBRIDGE
Resident Engineer Ford, Bacon & Davis, San Francisco



INTERIOR OF SUBSTATION WITH EQUIPMENT IN OPERATION

AS IN most large cities, the substations and 600-volt feeder system of the United Railroads of San Francisco grew out of old steam plants, poorly located for supplying the most congested portion of the load. The downtown district of San Francisco, including the heavy traffic of four tracks on lower Market Street, has been until recently supplied largely from the Bryant Street substation (originally a steam plant) situated some 20,000 ft. from the ferry.

In spite of a large tonnage of feeders, the voltage drop during the peak hour from 5 to 6 p.m. would run as high as 250 volts, giving a loss of approximately 2,000 kw. wasted in heating overhead copper and track return.

The United Railroads of San Francisco bought energy under a contract rate of $7.50 per thousand kilowatt-hours at 11,000 volts, with a guaranteed load factor of 60 per cent. As this load factor is not reached, the basis of the contract becomes power and not energy, the price being approximately $40 per kilowatt of peak demand per annum.

As 2,000 kw. of loss at this rate amounts to $80,000 per annum, it is obviously worth while to give careful consideration to any means by which this loss might be materially reduced.

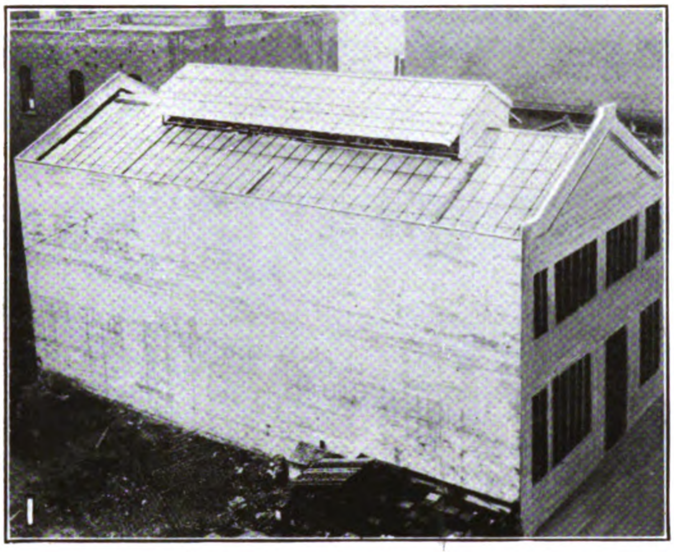
In spite of municipal competition, the traffic of the United Railroads of San Francisco (now the Market Street Railway) has been steadily growing, increasing the load on stations and feeders to the value reached during the Panama Pacific Exposition and requiring extensions to take care of future growth.

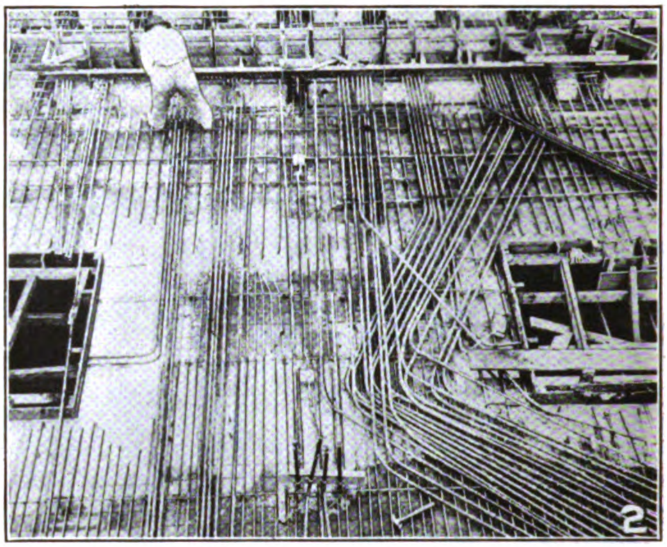
The writer estimated that the installation of a 4,000-kw. substation, suitably located in the downtown district, would reduce the feeder losses and, thereby, the peak demand by approximately 1,200 kw., besides releasing a large amount of copper. Such a substation has been built and, at this writing, has been in full operation less than one month, which is not a sufficient period to give an accurate comparison of new with old system peak demands, but there is every indication that the estimated saving will be exceeded.

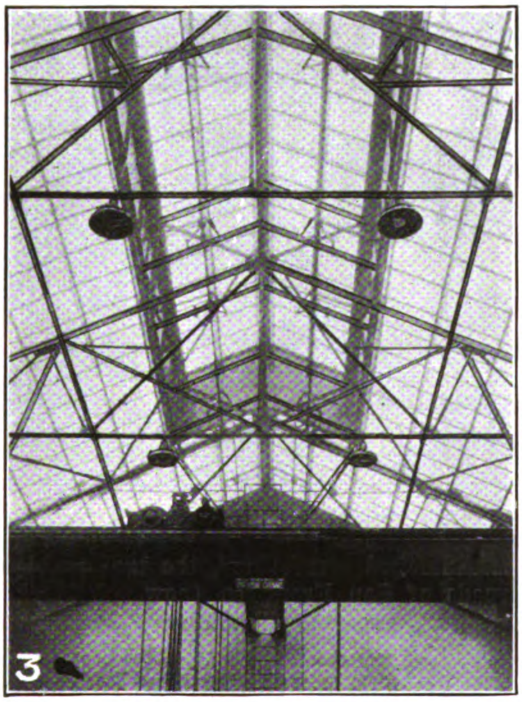
CONVERTERS PREFERRED TO MOTOR-GENERATORS

On account of lower first cost and higher efficiency, converters were chosen for this service instead of motor-generator sets as used in the older stations. The use of converters so close to heavy traction loads involves several serious difficulties, all due to the absence of direct-current feeder resistance to reduce the rush of short-circuit current in case of a broken trolley,

Construction Details and Equipment Arrangement for New Substation of the Market Street Railway in the Downtown District of San Francisco







No. 1—Exterior of substation as partly completed.

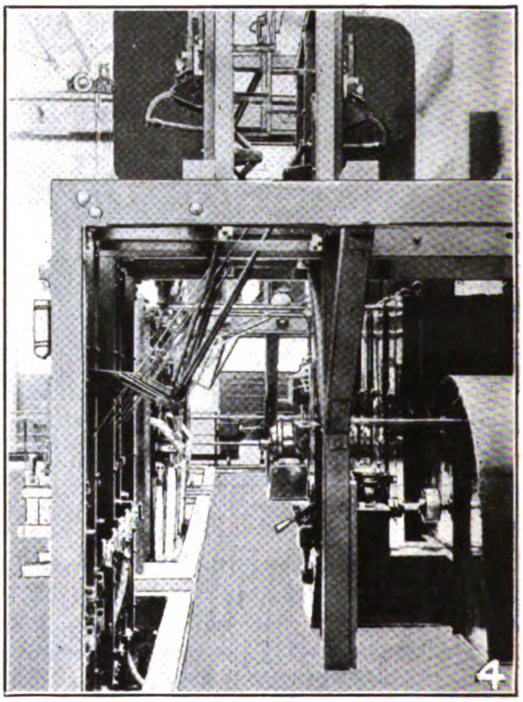
No. 2—Installing conduits for small wiring in floor of station.

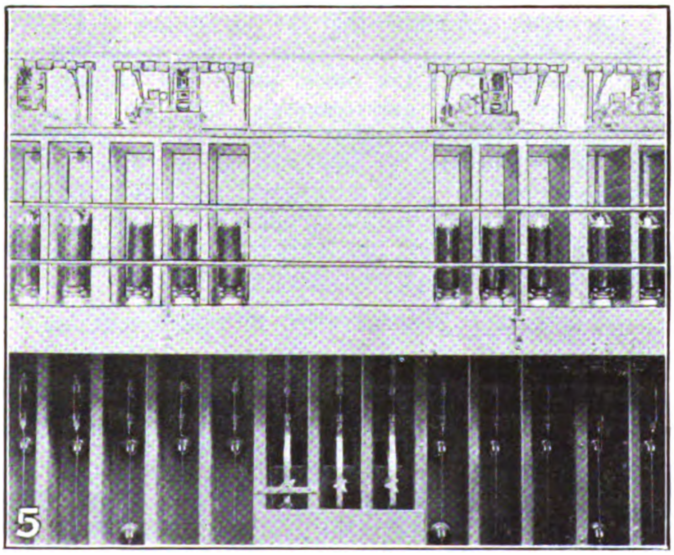
No. 3—Looking at the glass roof.

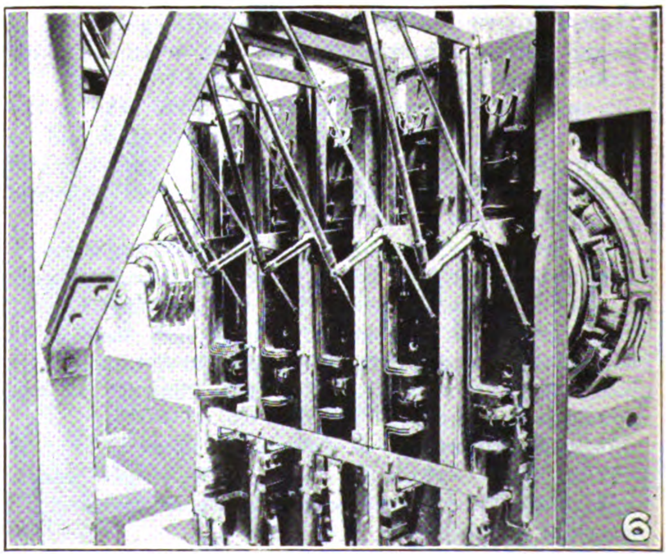
No. 4—General view back of the switchboards.

No. 5—Oil switches and disconnecting switch arrangement.

No. 6—Rear view of feeder switchboard.







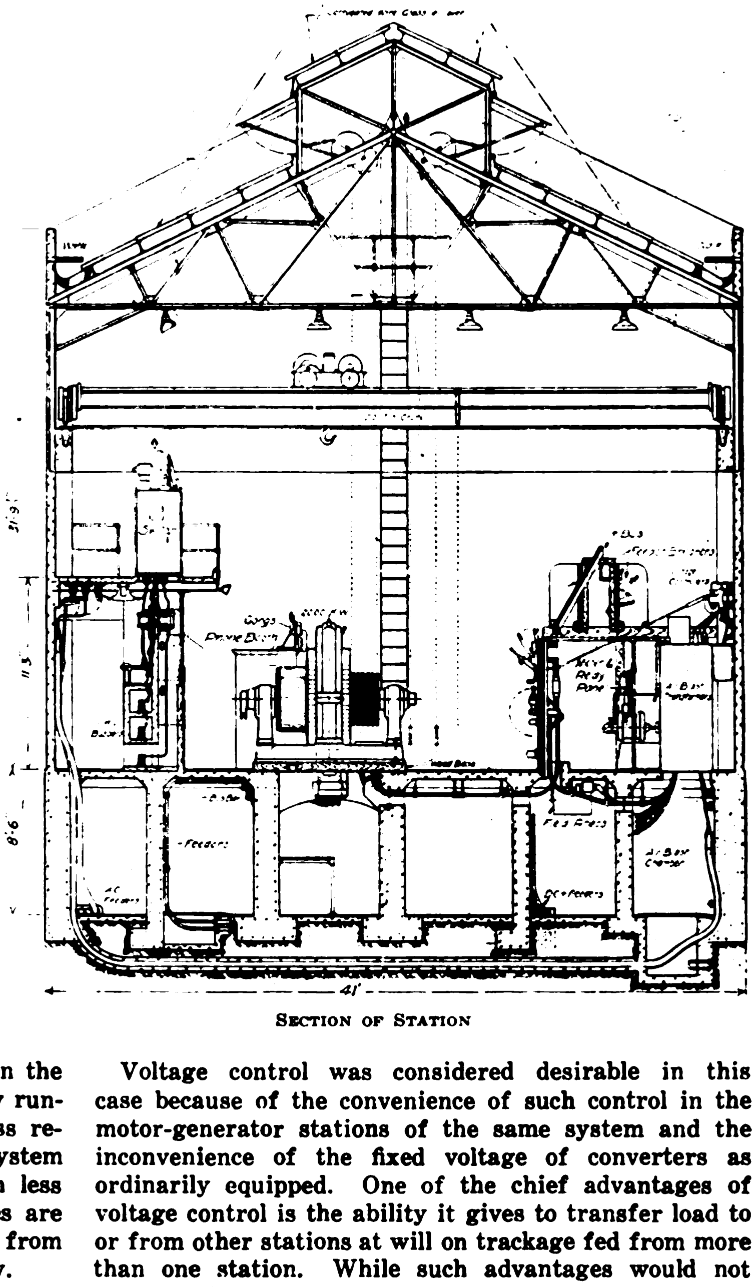
car-equipment failure or other fault from feeder network to ground. The old specification of no feeder taps nearer than 2,500 ft. to the station is not applicable where the heaviest load is 250 ft. away, and 2,500 ft. is about as far as the station feeds. The manufacturers' specification of sufficient feeder resistance to limit the short-circuit current of one feeder to three times full load of one machine is also not applicable where one feeder has a peak-hour average demand of 3,000 amp., which is approximately the rating of one converter. This would require a 30 per cent drop in this feeder or about a 500 kw. loss at $40 per kilowatt per annum. Precautions of various sorts, described below, were taken to protect the machines, operators and circuit-breakers, and the minimum resistance to any one point on the trolley network was made at 0.025 ohm, which would, obviously, limit the current to 20,000 amp. at 500 volts. This resistance was obtained, in most cases, by bringing the feeders out from underground to overhead as near the substation as possible and running the balance of the distance in weatherproof cable at a higher current density than can be used underground without danger of burn-outs. Added resistance was necessary in only two feeders, involving a loss of approximately 10 kw. in each at the peak. One of these resistances is used as an elect ical furnace with air taken from the air blast chamber to warm the office.

EQUIPMENT FEATURES DIFFER FROM USUAL PRACTICE

The converter fields are shunt wound, this departure from standard railroad practice having been taken for several reasons, as follows: First, to ease the severity of short circuits; second, to reduce the number of heavy windings and joints of large capacity in the machines; third, to eliminate the equalizer busbar, switches and connections and to simplify operation, and fourth, to improve the power factor on the assumption that the equipment will be loaded to its capacity on the basis of temperature rise, in which case improved power factor is a decided advantage. The commutating poles are of the high-reluctance design, their ampere turns being greater than those of the armature.

A somewhat unexpected advantage has resulted from the shunt characteristic. As the station output rises in the late afternoon, from approximately 6,000 to 9,000 amp., the voltage automatically falls off from 550 to 500 volts. As the peak is occasioned by congestion of cars on the downtown streets, which of itself necessitates slow running, the lower voltage undoubtedly results in less resistance loss in car equipments and improved system economy. The voltage drop is, however, so much less than with the old long feeds that better schedules are maintained, and a car will probably be dropped from each of several routes, without increase of headway.

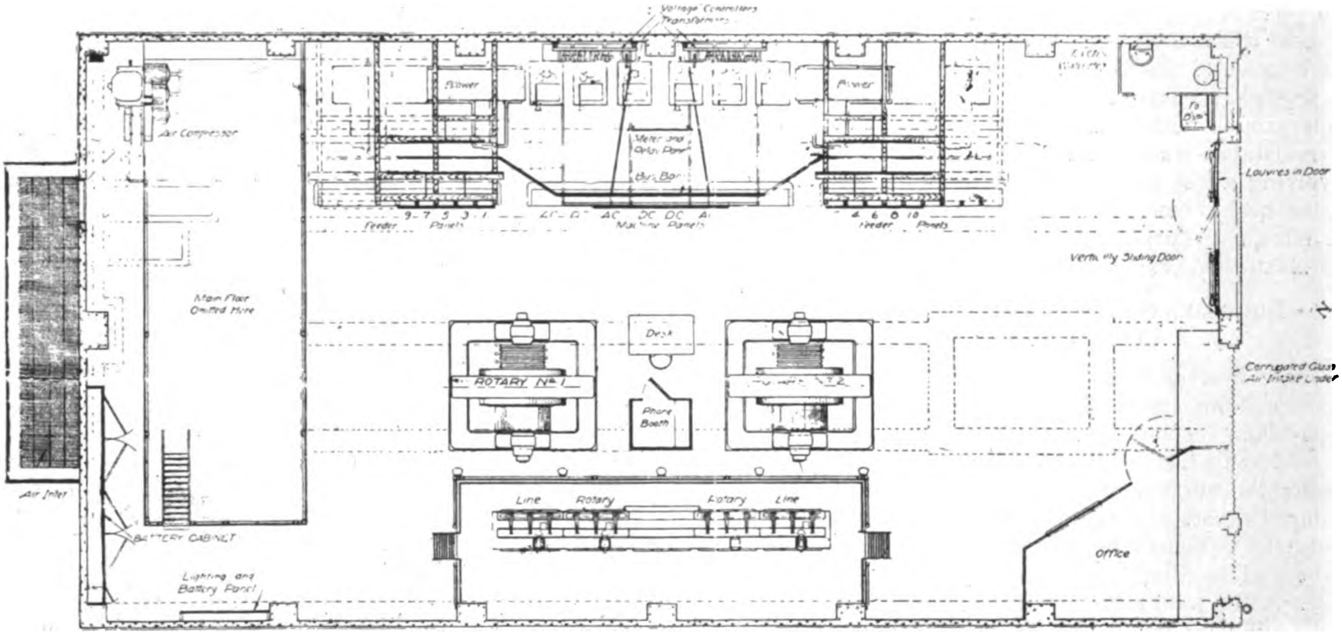
The equipment is designed to make it possible to alter the voltage under load conditions without power-factor variation. This is accomplished by taps in the primary windings of the step-down transfomers, these taps being brought out to step-by-step circuit-breaking contactors, manually operated, with auto-preventive reactances for maintaining the connections while stepping from tap to tap. The transformer ratio is changed 1½ per cent for each of eight steps, giving a total ratio range of 12 per cent. The transformer primaries are star-connected and the taps for this purpose are brought out at the neutral end of each primary, giving minimum voltage between the taps of the three phases and from contactors to ground. The transformers are of the air-blast type and all taps for this purpose are brought out through the tops of the transformers to controllers located immediately above them, giving a convenient accessible location in plain view for these devices "isolated by elevation." The transformers are located behind the main switchboard, and the voltage control is actuated by means of mechanical shafting from hand cranks on the face of the board.



SECTION OF STATION

Voltage control was considered desirable in this case because of the convenience of such control in the motor-generator stations of the same system and the inconvenience of the fixed voltage of converters as ordinarily equipped. One of the chief advantages of voltage control is the ability it gives to transfer load to or from other stations at will on trackage fed from more than one station. While such advantages would not warrant the cost and added losses of induction regulators or booster converters, they are held to warrant the added cost of the step-by-step arrangement, which was $2,650 per machine, factory cost.

The location of the equipment in the substation differs somewhat from the usual design, which is intended to convey the power generally in one direction from incoming high-tension source to outgoing direct-current delivery. Such an arangement involves considerable running around by the operator—from high-tension switch control to starting switch, to field switch, to direct-current panel, etc., which slows down restoration of power in emergencies. The substation here described is designed for operation by one man per shift; for this reason all operations are centralized so far as possible and all control is collected in the immediate neighborhood of the telephone booth, which is treated as the operating center when operation must be made most expeditious, as in emergencies. All high-tension disconnecting switches between the busbars and the oil switches, commonly called "bus disconnects," including the busbar sectionalizing switches, are located within convenient reach from the main floor and in plain view from the operating position. No switches whatever are mounted on the machines. Negative switches are omitted as unnecessary and (the machines being shunt wound) no equalizing switches are required. The field switches are located with the alternating-current starting switches on the main switchboard. On account of the large number of cables to each starting switch (fifteen, each 2,000,000 circ.mil in size) it is, of course, advisable to have the starting switches between the transformers and the converters, which results in locating the transformers behind the board. Congestion on and around the main switchboard is avoided by careful lay-outs of cable runs and by the removal from the board of all devices, such as meters and relays, which do not require handling in emergencies.



PLAN OF STATION AND ARRANGEMENT OF APPARATUS

The station is built for an ultimate capacity of four machines, of which two are now installed, the additional space being sufficient for two 3,000-kw. units, which would, if added, give a total capacity of 10,000 kw., sufficient for all probable downtown demand in San Francisco even with a subway under Market Street. In order to avoid an awkward location of the operating center, either with the initial or final equipment, the two machines first installed are located in the middle of the station with room for one additional at each end.

The converters face opposite to those in the usual design of substations, the collector ring end, instead of the commutator end, being toward the main working passageway and switchboard.

This is done to avoid risk to the operator and nervousness on his part from the danger of flashing under emergency conditions, such as cutting in machines on feeders which may be short circuited. The arrangement of the converters differs in another radical respect from the conventional, reverting to a practice abandoned for many years, in that the bed plates are set on timbers and insulated from ground. This has been done to eliminate the short-circuiting effect of flash-overs from positive brush rigging to pedestals or other portions of the frame and to cut out the severe burning that would otherwise occur in case of a breakdown from armature conductors to core. Each frame is grounded through an indicating lamp and suitable resistance to give notice in case of insulation failure. Risk of shock to operators from live frames is eliminated by the use of an insulating floor as described later.

Unusually convenient access to the lower half of the brush rigging is obtained by mounting the negative busbar in another location, by the omission of all shunts and by keeping all cables out of the way. A removable bench is provided to give a safe, convenient working platform under the commutators. The negative busbar is so assembled that it can be increased in section or extended in length without slacking off its connections.

The site selected for the station is a piece of property 41 ft. front by 80 ft. deep on a narrow back street, immediately next to Market Street. This site was owned by the United Railroads of San Francisco, being the location of an old horse-car stable of the Sutter Street line previous to the San Francisco fire. The building is reinforced concrete with no structural steel below the roof trusses. The problem of adequate lighting, always difficult on a site surrounded by private properties on three sides with a narrow street on the fourth, has been solved by making the whole of the roof of glass. Corrugated, wired glass was used for this purpose, set on one-quarter pitch with 2-in. slope lap, and has proved eminently satisfactory in every respect. There is no leakage in downpours or driving storms even though some sheets were cracked due to being set on non-parallel purlins and overloaded by weight of men working on them before the bad supporting conditions were noted. The roof does not sweat or let in too much heat under San Francisco climatic conditions. Direct sunlight is so diffused that there is no objectionable glare and the lighting on dark days is infinitely superior to that of any building with side windows or even with the ordinary skylights.

Ventilation is another feature requiring careful attention in a substation of this character, since the manufacturers refuse to design rotary converters with forced ventilation, leaving this as about the only class of electrical machinery to "stew in its own juice." The heated air is allowed to escape from this station through the sides of a monitor of the usual design, and cool air enters through louvers provided at both ends to admit air both above and below the main floor. This suffices for the two machines, but mechanically assisted draft will apparently be necessary for four.

The main door is made large enough to admit a converter assembled and the machines were shipped that way. To avoid waste of space with hinged doors and the cost of jack-knife or roller doors, the main door is mounted on vertical slides and is arranged to be lifted by the crane. No door latch or lock is required.

The air-blast pressure under the transformers is one ounce per square inch or about 150 lb. on the area of a door. A small air lock is provided with spring-hinged wickets in the inner and outer doors. The blower dampers are automatic.

An adjacent building was 2 in. away and it was considered advisable to leave no forms in the 2-in. space for fear of a complaint on the score of noise. The forms were ingeniously designed to allow their removal, which worked out successfully.

The location of the telephone booth in the operating center between the two machines necessitated special soundproofing. The booth is of single wall construction, lined with 1 in. of hair felt with an inner lining of wallboard. The inner windows are celluloids, the joint of the door is weather-stripped, the booth is mounted on rubber posts and the floor covered with a rubber mat. The result is almost absolute quiet.

The main floor is finished with 1 in. of Trinidad Lake asphalt mastic, which was preferred to concrete as less slippery, less dusty and softer under foot. The writer has taken 11,000 volts from hand to ground standing on this floor without sensation except when taking hold of and letting go the circuit.

The high-tension bus structure with all barriers is concrete cast in one pouring. Its longitudinal wall runs up between the line and bus terminals of the motor-operated oil switches, thus keeping any fireworks on the line side from spreading to the bus side. The oil-switch cells have removable doors back and front to provide for easier maintenance and quick cleaning up after breaking heavy loads.

The outside disconnecting switches are double throw with triple-pole, rod-operated short-circuiting and grounding switches that can only be closed on the back throw when the line is disconnected from the house. This does away with the need of the usual dangerous grounding wire.

All outgoing direct-current feeder panels and circuit-breaking equipment are mounted on timber frame work of mill construction in place of the conventional grounded steel frames. This has been done to avoid the chance of short circuit from positive busbar or bare copper connections to the steel frame when working on live circuits. Since the feeders in a downtown district must always be energized and can never be shut down even during the midnight hours on account of "owl-car" service, this precaution is a decided safety-first advantage. On account of the severe circuit-breaker duty occasioned by low feeder resistance to the trolley network, the circuit breakers are not mounted as usual on the feeder panels, where they would be immediately above the head of the man operating them. They are located in two rows above and behind the feeder switchboards, the double row allowing the breakers to be located on 32-in. centers with the panels on the usual 16-in. centers. Transite barriers are mounted between the breakers, thus isolating each breaker in a cubicle or cell somewhat similar to the cells provided for high-tension oil switches, but open at the top, front and bottom. In case repairs are required or burned-out breakers must be replaced, the operator can work in such a cell with its timber frame, slate and transite walls in comparative safety and is not endangered by accidental grounds or arcing from adjacent breakers.

In addition to the usual 600-volt main busbar, the feeder panels are equipped with what is termed a "hospital bus" supplied from the main busbar through a spare circuit breaker. Each feeder switch is double throw so that any feeder can be connected via the hospital bar to the spare breaker. All feeders can be interconnected through the hospital bus at times of light loads when the station is shut down, thus allowing the main 600-volt busbar to be de-energized for work on same or on the circuit breakers. Each feeder is equipped with a pilot lamp and suitable resistance to indicate approximate voltage delivered via multiple connections from other stations. This detail was specified in place of the usual voltmeter plug, as it was found that operators will not take the time to plug in a voltmeter on a cut-out feeder, but will cut in in a hurry to catch the cars before they slow down, with serious results at times.

In order to ring a gong when the breaker opens, each feeder breaker is equipped with an auxiliary switch, serially connected to another auxiliary switch actuated by the corresponding feeder switch which stops the gong when the latter switch is opened. All switches and breakers have laminated studs.

The direct-current feeders are $\frac{5}{32}$-in. paper-lead cables varying in size from one of 750,000 circ.mils to three cables per feeder each of 1,500,000 circ.mils. Total positive outgoing copper is 17,250,000 circ.mils and negative current is returned by eight 2,000,000-circ.mil bare cables drawn into fiber ducts.

SWITCHBOARD DETAILS SIMPLIFIED

The line and converter switchboard has been simplified by the omission of several items often used but found unnecessary. No direct-current starting equipment has been provided, since with the variable voltage alternating-current starting is always reliable. Instruments have been kept to a minimum. Each incoming line has pilot lamps and an ammeter only. Each converter has a reactive factor indicator on the low-tension side and a direct-current ammeter only. The main direct-current voltmeter has a suppressed zero to give an open scale. A 200-volt center-zero voltmeter is provided to show polarity and can be switched from either converter to positive busbar to serve as a paralleling voltmeter to avoid plugging a voltmeter from bus to machine and vice versa. Lamps are connected from the voltmeter bus to the battery to give a check test on polarity or to serve if the polarity indicator is out of commission.

All connections between transformers, converters and switchboards are made with 2,000,000 circ.mil cables, two per phase and four per direct-current terminal, making twenty such cables to each converter. The cable racks are hardwood, held to steel straps by studs and malleable washers. The studs between phases of the alternating-current conductors are brass, all others including those between cables of the same phase, steel. All cable lugs were sweated on the ends of the cables, standing up in position.

The cost of the development, including transmission lines paid for by the company, was as follows:

Building	$51,000
Equipment, f.o.b. factory	76,000
Freight and installation	21,000
Conduits and manholes	33,500
Cables, positive, installed	32,000
Cables, negative, installed	7,500
Transmission lines supplying	75,000
Engineering and overhead	40,000
Total	$336,000

Automatic protective features are as follows:

The machine circuit breakers are equipped with alternating-current low-voltage release attachments connected to centrifugal speed-limit switches and direct-current, reverse-current relays. The alternating-current converter switches are equipped with inverse time-limit overload and instantaneous low-voltage relays, the incoming lines with reverse-power relays.

Plug switches are provided by means of which the winding of any relay may be energized from toy transformers with an overload current capable of adjustment, and in the case of the incoming lines with the proper phase and polarity. Thus the complete test of any relay may be made a routine operation.

The watt-hour meters are connected to triple-pole, double-throw switches for testing purposes, which accomplish the following results: First, the current transformer secondaries are cut off from the meters without opening the circuits of the current transformers, but leaving the current coils of the watt-hour meters open. The potential coils of the two torque elements of the meter are connected in multiple and the current coils in series. As a result, either with meter in service or out of service, the meter tester may, from the front of the board, make all necessary connections for the supply of and delivery from a phantom load, for testing each torque element of the meter and for making a check test on the two torque elements in series. The switch may then be sealed in the running position. An indicating lamp is connected across each potential coil of each meter to give notice of the blowing of any fuse, either primary or secondary.

Current for lighting the station is taken from the direct-current busbars as being the most continuously energized part of the network. At night the station is closed down and all alternating-current equipment is disconnected for a general clean-up by the night shift. All direct-current lighting circuits consist of four 115-volt lamps in series charging the control storage battery. No other charging equipment is required. A low-voltage release is so connected as automatically to light from the battery a sufficient number of lamps to illuminate the control center when direct-current power fails at night.

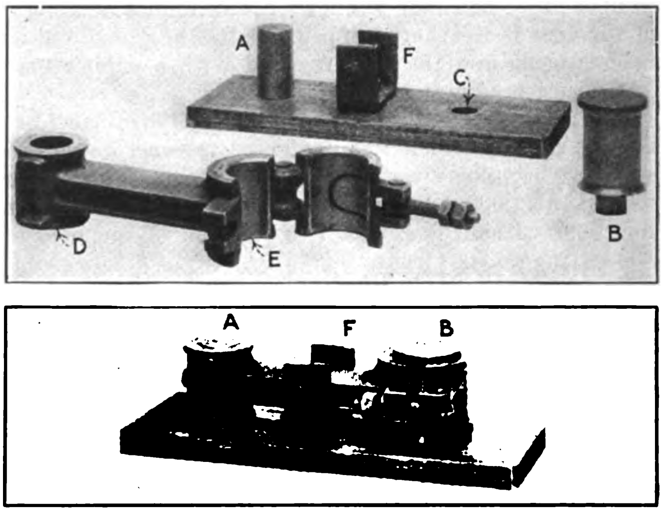
The converters, transformers and direct-current switchboards are of Westinghouse manufacture. The high-tension switching equipment is General Electric.

The station was designed for the United Railroads of San Francisco by Ford, Bacon & Davis, consulting engineers, who also superintended the construction of the building and of the conduit system required therewith and the installation of all equipment, cables, etc.

Jig for Rebabbitting Compressor Connecting Rods

The Babbitting of Compressor Connecting Rods Is Facilitated and Proper Alignment and Fit Are Assured by the Use of a Simple Jig

ACCOMPANYING illustrations show a form of jig used by the Ohio Electric Railway for rebabbitting the connecting rods of its compressors. The jig consists of a base on which is mounted a pin, *A*, a clamp, *F*, and a socket hole, *C*, for holding the pin *B*. In babbitting a connecting rod, it should first be fitted with a suitable bushing at the closed end *D*, so as to provide a close fit on the piston wrist pin. This closed end is then placed over the pin *A* as shown. Next the pin *B* is set in its socket hole at *C* and the open end of the connecting rod is adjusted by means of the clamp *F* until the pin *B* comes centrally with the hole to be rebabbitted. Cardboard fillers are used between the halves of housing to prevent the two halves from being cast in one piece, and also to prevent the babbitt from running out. Fire clay is used to stop up the bottom and thus insure all openings being properly closed to prevent any babbitt running out. The pin *B* should be a rather loose fit in the hole of the socket *C*, as it is necessary to lift this pin out of its socket in order to remove the connecting rod after babbitting, and the heat from the babbitt will expand this somewhat. The oil groove shown in the connecting rod of the accompanying illustration was cut by hand, but this can be readily cast by having a suitable raised form on the pin *B*, in which case some kind of a dowel or key should be put on the stem *B* to insure that the oil groove comes in the right place each time.



TOP VIEW, JIG WITH CONNECTING ROD AFTER BEING BABBITTED. BOTTOM VIEW, CONNECTING ROD IN POSITION READY FOR THE POURING OF THE BABBITT

The use of this jig in the shop of the Ohio Electric Railway has considerably reduced the time necessary for babbitting connecting rods, and accurate fits have increased the time necessary between rebabbitting.

Springs for Easy Riding Cars

The Ratio of the Dead Load to the Live Load and that of Maximum Load to Average Load Are Factors that Give Great Difficulty in Designing Springs with Easy Riding Qualities

BY L. F. SEELAR
Chief Engineer St. Louis Car Company

THE selection of springs is one of the most difficult tasks which confronts the designer of trucks for street and interurban cars. On the heavier coaches used in railway service, the proportion of live or passenger load is so small, compared with the total weight of the equipment, that this difference plays but a small part in the selection of the spring. It is not unusual to find that the weight imposed upon the bolster spring by the light body amounts to but one-sixth of the capacity of the spring, and that the passenger or live load will amount to less than one-eighth of the light weight of the body. Under such conditions, it is a matter of no great difficulty to select springs that will give easy riding and have long life.

When we enter the field of street car design, we meet a totally different condition. The day has long passed since weight in car bodies was a matter of minor importance. For the past ten years it has steadily been impressed upon the car builder and designer, by the operating officials, that weights should be kept to a minimum. This reduction of weight probably reached its climax in the bringing forth of the safety car, in which the relation between the weight of the car body and that of the passenger load is equal one to the other. In this car the seated passenger load is equivalent to one-third the weight of the car body, and as it is not unusual for street cars to carry twice their seating capacity, it will readily be seen that the weight of car to passenger will often be as three is to two, and on occasions, no doubt, it is as one is to one. It is this condition, which reaches its maximum in the safety car (ratio of dead load to live load), that causes the greatest difficulty in designing springs that will give easy riding qualities, both when the car is only carrying the average load and when loaded to its maximum capacity.

It has become almost standard practice to design the bolster springs in double trucks for a height of 10½ in. under the weight of the body. Conditions imposed in maintaining step heights on street cars make it almost impossible to increase this dimension. At the same time, owing to the maintenance of clearance between the various parts of equipment, it is very difficult to obtain more than 2 in. of deflection of the car body between its height without load and with maximum load.

It is the usual practice to design truck parts so as to give a clearance of 3 in. with the car body light and 1 in. with car body and maximum load. This inch of clearance is often found to have entirely disappeared after cars have been in service from one to two years, due to wear of the various parts, and in exceptional cases this clearance has disappeared within six months. The spring designer must have a lively appreciation of the foregoing conditions, if he is to meet with success in providing a spring to carry minimum and maximum load and maintain comfort of the public.

For a long period of time I have assumed that a deflection of car body of 1 in. for each 10,000 lb. of load imposed would give easy riding, and insure a spring capacity tending to long life of truck parts. This rule cannot, however, be followed in many double-truck street cars that have recently been built. There are a number of cars now in service in which the body weight runs from 18,000 to 22,000 lb. and the maximum passenger load runs from 20,000 to 25,000 lb. As it is necessary to maintain at least ¾ in. between the bands of the springs with the fully-loaded car; and as the passenger load would, according to the foregoing rule, give a deflection of 2 to 2½ in., it is apparent that the deflection of the spring would be from 2¾ in. to 3¼ in., a condition that can very seldom be permitted. Where the rule of 1 in. deflection for each 10,000 lb. of load has been consistently followed, there have been very few complaints of cars riding hard and the springs have stood up remarkably well in service.

It has long been good practice to load bolster springs in double-truck cars and side springs in single-truck cars at two-thirds of their capacity; that is, with a car body weighing 20,000 lb., which is subjected to a maximum passenger load of 20,000 lb., the spring capacity is 60,000 lb.

As the average load carried by street cars is about one-half the seating capacity or one-sixth of the maximum load, which is imposed for a very short period of time (about two hours in eighteen), springs for street cars can be figured at higher limits than those mentioned, though it is never safe to go over 80 per cent of the capacity of the spring.

METHODS OF CONSTRUCTING SPRINGS FOR EASY RIDING

In order to maintain easy riding under the conditions outlined, four courses are open:

1. To put in plates of varying thicknesses. In cases of this kind it is customary to make the first and second plates heavier than the others. Where this is done there is a compound fiber stress set up which is hard to determine, and as the capacity of the spring is directly proportional to the square of the thickness of the plates, it is a difficult matter accurately to calculate deflections. This method should never be followed where any of the three others can possibly be used.

2. To place auxiliary plates within the main spring. When this is done the main spring is calculated to carry the weight of the car body and the seated passengers. The auxiliary spring is then designed to care for the standing passengers and road shocks. The two springs must be so proportioned that the deflection of the main spring with maximum load will never be exceeded. Therefore, to obtain this end it is necessary that the auxiliary spring be short and composed of very heavy plates.

3. To build up a spring of a large number of thin

plates. This spring is open to the objection of a large total deflection, though it gives the greatest flexibility and, therefore, is very easy riding.

4. To use a maximum fiber stress of 120,000 lb. instead of the 80,000 lb. formerly used.

For a great many years 80,000 lb. was considered as the elastic limit of spring steel. Modern heat treatment, however, has shown that this value can be increased, and it is possible by heat treating ordinary spring steel to obtain elastic limits of from 135,000 lb. to 250,000 lb. It is not unusual to find spring manufacturers demanding steels with an elastic limit of from 135,000 lb. to 150,000 lb. It is this ability to increase the elastic limit by heating treatment that enables us to design springs that are light in weight with deflection that will satisfy the mechanical limitations imposed, as by using a maximum fiber stress of 120,000 lb. instead of the 80,000 lb. formerly used, the weight of the spring is reduced and the deflection increased. This means that a few very thick plates will give the same riding qualities as were formerly obtained from a great many thin plates. It also makes it possible to reduce the size of the spring, as the strength of a spring is directly proportional to the square of the thickness of its plates, *i.e.*, a spring 30 in. long with four plates 3 in. x ¼ in. is only one-quarter as strong as a spring 30 in. long with four plates 3 in. x ½ in., or stating it differently, one ½-in. plate is equivalent to four ¼-in. plates. This gives a 50 per cent reduction in weight and volume. It is also true that the deflection of springs is proportional to the thickness of the plates so that the deflection of the ½-in. plates is one-half that of the ¼-in. plate under the same load.

With the foregoing facts in mind, it is a comparatively simple matter to design a spring that will give nearly the same riding qualities as were formerly obtained and at the same time approximate the same factors of safety as used heretofore—and as will be shown by the following example:

Assuming a car body which will weigh 18,000 lb. and seat sixty persons at an average weight of 150 lb. each, we have a ratio of live to dead load of 1:2, and as this car will carry during rush hours from 100 to 120 persons, live load can very well equal or exceed the dead load. As the springs must be designed to meet the worst condition and as the total expected load would be 36,000 lb., the springs should have a capacity of 3 × 36,000 ÷ 2 or 54,000 lb. in order not to exceed the limit previously set as desirable.

By using the high fiber stress of 120,000 lb. and heat treating the spring to raise its elastic limit, we would only have a fiber stress of 80,000 lb. in the spring, due to load with maximum loading and have one-third of its capacity to absorb road shocks as at present. As the average load is less than one-half the seating capacity of the car, the fiber stress in the spring due to load would only be 42 per cent of the capacity of the spring. Cars usually operate eighteen hours per day, and are seldom worked to capacity for more than two hours per day, so that there is ample time to recover from any fatigue set up in the period of maximum loading.

The second consideration of design is that of deflection. As we are assuming a spring with plates of uniform thickness and having a limitation of 2-in. deflection from light to full load, this fixes the deflection from free to light load height as the deflection will be directly proportional to the load imposed.

Assuming the maximum passenger load at three times the seating capacity, we have a live load of 180 × 150 lb. or 27,000 lb., with a 2-in. deflection; this would mean a load of 13,000 lb. per inch. As the car body weighs 18,000 lb., the deflection under light load would be in the ratio—1:13,000 = X:18,000 or 1.384. Again assuming that the spring will stand 10½ in. high under light car body, we have a free height of 11⅞ in. or 12 in. As the capacity of the spring is 54,000 lb. and the deflection ratio is 13,000 lb. per inch, the total allowable deflection would be 54,000/13,000 = 4.154 in. and the distance between bands with light car would be 4.154 in. less 1.384 in. or 2.77 in.—say 2¾ in. for deflection under live load and shock.

DETERMINING THICKNESS OF THE PLATES

We can now determine the total allowable thickness of the plates composing the spring by adding to the deflection for live load 2.77 in., the thickness of bands (usually ⅜ in. each) 1½ in. and deducting the same from the light load height of 10½ in., which gives 10.5 in. less 2.77 in. + 1.5 in. or 6.23 in. for two halves or 3.12 for one side of the elliptic spring.

We are now ready to consider the third point of design—that of length. In order to gain easy riding a spring must have maximum deflection. Deflection is proportional to the square of the length so that a spring should have the greatest possible length, consistent with the maximum permissible deflection. As a rule, there are as many mechanical limitations to the length of the spring as there are to its height and they are ordinarily made from 28 in. to 36 in. long. Assuming a length of 31 in. with 3-in. bands, we have an effective length of spring of 28 in. The width of springs may be determined by available space or by requirements as to capacity. Car springs are usually 3 in. wide and we will use this width in the design of the assumed spring.

Having determined the limiting features of the spring, we are ready to begin its detail design:

1. It must have a capacity of 54,000 lb./4.
2. The deflection should not be more than 4.154 in.
3. Its effective length should be 28 in.
4. The total thickness of plates cannot exceed 3.12 in.
5. The width of spring is 3 in.

Since the capacity of the spring plates is proportional to the square of their thickness, and the stiffness of the spring is affected by the number of plates, it is necessary to find the greatest number of plates that can be used in order to give the required capacity in the space available.

By using a spring plate 1/16 in. thick and 1 in. wide as a basis of comparison and considering the available space as occupied by a single plate we can obtain, first, the number of plates and, second, their thickness. "Machinery's Hand Book," page 421, gives the capacity of a spring 1 in. long, 1 in. wide and 1/16 in. thick as 208 lb. with a fiber stress of 80,000 lb. With a fiber stress of 120,000 lb. its capacity would be 50 per cent greater or 312 lb. Since the length is 28 in. its capacity would be 312/28 or 11.14 lb.

The total thickness of all plates being 3.12 in. or 50/16 nearly the capacity of a single plate spring would be 50^2 × 11.14 or 27,850 lb. With spring plates 3 in. wide the capacity will be 27,850 × 3 or 83,550 lb.

Since the load (54,000 lb.) is distributed over four springs, each will sustain one-fourth of the total or

13,500 lb., and the total capacity of one spring plate divided by this sum will give the required number of plates—thus, 83,550/13,500 = 6.2, and dividing the allowable thickness, 3.12 by the number 6.2 will give the thickness of each plate—3.12 in./6.2 = 0.5 in. Again comparing capacity with the $\frac{5}{16}$-in. spring plate, we find that the capacity of the ½-in. plate is as the square of 1 is to 8 and that the capacity of the spring is therefore 64 × 6 × 3 × 11.14 or 12,833 lb., which is within 5 per cent of the desired capacity and is as close a result as it is ordinarily possible to attain.

It now only remains to check the deflection. This can be done by the use of the formula $F = SL^2/2Eh$, in which S equals stress per square inch, L the effective length of spring in inches, E the modulus of elasticity, 30,000,000 lb., and h the thickness of the spring plate. Or by means of the table given on page 421 of "Machinery's Hand Book," which gives the deflection for ½-in. plates as 0.00157 at 80,000 lb. fiber stress or 0.002355 for 120,000 lb. fiber stress. This constant multiplied by the square of the length (28 in.) will give the deflection for one-half of the spring—therefore, the deflection is equal to 2 × 784 × 0.00235 or 3.68 in. or a deflection within 3 per cent of that desired.

We can write a comparative specification showing qualities desired against those obtainable:

	Desired, In.	Obtainable In.
Number of plates	6	6
Width of plates	3	3
Thickness of plates	½	½
Length—center line of bolt	31	31
Width of band	3	3
Thickness of band	½	½
Capacity	13,500	12,833
Total deflection	4.15	3.68
Free height	11½	11½
Height with car body	10½	10½

The results obtainable are as close to those desired as it is possible to attain in manufacturing so that a spring can be made with a reasonable certainty of its satisfactory performance.

Results from Cadmium-Copper Trolley Wire

THE Eugene F. Phillips Electrical Works, Ltd., Montreal, Canada, has given out some results of a test of its cadmium-copper trolley wire on the lines of the Winnipeg Electric Railway. A curve with very heavy traffic was equipped for this test. One track was strung with copper trolley wire and the adjacent track with cadmium-copper wire, each being No. 00 and having a normal diameter of 365 mils. Both wires were installed on May 8, 1919.

On Dec. 21, 1919, after being in service 228 days, the maximum wear on the copper wire was 60 mils or 16.44 per cent, and on the cadmium-copper wire 20 mils or 5.48 per cent. The average wear on the copper wire was 20 mils or 5.48 per cent and on the cadmium-copper wire 5 mils or 1.3 per cent.

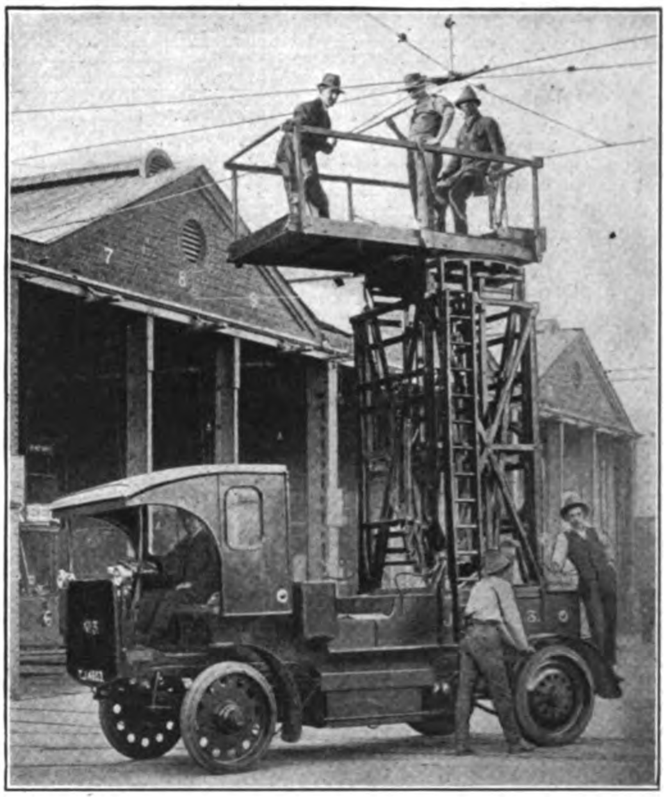
On May 8, 1920, after service of one year, the average wear on the copper wire was 45 mils or 12.3 per cent and on the cadmium-copper wire 15 mils or 4.1 per cent. On Dec. 29, 1920, after 602 days' service, the maximum wear on the copper wire was 115 mils or 31.5 per cent and on the cadmium-copper wire 30 mils or 8.2 per cent. On this basis the copper wire was considered as worn out and was removed and renewed with new copper wire. On May 8, 1921, the diameters were again measured, after 730 days' service of the cadmium-copper wire and 130 days' service of the replaced copper wire. The maximum wear on the cadmium-copper wire was 40 mils and on the replaced copper wire 20 mils, the averages being 30 and 12 mils respectively.

TEST ON CADMIUM-COPPER TROLLEY WIRE

Size B & S	Breaking Weight, Lb.	Tensile Strength Lb. per Sq. In.	Elongation in 10 In. Per Cent	Conductivity, Per Cent
0000	8,890	53,500	6.5	93.3
000	7,100	54,100	6.3	92.7
00	5,905	56,500	6.0	92.6
0	4.778	57,600	5.5	92.5

Results from these tests show that the cadmium-copper wire has superior wearing qualities, and its conductivity averages 92.7 per cent of the international annealed copper standard. Tests of tensile strength, elongation and conductivity are given in the accompanying table. These tests were made by McGill University. The results indicate that the tensile strength of the cadmium-copper wire is from 6 to 9 per cent higher than that of hard-drawn copper and the conductivity is 3½ to 4½ per cent lower.

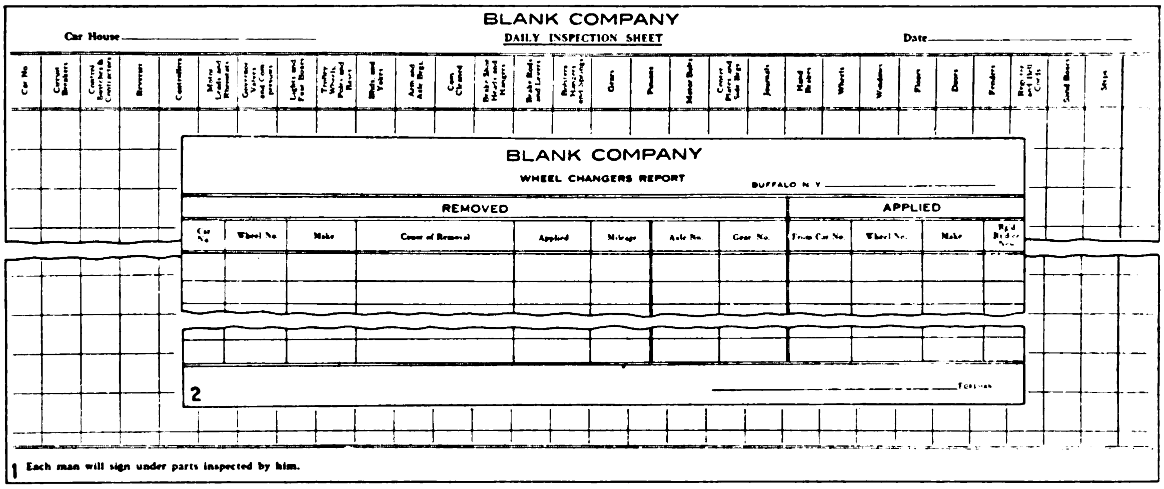
Electric Tower Wagon



ELECTRIC TRUCK FITTED AS TOWER WAGON

THE accompanying illustration shows an Orwell electric truck fitted as tower wagon which is used by the Johannesburg, South Africa, municipality for electric railway work. The speed of this truck is about 20 m.p.h. and it has an operating range of about 50 miles. The distance which can be operated per charge has been sacrificed for speed, as the truck can be recharged whenever it is not in actual service. This truck is being tried somewhat in the nature of an experiment, as the municipality now uses gasoline-driven trucks, and if it proves entirely satisfactory it is contemplated to buy other electric trucks for the work.

Convenient Forms for Recording Inspection and Overhauling Work



BLANK COMPANY

DAILY INSPECTION SHEET

Car House ______ Date ______

Car No	Circuit Breakers	Control Switches & Contactors	Reverser	Controllers	Motor Leads and Rheostats	Governor Valves and Compressors	Lights and Fuse Boxes	Trolley Wheels, Poles and Bases	Bells and Valves	Arm and Axle Brgs	Cars Cleaned	Brake Shoe Heads and Hangers	Brake Rods and Levers	Bolsters Hangers and Springs	Gears	Pinions	Motor Bolts	Center Plates and Side Brgs	Journals	Hand Brakes	Wheels	Windows	Floors	Doors	Fenders	Registers and Bell Cords	Sand Boxes	Steps

1 Each man will sign under parts inspected by him.

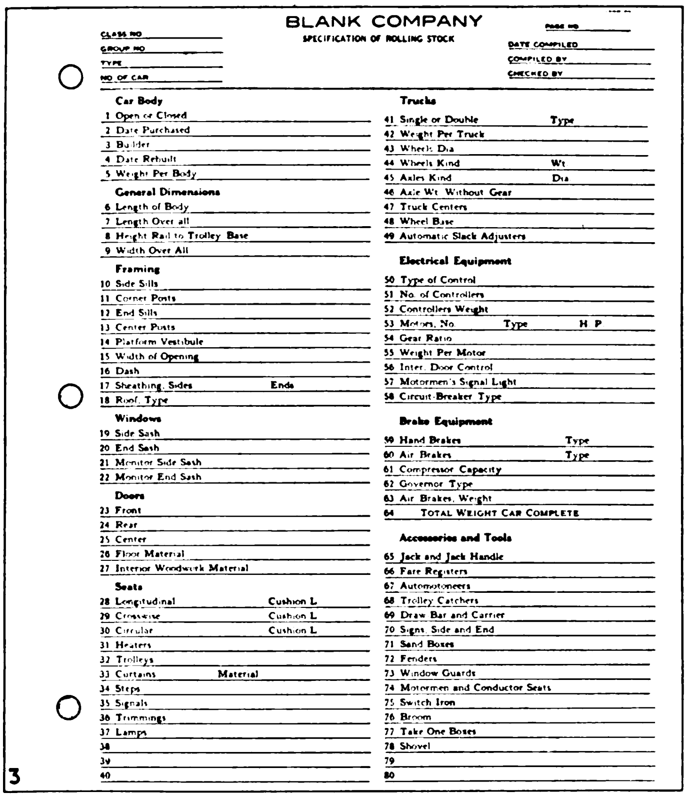
BLANK COMPANY

WHEEL CHANGERS REPORT

BUFFALO N Y ______

REMOVED								APPLIED			
Car No	Wheel No.	Make	Cause of Removal	Applied	Mileage	Axle No.	Gear No.	From Car No.	Wheel No.	Make	Rgd Bridge New

2 ______ Foreman



BLANK COMPANY

SPECIFICATION OF ROLLING STOCK

CLASS NO ______
GROUP NO ______
TYPE ______
NO OF CAR ______

PAGE NO ______
DATE COMPILED ______
COMPILED BY ______
CHECKED BY ______

○

Car Body

1 Open or Closed
2 Date Purchased
3 Builder
4 Date Rebuilt
5 Weight Per Body

General Dimensions

6 Length of Body
7 Length Over all
8 Height Rail to Trolley Base
9 Width Over All

Framing

10 Side Sills
11 Corner Posts
12 End Sills
13 Center Posts
14 Platform Vestibule
15 Width of Opening
16 Dash
17 Sheathing, Sides Ends
18 Roof, Type

○

Windows

19 Side Sash
20 End Sash
21 Monitor Side Sash
22 Monitor End Sash

Doors

23 Front
24 Rear
25 Center
26 Floor Material
27 Interior Woodwork Material

Seats

28 Longitudinal Cushion L
29 Crosswise Cushion L
30 Circular Cushion L
31 Heaters
32 Trolleys
33 Curtains Material
34 Steps
35 Signals
36 Trimmings
37 Lamps
38
39
40

○

Trucks

41 Single or Double Type
42 Weight Per Truck
43 Wheels Dia
44 Wheels Kind Wt
45 Axles Kind Dia
46 Axle Wt Without Gear
47 Truck Centers
48 Wheel Base
49 Automatic Slack Adjusters

Electrical Equipment

50 Type of Control
51 No. of Controllers
52 Controllers Weight
53 Motors, No. Type H P
54 Gear Ratio
55 Weight Per Motor
56 Inter. Door Control
57 Motormen's Signal Light
58 Circuit-Breaker Type

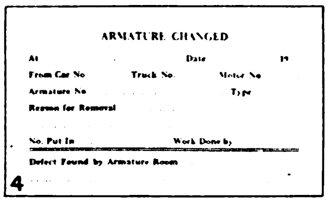
Brake Equipment

59 Hand Brakes Type
60 Air Brakes Type
61 Compressor Capacity
62 Governor Type
63 Air Brakes, Weight
64 TOTAL WEIGHT CAR COMPLETE

Accessories and Tools

65 Jack and Jack Handle
66 Fare Registers
67 Automotoneers
68 Trolley Catchers
69 Draw Bar and Carrier
70 Signs, Side and End
71 Sand Boxes
72 Fenders
73 Window Guards
74 Motormen and Conductor Seats
75 Switch Iron
76 Broom
77 Take One Boxes
78 Shovel
79
80

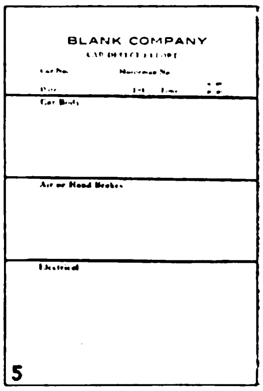
3



ARMATURE CHANGED

At ______ Date ______ 19__
From Car No ______ Truck No. ______ Motor No ______
Armature No ______ Type ______
Reason for Removal ______
No. Put In ______ Work Done by ______
Defect Found by Armature Room ______

4



BLANK COMPANY

CAR DEFECT REPORT

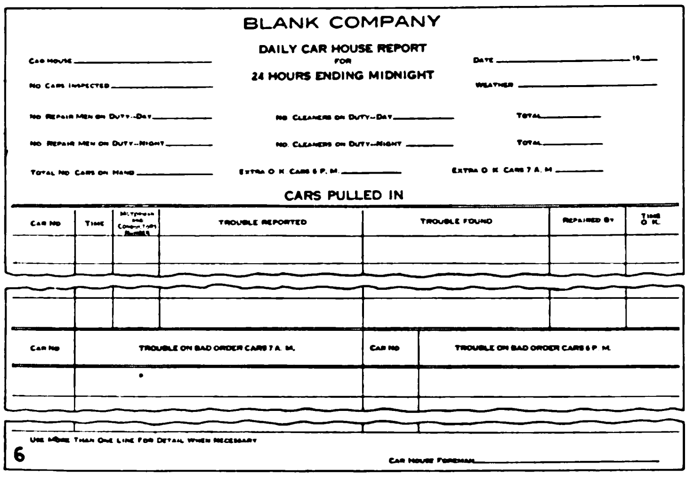
Car No. ______ Motorman No. ______
Date ______ Time ______ a.m. p.m.

Car Body

Air or Hand Brakes

Electrical

5



BLANK COMPANY

DAILY CAR HOUSE REPORT
FOR
24 HOURS ENDING MIDNIGHT

CAR HOUSE ______ DATE ______ 19__
NO CARS INSPECTED ______ WEATHER ______
NO REPAIR MEN ON DUTY—DAY ______ NO CLEANERS ON DUTY—DAY ______ TOTAL ______
NO REPAIR MEN ON DUTY—NIGHT ______ NO. CLEANERS ON DUTY—NIGHT ______ TOTAL ______
TOTAL NO CARS ON HAND ______ EXTRA O K CARS 6 P. M. ______ EXTRA O K CARS 7 A. M. ______

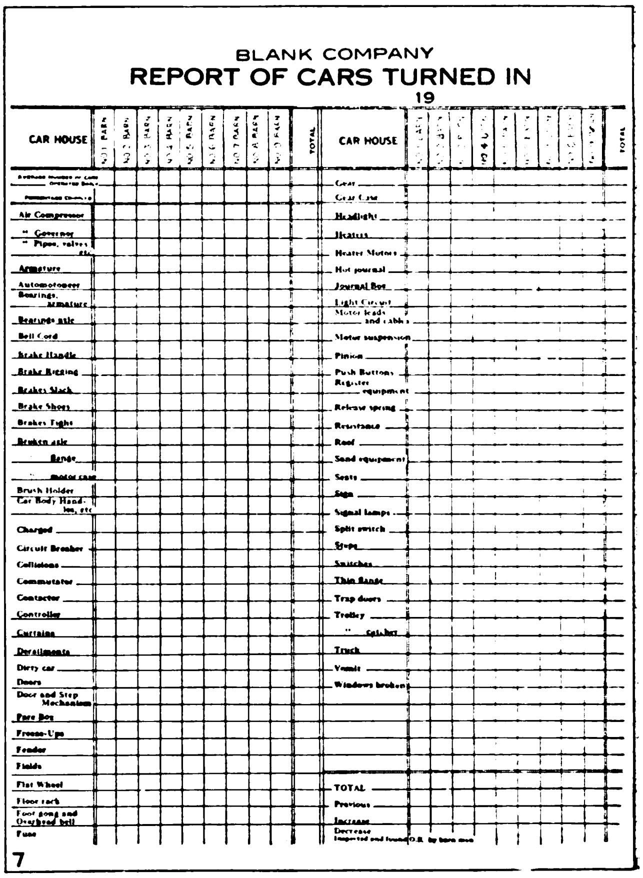
CARS PULLED IN

CAR NO	TIME	MOTORMAN AND CONDUCTOR'S NUMBER	TROUBLE REPORTED	TROUBLE FOUND	REPAIRED BY	TIME O. K.

CAR NO	TROUBLE ON BAD ORDER CARS 7 A. M.	CAR NO	TROUBLE ON BAD ORDER CARS 6 P. M.

USE MORE THAN ONE LINE FOR DETAIL WHEN NECESSARY

6 CAR HOUSE FOREMAN ______



BLANK COMPANY

REPORT OF CARS TURNED IN

19

CAR HOUSE	NO 1 BARN	NO 2 BARN	NO 3 BARN	NO 4 BARN	NO 5 BARN	NO 6 BARN	NO 7 BARN	NO 8 BARN	NO 9 BARN	TOTAL
Average number of cars operated daily										
[illegible]										
Air Compressor										
" Governor										
" Pipes, valves etc.										
Armature										
Automotoneer										
Bearings, armature										
Bearings axle										
Bell Cord										
Brake Handle										
Brake Rigging										
Brakes Slack										
Brake Shoes										
Brakes Tight										
Broken axle										
" flange										
" motor case										
Brush Holder										
Car Body Handles, etc										
Charged										
Circuit Breaker										
Collisions										
Commutator										
Contactor										
Controller										
Curtains										
Derailments										
Dirty car										
Doors										
Door and Step Mechanism										
Fare Box										
Freeze-Ups										
Fender										
Fields										
Flat Wheel										
Floor rack										
Foot gong and Overhead bell										
Fuse										

CAR HOUSE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	TOTAL
Gear										
Gear Case										
Headlight										
Heaters										
Heater Motors										
Hot journal										
Journal Box										
Light Circuit										
Motor leads and cables										
Motor suspension										
Pinion										
Push Buttons										
Register equipment										
Release spring										
Resistance										
Roof										
Sand equipment										
Seats										
Sign										
Signal lamps										
Split switch										
Steps										
Switches										
Thin flange										
Trap doors										
Trolley										
" Catcher										
Truck										
Vomit										
Windows broken										
TOTAL										
Previous										
Increase										
Decrease										

Inspected and found O.K. by barn men

7

1. Daily inspection sheet.
2. Report of wheels changed.
3. Specification of rolling stock.
4. Report of armature changes.
5. Car defect report.
6. Daily record of cars pulled in.
7. Summary of cars turned in

Systematic Maintenance Good Investment

Methods Used and Results Obtained by One Large Railway Indicate that Careful Attention to Maintenance Details Produces Most Satisfactory Conditions—Concrete Example Discussed, Using Data Gathered from a Survey of the Shops and Records

BY JOHN S. DEAN
Railway Motor Engineering Department, Westinghouse Electric & Manufacturing Company

IN ANY CAMPAIGN for increased revenues one important item which must not be overlooked is the possible economies which might be effected by certain changes or improvements in operating methods. To assist in pointing out some of the possibilities along this line a concrete example will be discussed, using data and figures gathered from a survey of the shops and records of one of the large railway operating companies with the following characteristics:

Service.—City of 500,000 population and interurban service to adjoining towns.

Miles of Track.—City, 230 miles; suburban and interurban, 204 miles.

Passengers carried per year, 227,000,000.

EQUIPMENT

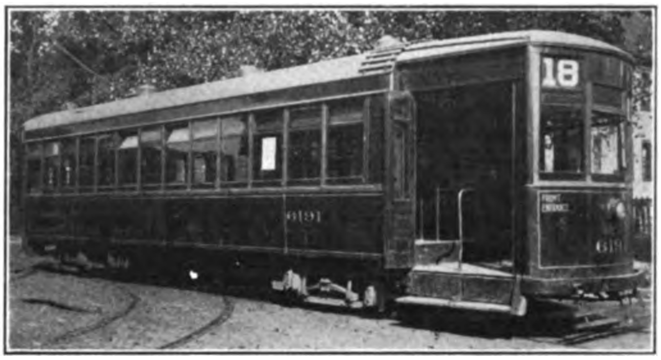
Passenger	Motor cars	815 city	351 quadruple equipment 468 double equipment
		84 interurban—quadruple equipment	
		23 suburban—quadruple equipment	
		4 special	3 quadruple equipment 1 double equipment
	Trail cars	19 city 4 suburban	
Service	Motor cars	60 snowfighting equipments 3 electric locomotives 53 freight, track department, sand, etc.	
	Trail cars	75 flat, dump, etc.	

SHOP AND CARHOUSE EMPLOYEES

		Men
Main shops	Electrical department	45
	Mechanical department	29
	Air brake department	16
	Erecting department	22
	Wood-working department	78
	Painting department	25
	Reclamation department	22
	Total	237

		Cars	Men	Cars per Man
Carhouses	No. 1 Station	228	62	3.7
	No. 2 Station	93	22	4.2
	No. 3 Station	135	47	2.8
	No. 4 Station	60	16	3.7
	No. 5 Station	17	54	3.2
	No. 6 Station	101	29	3.4
	No. 7 Station	34	15	2.2
	No. 8 Station	67	24	3.7
	No. 9 Station	22	..	...
	Total	919	269	3.4 average cars per man

Very complete records of all work done at the main shops and at the carhouse are made and kept on file available at any time for ready reference. These records are used by the officials to make careful studies of equipment failures, and result in improvements to overcome these troubles. Further, from these records monthly reports are made to the management covering a general summary of trouble and work done on the equipment. The daily inspection sheets are each signed by the men doing this work and are used by the company's legal department as evidence in case of law suits. Some of the most important forms used in connection with the work are reproduced herewith. In addition to the above, tabulated blueprints are kept up to date showing important details of all passenger and service equipment, also car assignment sheets giving the most important details of all cars operating from the various carhouses.



THE BELT RAIL IS BEING LEFT OFF THE CAR SIDE

The following system of inspection and general overhauling of equipment has been adopted and is being carried out on this property:

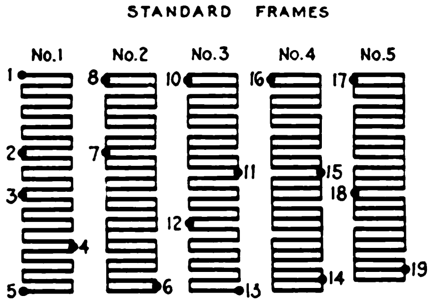
Daily inspection of cars with old style motors and brake rigging.

Light inspection every week.

Heavy overhaul every one and one-half to two years.

The daily and weekly inspections are made by the regular inspection force at the various carhouses, while for the general overhauling the cars are put into the main shops and the trucks and all equipment taken off and thoroughly overhauled. During this time the car bodies are very thoroughly cleaned and varnished or repainted.

The present working schedule of the shop for the general overhauling is from eight to ten cars each



RESISTANCE AND CURRENT CARRYING VALUES OF EACH OF ABOVE STEPS

STEPS	OHMS	AMPERES
1 to 2	1.28	30.4
2 to 3	0.64	30.4
3 to 4	0.80	30.4
4 to 5	0.80	30.4
6 to 7	0.56	60.8
7 to 8	0.32	60.8
10 to 11	0.40	60.8
11 to 12	0.80	30.4
12 to 13	1.12	30.4
14 to 15	0.214	91.2
15 to 16	0.400	60.8
17 to 18	0.214	91.2
18 to 19	0.160	91.2

COMBINATION STANDARD LAYOUTS

Based upon, weight of car, type of control, No. of motors, type and hp of motor, gear ratio, size of wheel

CLASS	STANDARD FRAMES	STEPS	TOTAL OHMS
A	1-1	4	5.76
B	1-2	4	4.40
C	3-4-5	6	2.18
D	3-4-4	6	3.14
E	2-2-2	4	2.64
F	4-4-4	5	1.838
G	2-5-4-5-5	7	2.610
H	3-2-5	6	3.574

STANDARD FRAMES OF GRID RESISTORS USING SINGLE THREE-POINT TYPE GRID week. This will vary depending upon the amount and importance of repair and upon the new work going through the shop.

SHOP REARRANGEMENT TO FACILITATE MAINTENANCE

Within the past few years as the result of an investigation instituted by some of the officials of this company a number of important changes were made in the layout of the main shops and in the distribution of the work whereby the handling of the general overhauling of the equipment was greatly facilitated. In general the changes made were as follows: (1) The electrical department was moved into the main shops near the motor and truck floor; (2) the work in the motor, truck and carpenter shops was rearranged to permit the carpenters and electricians to work on the cars at the same time; (3) carhouses were provided with necessary tool equipment to do their light repair work, thus relieving the shop.

All carhouses are clean and comfortable with well-lighted and orderly arranged pits, in which are to be found the required wrenches and small tools necessary to handle all repair and inspection work on the equipment. These pits are also equipped with the necessary small machine tools and hoists to take care of all light repairs at a saving of time and money. The material used is handled on an exchange basis. Each house is assigned a definite amount of material, and to make a replacement at the main shops the old parts must be turned in and exchanged.

THIS TYPE OF HEADLIGHT HAS BEEN RECESSED INTO THE DASH

Each carhouse is in charge of a general foreman, who reports directly to the superintendent. In general, the force, which will vary with the number of cars parked in the carhouse, consists of a general foreman, an assistant foreman in charge of inspection, a light foreman, a general utility man, a controller inspector with helpers, an air inspector and helpers, a brake inspector and helpers, a motor inspector and helpers, an oiler, helpers and cleaners.

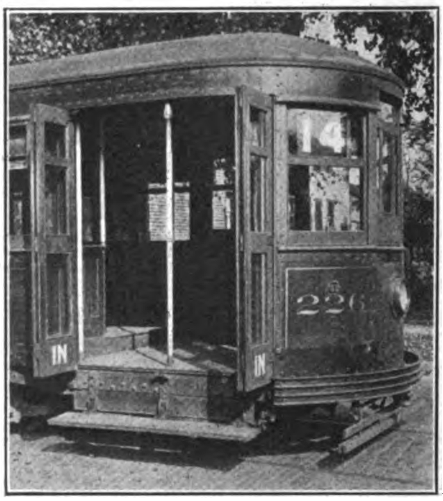
Some of the work done at the carhouses consists of daily inspection of cars with old style motors and brake rigging; weekly inspection of cars; sweeping of cars every night; washing outside of cars every four or five days; washing inside of cars every four weeks; changing wheels on cars, changing armatures and doing light repair work on crippled cars; submitting daily reports on all crippled and O.K. cars and reports on all cars inspected.

All carhouse foremen are furnished with a summary of the weekly records of crippled cars from all houses. This scheme has created a friendly competition among the various foremen which tends to bring out the very best efforts of the men to make a creditable showing for their respective houses.

To meet the severe operating conditions during the winter season ample equipment, consisting of sweepers, plows and other apparatus, is available, and a definite snowfighting program has been worked out and is put into effect.

The reclamation department, which was recently organized, has made an excellent showing during its short existence. The welding room is the most promising division of this department as it has made possible the salvaging from the scrap pile of a large number of motor and truck parts. This work is being done at a large saving and has greatly facilitated the overhauling work on equipment. Some of the results obtained in this department are shown by the figures taken from the records in the accompanying table.

An illustration on page 281 shows a pile of damaged and discarded gear cases in the background, while in the foreground are shown four similar cases that were reclaimed. Repairs are made by either the oxy-acetylene, electric or thermit process of welding, depending upon the size of the piece to be repaired and the final finish to be given the welded section. In doing this work much depends upon the skill of the operator, the welding metal and the flux used. A skilled workman by using the right combination of welding metal and flux can produce either a very hard or a comparatively soft welded joint.

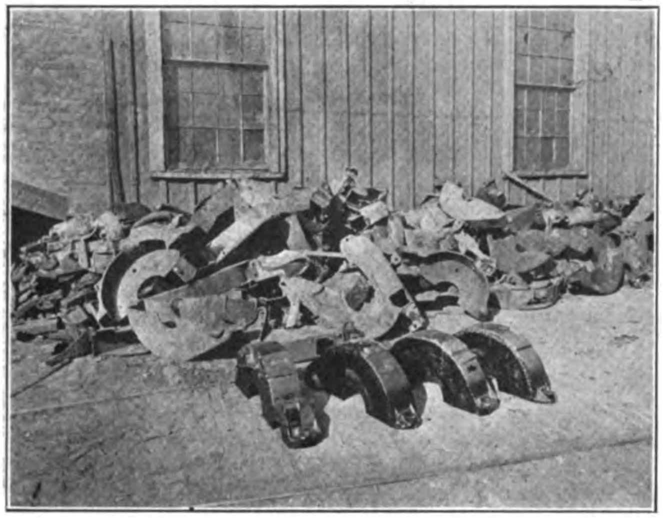


RECESSING THE HEADLIGHT INTO THE DASH ELIMINATES TROUBLE

Another illustration shows the babbitting department, which is fitted with two gas-heated pots, one used in burning off the grease and melting the babbitt from the old shells and the other to heat the clean metal used to reline the bearing shells. A high grade babbitt metal is used and great care is taken with each operation to produce reliable bearings. In order to make a good tinning job on the car journal brasses, a buffing wheel has been installed on which the surface to be tinned is thoroughly cleaned and polished. A further improvement considered for this department is the installation of an automatic temperature controlling device for the babbitting pots to maintain the correct working temperature of the metal.

Repaired Parts	Jan.	Feb.	March	April	May	June	July
Gear case halves	46	63	45	60	94	92	76
Motor frames	8	11	9	12	5	13	15
Trucks	..	..	20	12	19	20	14

With the great variety of equipments on this property, it was found that originally sixty-two different types of grid resistors were used. This required a large stock of individual castings and a great variety of assembled frames in order to make the necessary repairs



DAMAGED GEAR CASES AND SAMPLE RECLAIMED BY WELDING

when needed. This question was given careful thought and study, which finally resulted in adopting as a standard a single three-point type grid resistor which is now being applied to all equipments to replace the original sixty-two varieties. This single grid is built up into five standard frames which can be arranged in eight groups or classes suitable for all of the equipments. This arrangement when finally installed will be a big factor in facilitating repairs on the grid resistors.

METHODS OF WINDING, DIPPING AND BAKING

The winding department within the past few years was brought into the main shop nearer the motor and truck floor and this change has saved considerable time and money. In connection with the regular routine work in this department there are in use several schemes which are worth special mention.

Armature coils are heated in an electric oven, thus softening the insulation, making the coils more pliable and less likely to have insulation damaged while winding.

A complete outfit is in operation for impregnating field coils with insulating compound.

A dipping and baking plant has been installed to treat armature coils and completely wound armatures.

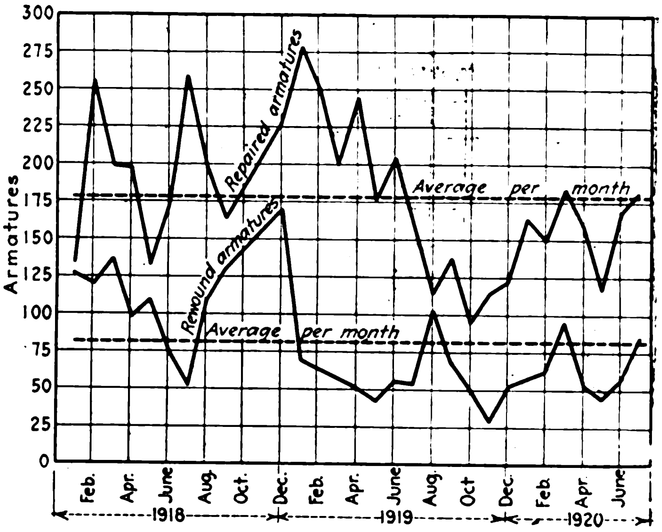
Armatures are inclosed in a flexible wood crate while being transferred between shop and carhouses. This carrier is readily applied and provides ample protection for the commutator and windings.

BABBITTING DEPARTMENT

The commutators on all machines have the mica undercut approximately $\frac{1}{64}$ in. All repaired armature windings are given an insulation test of 1,200 volts and new windings 2,000 volts to ground. This company has a definite program laid out covering the dipping and baking of all repaired and rewound armatures. This was put into effect more than a year ago and to date results have been very gratifying. In addition to the above all new field coils are impregnated.

The baking oven has natural ventilation, is heated by electricity and has automatic control to regulate the temperature. Schenectady black varnish is used and armatures are first heated about twelve hours, then dipped pinion end down except a few types of smaller sized motors, which are dipped commutator end down. Armatures remain in varnish until all bubbling ceases and then are baked for forty-eight hours at a temperature of 225 deg. F. The results obtained from treating armatures in this manner have been so satisfactory that this company is planning to put in additional equipment to dip and bake their completely wound motor frames.

An analysis of the pull-in reports showed an unusual number of broken motor cable leads especially on a certain class of cars. As a result of this investigation these cars during the overhauling period are having the car wiring put in conduits and motor cable leads securely cleated. All parts of the cleats are made a standard size and the motor leads are all brought out in the same relative position so as to make all parts on the trucks and car body interchangeable. All cables on the trucks are provided with two sets of quick break connectors so that the leads to individual motors as well as both sets of motor leads can be readily disconnected from the car body. When this work is completed it promises a further reduction of car pull-ins from motor lead troubles.



CURVES SHOWING ARMATURES REPAIRED AND REWOUND

One detail in connection with the reconstruction work on trucks which has been given considerable attention by this company is that of providing hardened steel bushings at all wearing parts of the truck frames. This construction provides not only a longer life but also an easy means of repairing parts when they become badly worn.

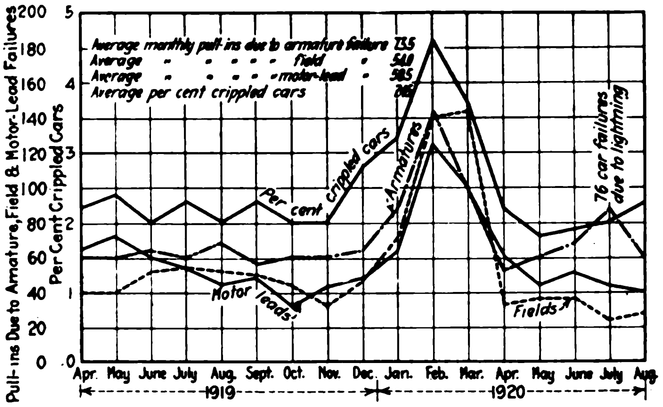
As a result of experience several changes have been made on standard car equipment which show what can be accomplished in the way of reduced maintenance by carefully going after mere details.

The belt rail is left off the sides of cars. This rail consisted of a wood strip running the entire length of the car on both sides about half way between the under side of the windows and the bottom of car body. This strip tended to catch water which would rust the side plates of the car body at this point, resulting in frequent repairs.

The fuse box on the same cars was located under the car at the side near the door and was either continually grounding due to drip water or being knocked off by passing automobiles. They are being removed and placed under the car just ahead of the main air reservoir.

By a comparison of the headlights shown in cars in accompanying illustrations it will be noted that one extends out very much farther than the other. The headlights extending out so far have been a source of continual trouble by being damaged and torn off by the trolley rope on the car ahead when operating in congested districts. All of these types of headlights are being reconstructed in the reclamation department and remounted as shown. This has eliminated much trouble.

On all single-end cars the apron on the front dash is left off as a matter of economy. This apron was originally placed over the dash at front and rear to keep small boys from finding a good foothold to ride on rear of cars and this protection is necessary and still maintained on double-end operated cars. However, on cars operated in one direction, this protection is not needed at both ends of the cars so the apron is left off at the front end, thus reducing maintenance costs.

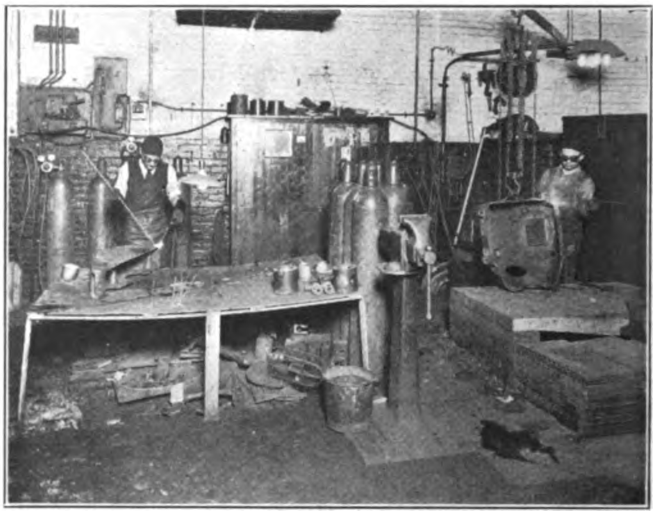


Curves Showing Crippled Cars and Pull-ins

At the main shop all assembled motors are given a no-load running test to check the bearings. Similar tests are made at the carhouses on all box frame motors when armatures are changed. The question of giving all repaired motors a running load test at the shop to weed out defective workmanship and material is now being considered by this company. When armatures or motors are changed on any cars at the shop or carhouses, each individual motor on the car is checked for correct connections by spinning the wheels. This is done in both directions to insure all motors working together. The car before being put in regular service is always given a trial run on a section of the main track to try and locate any possible trouble with the bearings or electrical equipment.

Some Low Maintenance Costs

In addition to trying to improve the maintenance methods this company gives very careful attention to operating costs on details as the management is a firm believer in looking after the small things on the property. The following cost figures show what has been accomplished along this line:



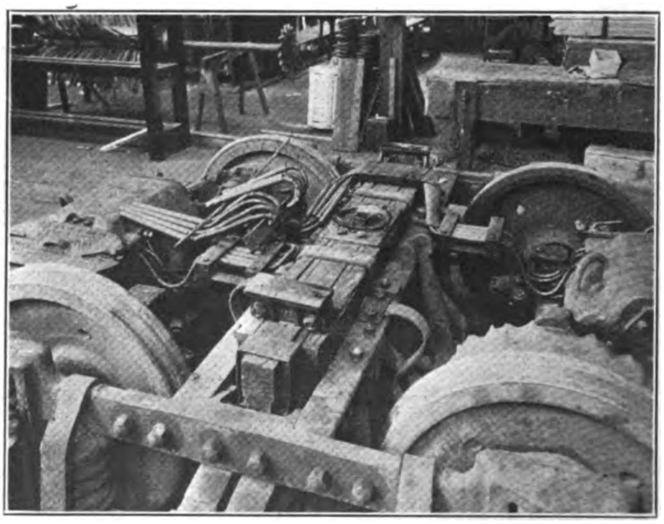
Welding Room

Carbon brushes per thousand car-miles	$0.09
Lubrication per thousand car-miles	0.219
Trolley wheels per thousand car-miles	0.29
Lamps per thousand car-miles	0.75
Brake shoes per thousand car-miles	0.90

The curves shown were plotted from values taken from the weekly report of pull-ins and in general they show that the peaks during the winter months are due to severe snow conditions. The armature curve was given an upward turn due to lightning trouble during the summer months and the general trend of motor lead and field troubles is downward. The percentages of crippled cars averages 2.4 per cent, which is a comparatively low figure.

The general tendency of both the repaired and rewound armature curves is downward, with an upward turn in the winter on account of snow conditions and again in summer due to severe electrical storms.

The high peak on all the curves occurred during February, 1920, and it will be recalled that this was a particularly severe period in regard to weather conditions. The peak in the armature curve for July, 1920, includes seventy-six failures which occurred as a result of a severe electrical storm.



Motor Cable Leads Are Securely Cleated in Position

Des Moines Rides Buses and Walks

Public Calamity Being Enacted with Meager Public Concern — Dilapidated and Crude Buses Trying to Replace Street Cars, While Many Walk or Stay Home—No Great Effort Toward Solution Being Made

BY "OBSERVER"

DES MOINES, the capital city of Iowa, with a population of 126,000, has harassed its street railway company until it has been forced to cease operation, thereby imposing on the citizens what is little short of a public calamity, though but partially realized as yet at the end of the first week, when this is written. Every effort was made by the company to effect a settlement of the difficulties and warning was given of the necessity to shut down unless some solution were promptly found. The city authorities, the newspapers, and the people generally, seemed to believe this was only a bluff and refused to take the matter seriously. The shut-down followed at midnight on Aug. 3, at the order of Federal Judge Martin J. Wade, under whose direction the property had been operated under receivership since January, 1921. Operation of the lines having ceased, the bondholders have started foreclosure proceedings.

Now Des Moines is a free-for-all bus town, licenses being issued to all comers regardless of the type or condition of vehicle and with the simple requirement of a $25 license fee and a $5,000 indemnity bond. The $25,000 state bond for vehicles carrying over fifteen passengers is apparently not being enforced. At the end of the first week approximately sixty buses of all kinds and sizes brought in from Kansas City and St. Joe, Mo.; Hutchison, Kan.; Sioux City, Ia.; Minneapolis, Minn., etc., were doing their utmost in an unorganized and inexperienced way to make these few do the work that normally requires more than a hundred double-truck street cars. The results are pitiable indeed, yet the public officials seem to be complacently viewing the spectacle, while the people who must ride suffer a congestion and actual danger seldom witnessed. Even the downtown merchants, whom one would expect to be greatly concerned, are only passively interested as yet. They have been working in a way to set up a plan acceptable to company and city, but they have not displayed the determination one would expect of them to bring about a prompt settlement and return of the cars. Of a number of merchants interviewed, none was found who really felt keenly the absence of the cars, though a few seemed aware that a continuation would undoubtedly affect their business. Two complained that business had been so poor anyway that they guessed it could not be made any worse. Des Moines has been very hard hit in a business way because of its very large dependence on the farmers. The people riding the buses for the most part seem to be taking the situation somewhat as a "lark" and good naturedly making the most of the intolerable riding conditions. The private automobiles, of which Des Moines has a very large number (Iowa has one for every 6.7 inhabitants), come into the city loaded with friends and strangers in the morning. Practically all automobiles at this time of day are bound for the downtown business districts, though it is more difficult for the unfortunate pedestrian to intercept a ride going home in the evening, when the route of the private car cannot be foretold. However, many people wait thirty minutes and more for a lift in a private automobile. Others are walking six and seven blocks to board buses on their way to the downtown loop so that many of the buses are well loaded for the return trip when they arrive downtown. Great numbers of people are walking, and great numbers of women and non-necessity riders are staying at home rather than endure the discomforts, not to say embarrassments, of the Des Moines motor bus trip. The remark is frequently heard that a person is actually afraid to ride in the buses. This is not difficult to understand when one observes the crowding of thirty-five and forty people into buses seating twelve to eighteen. The low headroom, limited foot space and general *compression des voyageurs* makes a rush-hour ride one not to be readily forgotten. Passengers are so crowded in that in practically every bus they fill up the front end at the right of the driver so that he has no vision to the right at all. Indeed, in some buses passengers occupy the space at the front of the car on both sides of the driver so that he has no vision in either direction and can see only what is immediately in front of him. Therein lies the greatest danger, and it is only by the grace of God that a serious accident has not been recorded. Further danger lies in the fact that the buses in use were not designed for such extreme loads to begin with, and furthermore, most of them are in extremely poor condition.

Other evidences of the effect of the street car shutdown is afforded by action of an amusement park management and the State Fair Association. The management of the latter issued a statement to the effect that without street car transportation the Fair, which is scheduled to open Aug. 24, would produce a deficit of $150,000. Last year the Des Moines City Railway pro-

DAILY AVERAGE DATA OF 5-CENT BUS LINES IN DES MOINES

Line	1921 Days Covered by Check	Number of Buses	Number of Trips	Total Bus-Miles	Number of Passengers	Passengers per Bus per Day	Total Earnings	Earnings per Bus per Day	Earnings per Bus-Mile
Walker	4-18 to 4-20	3	99	371.97	1,074	331	$40.16	$16.46	14.3c.
Walker	5-16 to 5-18	5	165	620.79	1,735	347	86.73	17.35	13.9c.
University	3-12 to 3-26	10	402	1,310.04	4,836	487	249.55	25.00	18.0c.
University	4-25 to 4-30	10	362	1,176.63	4,123	412	206.15	20.62	16.5c.
Sixth Ave	2- 1 to 2- 2	5	219	742.36	2,600	532	133.00	26.00	17.7c.
Sixth Ave	3-28 to 4- 1	8	388	1,336.09	5,051	635	252.53	31.56	17.1c.
Sixth Ave	5- 9 to 5-14	8	357	1,228.65	4,327	624	249.50	30.77	20.2c.
Clark	2-16 to 2-18	2	78	243.2	1,071	536	53.57	26.78	20.5c.
Clark	4-11 to 4-16	5	162	500.6	2,096	465	104.80	23.26	20.5c.
Clark	5- 2 to 5- 7	5	196	607.1	2,397	497	119.84	24.83	19.7c.
Valley Junction*	4- 4 to 4- 9	4	104	601.76	1,664	459	124.81	34.61	20.9c.
Valley Junction*	4-25 to 4-30	4	108	625.2	1,637	609	122.74	30.70	19.5c.

* Charge 10-cent cash fare with reduced ticket rate, making average fare 7½ cents.

EAST 14th STATE FAIR

A GROCERY STORE ON WHEELS CONVERTED INTO A MORE PROFITABLE FORTY-SEAT BUS AND NAMED BY PATRONS "SAINT VITAS" BECAUSE OF ITS RIDING QUALITIES

A GREAT SCHEME FOR FAST LOADING AND UNLOADING BUT REQUIRING TWO MEN. THE STEPS FOLD UP WHEN THE DRIVER PULLS THE ROPE

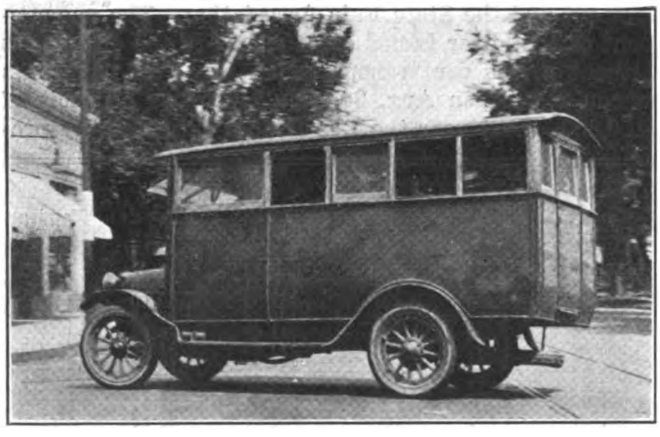
vided sixty cars to serve the State Fair, giving a forty-second headway all day up to 7 p.m. and hauling as many as 75,000 people in one day. One evening after a show at the fair grounds two full round trips of the sixty cars were required to haul all the people home. The manager of Riverview Park has announced that he will close the park on Sunday, Aug. 14, because of the falling off in admissions. At least 80 per cent of the 25,000 a week who patronize this park are car riders. To attend the park now, unless they live directly on the line of buses which is trying to serve the park, patrons must pay one fare to get into a jammed bus to ride downtown and then fight to get into another and pay another fare to proceed to the park. Naturally they stay at home rather than suffer this experience.

EXTENT OF BUS SERVICE

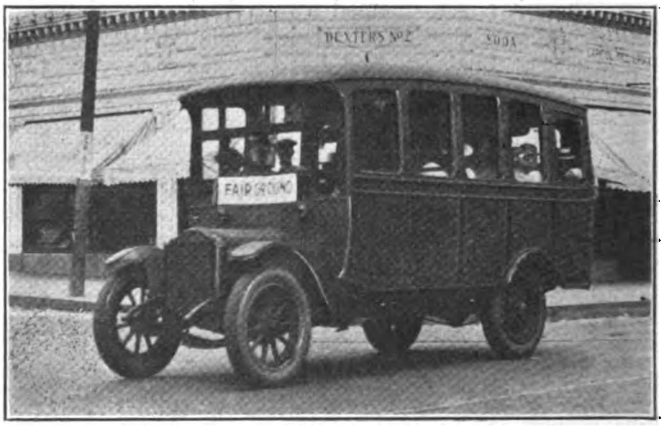
Prior to the shutting down of street railway service, on May 23 there were twenty-five buses operating in competition with the company, on July 6 there were thirty-six and between this time and the day operation ceased, Aug. 3, not more than two or three additional buses were added to the competitive service. A check made on Aug. 5, the second day after the shutdown, showed there were fifty buses; on Aug. 6, fifty-six, and on Aug. 7, fifty-six maximum, including all cars hauling passengers whether bus or jitney touring cars. These figures were obtained through an accurate check made by the railway company and are considerably less than the number of buses claimed by the bus men's association to be in operation. The association claimed to have eighty-six buses in operation for the rush hour on Aug. 10, one week after railway operation ceased, but judging from figures given out previously it was estimated that there possibly were sixty-five buses.

During March, April and May of this year five different lines of buses paralleling street-car lines were operated. Buses were also operated spasmodically on other lines, presumably as a trial of the possibilities. Now an effort is being made to give some bus service along thirteen of the fourteen main car lines. Four of these, however, were being operated with but one bus, giving an average interval on the four lines of thirty minutes. Some of these bus lines are turned back about 1 mile short of the end of the car line, where the railway has turned back its tripper cars. The buses charge a 5-cent fare without transfer, whereas the railway fare was 8 cents cash, two tickets for 15 cents, with universal transfer and 2½-cent tickets for high school pupils and for children under 12 years of age. In April, May and June over 18 per cent of the total passengers carried by the railway used transfers. This week the buses put into effect a six-for-a-quarter ticket good between 9 and 4 to stimulate shopping. The tickets are sold on the buses.

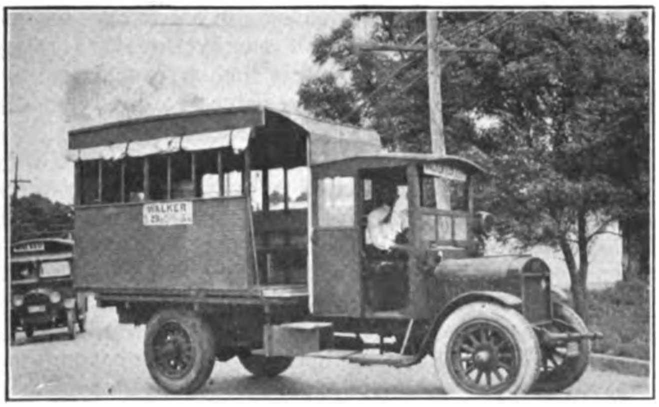
While the bus men have an association, comprising a majority of the individual owners, they are operating largely as individual enterprises and agreeing to a certain extent on schedule and other matters of service. Of course if a driver gets tired during the dull hours of the afternoon he drops out for one trip so that the interval is rather unreliable. A complete check made on Aug. 5 of the bus headway on each line between the hours of 7 and 10 a.m. and 2 and 7 p.m. disclosed a most erratic service, with intervals on the same line of from two minutes to forty-five minutes.



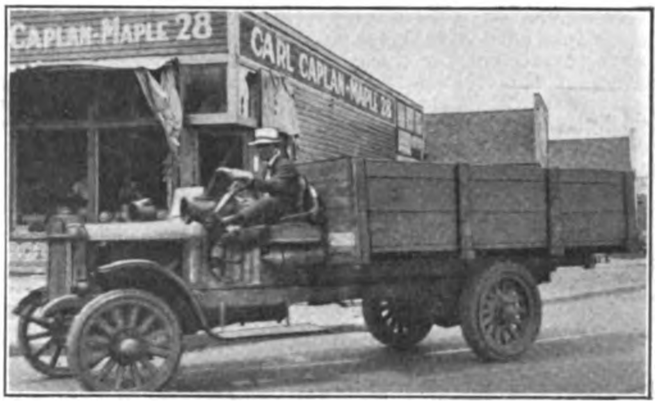
AN OLD TIMER BROUGHT BACK INTO SERVICE



ONE OF THE BEST BUSES IN DES MOINES



A FIELD REAL ESTATE OFFICE LIFTED ON THE TRUCK TO MAKE A BUS BODY. AFFECTIONATELY NAMED THE "GRAINARY"



THE "ICE WAGON," FOR THAT IS WHAT IT IS IN DES MOINES EXCEPT THAT SEATS (BOARD) HAVE BEEN ADDED

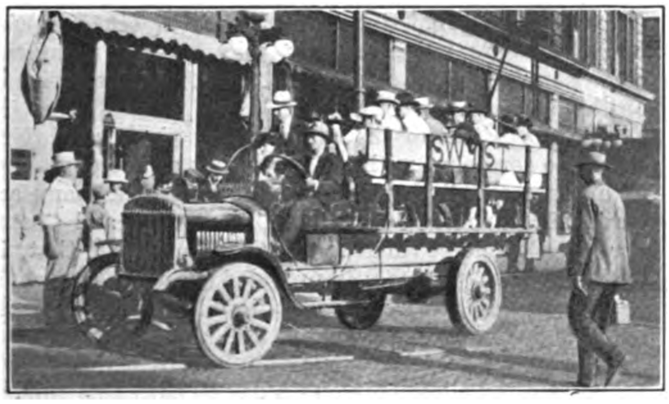
Of course, in fairness it should be said that the busmen cannot be expected to establish overnight a very complete or reliable service, or to equip themselves with first class buses. Through their association they have been endeavoring to secure a one-year franchise, upon receiving which they guarantee to spend a considerable sum of money for new buses, adequate to handle the city's traffic. Consequently, the buses that are now being supplied are such as could be purchased for comparatively small sums and financed on what little money the driver had available personally. The result is rather humorous, if one can forget the seriousness of the situation. The patrons have a good many of the buses named, as indicated in the captions under the accompanying pictures. They range in size from a seating capacity of eleven up to forty and employ old four-cylinder Cadillacs, GMC, Reo, White, Masters, Stewart, Republic and other chassis.

It is not thought that the number of buses in operation will be increased materially until the bus owners can be given some assurance by the City Council as to what their life will be. License fees for the buses now in operation expire on Sept. 1 and there is no desire upon the part of bus owners to pay the annual fee until some plan for future operation is worked out. It is said that ten buses from another city are waiting for shipment to Des Moines for the word that they will be given a lease on life by the Des Moines City Council.

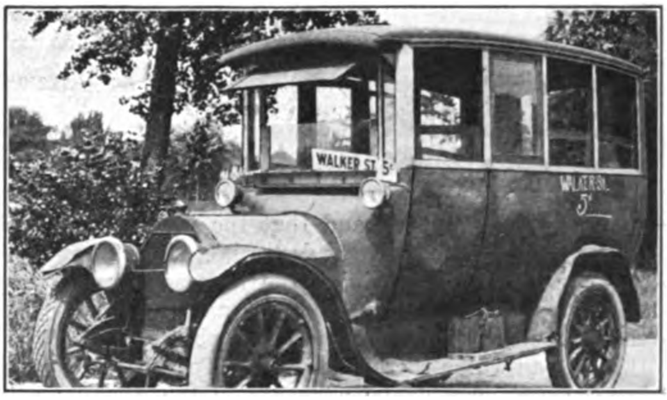
BUS MEN WANT THE BUSINESS

In addition to the efforts of the local bus men's association to secure a franchise, several other interests have been actively at work endeavoring to secure a franchise or promote a company to finance a system of buses to displace the street railway system. Typical of these propositions is the following made by T. J. Fay, president Fay Motor Bus Company, which has made quite a success of a 10-cent motor bus line in Rockford, Ill., and has started a system in Little Rock, Ark., and in one or two other places.

> The Fay Motor Bus Company, co-operating with a number of substantial business men of Des Moines, hereby makes you a tentative offer to install and operate in the city of Des Moines a complete motor bus system, consisting of at least 154 buses of an average seating capacity of twenty passengers per bus.
>
> After closely observing the intracity traffic of the present motor buses and traction lines now operating here, and estimating the amount of passengers that offer themselves for transportation, we find that the number is about 105,000 passengers in each day's operation at the present time, and as conditions improve, we will furnish all of the additional equipment necessary to give adequate transportation for the city of Des Moines at a fare of 5 cents from all outlying districts to the center of population as described on the accompanying map submitted to you, and issuing a transfer from transfer points at an additional charge of 2 cents, enabling a passenger to go from any part of the city to any other part of the city at a total fare of 7 cents. While we are basing these lines at the present time on general transportation lines now established, we stand ready to alter or to add additional lines as the necessity arises.
>
> We also submit a survey of the operation, basing the costs of same on an experience acquired during the operation of over 7,000,000 miles.
>
> Believing that the city should be recompensed for the use of such streets as the buses would operate over, and estimating the probable cost of the additional wear and tear on the pavements and streets of such routes, we would agree to recompense the city for such operations at the rate of $25,000 for each year of such operation. We also agree to clear the snow during the winter over our established routes sufficient to allow buses to operate during all weather conditions, and also agree to maintain a sufficient reserve to cover any just claims for personal injury or property damage that may accrue in our operation.



A SAMPLE OF BUS BODY NAMED APPROPRIATELY "STOCK CAR"



ANOTHER RELIC ENJOYING A NEW LIFE

Inasmuch as it is a very serious step for the city to enter into such a contract as we propose, and also a very large investment for those people interested in the installation of this system, we wish to have this considered a tentative proposition and would suggest that if you intend giving it your serious consideration, that we enter into the details, routes and other arrangements more definitely and perhaps work out a number of details in this problem to a more mutual conclusion, as we estimate the investment of this bus system to cost close to $750,000, including equipment necessary for the upkeep of such a large organization.

COMPARISON WITH RAILWAY SERVICE

The downtown district of Des Moines lies just about at the center of the 50 sq.m. included within the city limits. For this reason the mileage on practically all of the lines is unusually uniform, all lines radiating from the central district with no through lines and no cross-town lines. The average length of all the lines is 4 miles, giving an average round-trip distance of 8 miles. This characteristic of the city transportation system results in fairly short haul. The easy topography of the city, the fact that 85 per cent of the streets of Des Moines are paved and that the peak load is well distributed both morning and evening, also rather favor the possibility of providing the necessary transportation with buses. However, the handling properly of the rush-hour crowd presents a problem in a city of this size on which there is much well founded doubt that buses could possibly be adequate to the requirements. While the city authorities have apparently preferred to have transportation revolution rather than evolution, they have evidently been wise enough not to sign up any contract with a bus concern to supply the city's entire transportation needs. Of course such a franchise would have to be passed upon by the voters before becoming effective.

SURVEY OF BUS AND TRANSPORTATION PROBLEM AT DES MOINES, IOWA, SUBMITTED BY T. J. FAY

Average daily number of passengers carried on buses and traction lines		105,000
Number of buses necessary to carry 105,000 passengers per day at average of twenty-five passengers per round trip	140	
Additional equipment allowance of 10 per cent (replacing cars in repair shop)	14	
Total buses necessary		154
Note: (Due to the fact that there are portions of the day when the full equipment is not necessary, buses can be overhauled and repaired during this portion of the day, and the average operating efficiency should easily be at least 95 per cent.)		
Number of bus routes operating from center of city necessary to cover entire city		13
Average distance of each round trip		6 miles
Receipts per trip of twenty-passenger bus with average round trip load of twenty-five passengers		$1.25
Average revenue per bus-mile		20½c.
Number of trips per day necessary to carry 105,000 passengers at average of 25 passengers per round trip		4,200
Number of trips per bus per day		30
Average number of miles operated per day		25,200
Average number of miles per bus per day		180
Gross receipts per day carrying 105,000 passengers		$5,250
Transfers to be issued at additional price of 2 cents each, making cost of riding from one extreme limit of the city to the opposite city limit		7 cents
Ordinary fare from any part of city to center of city		5 cents
Estimating twenty-five passengers for each round trip, whereas seating capacity per round trip is forty (with additional 50 per cent standing room, or possible round trip capacity of sixty), it is possible with this equipment to carry an additional 25 per cent or a total of 130,000 passengers per day. This increase is allowed for periods of the day when there might be an unusual rush		

SURVEY OF COSTS PER DAY FOR OPERATION OF 154 BUSES

Overhead (operating)	$856.80	
Depreciation (40 per cent a year)	767.12	
Insurance reserve (casualty)	154.00	
Total overhead		$1,777.92
7 per cent interest return on $700,000 investment		134.25
Maintenance:		
Gasoline	$587.16	
Oil	52.84	
Tires	690.00	
Shop repairs (labor)	65.52	
Parts, etc.	166.32	
Total maintenance		$1,561.84
Drivers' salaries		1,081.99
Total daily cost of operation		$4,556.00
RECAPITULATION		
Gross receipts (105,000 passengers at 5 cents)		$5,250.00
Total operating cost per day: (154 buses making 4,200 trips per day at 6 miles per round trip or 25,000 miles at 18 cents per mile)		$4,556.00
Net profit per day		$714.00

The normal base schedule of the Des Moines City Railway calls for seventy-nine cars, with fifty-three additional tripper cars during the rush hour. These 132 cars are so scheduled that 190 cars leave the downtown loop during the maximum hour. During this rush hour, on a certain day when the street cars and thirty-six buses were both operating, a total of 10,815 passengers were handled out of the loop. On the assumption that all of the passengers carried by both agencies had been carried on the street cars, the total square feet per passenger of street-car floor space provided was 4.2, each street car having 281 sq.ft. or a total for the 190 cars of 53,390. Assuming an average floor area of 74 sq.ft. for the buses in order to give an equivalent floor space of 4.2 sq.ft. per passenger with buses, it would have required 721 buses during the hour scheduled through the loop to handle the complete traffic of 10,815 passengers. This would mean that an equipment of 480 buses would be required, assuming a schedule speed and length of haul equal to that of the railway. When 132 street cars were provided to handle this load, they were not crowded, so that the comparison as indicating actual requirements that must be faced by the buses may be overdrawn. But even dividing the estimate by two, the result, 240 buses, would be a very long way from the estimate of 154 buses as made by Mr. Fay. The following additional data will be of interest in comparing the railway operation with the proposal of the bus men.

The average schedule speed of the railways including layovers, etc., was 9.5 m.p.h. In April of this year the operating expenses, including 3 per cent depreciation, were 34.62 cents per car-mile, and the passenger revenue, 35.01 cents. In June, because of greatly curtailed mileage on account of the partial shutdown of the power system, the operating expenses, including depreciation, were 42.21 cents per car-mile, and the passenger revenue, 47.09 cents. The revenue passengers per car-mile in January of this year were 5.60, in February 5.57, in March 5.05, in April 4.63, in May 4.91, and in June 6.16. These figures indicate very clearly the effect of the increasing jitney competition which began in January and the 60 per cent curtailment of car mileage which took place on May 23, due to power shutdown. For the first six months of the current year the revenue passengers per car-mile were 5.28 and the total passengers per car-mile 6.31.

A good idea of the earnings of the buses in Des Moines under competitive conditions; in other words, while the cars were running, may be had from the accompanying tables of data gathered from checks made on the days indicated this year.

The proposition of the bus company given heretofore might be compared with the statement of the engineers of another well known and competent truck manufacturer who appeared before the City Council and Chamber of Commerce and made the statement that if up-to-date bus service was provided with buses costing $8,500, the daily cost of operation for labor, maintenance and depreciation would be $41, and that on a 5-cent fare it would be necessary to haul forty persons each round trip for eighteen hours a day to earn this sum.

Several of the bus-owner drivers were talked to, and they seem to think they are making money now and plenty of it on a 5-cent fare, and will continue to do so even with the six-for-a-quarter ticket rate. They seem eager for the opportunity to demonstrate to the people of Des Moines that they can provide adequate service. Their most common remark is: "You give us a franchise and we will give you the service." Strange to say, they are asking only a one-year franchise, and on the strength of this declare themselves willing to purchase fine new buses and discard the present makeshift contraptions. Also, on the strength of such a franchise, they declare they had been assured of financing by one of the large manufacturers of trucks and farm implements. A franchise cannot be granted, however, without a vote of the people, which will require considerable time and there is much doubt that it would pass.

CAUSES OF THE PRESENT SITUATION

The franchise under which the Des Moines City Railway has recently been operating is a twenty-five-year grant passed by the City Council Oct. 2, 1915, and approved by the voters on Nov. 22, 1915. The original franchise given to this company was dated Jan. 1, 1868, with a term of thirty years. From the date of this expiration in 1898 until the new franchise was started in 1915 the company was almost continually in the courts over a controversy as to whether the old franchise was actually limited to a period of thirty years or was in perpetuity. The supreme court of Iowa finally held that the franchise did expire on Jan. 1, 1898, and gave the company two years in which to secure a franchise or remove its tracks from the streets, but this legal battle and a belligerent attitude toward the people on the part of the old managements did much to develop an antipathy toward the company. It formed a good groundwork for the succeeding agitation of three of the four local newspapers and the politicians.

The new franchise entered into as late as 1915 rather surprisingly provides that:

> The maximum rate of fare for a single continuous ride within the limits of the city in one direction over any route of the company during the life of this franchise shall be 5 cents in cash. The company, in at least twenty-five convenient places within the city, shall sell to any person applying therefor six tickets for 25 cents. . . . The fare for children under twelve years of age shall be 2½ cents. On the payment of a 5-cent cash fare, the conductor will give the child a ticket which will be accepted as fare for another ride if presented by a child under twelve years of age. High school pupils on their way to and from school on actual school days between the hours of 7:30 a. m., and 4.30 p.m., shall be carried on tickets . . . sold in books at the rate of twenty for 50 cents. . . .

The franchise also provides that universal free transfer shall be issued, and a transfer upon a transfer. The company agreed to expend $1,500,000 for reconstruction, rehabilitation, new lines and extension, according to a specified itemization contained in the franchise, within a period of three years. In connection with the service to be rendered, the following clause quoted from the franchise is enlightening in analyzing the company's financial situation:

> As a guarantee of the service provided for in this section, it is agreed that no dividends on the outstanding stock of the company shall be considered or allowed in determining the quality, quantity or kind of service the company is bound and obligated to furnish under this ordinance; it being understood and agreed that subject to the payment of all costs of operation, including taxes and interest at not to exceed 5 per cent on the company's indebtedness represented by bonds, and not to exceed 6 per cent of the remainder of such indebtedness, and the setting aside of a depreciation fund as provided in Sec. 22 of this ordinance, the city is entitled to have and the company is bound to render the first class service as defined in this section.

The provision with regard to depreciation is that after the expiration of the first three years, the

> Company shall set aside and charge off a sufficient depreciation fund to cover replacement, renewals, new equipment and installations necessary to maintain the entire system and preserve the property of the company . . . in modern first class condition suitable for the carrying on of the business of the company.

There is a provision whereby the company agrees to arbitrate any difference which may arise between the company and the city or between the company and its employees. Another significant statement is that "the company, by the acceptance of this ordinance, agrees to continue to contract with its employees . . ."

The sale of stock and bonds is under the supervision of the city and "discounts upon bonds sold by the company shall not be added to the value of the property for any purpose." The company agreed to the purchase of the street railway property by the city upon six months' notice at any time during the life of the franchise. For this purpose it was agreed that the value of the property as of Aug. 1, 1915, was $5,000,000.

These few extracts from the franchise will be illuminating in reviewing the development during the last few years.

A common remark heard among business men and on the street in Des Moines is that the company has not lived up to its promises. This is possibly true as to work done, but not as to money expended. In fact the company has jeopardized its financial strength in attempting to carry out its promises. Instead of expending $1,500,000 in the first three years of the franchise for rehabilitation, extensions, etc., as agreed to in the franchise, the company actually expended $2,427,000, though failing, on account of the great increase in cost of equipment and materials, to carry out the full program of extensions and new lines by an amount which would now cost approximately $400,000 to complete. The company has also been unable to keep up with the paving requirements imposed upon it by the city by a considerable amount, though it has expended from $50,000 to $60,000 a year in paving maintenance alone. Then, as to the rate of fare, the company has also not lived up to its contract, but had it not been aided by the courts, the people of Des Moines would probably have been without transportation several months earlier.

DATA FOR SIX MONTHS ENDED JUNE 30, 1921, DES MOINES CITY RAILWAY

	Total	Per Car-Mile
Total passengers	17,561,809	6 31
Revenue passengers	14,649,652	5 28
Car-miles	2,781,734	1 00
Passenger revenue	1,110,267	39 91 cents
Operating expense, including depreciation	1,057,382	38 01 cents
Taxes	84,000	3 02 cents
Fixed charges	197,781	7 11 cents

REVENUE PASSENGERS PER DAY, DES MOINES CITY RAILWAY

Under Normal Service		Under Reduced Service	
Sun., May 8, 1921	62,646	Sun., July 24, 1921	50,390
Mon., May 9, 1921	74,962	Mon., July 25, 1921	54,565
Tues., May 10, 1921	79,248	Tues., July 26, 1921	55,683
Wed., May 11, 1921	77,975	Wed., July 27, 1921	52,857
Thurs., May 12, 1921	79,503	Thurs., July 28, 1921	50,689
Fri., May 13, 1921	74,526	Fri., July 29, 1921	54,779
Sat., May 14, 1921	92,595	Sat., July 30, 1921	55,884
	77,351		53,550

The matter of wages has been very closely associated all along with the efforts made to secure an increase in fare, and aggravated by a very difficult labor situation. The present trouble first started when the company asked for an increase in fare to make possible the payment of increased wages awarded in arbitration. This went to a vote of the people in September, 1919, when a 6-cent fare was voted down. In January, 1920, the company went into receivership. A further wage arbitration awarded 70 cents an hour to the men, and as the company was unable to pay, the men struck. On the strength of a decision by the Iowa Supreme Court that a city had no right to fix the rate of fare, and in order to get the cars started, Federal Judge Wade ordered a 6-cent fare for adults to be put into effect on Aug. 23, 1920, the reduced rate for children and high-school students continuing as specified in the franchise. The additional revenue was to be applied to the payment of wages.

Finding itself unable to proceed longer on the 6-cent fare, the company applied to Judge Wade for a cut in service. A new schedule was drawn up and approved by the city supervisor and the date set to put it in effect. Corporation Counsel Byer then got an injunction against these schedules in the district courts. While there was some doubt as to the jurisdiction of this court, the company obeyed the injunction but again appealed to the Federal Court. The latter dissolved the injunction and ordered the district court to keep hands off. The reduced schedule was put into effect and the company ran along on this for several months until it became necessary to make a further cut in order to keep expenses within revenue. In December, 1920, Judge Wade appointed a master to make an investigation and recommend what would be a reasonable fare in order to put the company on its feet. After investigation the master recommended an 8-cent fare and an increase in the service by 1,800 car-hours per day. The company revised the schedule on that basis and on Dec. 23, at the order of Judge Wade, began the operation of 132 cars and the collection of an 8-cent fare with two tickets for 15 cents.

Then in January, 1921, having been defeated in its efforts to retain the 5-cent fare, the City Council opened the doors to jitney and bus competition, with the results related early in this article. The schedule of 132 cars remained in effect until May 23 of this year, when the court approved the petition of the General Electric Company to remove all equipment from three 500-kw. automatic substations and one 5,000-kw. generator, switching equipment, etc., from the power house, for which the manufacturer had not received payment. This made it necessary on that date to cut the service to sixty cars, which of course greatly aggravated the local transportation situation and served as a strong inducement for additional buses to start in business. The company continued operation on this basis, losing money rapidly, until midnight on Aug. 3, at which time all operation ceased as ordered by Judge Wade upon petition of the company. All through the difficulties numerous attempts were made and various plans proposed to bring about a settlement, but to no avail. Consequently, approximately 750 traction employees were thrown out of jobs, about 250 additional having been laid off when service was cut to sixty cars, and the city is without transportation save what can be supplied by an unorganized group of sixty or seventy heterogeneous buses. The railway company has discharged all employees, including trainmen, linemen, shopmen, barn forces, and sixteen out of thirty-four power house employees. The power plant has been continued in operation to supply energy for the Inter-Urban Railway and four small towns and mines and various other industries along the interurban right-of-way. The load on the power plant is now 17,000 kw. as against a normal load of 50,000-kw. Only the main department heads throughout the company have been retained on the payroll. In other words, the company is completely shut down, and some $8,000,000 worth of railway property is standing idle.

Economies from Use of Ball Bearings*

Mechanical Troubles Have Discouraged Electric Railway Men From the Use of Ball Bearings, but a Satisfactory Type Will Effect Large Savings

By J. T. PORTER

Master Mechanic Northern Texas Traction Company,

THE results from the use of ball bearings for the journal bearings of electric cars has been somewhat discouraging to the mechanical department of electric railway companies. Numerous mechanical troubles have developed, caused by poor workmanship, and the time and labor necessary for making wheel changes have been much greater than is necessary when friction type of journals is used. This latter condition is due somewhat to the truck design which is now employed.

COMPARATIVE COSTS OF OPERATION OF BIRNEY CARS EQUIPPED WITH BALL-BEARING AND FRICTION-BEARING JOURNALS, NORTHERN TEXAS TRACTION COMPANY, YEAR 1920

Cost to produce and deliver power to cars, per kilowatt-hour	$0.02
Using the test made at Beaumont as a basis of power consumed by both types of bearings, we arrive at the following conclusions:	
Cost per car-mile for power, ball-bearing journals	$0.0228
Cost per car-mile for power, friction-bearing journals	$0.0262
Mileage for Birney cars, year 1920	1,967,005
Cost of power used on Birney cars with ball-bearing journals	$44,847.714
Cost of power used on Birney cars if same were equipped with friction-bearing journals	$51,535.531
Actual saving in power during the year	$6,687.813
Saving per 1,000 car-miles	$3.40
Cost to remove, change bearings, change wheels and replace in car, inclusive	$8.71
Cost to replace worn or defective journal ball bearings, year 1920	$1,678.13
Cost per 1,000 car-miles to make changes of the seventy pairs of wheels changed in 1920, plus the cost to replace worn or defective bearings	$0.917
Saving per 1,000 car-miles, cost of wheel changes and bearing replacements deducted	$2.236

BALL BEARINGS VS. FRICTION BEARINGS FOR BIRNEY SAFETY CARS, BEAUMONT TEST

Power Consumption

Friction bearings, kilowatt-hours per car-mile	1.31
Ball bearings, kilowatt-hours per car-mile	1.14
Difference, kilowatt-hours per car-mile	0.17 or 14.9%

On a basis of 144 miles per day the ball bearings will save $89.35 a year. Considering the difference in price between ball bearings and friction bearing No. 218, the ball bearings would pay for themselves in two and one-half years.

Acceleration

Ball bearing, miles per hour per second	2.88
Friction bearing, miles per hour per second	2.58
Difference, miles per hour per second	0.30 or 11.62%

Free Running Speed

Ball bearing (maximum), miles per hour	25.2
Friction bearing (maximum), miles per hour	23.8
Difference, miles per hour	1.4 or 5.8%

Retardation from Maximum Speed

Friction bearing, miles per hour per second	3.13
Ball bearing, miles per hour per second	2.90
	0.23 or 7.93%

	Ball Bearings	Friction Bearings
Stop, seconds	8.20	7.43
Distance, feet	170.50	143.60
Retardation from 10 M.P.H.		
Stop, seconds	4.9	3.75
Stop, feet	52.38	35.88
Miles per hour per second	1.72	2.28

It is possible to obtain about 2 per cent higher schedule speed with ball bearings

The accompanying tables show the results of some tests made at Beaumont, Tex., on cars equipped with ball and friction type bearings and will serve to show the economies that can reasonably be expected.

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*This is an abstract of the discussion presented by Mr. Porter at the interurban railway section of the Southwestern Electrical & Gas Association at its recent convention in Galveston.

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

New Type Brake Slack Adjuster

Type of Slack Adjuster in Service for Several Years on European Railways Introduced to Railways of This Country in Connection with Safety Car Operation

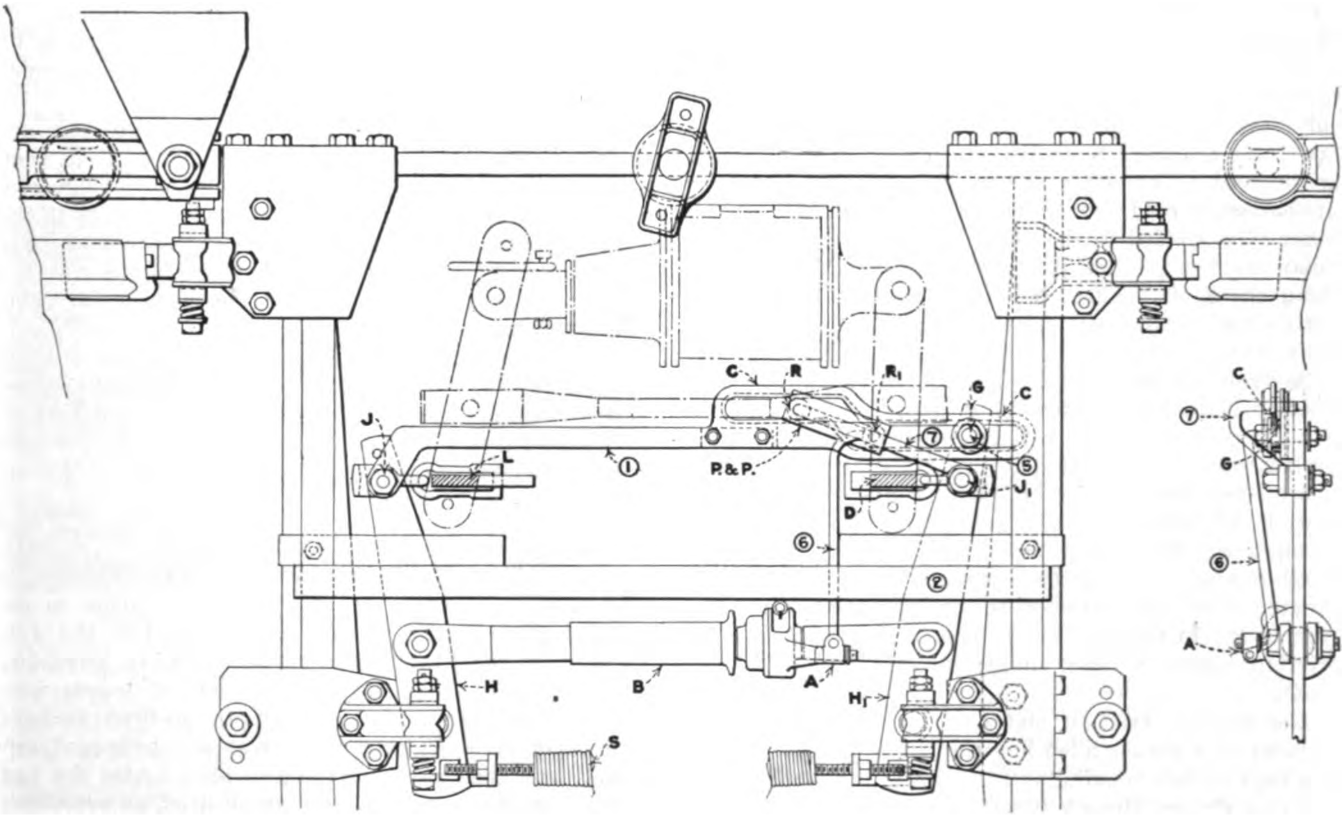
A TRIAL is being made on one of the safety cars of a large city electric railway system of a type of slack adjuster whose design and operation differ somewhat from others now in use in this country. This is known as the Durson slack adjuster and brake regulator. It has been used successfully on the railways of Sweden, Denmark, Holland and Switzerland, as well as on street railways of other European cities for several years.

The travel of the brake cylinder piston on cars equipped with air brakes may be considered as made up of three factors. First, the travel necessary to take up the shoe clearance and bring the brakeshoes into contact with the wheels if all adjustments are properly made; second, the travel necessary to take up any wear in the brake rigging or brakeshoes, and, third, the travel after the shoes are in contact with the wheels due to the elasticity of the brake lever system and the play in the journal boxes. The Durson slack adjuster differs in its operation from other types of slack adjusters now in use in that adjustment is automatically made for the second of these only; that is, the additional travel of the brake cylinder piston occasioned by wear in levers, fulcrum pins and brakeshoes, while no slack is automatically taken up for the travel necessary to take up the shoe clearance and to take care of the elasticity of the brake-lever system.

With the Durson brake regulator a certain predetermined minimum clearance between the brakeshoes and the wheels is fixed. Should there be any further slack due to wear of parts, wheels or shoes the adjuster comes into play and takes it up by the turning of a threaded shaft. When this point is reached the brake shoes touch the wheels at the same moment that the adjuster would otherwise begin to act and the friction moment in the screw thread due to tension in the brake rigging is then sufficient to overcome the frictional resistance in the adjuster clutch so that further working of the adjuster is stopped.

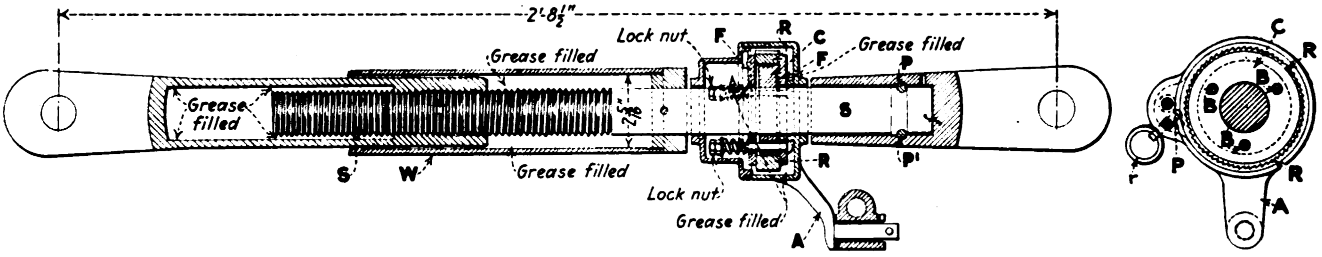
INSTALLATION AND OPERATION OF THE SLACK ADJUSTER

An accompanying illustration shows the Durson brake regulator connected in the brake rigging of a Birney safety car. The brake regulator *B* is placed between the horizontal brake levers *H* and *H*-1. Attached to these levers at *J* and *J*-1 is the bar 1, and to this is bolted



Slack Adjuster Connected in Safety Car Brake Rigging the cam guide *C*, whose free end is held by means of a roller guide bolted to the horizontal lever *H*-1, which moves in the slot as the brake is applied and released. To the joint *J*-1 is attached the rod 7. The other end of this rod 7 passes through a roller *R* moving in the slot of the cam guide *C*. Two distance plates *P* and *P*-1, on either side of the cam guide *C*, transmit the motion to the roller *R*-1, which follows the motion of *R* and which in turn is connected by means of the rod 6 to the bracket arm *A* of the brake regulator. Upon the application of the brake, the rollers *R* and *R*-1 move along the slot of the cam guide *C* exactly as the distance between the joints *J* and *J*-1 is shortened. This motion is changed from longitudinal to transverse when the roller *R*-1 mounts the cam slot, and this operates the bracket arm *A* of the brake regulator.

In order to obtain the proper uniform clearances and, therefore, the proper piston travel, the distance that the roller *R*-1 moves before it starts to mount the cam is regulated to come at the moment when the brakeshoes come into contact with the wheels. This immediately starts movement in the bracket arm *A* of the brake regulator and takes up the slack if any exists.



SECTION OF SLACK ADJUSTER

The brake regulator itself consists of a cold-rolled steel shaft *S* to which two end jaws are connected. These jaws are in turn bolted to the horizontal brake levers and form a connecting rod in the lever system. The shaft is attached to one jaw by means of two pins, *P* and *P*-1, engaging a groove in the shaft. As the thrust is taken up at the face *f*, which is finished, the only function performed by the pins is to prevent the jaw from dropping from the shaft when the apparatus is removed. The other end of the shaft has a triple left-handed thread, which screws into the other jaw. A collar *C* is welded to the shaft. On either side of the collar are two friction plates *F*, which are free to turn about the shaft. Three bolts *B* are set in holes which are drilled through the friction plates *F* and the collar *C* by means of which the motion of the friction plates *F* is transmitted to the collar *C*. Between the two friction plates *F* and revolving freely on the collar *C* is a circular ratchet *R*. Three springs, held in place by lock nuts, are adjusted to bring a desired degree of friction between the friction plates *F* and the ratchet *R*. Motion therefore of the ratchet *R* is transmitted through the friction plates *F* and the collar *C* to the shaft *S* unless the friction moment of the shaft *S* is greater than that between the friction plates and the ratchet *R*. In this case the ratchet *R* slides between the friction plates without imparting its motion to the shaft.

The ratchet, friction plates, collar and springs are inclosed in a grease-filled housing. The bracket arm *A* is a part of this housing and transmits the motion from the cam slot as already described. The pawl *P* is also connected to the housing as shown and engages the circular ratchet *R* when the bracket arm *A* is moved in a clockwise direction.

In operation, when the rod connecting the roller *R*-1 in the cam slot is moved in a transverse direction away from the regulator, it moves the bracket *A* in a clockwise direction. As noted, this motion is transmitted to the shaft and the revolution of the shaft in the female end of the hollow end jaw, which has a triple left-hand thread, causes the distance between the two jaws to be increased. This will take up any slack which may be present until the brakeshoes make contact with the wheels.

Tension then arises in the entire brake rigging, and when this occurs the friction moment between the screw shaft *S* and the female thread of the end jaw is greater than that between the friction plates *F* and the ratchet *R*. As a consequence further motion causes the slipping of the ratchet *R* between the friction plates *F*. A handle is used merely for the purpose of decreasing the length of the regulator when it is necessary to change brakeshoes. The pawl *P* is raised by means of the ring *r*, disengaging the friction clutch, and the regulator is easily screwed in to any desired length. The pipe *W* which is screwed and pinned to the handle 96 merely acts as a housing for the screw thread on the shafting. It slides along the hollow end jaw and has a clearance of but $\frac{1}{16}$ in. This hollow jaw, the pipe *W* and the center housing are all filled with a grease of such a consistency that it will neither melt in summer nor congeal in winter.

All moving parts of the Durson brake regulators are protected by grease-packed housings. They have been in use for years on the street railways of Copenhagen, Malmo and Stockholm, as well as on railway lines in the northern part of Europe. Conditions of snow and ice in these localities are very severe and prove the working qualities of the regulator under the most unfavorable circumstances.

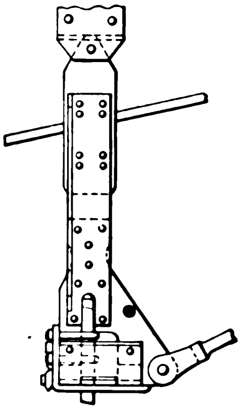
The only parts of the apparatus which are subject to wear are the friction plates and the circular ratchet. These surfaces are steel against steel. The construction of the regulator is such that even in case of an accident, it will continue to function as an adjustable turnbuckle until repairs can be made.

Spring Leaves Tempered Separately

In connection with the short article relating to the hardening of elliptic springs as published in the July 16 issue of the ELECTRIC RAILWAY JOURNAL, page 102, the statement was made that the sets of leaves were bunched together and heated in an oil-fired furnace. This is in error in that the leaves are tempered separately and then assembled and banded. Also the furnace is coke-fired instead of being oil-fired, as previously stated.

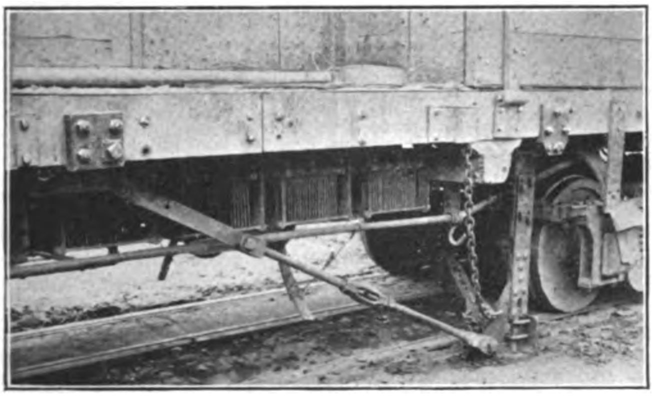
Cutting Device for Asphalt Pavement

AN ATTACHMENT which can be put on any ordinary work car has been devised by the Market Street Railway of San Francisco for making a cut 1½ in. deep in asphalt pavement along the track. The cut can be made as the car moves along at a rate of 4 to 5 m.p.h. In addition to the saving in cost, a great advantage claimed for this device is its speed of operation. It has been used without interfering with the traffic on lines where service was being maintained on a three-minute headway. The method has been so successful that it has been adopted as standard throughout the system and no more pavement cuts along the track are being made by hand on reconstruction jobs.


FRAMEWORK FOR CUTTING TOOL

The cut is made by a tool which projects downward from a shoe carried by a work car and set to ride on the pavement at 18 in. or 24 in. from the rail head. The framework supporting the shoe consists of struts attached to the car at three points by means of pins and suitable mountings on the car body. The framework supporting the shoe can be attached to the mountings in about fifteen minutes. Once fastened in place, hinged joints make it possible to swing the device up out of the way under the car body, where it is held by hooks until the car arrives at the point where the work is to be done. The apparatus is so arranged that it can be used not only while the car is moving ahead in the usual direction of traffic, but also in the reverse direction by turning the apparatus around. This operation requires only about ten minutes

When ready to begin cutting it is only necessary to unhook the framework and swing it down so the shoe rests on the pavement. In this position the strut which thrusts the cutting tool down into the pavement is not yet vertical nor does it carry any weight. When the car moves forward a few inches, however, the hinge in the strut opens still wider, the strut takes a vertical position and, as it tilts the car body 2 or 3 in. out of plumb, takes a considerable weight off the car springs and the cutting tool sinks into the asphalt. The car can then move forward at a rate of 4 to 5 m.p.h. leaving a clean cut in the pavement. The depth of the cut can be adjusted by changing the bolts which attach the tool to the shoe; the usual depth is 1½ in. and the width ¾ in.


PAVEMENT CUTTING TOOL IN OPERATION

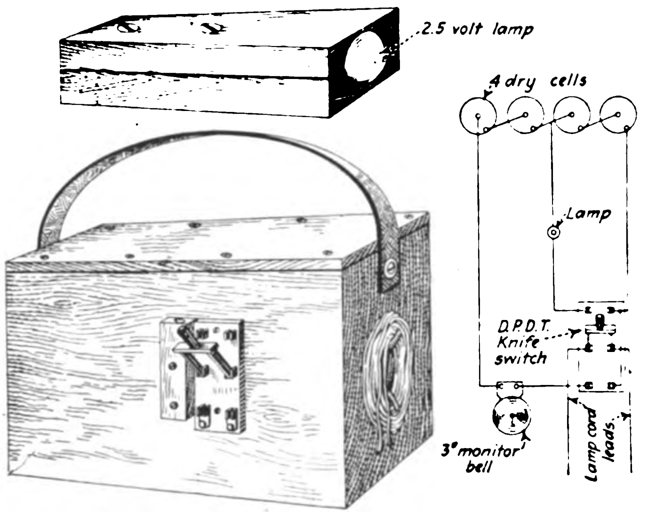
When cutting pavement in very cold winter weather it is sometimes necessary to put a load on the car to prevent the cutting tool from "riding" on the pavement surface. It was found that the best cutting tools were those forged from old carbon steel gads. These were superior to high-speed steel. The tool becomes dulled and requires to be replaced after cutting about 600 ft. in the summer time or 300 to 400 ft. in the winter time.

The design of the cutter was worked out by W. D. Chamberlin, principal assistant engineer. B. P. Legare is engineer of maintenance of way.

Convenient Test Box

MOST shop men are familiar with some form of bell box or test and inspection box, which they use for testing out connections, locating trouble and ringing out circuits. It is sometimes more convenient to use a light for indicating when the circuit is closed than to rely on the ringing of a bell or buzzer. The box illustrated which provides for both a light and a bell has been found very convenient for this work.

The box on which the various testing apparatus is mounted and in which space is provided for four dry cells is made of ⅜-in. wood, and is 6½ in. x 9 in. x 11 in. in size. A cleat of sufficient size so that approximately 30 ft. of lamp cord can be conveniently wound up is fastened to one end of the box. The opposite end forms a convenient place for mounting the bell. A double pole double throw switch is necessary for cutting out either one or the other of the circuits which is not in use and the light can be located in a convenient position adjacent to the switch.



CONNECTIONS FOR TEST BOX

As test boxes are sometimes submitted to hard usage, it is desirable to protect the light in some manner. A satisfactory method has been found to mount the lamp in a block of wood about 1 in. square and 3 in. long, with a hole drilled in one end large enough to receive a small 2½-volt lamp. For convenience in mounting and connecting, the wooden block should be sawed in half and the wires from the lamp sockets can come out of two holes at the opposite end. By screwing the two halves together, all are protected. A leather handle for the top of the box is also a convenience for carrying. The accompanying illustration shows a form of box for this use, together with a wiring diagram for connecting four dry cells, so that all four will be used for ringing the bell and two of them for the lamp circuit.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Another Park Planned

Philadelphia Rapid Transit Sees Money-Making Opportunity in Burd Home Tract

The Philadelphia (Pa.) Rapid Transit Company has made plain its purpose in purchasing the so-called Burd Home property in Delaware County. It is contemplated by the company to use the property as a public park and playground. The tract acquired consists of thirty-two acres lying west of the city limits. It was taken over in the interests of the Willow Grove Park Company, operating Willow Grove Park. The opinion of T. E. Mitten, president of the railway, is that the operation of the now proposed Burd Home Park will not lessen the attendance at Willow Grove because there are more people desirous of this kind of entertainment than both of these parks can supply.

NEW PARK HAS MANY ADVANTAGES

The Burd Home Park will be operated through the Willow Grove Park Company, to which the Philadelphia Rapid Transit has advanced $340,000 to make a down payment upon the land at Burd Home Park. It is explained that this sum is expected to be repaid during 1922 from the sale of the street frontage of the Burd Home Park and from the earnings of Willow Grove Park.

The Willow Grove Park Company's further indebtedness consists of $75,000 due in 1924 and $239,500 due in 1925. Both of these amounts are secured by purchase money mortgage upon the Burd Home Park property and the opinion of the management is that they can easily be paid from the future earnings of Willow Grove Park.

WILLOW GROVE PARK NOW PAYS

This proposal by the company to start a new park naturally has directed attention to the activities of the company at famous Willow Grove Park. This latter park, known all over the country, was opened in 1896, and up to the time of the coming of the Mitten management in Philadelphia had always been a loser. In 1910 it was operated at a loss of more than $25,000. The former management of the railway in 1910 made new long-term contracts with concessionaires for the control of all of the principal attractions. The railway did not receive sufficient revenue from the amusements to pay the cost of the music, the policing and the administration of the park.

The Mitten management at once directed itself to making Willow Grove Park self-supporting by a more effective administration. This has been accomplished with such effect that Willow Grove Park during the ten years, 1911 to 1920, earned a net income of $444,117. At the beginning of the 1921 season the Willow Grove Park Company purchased for $125,000 from the Ryan Amusement Company all of its amusements and buildings representing an investment of $320,000, which the concessionaire had a right to remove under his contract expiring in 1920 and 1921. The operation of these purchased concessions will, it is estimated, produce $125,000 of net earnings for the year 1921.

Mr. Mitten anticipates that Willow Grove Park should in 1922 and thereafter earn a net income in excess of $200,000 per annum. He is frank to say, however, that Willow Grove Park as a revenue producer for the Philadelphia Rapid Transit by way of added passengers carried has always proved a disappointment because of the cost of operating the long lines over the extreme grades encountered on the York Road and Glenside routes. With its present 7-cent cash fare with four tickets for 25 cents, with the added zone outside the city limits, the company is, however, now earning sufficient on the York Road and Glenside lines for them not to be a burden on the rest of the system.

Indianapolis Company May Contract with City

Regulations under which the Indianapolis (Ind.) Street Railway shall operate, in the place of those specified in the franchise which the company surrendered several weeks ago, may yet be fixed by a contract between the city and the company.

Dr. Henry Jameson, chairman of the board of directors of the company, called on Mayor Jewett recently and before he left the City Hall he said the company had never taken the stand that it would not agree to a contract arrangement.

Samuel Ashby, Corporation Counsel for the city, and other city officials have understood since the last conference between the company officers and city officials that the company would not agree to the contract method of fixing the regulations.

Since the last conference, the jitney bus problem has become acute, and the company has asked the City Council to pass an ordinance regulating jitney bus competition. Some Council members, however, felt that the company should come to some agreement concerning regulation by the city before action was taken in regard to the jitney bus situation.

The city officials have felt that the contract method would be the best policy, both for the city and for the company.

Report Against Radials

Ontario Commission Reports Adversely Upon Great Transportation Project —Government Policy Fixed

An adverse report on the project for constructing and operating a number of electric railways by the Ontario Hydro-electric Commission, through an issue of bonds guaranteed by the government, has been made by the commission which was appointed by the provincial government to investigate the matter.

Decision against the construction of additional lines and development of the "radial" system is based on the present financial situation in the electric railroad industry generally, possible competition with the Canadian National Railways by paralleling lines and the desirability of testing the effect of highway development before undertaking a program of electric railway building.

The reasons that were cited were as follows:

> The financial condition of electric railways in Ontario and the United States has been precarious and unsatisfactory and the outlook discouraging; the evidence submitted indicates that the proposed electric railways would not be self-supporting. Their construction paralleling and competing with the Canadian National Railways system would be economically unsound, and a serious blow to the success of government ownership. Until the Chippawa power scheme, estimated to cost $60,000,000 or upward, is completed and shown to be self-supporting, the government would not be justified in endorsing the construction of an electric railway system at an initial estimated cost of $45,000,000.
>
> The endorsement of bonds by the province for systems of electric railways at the instance of the municipalities concerned is held highly dangerous and likely to lead the province into great financial difficulties, as it would give rise to demands for like accommodation from other localities which it would be hard to refuse. The expenditure of $25,000,000 on public highways in the province having been begun, it would be unwise to commence the construction of electric railways until the effect of highway improvement has been ascertained and the use of them by motor cars and trucks made clearly apparent. The rapidly increasing debts and financial commitments of the Dominion, Province and municipalities have aroused well-founded apprehension and are a cogent reason against the embarkation in the construction of the contemplated electric railways.

The report is signed by four of five members of the commission: Judge Sutherland, the chairman; General C. H. Mitchell, W. A. Amos and A. F. Macallum, C. E. The minority report by Frederick Bancroft, labor representative, controverts most of the conclusions arrived at in the majority report, recommending that the government should adopt the principle of publicly owned and operated electric railways. He states that unemployment conditions should be taken seriously into account and that the hydro-radial development would bring considerable relief.

It is anticipated that the report has determined the policy of the Drury Government with respect to the project.

Interurban Objects to Relocating Tracks

The Columbus, Delaware & Marion Electric Company, Columbus, Ohio, has filed in the Ohio Supreme Court its answer to the orders of the state highway commissioner and the county commissioners of Franklin County requiring it to move its tracks from the right-hand side of the road to the opposite side while the stretch of highway between the north corporation line of Columbus and the village of Worthington is being improved. The ouster petition was entered by the Attorney-General.

The company charges that the Ohio state highway commissioner, among others, ignored the proposal of the state board of administration to furnish prison-made paving brick at $33.50 per thousand and awarded a contract for brick to a private concern at an increase in price of 30 per cent.

Claims are also set up that the commissioner failed to award the contract for the improvement of the highway within the ten-day period allowed by law; that the improvement was contracted for by the commissioner without the approval of the state highway advisory board—since abolished under the Ohio reorganization code, which became operative July 1—and that the commissioner had been enjoined from proceeding with the improvement through injunction proceedings brought before the Franklin County Common Pleas Court and allowed by that tribunal.

The stretch of road to be improved is one of the most important arteries of travel leading to and from Columbus and is located north of Columbus. The Attorney General's suit was brought to compel the railway to move its tracks temporarily in order to permit the improvement to be made.

Engineer's Supplemental Report Presented

Mr. Ballard, the valuation expert for the city of New Orleans, La., in connection with the negotiations between the city and the New Orleans Railway & Light Company, presented his supplemental report on Aug. 13. Neither he nor the Commission Council would disclose the contents of his findings. Mr. Ballard intimated, however, that the recommendations made by him are in line with terms the Council believes the railway will accept. The Council was to confer on the report on Aug. 15.

The Council at its meeting on Aug. 9 appointed Wylie M. Barrow, special counsel in the injunction proceedings instituted by the receiver of the New Orleans Railway & Light Company. The suit was brought against the city, in the federal court, to restrain it from interfering with the collection of an 8-cent fare by the railway.

The appointment was made at the request of City Attorney Kittredge, who stated that the appointment of some one well versed in public utility matters as an aid to him in the conduct of the case was urgently needed, and that Mr. Barrow, as assistant to the Attorney General of the States and now acting as counsel for the State Railroad Commission, would be of service in the litigation pending before Special Maste Chaffe, recently appointed by Judge Foster to hear the evidence in the suit.

10 Per Cent Wage Cut in Dallas

The Dallas (Tex.) Railway has announced a reduction of 10 per cent in the pay of all motormen and conductors and employees in the mechanical and track departments of the company. Richard Meriwether, vice-president and general manager, declares that the reduction was made necessary through failure of the company to get a 7-cent fare from the city and the falling off of about $800 a day in revenues of the company. The reduction affects about 1,000 men and will clip something like $8,000 a month from the company's payroll.

The action was decided on after conferences with the employees, in the course of which the employees agreed to accept the reduction without protest. Platform men who have been receiving from 46 to 50 cents an hour, on two-man cars, and 50 to 54 cents an hour on the one-man cars, will get 5 cents an hour less under the new scale. Salaries of office employees who are paid by the month will also be reduced 10 per cent.

Wage Cut Negotiated in Denver

Negotiations between the receiver of the Denver (Col.) Tramway and the representatives of the employees looking toward a wage readjustment were concluded on Aug. 9, when the latter accepted the proposition submitted to them. The new scale became effective on Aug. 16 and is to continue for a period of nine months: The former rates and the new platform wage scale in cents per hour follow:

	Old Rate	New Rate
First three months	53	45
Next nine months	56	47
Second year	58	50
Third year and thereafter	—	52

Present trainmen in the employ of the company for less than three months will receive, after the effective date, the second year rate or 50 cents an hour until the expiration of their respective three-months' period and thereafter the maximum rate of 52 cents an hour.

All other trainmen now in the service of the company will receive, after the effective date, the maximum rate or 52 cents an hour.

Trainmen entering service on or after Aug. 16 will receive the lowest rate in the wage scale.

A bonus system, based upon performance, is to be worked out by the employees, representatives and the management under which trainmen will be able to increase their monthly wage somewhat.

Reductions in the wage scales of all other hourly paid employees, corresponding to the reduction in the trainmen's scale, were also made effective on Aug. 16.

12 Per Cent Wage Cut in Haverhill

The pay of the 300 employes of the Massachusetts Northeastern Electric Railway, Haverhill, Mass., will be reduced 12 per cent, under the decision of the Arbitration Board filed Aug. 11.

When the wage agreement expired on May 1, the employees sought a continuation of the old rate of 60 cents an hour, and the street railway officials, through President David A. Belden, requested a cut of 10 cents.

P. F. Sullivan, ex-president of the Bay State Street Railway, Thomas H. Mahoney of Boston and James H. Vahey were appointed as arbitrators. The finding is signed by Messrs. Mahoney and Sullivan, with a dissenting opinion by Mr. Vahey.

The new scale is retroactive to May 1, and the new 54 4-5 cents per hour will continue in effect until May 1, next.

Arthur G. Wadleigh, one of the public trustees of the Eastern Massachusetts Street Railway, appeared as counsel for the Massachusetts Northeastern.

Columbus Company Struggling Against Opposition

The troubles of the Columbus Railway, Power & Light Company, Columbus, Ohio, in its efforts to comply with the orders of the City Council to extend its lines to the suburb of Sheppard are not yet over. Condemnation proceedings brought by the railway in the probate court of Franklin County, following unsuccessful negotiations with the Columbus, New Albany & Johnstown Traction Company to buy that company's line, extending from Columbus to Shepard, a distance of 1½ miles, have been held up by suit brought by the interurban railway, attacking the jurisdiction of the probate court.

The Franklin County Appellate Court, in which the injunction proceedings were brought by the Columbus, New Albany & Johnstown Traction Company decided against that line and in favor of the probate court, and the defeated traction company now seeks admission to the Supreme Court.

Its petition filed in the Ohio high court a few days ago attacks the judgment of the Appellate Court, and holds that the State Public Utilities Commission alone has jurisdiction.

Before and After—In Chicago

What Chicago was fifty years ago in the days of horse-drawn rigs and what she is today with all the conveniences and luxuries which electricity can supply, is told in a recent pamphlet published by the Illinois Committee on Public Utility Information. "Chicago's Genii, The Public Utilities," reviews some historical data concerning the growth of the electric light, power and gas service in this great city. One of the best examples of Chicago's Half Century Miracle is the electric railway system which ranks first in the number of miles of tracks, number of cars and the number of passengers carried.

Developments Being Awaited

Detroit United Railway Makes No Moves to Comply With Recent Ouster Ordinance

Although important developments have been expected in Detroit relative to the railway situation since the ordinance was passed by the City Council, requiring the Detroit United Railway to remove its tracks from Fort Street and Woodward Avenue, no move has been made by the company toward complying with the ouster, and the company's contention still stands that the price named by the city for these lines will not be accepted.

CONSTRUCTION WORK GOING AHEAD

Construction work on the municipal ownership lines is being carried out according to schedule, and the Charlevoix-Mack-Buchanan crosstown line has been extended about 2 miles and ten cars added. Other sections of the municipal lines will soon be in operation, according to Joseph S. Goodwin, general manager of the system. The extension of the crosstown line is the first since crossings were installed at intersections with the Detroit United Railway tracks and other railroads according to the plans authorized by the Michigan State Public Utilities Commission.

It was announced by the city officials that the extension of the municipal crosstown line increased the receipts from the system about 25 per cent. A statement of receipts and expenditures of the municipal lines for the first six months in 1921 is to be issued by the City Controller's office as soon as all power bills for the operation of the lines are received.

Mayor Couzens is negotiating with the Ontario Hydro-Electric Power Commission for electric power from the commission's Niagara development to operate the municipal lines in Detroit. Niagara power is already being used across the Detroit River in Windsor.

OUSTER ORDINANCE ATTACKED

The starting of petitions calling for a referendum on the ouster ordinance has been intimated as the first move in a plan to terminate the Fort Street and Woodward Avenue ouster and to have the existing municipal lines operated by a private company. The plan is backed by a number of business men, many of them located on the two lines in question. The plan provides for the submission of two questions to the voters.

It is cited that under the referendum clause of the city charter, an ordinance passed by the City Council, such as the ouster ordinance, must be submitted to a vote of the people on presentation of a petition signed by 10 per cent of the voters. The other proposed action is an initiative ordinance repealing the municipal street railway ordinance, approved by the voters on April 5, 1920. The lease of the lines to a private company is proposed.

The reasons given by the proponents of the plan include the belief that the city's interest can best be served by halting the expenditure of city money for street railway purposes and by providing some feasible solution of the traction problem. In event of the filing of a petition providing for the referendum of the ouster ordinance, the ordinance, it is cited, will be automatically suspended until the city clerk has certified as to the number of signatures on the petition. If sufficient signatures have been obtained the ouster ordinance cannot become effective until after the ordinance has been ratified by the voters.

Montreal Cut Put Into Effect

Developments in the Montreal (Que.) Tramways wage situation have followed a quiet course. On Aug. 16 the company put into effect its announced reduction of 12½ per cent. This cut it substituted for the 20 per cent reduction first proposed, against which the union representatives protested, contending for a reduction of only 10 per cent. The employees, of course, will not feel the effect of the cut until they receive their half-monthly pay checks on Aug. 31.

The company having failed to nominate a representative on the board of arbitration for which the employees applied to the Federal Department of Labor, the Department has appointed A. P. Frigon, a Montreal bond dealer, to act for the company. The men's representative, A. Brossard, a Montreal lawyer, will confer with Mr. Frigon with a view to choosing a third arbitrator, and if they cannot agree upon a nomination, the Department of Labor will select the third man.

The employees will remain at work under the reduced scale, pending the outcome of the arbitration. Under the Canadian legislation covering industrial disputes affecting public utilities, neither party is obliged to accept the award of an arbitration board, but the delay secured is a check upon rash action, and public opinion, based upon the presentation of both sides of the case before a properly-constituted tribunal, is generally a strong factor in bringing about ultimately an amicable settlement.

Wages Reduced 6 Cents an Hour

A new wage agreement with the platform men of the San Francisco-Oakland Terminal Railways, Oakland, Cal., went into effect on Aug. 1. The new scale follows:

Traction Division — First three months, 46 cents an hour. Next nine months, 49 cents an hour. Second year and thereafter, 53 cents an hour.

Key Division—First three months, 48 cents an hour. Next nine months, 51 cents an hour. Second year and thereafter, 55 cents an hour.

This scale was incorrectly given in the ELECTRIC RAILWAY JOURNAL, issue of July 30.

News Notes

Suburban Strike Settled.—The strike on the Syracuse & Suburban Railroad, Syracuse, N. Y., which has been in force two weeks, was ended on Aug. 16, and C. Loomis Allen, general manager of the road, accepted the offer of the men to return to work at a wage schedule of 45 cents an hour. The men struck when they quarreled with officials over terms of an impending arbitration agreement.

No Wage Cut at Present.—Officials of the Indiana Service Corporation, Fort Wayne, Ind., will not take up the matter of a wage cut on the city lines before the middle of September. President Feustel has announced that although the matter of a cut had been considered, a promise had been made to the employees that no such action would be taken definitely until the middle of September and the company has stated that it will hold to its promise.

City Won't Appropriate Money.—The new transit commission of New York City is unable to carry out its plan for the completion of transportation facilities owing to the city's holding up thirty-one contracts. At a recent meeting of the Board of Estimate the Mayor refused to have read the commission's request for approval of the urgently needed improvement. It was stated at the transit commission's office that the construction could not be started now until next spring as the Board of Estimate had adjourned its regular sessions until Sept. 30.

Compromise in Macon.—Trainmen of the Macon Railway & Light Company, Macon, Ga., have agreed to a wage cut of 4 cents an hour. The company wanted to cut the wages 6 cents an hour but agreed to compromise on 4 cents. The new scale ranges from 36 cents an hour for beginners to 49 cents for those who have been in the service for more than a year. The new agreement was signed by the men on Aug. 3. It will be binding for one year. The company's business has decreased 20 per cent during the past year compared with the previous year.

Vacation Issue Advanced Again.—In the wage adjustment of the platform men of the Community Traction Company, Toledo, Ohio, the two weeks' vacation with pay was given up by the men. After the election of a new business agent of the union, however, the men asked for re-opening of the vacation issue. The new agent claims that the men didn't understand what they were voting for when they approved the contract which eliminated the vacations. It is doubtful whether anything can be done at this date on the vacation issue. The contracts are signed and the action taken was carried out in accordance with the union rules.

Financial and Corporate

Merger in Indiana

Utilities Serving Seventeen Counties to Be Brought Together Under One Head

Seven Indiana utilities propose to consolidate as the Indiana Electric Corporation. Authority to carry out the plan is asked in a petition which was filed with the Indiana Public Service Commission. There will be a public hearing before the Public Service Commission to give the commission information concerning the proposed merger. Articles of incorporation for the corporation, capitalized nominally at $10,000 have been filed in the office of the Secretary of State

The companies involved in the merger are the Merchants' Heat & Light Company, Indianapolis; the Indiana Railways & Light Company, Kokomo; the Elkhart Gas & Fuel Company; the Valparaiso Lighting Company; the Wabash Valley Electric Company, Clinton; the Putnam Electric Company, Greencastle, and the Cayuga Electric Company. The companies serve seventeen counties.

It is the ultimate intention of the men backing the enterprise to locate a power house on the Wabash River in Vigo County, probably north of Terre Haute, at an expenditure of several millions of dollars and to connect it with a system of transmission wires which will deliver electric current from the Indiana coal fields to many parts of the state. A triangular transmission line 300 miles long would distribute the current, one line extending from the central plant to Kokomo, another to Indianapolis and the third from Kokomo to Indianapolis.

The incorporators of the Indiana Electric Corporation are Joseph H. Brewer, Grand Rapids, Mich., president of the Merchants' Heat & Light Company; Charles O'Brien Murphy, vice-president and general manager of the Merchants' Heat & Light Company; Paul D. Birdsall, secretary of the Merchants company; Lex J. Kirkpatrick, Kokomo, vice-president of the Indiana Railways & Light Company; Marshall V. Robb, Clinton, secretary of the Wabash Valley Electric Company. The board of directors is made up of the incorporators. Mr. Brewer is president of the board of directors, Mr. Murphy is vice-president and treasurer, Mr. Kirkpatrick is a vice-president, and Mr. Birdsall is secretary.

The plan of financing embraces the acquisition of the various properties by issuing $4,000,000 in common stock and $1,850,000 in 8 per cent preferred stock; by issuing $3,250,000 in 7.5 per cent fifteen-year first and refunding bonds; by issuing $2,250,000 in 7.5 per cent seriel bonds maturing within fifteen years; by issuing $750,000 in one-year 8 per cent notes.

The bankers concerned in underwriting the securities of the new company are Halsey, Stuart & Company, the Harris Trust Company, and Paine, Webber & Company, all of Chicago.

It is planned to have the Indiana Electric Corporation acquire all the properties of the merged companies free from all liens. The petition for authority to complete the merger plan sets out that a sum of $600,000 will supply sufficient capital necessary for the efficient and economical operation of the utilities owned by the various corporations.

Ohio Electric Segregation Approved

Federal Judge John M. Killits at Toledo has issued an order returning auxiliary lines operated by the Ohio Electric Railway to independent control and absolved the Ohio Electric of all liens, demands and claims for rental by the subsidiary companies.

The order was issued after an agreement had been executed by the receivers for the Indiana, Columbus & Eastern Traction Company, The Columbus, Newark & Zanesville Electric Railway, and the Fort Wayne, Van Wert & Lima Traction Company.

B. J. Jones was appointed receiver for the Ohio Electric on Jan. 26. He asked for separation of the companies on June 15.

Judge Killits also approved a contract entered into by J. Harvey McClure, receiver for the Indiana, Columbus & Eastern Traction Company, with Day & Zimmerman, Inc., Philadelphia, who will operate the road. The engineering company will receive $1,000 a month and expenses as compensation.

Adrian Lines May Suspend

Discontinuance of service on the Adrian (Mich.) Street Railway, a Doherty property, is threatened on account of a boost in the price of electric current by the Toledo & Western Railway effective on Aug. 20.

The railway officials claim that the Adrian lines have been losing money for some time. An increase in fare from 5 to 10 cents about a year ago failed to make up for the loss of patronage by the growth of automobile travel.

The city lines have always paid about $2 a car per day for power service from the Toledo & Western, but this line is in the hands of receivers and has raised the price of energy.

It is said that the Adrian property, if junked, would net owners about $30,000. This is the price asked for the line.

There is a possibility of the city buying the line.

Financial Authority Points Out D. U. R.'s Weak Spots

Lack of a comprehensive financing plan and "absentee ownership" are pointed out by the *Wall Street Journal* as the weak spots in the financial structure of the Detroit United Railway. The article, critical of the Detroit United Railway, appeared in the issue for Aug. 16.

An official of the Street Railway Commission is quoted as estimating that the Detroit United will be eliminated as a city transportation medium in Detroit within five years.

The *Wall Street Journal* considers the company's interurban lines "the largest and, perhaps, the most strategically stiuated in the country." It apparently sees in them the hope of the company for the future, for it says that "freed of political bickerings and expensive local campaigns the company, it is expected, will be in a more satisfactory position as a strictly interurban carrier."

Despite the arbitrary attitude of Mayor Couzens with respect to the very low price which he has fixed for the Woodward and Fort Street lines of the company the *Wall Street Journal* is of the opinion that "payment for lines taken over will finally of necessity be based on a just estimate of their value." In conclusion the paper says:

> There have been two weak points in Detroit United's financial structure—lack of a comprehensive financing plan and "absentee ownership." Practically all stock is held outside Detroit, much of it in Canada. It is not impossible that after the present political trouble is settled the company may find it advantageous to offer stock to Detroiters. The 7 per cent notes are due in 1923 and other obligations mature up to 1932. It is understood that a definite program is being worked out to provide for this situation.

Monongahela Stock Sells Well

The sale of preferred stock of the Monongahela Power & Railway Company, Fairmont, W. Va., which was started on May 16, 1921, has greatly exceeded expectations. To date the company has sold 18,746 shares, the par value of which is nearly $470,000. The shares which have been sold to old stockholders number 11,583 and there have been 7,163 new stockholders since the sale began.

The stockholders who bought their shares before June 25 have had their quarterly dividend checks mailed to them. The dividend is at the rate of 6 per cent per annum on the par value of the stock or nearly 8 per cent on the amount paid for the stock.

The additional stock has been sold largely throughout the territory where the company operates, that is to say, in Fairmont, Mannington, Clarksburg, Weston, Shinnston, Philippi also in Parkersburg and other places in that vicinity.

The company attributes the splendid success of this sale to the fact that it is the first opportunity that local people have had to become shareholders in the company. Under an arrangement which makes the acquisition of shares particularly attractive.

Suspension and Receivership in Saginaw

Failure to Curb Jitneys and to Grant Fare Relief Throws Line Into Bankruptcy

Since midnight of Aug. 10 citizens of Saginaw and Bay City, Mich., have been forced to rely entirely upon jitneys for their transportation, for at that time the cars of the Saginaw-Bay City Railway were put into the carhouses. On that day the company asked for a receiver and placed itself in bankruptcy. The proceedings took place in Bay City before George A. Marsten, referee in bankruptcy for the United States district court of the Eastern District of Michigan, Judge Arthur L. Tuttle of this court being out of the district. Otto Schupp, president of the Bank of Saginaw, was named receiver to conserve the property pending the appointment of a trustee.

THE petition in bankruptcy was filed by the Commonwealth Power, Railway & Light Company as the heaviest creditor, Booth & Boyd Lumber Company, Saginaw, and the Jennison Hardware Company, Bay City. The Commonwealth Company is also the owner of the bankrupt corporation.

The railway owes the Commonwealth Company $1,415,509 for money advanced as loans to pay for improvements, interest and operating expenses and thus keep the property going. The Commonwealth Company could not continue to put money into a steadily losing property.

The railway's total liabilities in bonds, notes and accounts payable and the loans from the Commonwealth, but exclusive of stock, are given as $3,588,851, with assets in excess of $5,000,000.

Following the decision of the creditors to file a petition in bankruptcy, the board of directors of the Saginaw-Bay City Railway, with all members present, adopted resolutions expresing willingness to have the company adjudged a bankrupt, as the only possible recourse.

John A. Cleveland, vice-president and general manager of the Saginaw-Bay City Railway, said:

> This action is deplorable, but as our people commonly know, it was inevitable. We had no other recourse. We could get no more money from the Commonwealth Company to carry us while struggling in a vain hope of being allowed to charge fares that would enable us to pay our own way. We have been trying for several years to make ends meet on inadequate fares and to get fares that would be reasonable and fair. We had hoped that the last two propositions submitted to our two cities would carry and save us from this fate, but the proposed new franchise in Saginaw and the proposed amendment to our franchise in Bay City, relieving us of paving, were decisively defeated. That was the climax and we are out of business as a consequence. Despite the fact that the people by their action said they wanted jitneys, I do not believe that either Saginaw or Bay City is a jitney town or wants to be known abroad as such.

More than 300 men are thrown out of employment in Saginaw and Bay City as a result of the bankruptcy.

Following default of interest due on Aug. 1 on Saginaw Valley Traction Company first mortgage 5 per cent bonds (a lien on the company's property in Saginaw and the interurban line to Bay City), petition was filed by the Commonwealth Power Railway & Light Company, which is the heaviest creditor and also owner of the entire capital stock of the Saginaw-Bay City Railway.

B. C. Cobb, vice-president of the Commonwealth Company, stated in part:

> The officials of the Commonwealth Power, Railway & Light Company, owners of all of the stock of the Saginaw-Bay City Railway, regret exceedingly, and I believe more than anyone else possibly can, the conditions that have made necessary the cessation of street railway service in Saginaw and Bay City. The Commonwealth company and the Saginaw-Bay City Railway have done everything in their power to keep the street cars running and they did keep them running and serving the people until the voters of both cities made it impossible to continue.
>
> The street railway situation in Saginaw and Bay City has been most unfortunate for the last three years. The street cars have been kept running, not only without any return on the investment, but with actual and large deficits.
>
> INCREASE INSUFFICIENT
>
> The majority of the city authorities in both cities have all along disregarded the fact that a public utility, like any other business, can continue to serve only as it is allowed to earn. Although our rates of fare were increased to some extent, the increase was never sufficient to enable us to cope with the increased cost of operation and, furthermore, we were forced to meet the unregulated and unfair jitney competition which city authorities not only allowed, but encouraged. The present results, therefore, were inevitable.
>
> During the last two years there have been several strikes and consequent interruptions in the street railway service in these two cities, owing to the company's inability to increase the wages of its men because it was not permitted to charge fares that would make it possible so to do.
>
> In June of this year the authorities of these two cities were plainly told by the company's officials that unless they gave relief in the way of increased fares, abandonment of the burdensome paving charges and the elimination of jitneys, the company could not continue to serve and would be forced into bankruptcy.
>
> The majority of the authorities in both cities positively refused to grant us this relief, but they did finally adopt and submit ordinances to the voters covering the fare and paving provisions promised, if the ordinances carried to regulate the jitneys. These ordinances were defeated in both cities.
>
> In addition to its original investment in the property upon which it received a return for only a short time, the Commonwealth company is a creditor of the Saginaw-Bay City Railway to a large amount for cash loaned it to pay the cost of improvements, interest and operating expenses. When the voters by their ballots said that the service rendered was no longer desired, there was nothing left for the Commonwealth company to do but stop putting up money, regardless of its faith in the future of the two cities and its belief that they are not jitney towns, and there was nothing that the Saginaw-Bay City Railway could do but quit.
>
> In addition to its loss on its original investment, the Commonwealth company is a common, unsecured creditor to the amount of $1,415,509. It is therefore a big loser and I am pleased to add, a good loser.
>
> FUTURE UP TO CITIES
>
> I repeat what the people of these cities know, that these companies have done everything in their power to continue service and avert this calamity not only to the companies, but to both cities and to every man, woman and child in both cities. It is a calamity to business. It is a calamity to labor, to every interest and phase of life and we deplore it.
>
> The future is up to these two cities. No reasonable street railway service can be maintained unless jitney competition is eliminated, reasonable fares charged and the company relieved of the heavy expense of paving.
>
> I do not believe in municipal ownership and operation of public utilities, but it may be considered that the present situation presents to Saginaw and Bay City an opportunity to acquire the railway property at a reasonable price; but having made the operation of the railway property impossible, they cannot obtain it for less than a reasonable price. So far as the Commonwealth Company is concerned, its net earnings will be more without these properties than with them operating at a loss.

It is understood that steps are being taken toward the formation of protective committees for the purpose of conserving interests of the bondholders.

The plight of the company has been pointed out repeatedly in the past. Things kept going from bad to worse, with the service tied up four times from March 23, 1919, to the time of the suspension. Some hope to the company was held out early in the present year by a series of conferences with city officials looking toward operation at service at cost. These conferences grew out of a tie up of the system last fall for twenty-four days. When the proposed new grant went before the people on July 19 it was voted down. Toward the close of the franchise negotiations on June 2, Mr. Cobb pointed out in unmistakable terms that the railway had reached the end of the rope so far as continuing to give service at a loss to itself was concerned. His warning then was:

> We want to continue giving Saginaw and Bay City street car service if we can, but we can't under existing circumstances. If we don't get the relief we have asked there is only one thing ahead—bankruptcy. This is no bluff—no "ifs" or "ands" about it—it is purely a business proposition. The company is at the end of its rope and unable to go any further unless it has help on all the things enumerated in this letter.

The City Council of Saginaw was to meet on the evening of Aug. 16. It was expected that an inquiry would be ordered to compel the company to resume service or at least to determine the binding effect of the franchise. Thus the Council, led by George Phoenix, finds itself in a hole. So long as the street cars were running that body had something to rail at, but it failed to realize that that was where it was strong and that its power for evil would end when the company went bankrupt and the cars were withdrawn. The members all realize it now, Pheonix more than any of the others. He now finds himself under the irksome necessity of providing a better, more adequate system of transportation than the city had when the cars were in operation. In other words, he is confronted by the impossible.

For a time the Mayor followed along with Phœnix and the others. Toward the last of the long controversy he did stand for a serious solution of the railway problem and against the jitneys. He is, therefore, in a position now to sit back and laugh at Phœnix and the others and to say: "I told you so."

All that the city now has at its command for transportation is a motly collection of nondescript cars and boxes, going by the name of buses and driven by irresponsibles. Some of these rattletraps are filled to the doors during rush

hours, with people hanging on and standing.

Saginaw and Bay City are, of course, very dead towns at present. Industry is down; not more than 25 per cent of labor is employed and in this clear, pleasant weather people are not riding as they otherwise would. That may give the jitneys a chance to plug along for a while, but at that, the better element of people are not patronizing the autos as they did the street cars, and the Mayor says he is already getting letters from the people demanding street car service. Merchants are not yet saying much, though some of them admit some falling off in trade even now.

The railway carried about 6,000,000 passengers in Saginaw in a normal year and 4,500,000 in Bay City. With forty jitneys, seating sixteen passengers in regular service and ten on the sidelines for emergencies, as they say, it is not difficult to imagine how adequately Saginaw is being served. Bay City has still fewer buses operating and needs fewer, for if ever a town was dead and silent, it is.

Mr. Seaman Still at It

John W. Seaman, a small stockholder who has filed many suits against the United Railways, St. Louis, Mo., only to be defeated in all the cases that have been decided, is seeking again to have Receiver Rolla Wells removed under the Adler suit appointment. The latest phase in much involved litigation came on Aug. 9, when Richard McCulloch and officers of the corporation asked the revocation of Federal Judge Wade's order which, if it stands, would give Mr. Seaman another day in court.

Judge Wade, acting in the absence of Judge Faris, who is on vacation, dismissed Mr. Seaman's petition for the appointment of a new receiver, but granted leave to renew the motion when Judge Faris returns. On Aug. 9 the defendant, the corporation, filed a motion to have Judge Wade rescind this grant, the corporation denying that there was any danger of a foreclosure on the bonds of the St. Louis & Suburban Railway, one of the constituent lines, or that Receiver Wells is being hampered in financing the receivership on account of doubt of the validity of his position under the Adler Bill, as alleged by Mr. Seaman.

Judge Wade in his ruling stated that he could see no emergency and that the litigation could wait upon the return of Judge Faris.

$28,935,656 Lost by New Haven on Rhode Island Trolleys

The annual report of the New York, New Haven & Hartford Railroad for the year ended Dec. 31, 1920, states that during the year the Rhode Island trolley properties were disposed of by the trustees appointed by the federal courts. The loss sustained by the New Haven Company amounted to $28,935,656. This is written down in the profit and loss statement for the year. The income accounts for the remaining trolley properties are shown in the accompanying table. The results of the year's operations were unsatisfactory, but at present there are signs that the situation is improving.

The period of advancing costs continued into the year 1920 and increases in the rate of wages was made necessary on all of these electric roads. Efforts to obtain increases in revenue to offset the mounting costs were only partly successful, but toward the close of the year the economies that had been previously inaugurated together with the increased revenue accruing from passenger traffic due to more reasonable regulation in the operations of motor buses had turned the scale in favor of improved net revenues.

Weather conditions prevailing in the months of January, February and March, 1920, also made heavy inroads into the net revenues of all properties. Energetic efforts have been made to acquaint the public with the facts as to the financial condition of the company.

Note was also made of the appeal to the Connecticut Legislature for relief from burdensome obligations and for effective control of motor bus operation, and there is every belief that constructive legislation will soon be passed, in which the financial relief to be obtained, coupled with the increased revenue under the present rates of fare, should result in an improved financial showing for the ensuing year. This relief legislation has since been passed.

$350,358 Net Despite Strike and Auto Competition

The first full year's report of the Brooklyn (N. Y.) City Railroad, which operates 217 miles of track, has been issued for the year ended June 30, 1921. Notwithstanding the strike of August, 1920, which cost the company, including direct expenses and loss of revenue, approximately $1,000,000, and competition from city controlled motor buses, the deficit after payment of operating expenses, taxes and income deductions covering fixed charges and rentals of tracks and cars was $350,858.

The report states that revenue from transportation shows a considerable increase over the corresponding period of the year previous, and with the reduction in wages, effective on Aug. 5, 1921, as well as the marked reduction in cost of materials there is a favorable outlook during the current year.

Passenger revenue amounted to $10,179,968, which together with revenue from miscellaneous sources, made the total operating revenue for the year $10,457,171; operating expenses were $9,715,667. The net after taxes assignable to railway operation, which totaled $500,515, was $240,989. Fixed charges were $362,269 and rent of tracks, cars, etc., $321,421. Non-operating income amounted to $91,843.

Traffic handled during the year amounted to 218,145,000 passengers, divided as follows: Revenue passengers, 205,002,000; transfer passengers, 11,205,000; free passengers, 1,938,000. The car-miles run were 23,600,000.

The report also refers to the service over the Williamsburgh Bridge, which the city authorities have announced they were to take over. At present through service as well as local service is operated. In case the city takes over this operation the railway company plans to discontinue all bridge service. This will result in an increased cost and inconvenience to all riders to Manhattan inasmuch as the bridge ride will cost an extra fare. The profit from the bridge locals, on which the fare is 2 cents, or three tickets for a nickel, were only $25,483, much less than the extra cost incurred in routing all lines entering the Williamsburgh Plaza to the Manhattan end of the bridge.

INCOME ACCOUNTS—TROLLEY LINES CONTROLLED BY NEW YORK, NEW HAVEN & HARTFORD RAILROAD

	Berkshire St. Ry.		The Connecticut Co.		New York & Stamford Railway		The Westchester Street Railroad*		N. Y. Westchester & Boston Railway	
	Actual	Per Cent Change Over 1919	Actual	Per Cent Change Over 1919	Actual	Per Cent Change Over 1919	Actual	Per Cent Change Over 1919	Actual	Per Cent Change Over 1919
Operating revenues	$1,050,545	18.18	$13,089,317	18.52	$494,443	13.92	$239,039	19.98	$912,265	21.22
Operating expenses	1,037,645	19.52	12,417,141	34.78	457,324	17.60	276,006	*18.09*	829,765	25.22
Net operating revenue	$12,900	*4.98*	$672,176	*63.40*	$37,119	*17.80*	*$36,967*	3.41	$82,500	*8.04*
Taxes	45,205	*2.98*	725,767	17.12	24,260	2.46	12,081	1.37	170,234	15.18
Operating income	*$33,305*	*13.21*	*$53,591*	*104.20*	$12,859	*40.20*	*$49,048*	2.27	*$87,734*	*51.20*
Non-operating income	5,715	237.50	11,340	*94.60*	2,156	254.50	665	*24.30*	13,511	71.40
Gross income	*$26,590*	*117.80*	*$42,251*	*102.80*	$15,015	*32.10*	*$48,383*	1.88	*$74,223*	*47.80*
Deductions from gross income	(*a*) 319,013	0.51	1,393,840	4.13	(*b*) 100,962	3.60	(*c*) 34,751	*2.42*	(*d*) 1,732,959	3.59
Net income for year	*$345,603*	*4.85*	*$1,436,091*	*1,431.00*	*$85,947*	*14.08*	*$83,134*	2.15	*$1,807,182*	*4.57*
Profit and loss account at end of year	*$2,099,977*	*16.00*	$1,051,763	*60.4*	*$418,839*	*29.00*	*$439,282*	*23.80*	*$13,673,636*	17.20

*This company is entirely separate from the New York, Westchester & Boston Railway. Figures include receiver's account for the 29th of February and ten months ended Dec. 31, 1920.

Includes interest accruing to the N. Y., N. H. & H. R.R., but not included in the income account of that company: (*a*) $213,550, (*b*) $42,533; (*c*) $26,784; (*d*) $815,979.

Cuban Electric Road Sued

The Cienfuegos, Palmira & Cruces Electric Railway & Power Company, Cuba, is made defendant in a suit filed in the Common Pleas Court at Cincinnati, Ohio, by the Davidson Sulphate & Phosphate Company, Baltimore, Md., which seeks to recover $1,959,571 for breach of contract.

The Davidson company also attaches six electric cars under construction at the plant of the Cincinnati Car Company, which are the property of the defendant company.

The petition charges that the defendant failed to carry out a contract whereby railroad lines were to be constructed from the wharf at Cienfuegos to Caonao; from this point to Cumanayagua, and a branch line to a point in Cuba known as the Davidson Terminal. Under this agreement the plaintiffs were to have facilities for shipping 100,000 tons of material mined at its Cuban mines each year and were to have certain electric power facilities. As the result of the failure to carry out this agreement the phosphate company charges that it has been obliged to pay demurrage charges at Cuban ports due to delays in collecting its product for shipment. Filing of the suit in Cincinnati was due to the fact that the cars attached are being built there.

Financial News Notes

Rehabilitation Plan Fails. — The Geist plan to rehabilitate the railway at Lafayette, Ind., has been abandoned following a meeting of the citizens' committee named about two weeks ago to offer $100,000 in preferred stock to local citizens. The prospects are that the present owners will abandon the line in the near future.

Gold Notes Offered.—Halsey, Stuart & Company and the National City Company are offering at 89½ and interest $500,000 fifteen-year 7 per cent secured sinking fund gold notes of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill. The notes known as Series "B" are dated June 15, 1921, and are due June 15, 1936.

Abilene Line to Resume.—The Abilene (Tex.) Street Railway, which was taken over by the American Public Service Company, will be put in operation again on Sept. 10. New cars will be put in use and current for operating the lines will be furnished from the American Public Service Company's new $1,000,000 power station soon to be put in operation. There are now 5 miles of track. An extension will be built at once to the new McMurray Methodist College, now under construction.

Franchise Tax in Dispute. — The Southern Indiana Gas & Electric Company, operating the city railway lines at Evansville, Ind., and the line between Princeton and Evansville, will not pay its franchise tax to the city of Evansville unless required to do so by the courts. Frank J. Haas, general manager of the company, maintains that the company is not operating under a franchise at the present time and should not pay the tax. The company surrendered its franchise in 1917, but continued to pay the franchise tax until 1920. It is believed the case will be taken to the courts for settlement.

Exception Taken to Separate Foreclosure.—The Guaranty Trust Company has filed a bill in the United States Court taking exception to the decision of Judge Orr in which he rules that the Southern Traction Company, one of three underlying companies of the Pittsburgh (Pa.) Railways, may foreclose on mortgage and operate its West End lines independently. It is contended that any such action might delay the proposed reorganization of the Pittsburgh Railways and would mean protracted litigation, as the Guaranty Trust Company would appeal to a higher court. It is also stated that the value of Pittsburgh Railways as a unified system will be impaired if broken up.

Short Dallas Line Abandoned.—The Dallas (Tex.) Railway has been authorized by the City Commission to abandon its Nettie Street line. The application of the company for authority to abandon this line set forth that it was eight blocks in length and extended to Commerce Street, but did not connect with the tracks on that street. Receipts of the line during the last few months have averaged about $120 a month, while the cost of operation has been $575 a month. Continued operation would require the expenditure of $2,500 on track improvements. Investigation by the Supervisor of Public Utilities shows that $7,428 was lost by the company through operation of this line during the fiscal year ended June 30, and that an average of 138 persons ride this line a day.

Abandonment Planned in Spokane.—The Washington Water Power Company, Spokane, Wash., has applied to the city for permission to cancel certain of its franchises. The idea of the company is to abandon some of its lines. According to the city officials, some of the company's principal lines outside of the business district are operated without franchise rights. W. E. Coman, second vice-president and general manager of the company, is reported to have said that the company was aware that some of its franchises had expired, but that it had no intention of applying for a renewal at this time. No part of the regular service will be disturbed by the discontinuance of the two lines included in the pending petition of the company. It was expected that the whole matter would be considered at a public hearing to be held on Aug. 16. A review of the fare and the jitney situations in Spokane is published on page 300 of this issue.

Disappointing Outlook in Brazil.—At the annual meeting of the Brazilian Traction, Light & Power Company in Toronto, Ont., on July 20, Vice-president Miller Lash told the shareholders that at the present rate of exchange, earnings for the first half of the present year were just about sufficient to provide for bond interest, sinking fund and preferred dividend with no substantial provision for capital expenditure. It was impossible to sell securities at the present time and to provide working capital. Mr. Lash pointed out that conditions were improving except for the drop in milreis, which had declined from 27½ cents in 1919, by over 50 per cent, to 10½ cents. He intimated that dividends would return with a 20-cent milreis. He pointed out, however, that in the last half of last year coal had cost $2,500,000 or $29.70 a ton. In the first half of this year it had dropped to $615,000 or $12.09 a ton. The drop in exchange, however, had almost wiped out this difference.

Woonsocket Lines Sold.—The Woonsocket properties of the Rhode Island Company, which include all the remaining property of the Rhode Island Company, Providence, R. I., were sold by Arthur A. Thomas, special master, on Aug. 6 to C. H. Mandeville, who announced he was bidding for the United Electric Railways. There will be $300,000 paid in cash, but there are a number of other obligations that Mr. Mandeville must meet or at least see that the new traction company meets. On Aug. 12 the Superior Court confirmed the sale. This approval of the sale by the court has the effect of bringing under the control of the United Electric Railways substantially all of the railway properties in the State, formerly operated by the Rhode Island Company. Furthermore, the transfer practically winds up the affairs of the Rhode Island Company, inasmuch as the new owners of the Woonsocket lines have agreed to assume, with reservations, the obligations of that company.

Barcelona Net Up 14 Per Cent.—According to the sixth annual report of the board of directors of the Barcelona Traction, Light & Power Company, Ltd., for the year ended Dec. 31, 1920, the net income from all sources including that derived on the Barcelona tramways was $2,731,769 as against $2,194,353 in the previous year, an increase of nearly 25 per cent. Interest on bonds for the year amounted to $1,963,485. Depreciation reserves were also made by the chief operating company. The railway itself set aside $293,364. The operating results of the Barcelona Tramway Company showed an increase in gross earnings of nearly 25 per cent over those of the previous year, but owing to a large increase in operating costs the increase in net earnings was only 14 per cent.

Traffic and Transportation

One-Man Operation Attacked

New Cars Being Used to Make Political Capital in Milwaukee—Standard Cars In Use

Alleging that one-man safety car operation was unsafe, Alderman Carl Dietz of Milwaukee recently introduced a resolution in the Milwaukee Common Council calling upon the City Attorney to petition the Wisconsin Railroad Commission for an order prohibiting one-man cars from operating in the city of Milwaukee.

Company Explains Position

One-man operation was introduced in Milwaukee city service on the Thirty-fifth Street crosstown line about two months ago. On Aug. 1 it was extended by the Milwaukee Electric Railway & Light Company to the Twenty-seventh Street crosstown line. It is expected that it will be further extended to the other crosstown and light traffic lines of the company.

The matter was thrashed out on Aug. 5. 1921 at a hearing on the subject before the committee on railroads of the Council. Alderman Dietz, the introducer of the attacking resolution, urged its adoption almost entirely on safety grounds. He was supported by two or three other witnesses, but what opposition appeared seemed due to lack of familiarity with the safety equipment of the car rather than with the quality and quantity of service rendered by this type of equipment.

The company was represented at the hearing by its President, John I. Beggs, H. A. Mullett, assistant general manager, and W. A. Jackson, general attorney. The company's position as expressed by its representatives, was that due to the present state of unemployment, shorter hours which permit people to walk to and from work, and automobile competition, its railway revenues this year were smaller than during the previous year. The deficit would have to be made up either by increasing the rate of fare, lowering wages, reducing service, or effecting economies in operation.

While it was uncertain whether any one of these means would be sufficient to meet the situation alone, the company was first attempting to effect as many economies as possible, and for that reason had started one-man car operation.

Recommended by City's Utility Expert

Attention was called by representatives of the company to the recommendation made some time ago by the city's public utility expert that one-man car operation be inaugurated for the sake of effecting economies. The inauguration of one-man car operation was also urged in the report just issued by the Public Utilities Acquisiton Committee of Milwaukee, which was signed, among others, by three of the leading members of its Common Council. The representatives of the company pointed out that one-man safety cars were in use all over the country and that they were apparently favored by municipally-owned railway utilities such as those of Detroit and Seattle.

H. A. Mullett, assistant general manager of the company, described the safety equipment of the cars which are being used in one-man service. This is the Standard Safety Car Devices Corporation equipment for one-man cars. The cars themselves are a number of a lot of 100 which the company has recently acquired. They were especially designed for use in Milwaukee and may be utilized either for two-man or one-man operation. These cars seat fifty-three persons, are unusually light, comfortable and good looking, and have produced a distinctly favorable impression on the patrons of the railway company.

Testifies for One-Man Car

Testimony in favor of the one-man safety car operation was given by E. J. Steinberg, resident engineer in Milwaukee for the Wisconsin Railroad Commission, who said that this type of service had been approved by the commission for the Thirty-fifth and the Twenty-seventh Street crosstown lines. He pointed out that the company was voluntarily giving better service on these lines with one-man cars than that required by commission standards of loading. Another witness who testified in favor of one-man operation also stressed the fact that the service on the Thirty-fifth Street line had been distinctly improved since the installation of one-man operation thereon. The point was made by this witness that if certain practices on the part of one-man car operators were deemed unsafe, these should be corrected, but that this was no reason why one-man car operation should be entirely prohibited.

At the end of the hearing further consideration of the matter was postponed for a period of thirty days in order that the new service may be tried out for a somewhat longer period of time before final judgment was passed on the matter. It is expected that the Common Council will uphold the company in its use of one-man safety cars in Milwaukee city service.

In an advertisement primarily intended to further the sale of its securities the company made the following comment on the attack upon its use of safety cars in city service:

> Strict economy from top to bottom of the organization with its more than 5,000 employes is the only means of assuring regular payment to our thousands of home investors of their income from the business, in times like these. Nobody has to be told we can't spend what we don't earn; that we can't hire more men than we have work for, nor pay excessive salaries, nor in any other way give out more than we can take in. This Company has paid every debt on the due date, in full, since it was organized twenty-five years ago; it has paid regular dividends to its shareholders for over twenty years, and it intends to continue doing so. To do this in a season of hard times means avoidance of waste and it means utilizing every practical means for saving. This is especially true of the street railway end of the business. It can be made to serve better and at less cost by using one-man safety cars instead of heavy two-man cars on some of the streets; so the Company, following the example of other cities where the change has pleased the public by giving more frequent service with equal safety, is gradually introducing this economy into its business.
>
> Some folks who have no knowledge of the business, and no stake in it, criticise such economies, in order to make political capital. It isn't a political matter at all. It is question of providing most and best service at least cost to the public that pays the bills—and this is a job for the company's engineers co-operating with the city's and the state's engineers. *We are not going to risk the safety of our customers.* You can bank on that. But we are going so far as possible, to introduce whatever tried and proved new methods will improve the service and reduce its cost.

Fare Advance Refused

A recent ruling of the State Corporation Commission continues in effect the 5-cent fare on the lines of the Lynchburg Traction & Light Company, Lynchburg, Va., for six months, at the end of which time the commission will again review the situation. In its petition the company asked for an 8-cent fare between the city and points outside. The opinion was written by Alexander Forward and was unanimously approved by the commission.

Some months ago the company gave notice that it would on May 11 apply to the commission for authority to publish and file, effective June 1, revised tariffs for railway service providing a uniform fare of 6 cents, with an alternative proposal that in the event permission for such 6-cent fare within the city limits of Lynchburg was not granted by the City Council, then application would be made for authority to charge an 8-cent fare applicable between points in the counties of Campbell and Bedford and also between points in those counties and points in the city.

The commission thereupon fixed the same date, May 11, for hearing the proposed fare advances of the company. A hearing was accordingly had on that day and upon motion of opponents a further hearing was given on June 2, when the evidence and argument having been fully presented, the entire matter was submitted to the commission.

Prior to the first hearing the City Council of Lynchburg, which is admitted by the company to have jurisdiction over railway fares within the city limits, refused to grant the increase to 6 cents, so that the company's application to the commission was based upon a proposed increase in fares between the city and outside and between points outside, of 8 cents per passenger.

In its finding the commission stated that in a period of declining costs a reduction in operating expenses could be anticipated and that this is a transition period and no one can foretell future price levels.

Taylor Franchise Upheld

The franchise ordinance drafted by A. Merritt Taylor and recently submitted to the City Council of Norfolk, Va., for adoption has been vigorously defended by Messrs. Kerr, Wright and Doherty, leading business men of Norfolk and former members of the Public Utilities Commission, in a special report on the franchise made to the City Council on Aug. 3.

In their report these gentlemen refer to the severe criticism of the Taylor franchise, but point out that no constructive suggestions have been advanced as a substitute. They can see no better remedy than the one suggested by Mr. Taylor, a practical utilities operator, and acknowledge with indebtedness his comprehensive recommendations with respect to re-routing, improvement of present service and a new franchise.

The high points in the franchise ordinance drafted by Mr. Taylor which have caused much discussion were reviewed in the ELECTRIC RAILWAY JOURNAL, issue of Aug. 6.

Commission Orders Amended Tariffs

The Public Utilities Commission of Utah has decided that the Utah Railway must amend its coal carrying tariffs, effective not later than Aug. 8, so as to prevent any discrimination against the Salt Lake & Utah, an electric interurban operating between Salt Lake City and Payson, Utah, and in favor of either the Denver & Rio Grande or the Los Angeles & Salt Lake railroad. The system of the electric railway comprises 75 miles of road.

The order came in the case brought by the Salt Lake & Utah, commonly known as the "Orem Line," against the Utah railway. It was complained that the Utah railway carries in its tariffs, with reference to joint rates on coal routed from mines on the Utah railway to and through Salt Lake, the proviso that the rates shall be applicable "only to traffic for delivery on team tracks of the Salt Lake & Utah Railroad, or industries served by it, when so routed by shipper."

The effect of this was that if the Salt Lake & Utah were to undertake to haul coal for shippers who were on the Denver & Rio Grande or the Los Angeles & Salt Lake (Salt Lake Route) tracks, additional switching charges had to be made, which the interurban had to absorb or else lose the traffic.

The Salt Lake Route intervened in the case by claiming that it had made a large joint investment with the Utah railway at the latter's Provo terminals, and also that the two rail lines owned 2,000 steel gondola coal cars in common.

These joint investments, it was contended, made the rails from the Utah railway mines to Salt Lake practically one complete railroad, and the intervenor claimed that it was entitled to consideration as such. The case was referred to in the ELECTRIC RAILWAY JOURNAL for July 16.

Spokane Jitneys Run Wild

City Shows Its Contempt for Utility Commission by Permitting Competition With Railway

Jitneys have been in operation in Spokane, Wash., since the latter part of June with the result that the gross revenues of the electric railways there have been reduced and the service on these lines materially curtailed. The Washington Public Service Department in May issued an order granting the appeal of the two Spokane railways, the Washington Water Power Company and the Spokane & Eastern Railway & Power Company, for an increase in fare from 6 cents to 8 cents.

The City Commissioners through Mayor Fleming had previously announced that in the event of such decision by the state, the city would release the jitneys in competition with the railways.

Losing their fight before the commission to prevent an increase in fare, the city officials prepared to put their threat into operation. Every effort was made to get them to reconsider this decision, but without avail. The state officials in their written opinion and decision on the case, expressed the hope that the city was not in earnest in such a determination and pointed out the ultimate harm that it would bring to Spokane.

RAILWAY OFFERS COMPROMISE

The Chamber of Commerce roused itself and a committee of representative citizens, headed by Ben C. Holt, attempted to bring about a settlement and compromise. This committee secured from the railways a promise of a 7-cent fare dependent on the purchase of tickets, five for 35 cents. This compromise offer was curtly rejected and the jitneys released.

Every sort of a car was pressed into service in the first days of the jitney service. These are now giving way to buses which carry from ten to twenty passengers. A railway official estimated early this month that the two companies have suffered a loss of 21,000 fares daily or about one third of the normal patronage. Of this number it is the opinion that the jitneys are carrying about half, while the others are walking, being carried by friends in their cars or using their own machines.

This official said that so far as his company was concerned, the loss of patronage had been fully offset by the taking off of the tripper service. The tripper cars on this line are all two-man cars, so that with the increase in fare, the decrease in the payroll, the decrease in other costs and the sale of the juice for commercial use, this man figures that his company is just where it was before.

The fact remains, however, that with the jitneys in operation less than two months, they have made serious inroads on the railway business and forced considerable curtailment of service with the abandonment of certain unimportant lines already contemplated and asked for by the two companies.

The more conservative and far seeing of the citizens recognize the danger to real estate values in outlying districts and the inconvenience to those resident in them and strongly oppose the licensing of jitneys by the City Council. Spokane is a city with widely scattered residence districts, many of which frequented by the working class have no paved arteries. In winter and the wet weather of spring and fall, jitney service to these districts will be next to impossible. However, there is much sentiment favorable to the jitney and people are riding in them and suffering crowding and inconvenience cheerfully that they would not tolerate as a regular thing on the electric railway.

Neither the city officials nor the street railway officials give any indication of quitting the fight. Some of the railway employees incline to the opinion, however, that the only way to bring the matter to a speedy conclusion for the benefit of all concerned is to put the cars in the carhouses and demonstrate the inadequacy of the jitney service. More conservative counsel has so far prevailed and the companies are simply cutting down the service as rapidly as the jitney makes a line unprofitable.

Floats Teach Safety

According to W. F. Hanna of the Safety Committee, No Accident Week in Maryland and especially in Baltimore, accomplished some fine results. No fatalities due to traffic accidents were recorded, although some accidents occurred.

From Sunday, July 17, through Friday, July 22, an intensive safety campaign was waged, bringing home to the residents of the city some graphic lessons on the need of safety. Each day contributed some special feature in a striking manner. One day was known as "Wagon and Truck Day," and another as "Children's Day." The slogan, "Don't Get Hurt," appeared on large white streamers attached to the front and rear bumpers of every trolley car. July 20, "Walk Right Day," featured a hospital scene called "The Jay Walkers' Ward."

Another interesting tableau was prepared at the Carroll Park Shops of the United Railways & Electric Company which showed on a flat car a wrecked automobile with a specter of death in front of it. The car operated through the streets of the city while mournful tunes were played by a school band.

The United Railways & Electric Company gave its hearty co-operation to the success of the drive. Mr. Cullen, assistant to the president of the Baltimore property, said that the campaign was a great success and that the lesson of the week would have a lasting effect.

Fares Advanced Again in Toledo

Street Railway Commissioner W. E. Cann at Toledo, Ohio, has announced that on Aug. 20 fares will be jumped another notch by the Community Traction Company when ticket sales are changed from eight for 50 cents to six for 40 cents with the 7-cent cash fare and 1-cent transfer remaining. The commissioner says he believes this change will be the last necessary to bring back the stabilizing fund to normal. The last raise in fare was put into effect by the railway company on Aug. 1.

Only 25 per cent of the passengers are paying cash at the present time. This makes the average fare only a little more than 6¼ cents. On a straight 6-cent fare the railway system showed a deficit of approximately 1 cent per passenger.

As rapidly as economies of operation have been put into effect the car riding has decreased. The first twenty-five days of July brought in $12,638 less revenue than the same period in June. This ratio of decrease has been constant all summer. In February when the service-at-cost ordinance went into effect the revenues were averaging $12,000 daily. That figure at present is about $8,000.

Connecticut Jitney Case Argued

Judges Martin T. Manton, Edwin S. Thomas and John C. Knox, in the court room of the Federal Building at New Haven, Conn., on Aug. 16, heard the application of the jitneymen of New Haven for an injunction against the enforcement of the new jitney law by the state authorities. It is expected that a decision will be rendered by Aug. 22. While the application was presented by local jitneymen at New Haven the decision of the court will affect the entire state.

Attorney Woodruff for the jitneymen claimed that the jitney operators by reason of the application of the law had suffered substantial loss while being prevented from using their machines to earn a living and that their constitutional rights had been denied them. He said that service furnished by the buses was demanded by public convenience and necessity. He attacked the arbitrary attitude of the commission, but Judge Manton said that the court had nothing to do with that. The question it must consider was whether or not the Legislature had the power to enact the present law.

Judge Walter C. Noyes, trustee of the Connecticut Company, argued against the granting of an injunction. He showed where the state has power to regulate traffic over its highways and to control it. The new statute of Connecticut, he pointed out, is similar to the statutes of other states which have been upheld already by the supreme courts of those states.

Attorney General Healy said that the plaintiff had an inadequate conception of the right and public policy of the state.

Transportation News Notes

Tokens in Use.—The Vicksburg Light & Traction Company, Vicksburg, Miss., has replaced its paper tickets with metal tokens.

Ticket Fare Cut.—In Gadsden the Alabama Power Company has made a cut of 10 cents in the price of books of 16 tickets, selling them for 90 cents instead of $1.

Children's Fares Reduced.—The Alton, Granite & St. Louis Traction Company, Alton, Ill., has announced the use of metal tokens instead of tickets. A reduction in children's fares from 5 cents to 4 cents will be put into effect.

Protests High Fare.—A petition has been signed by many residents of Pottsville, Pa., and sent to the Public Service Commission requesting that body to require the Eastern Pennsylvania Railway to lower its fare between Pottsville and St. Clair. The petition declares that the distance is only 3 miles and that a 10-cent fare is not warranted in view of a cent-a-mile commutation rate on some railroads.

Awards for Safety Records.—In an effort to minimize accidents on the municipally-owned cars of St. Petersburg, Fla., R. E. Ludwig, director of utilities, has put into effect a bonus system under which motormen will receive cash awards or vacations for working for a stipulated period without accidents. Mr. Ludwig believes that this plan will not only lessen the number of accidents but will encourage the careful handling of the cars.

Petitions for One-Man Cars.—The Peoria Railway, a subsidiary of the Illinois Traction System, has presented to the Council an ordinance giving it the right to operate one-man cars in the city of Peoria. The company has furnished the Council with a list of cities where one-man operation of cars has been successful. The company further states that it wishes to extend its service but cannot do so as long as two men are required to operate cars.

City's Expert Preparing Data.—Harold M. Olmstead of the Delos F. Wilcox staff is going over the books of the Minneapolis (Minn.) Street Railway preparing for the city's argument at the hearing before the State Railroad & Warehouse Commission on Aug. 23, in which the city will combat a request of the railway for an emergency rate of 7 cents with four rides for 25 cents. A similar hearing is set for the same day in the case of the St. Paul City Railway, the two lines being component parts of the Twin City Rapid Transit Company, and their interests being similar as to rates of fare.

Change in Fare Announced.—The Grays Harbor Railway & Light Company, Aberdeen, Wash., has announced a change of fare in Aberdeen and Hoquiam from 6 cents within each of the cities, and a 12-cent fare between them, to a straight 10-cent fare. The change is announced as the result of recent jitney competition in the two cities and between them. The City Council of Aberdeen has instructed City Attorney A. E. Cross to protest the new fare before the Public Service Commission. According to a recent ruling of the State Department of Public Works, the company is allowed to charge a 10-cent cash fare, or an 8⅓-cent token fare. School rates remain unchanged.

New Publications

Roadway and Track

By W. F. Rench. Published by the Simmons Boardman Publishing Company, New York. 242 pages. Cloth.

This book is not one essentially on location, as are so many books on track, but partly on construction and more particularly on maintenance, care and protection of track. As such it should be very useful to the maintenance-of-way engineer. The writer was formerly supervisor of the Pennsylvania Railroad. The practice described is in a large measure that of that company.

Proceedings of Society for the Promotion of Engineering Education

Proceedings of the twenty-eighth annual meeting of the society. F. I. Bishop, editor. University of Pittsburgh, Pittsburgh, Pa.

This volume covers the meeting held at the University of Michigan, June 29 to July 2, 1920, and includes a number of articles of interest to engineers engaged in electric railway work. Special attention was devoted at the meeting to the relation to technical schools of the utilities and the engineering industry.

The Business Library

By Louise B. Krause, Librarian with H. M. Byllesby & Company, Chicago. 124 pages; illustrated. *Journal of Electricity and Western Industry*, San Francisco, Cal.

This is the second edition of this book. The first was published two years ago. Additions have been made to bring up to date the list of articles of value on the subject of business libraries. Some of the subjects covered are the organization of the library, the service expected to be rendered, how to file periodicals, government documents, trade catalogs, photographs and lantern slides. The methods advocated for the classification and cataloguing of the particles filed, the mechanical equipment needed and the qualifications essential for the business libraries are also covered in detail.

Personal Mention

Mr. Brewer, Promoter

Grand Rapids Operator and Manager Putting Through Important Merger in Indiana

Joseph A. Brewer, Grand Rapids, Mich., president of the American Public Utilities Company, is the moving spirit in another consolidation of utilities. This time the properties concerned are all in Indiana. They operate in seventeen counties. The plans being advanced propose a considerable extension of the activities of the companies which it is intended to bring together under one head, and contemplate a power development scheme which will involve an expenditure of several millions of dollars in the erection of a plant in the Indiana coal field with transmission lines to Kokomo and Indianapolis. The new company will be known as the Indiana Electric Corporation. Mr. Brewer will be its president. Among the companies which will be taken over is the Indiana Railways & Light Company, of Kokomo.

"Joe" Brewer is a Michigander. He is not in "Who's Who," but that is a reflection on "Who's Who" rather than on "Joe." All the Central West knows Mr. Brewer intimately, and the East knows him by his work even if it has had only a small share heretofore in assisting him in his financial operations. With Mr. Brewer it is another case of truth being stranger than fiction. The annals of American business are, of course, replete with examples of men who have risen to prominence from humble beginnings, but there are angles to the achievements of Mr. Brewer that differentiate him from others.

Not all stenographers become public utility owners. Not all railroad clerks become railroad presidents or rise to prominence in the railroad world. This is mostly the fault of the stenographers and clerks. Mr. Brewer at fourteen was both stenographer and clerk at Grand Rapids. He learned the ropes rapidly but the position lacked the element of contact that Mr. Brewer craved. He decided to take a chance. Hieing himself off to Detroit he set up shop as a public stenographer. If there is any place in which to come into contact with persons of mercurial temperament it is as a public stenographer. Your customers range from the prima donna of the traveling theatrical company to —well, most anybody. You are supposed to react to the state of mind of your client. You learn a lot about human nature.

Having established this point of contact with the dear public, Mr. Brewer returned to Grand Rapids where soon he became a real caterer to the public by purchasing an interest in the Holland Gas Company. Thus is the mystery solved of where all the money went that was earned by one public stenographer. The public is usually ungrateful and gives grudgingly to the utility manager, but there seems to be something irresistible about the urge onward of the business. Thus it was only a short time until Mr. Brewer took over the Winona Gas Light & Coke Company, Winona, Minn. A little later he and Charles B. Kelsey, another utility operator, realized that they could do more by joining forces than by operating separately, so the firm of Kelsey, Brewer & Company was formed.

So far the talk about Mr. Brewer has been nothing but business. Mr. Brewer, however, plays as hard as he works. Northeast of Plainfield Village, Mich., Mr. Brewer has a farm of 360 acres. Here he does his playing by supervising one of the most complete establishments of its kind in the State. This is the man's principal hobby. Despite the demands made upon his time by his utility and banking connections, Mr. Brewer has served as president of the West Michigan State Fair, an enterprise of no mean proportions.

The financial manuals list Mr. Brewer as president of the American Public Utilities Company, president of the Jackson (Miss.) Public Service Company, president of the Wisconsin-Minnesota Light & Power Company and president of the Eastern Wisconsin Electric Company, to note just a few. Forty-five finds Mr. Brewer still going strong in the field of public service, as is attested by the plans being matured for the $18,000,000 consolidation in Indiana.

H. C. DeCamp Leaves Sales Work to Become Operator

H. C. DeCamp, for the past eleven years a representative of the railway department, Westinghouse Electric & Manufacturing Company, Cincinnati office, has been appointed assistant general manager of the City Railway, Dayton, Ohio. Mr. DeCamp is very well known in railway circles, particularly in the Middle West, where he has for many years been active in the affairs of the Central Electric Railway Association, which he has served in various capacities from member of numerous committees to "parson" on the annual cruise this last summer. For many years he has had a hobby of the ways and means of promoting a better spirit and better salesmanship on the part of trainmen. He has felt that the trainmen have received less attention than they deserved, and at one time wrote a series of "Letters of a Retired Motorman to His Son," which were published in *Aera*. In his new position, with the full co-operation of the officers of the company, he expects to work out these ideas and endeavor to make the city railway one of the best operated companies in the country.

Mr. DeCamp has had a fund of both railway operating and selling experience. He first became interested in street railway matters in 1889, when he went to work for the General Electric Company. Subsequently he was connected with the old Utica & Mohawk Valley Railway, the Brooklyn Rapid Transit system, and the Third Avenue Railroad, thereafter entering the sales field. While engaged in selling, however, he has always kept up his interest in the operating field, particularly along the lines of efficient management and operation.

Transit Engineer Will Study Foreign Methods

Robert Ridgway, chief engineer of the New York Transit Commission, sailed recently on the Olympic for a five weeks' stay abroad, where he will study methods of construction and operation of subways, rapid transit lines and urban transportation generally. Mr. Ridgway is expected to make a special study of the underground systems of London, Paris and Berlin, to obtain information that will help him in laying out new lines in this city and to solve the traction problem in New York. He went by direction of the commission. Clifford M. Holland, chief engineer of the New York and New Jersey Tunnel Commission, accompanied him.

Harry S. Williams Joins Detroit Municipal Railway

Harry S. Williams has been made assistant superintendent of equipment of the Detroit municipal street railway system. Since 1914 he has been engaged in building work in Detroit, but prior to that was for many years in electric railway work. He started his railway experience in the construction department of the Lima-Honeoye Electric Railway, and became assistant superintendent when the construction of the line was completed. After three years he became connected with the construction work of the Oneida (N. Y.) Railway, and upon completion of this was transferred to Utica, N. Y., serving for a time in the power department and later in the mechanical department. At this time he had charge of the shops and carhouses of the Utica & Mohawk Valley Railway Company, now a part of the New York State Railways. Following the electrification of the West Shore Railroad from Utica to Syracuse, he was made electrical engineer of that property, with supervision of the power houses, overhead and third-rail, in addition to the car equipment. In 1910 he became chief engineer of the Peter Smith Heater Company, Detroit, serving in this capacity until 1914.

Walter J. Devine is now the secretary of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio. The position until recently was held by J. K. Trimble.

Herbert Ware has severed his connection with the Public Service Railway, at Camden, N. J., after a service of more than twenty-five years. For more than ten years he served as starter at the Pennsylvania terminal, at Camden, N. J. He was at one time assistant to the superintendent of employment at Camden. He started with the company as a motorman.

Walter Jackson, consulting engineer, has returned from a three months' study of transport conditions in Europe. In technical matters he paid particular attention to trackless trolley development and the amazing growth of motorbus operation both in city and country service. Visits were made to London, Paris, Vienna and Berlin in connection with changes in rates of fare, service-at-cost contracts and public ownership.

George C. Graham has been appointed superintendent of rolling stock and shop of the Windsor, Essex & Lake Shore Rapid Railway, Kingsville, Ont. Prior to his present appointment he was engaged in commercial business in Hamilton, Ont., and before that he was for six years superintendent of rolling stock of the International Railway, Buffalo, N. Y. Until January, 1910, Mr. Graham was master mechanic of the United Traction Company, Albany, N. Y., when he resigned to become superintendent of car equipment and shops of the Los Angeles Pacific Company, Los Angeles, Cal.

Obituary

R. H. Taylor, Jr., manager of the Sault Ste. (Mich.) Traction Company, died very suddenly on Aug. 4 of heart failure. Mr. Taylor had held the position of manager of the Sault Ste. property since the reorganization of the road many years ago. During the World War he served as sergeant in the 160th depot brigade and is said to have had a splendid record.

W. C. Connor, former mayor of Dallas, Tex., and builder of the first street car line in the city died at Long Beach, Cal, recently, after an acute illness of only a few days, although he had been in failing health since 1906. Mr. Connor was prominently identified with the building of Dallas since 1870, having been four times Mayor, organizer of the first volunteer fire department, builder of the first electric light plant in Texas, the first ice factory, the first street car lines and a pioneer in many other lines of industry. The first street car line he built employed mule cars and the line ran up Main Street and out Ervay Street to Browder Springs. When the electric lines superseded the mule cars, Mr. Connor retained his interest in the lines and served for many years as vice-president of the Dallas Consolidated Street Railway until this property was conveyed to Stone & Webster.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Good Time to Build

Important Engineering Firm Bases This Opinion on Survey of the Field

Dwight P. Robinson & Company, New York, have recently compiled and issued a chart showing price tendencies in nine groups of commodities from 1914 to July 1, 1921, based on the Bureau of Labor statistics. Commenting on these curves the company says in part:

> It is now evident that price recessions in many industries have been arrested. During a recent week more price increases than decreases were noted, the reverse of a situation which had existed for fifty-six consecutive weeks.
>
> Particular attention may be called to the curve for lumber and building materials, which has begun to straighten out. Building materials have taken a deflation of 139 points from their peak, as contrasted with the average deflation for all industries of 124 points, in spite of a more than normal demand for construction material. For the month of January contracts awarded were 6 per cent behind the January five-year average. For the period January to July 1 they were 9½ per cent ahead of the January to July 1 five-year average.
>
> There is not very much industrial construction going forward. When the large volume of this class of work starts, the increased demand will undoubtedly have a tendency to push building costs up, for the same laws of supply and demand obtain in the construction industry as in other lines and it is not reasonable to suppose that in the face of such activity there will be an appreciably greater deflation.
>
> The railroads are now practically assured of government aid and accordingly may soon be in the market for the equipment and materials they have so long needed. Heavy railroad purchases will act as a strong tonic to the business situation and will undoubtedly affect general prices.

Activities of Trade Associations

An official statement having to do with the activities of trade associations will be issued the latter part of August. A promise to this effect was made by Commerce Secretary Hoover after a conference on the subject between Mr. Hoover and members of his staff with the Attorney-General and members of the Department of Justice staff. Pending the issuance of the statement, Mr. Hoover declines to comment. The Attorney-General stated that there are a great number of trade associations which are of much benefit to business and that the activities of the great majority of these organizations are not being questioned. He said the Department of Justice simply is trying to find if there are not some cases in which illegal activities are being carried forward under the guise of trade associations.

The probabilities are that the official statement which is to be issued will not go very far toward illuminating the twilight zone which covers a part of the field of some of the existing associations. Since the Supreme Court of the United States is expected to hand down, during the October term, an opinion in the hardwood lumber case, which may define some of the limits of the fields of the trade associations, it is not probable that any executive department is going to declare any very definite policy before the rendition of that opinion.

The Department of Commerce has ascertained that there are more than 5,800 trade and industrial organizations in the country.

French Railway Orders Equipment

An order for electrical equipment amounting to $1,200,000 has been received by the Westinghouse Electric International Company from the Midi Railway of France. The order includes transformers, synchronous converters, lightning arresters and other substation equipment. The Midi Railway operates an extensive system starting from Bordeaux, running through Toulouse to Cette, with many branches. The section on which the Westinghouse equipment will be used extends from Pau to Toulouse in the Pyrenees Mountains near the Spanish border. The line passes through Tarbes and St. Gaudens, and has a total length of more than 100 miles.

Large Turbine Generators Tested

The capacity of the testing room of the South Philadelphia works of the Westinghouse Electric & Manufacturing Company was taxed to capacity recently when 169,000 kw. of steam turbine generators were on the test floor at the same time. Nearly 150,000 kw. of this amount was made up of five turbines for some of the largest railway and power companies in the United States. These included a 35,000-kw. turbine for the Hellgate station of the United Electric Light & Power Company of New York, a 25,000-kw. turbine generator for the Gold Street Station of the Brooklyn Edison Company, a 25,000-kw. turbine for the Virginia Power Company, Cabin Creek, Va.; a 35,000-kw. turbine for the Calumet station of the Commonwealth Edison Company, Chicago; a 25,000-kw. turbine for the United Electric Light Company, Springfield, Mass., and a 10,000-kw. turbine for the American Rolling Mills, Middletown, Ohio.

Electrification Data Needed

A technical commission in Portugal (No. 35,284) desires to be placed in communication with firms in the United States engaged in undertakings such as the electrification of railways and transmission of electrical power and to secure literature and catalogs from manufacturers of material and accessories pertaining thereto.

Rolling Stock

The Hydro-Electric Railway, Windsor, Ont., intends to rehabilitate its present rolling stock and buy twenty new cars.

The New York, New Haven and Hartford Railroad, New Haven, Conn., mentioned in the July 30 issue as having placed an order with the Osgood-Bradley Car Company for eight steel motor cars and for fourteen trailer cars of the same type, has given the following data on these cars:

Number of cars ordered (motor)	8
Date of order	Dec., 1920
Date of delivery	Dec., 1921
Builder of car body	Osgood-Bradley Car Company
Type of car	Motor-passenger
Seating capacity	84
Weight—	
Car body	68,500 lb.
Trucks with motors	69,700 lb.
Equipment	32,000 lb.
Total	170,200 lb.
Bolster centers, length	47 ft. 7½ in.
Length over all	72 ft. 7¼ in.
Truck wheelbase	8 ft. 1 in.
Width over all	9 ft. $8\frac{5}{16}$ in.
Height to top of roof	13 ft. 3⅝ in.
Body	All steel
Interior trim	Steel and agasote
Headlining	Agasote
Roof	Monitor
Air brakes	Westinghouse AMU-2-16
Armature bearings	Brass
Axles	O. H. Steel
Car signal system	Westinghouse Air
Car lighting	Adams & Westlake or Safety Company
Center bearings	M. C. B.
Side bearings	Creco roller
Conduits and junction boxes	Osgood-Bradley pressed steel boxes
Control	Westinghouse multiple unit
Couplers	National Malleable Castings Company—extended horn
Curtain fixtures	National—cam type
Curtain material	Pantasote
Gears and pinions	Nuttall BP
Heater equipment	Consolidated—52 Truss plank—26 seat
Headlights	Golden glow—12-in. reflector
Journal bearings	Brass
Journal boxes	Cast steel 6½ in. x 11 in.
Lightning arresters	Westinghouse 379-s 3-time element relay with 392 overload trip
Motors	6 cars—4 Westinghouse 409-D 2 cars—4 Westinghouse 417
Sash fixtures	National
Seats	Heywood Brothers & Wakefield
Seating material	Pantasote
Slack adjuster	American type L
Springs	Triple elliptic
Step treads	Feralun
Trucks	Standard Motor Truck Company
Ventilators	Osgood-Bradley
Wheels	Steel-tired 42-in.
Draft gear	Radial for operation on loop at lower level of Grand Central Terminal
Current collector	Railroad Company's Standard A.C. pantagraph and D.C. third-rail shoes

The body design of the trail cars is identical with that of the motor cars. The trail cars, weighing 104,000 pounds, are equipped with Westinghouse ATU-1-16 air brakes. The wheelbase of the truck is 1 in. shorter than that of the motor cars. The journal boxes are 5 in. x 9 in., while the wheels are 36-in. forged steel instead of 42-in. steel-tired. The American type J slack adjuster is used instead of the type L used on the motor cars.

Franchises

Shawnee-Tecumseh (Okla.) Traction Company, is resetting its tracks in Tecumseh. When the franchise was granted the company it provided for a double-track line which was never built. The line was built to one side of the street and it is now being removed to the center of the street preparatory to paving the road. The company has also replaced the wooden structure across the North Canadian River with a new steel girder bridge.

Fort Worth-Lake Worth (Tex.) Interurban, has been granted a permit by the County Commissioner's Court of Tarrant County sitting at Fort Worth, Tex., for the construction of an interurban line from Fort Worth to Lake Worth, a distance of about ten miles. The permit was granted to A. P. Barrett, W. P. Welty and J. H. Jackson, and it is proposed to build the line from the terminus of the Rosen Heights Street car line to the Municipal Bathing Beach on Lake Worth. The lake is the outdoor resort not only for the City of Fort Worth but for all the country within a hundred miles of the city. The cost of the line, according to Mr. Barrett, is estimated at $350,000.

Track and Roadway

The Columbus (Ga.) Railroad is rebuilding its track on the North Highland line using heavier rails and additional switches. This was found necessary in order to operate an increased schedule. A loop is also being constructed at the end of the line.

United Railways & Electric Company, Baltimore, Md., will extend its line one mile from Carney, Md.

Winnipeg (Man.) Electric Railway, is tearing up its old tracks on Main Street between Sutherland and Selkirk Avenue and replacing them by new 85-lb. heavy type standard rail. The ties are also being renewed, and special intersections put in at Dufferin and Main, Euclid and Main, and Selkirk and Main. Work on improving the tracks on Sherbrooke street and Sargent Avenue is also proceeding.

Public Service Railway, Newark, N. J., will remove its tracks in the middle of Valleybrook Avenue, Lyndhurst, N. J., and install a double track system in that thoroughfare.

Phillipsburg (N. J.) Transit Company, has been directed by the city commission to make improvements between the tracks on Lewis, Heckman and South Main Streets, Phillipsburg.

Oklahoma Railway, Oklahoma City, Okla., has met with the approval of the citizens at a hearing before the corporation commission in its plan to spend $100,000 in improvements and extensions, with the exception of the proposal of the company to abandon a section of track on Twenty-eighth Street. Other changes will be approved, including the consolidation of the Capitol and Culbertson lines, in a way to improve the service.

Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., is making a number of improvements to the bridge spanning the Neshaminy Creek at Croyden, Pa. and the bridge is now closed to traffic.

Wichita Falls (Tex.) Traction Company, will at once begin construction on the new Ninth Street line, from Floral Heights into the business district of the city. Permit for this line was granted by the City Council recently. The new line will traverse Ninth Street from Broad Street and will eliminate a loop of about twenty blocks, thus effecting a material saving in the operation of cars to the Floral Heights section. The company also announces that a new line will be built to serve the southern part of the city which has been developed since the Southland line was built several years ago.

Dallas-Terrell (Tex.) Interurban Railway will enter Dallas via Forney Avenue, Stonewall Street and Parry Avenue, according to Richard Meriwether, vice-president and general manager of the Dallas Railway and also vice-president of the interurban company. Application will soon be made to the City Commission of Dallas for trackage rights. Work of grading for the line between Dallas and Terrell is going forward, Mr. Meriwether said, but several small stretches of right-of-way must be secured before the grading work can be completed.

Charlottesville & Albemarle Railway, Charlottesville, Va., will enlarge Jefferson Park.

Power Houses, Shops and Buildings

Pacific Gas & Electric Company, Sacramento, Cal., has installed a new 12,500-kw. steam turbo-generator at Station "C," Oakland. It is a General Electric machine.

Interstate Public Service Company, Indianapolis, Ind., has selected a tentative site for the construction of a dam on Fourteen Mile Creek, near Charlestown, Ind., with which to provide power for an extension of the company's lines from Charlestown through, New Washington Madison, and thence to Aurora, connecting with the line to Cincinnati.

Dominion Power & Transmission Company, Hamilton, Ont., suffered a loss of more than $75,000 when its substation on Victoria Avenue, North Hamilton, was struck by lightning during a recent storm. Repair work is well under way.

Trade Notes

The Michigan Railroad Company, Jackson, Mich., has equipped fifty-four of its cars with the new Root spring lifeguard manufactured by the Root Spring Scraper Company, Kalamazoo, Mich.

J. E. Slimp, after a two months' association with the E. T. Chapin Company, as manager of sales, located at Chicago, has resigned. The E. T. Chapin Company is a producer of Western red cedar poles and piling and has its home office at Spokane, Wash.

The Belden Manufacturing Company, Chicago, Ill., is now supplying standard magnet wire in even quantities of ¼, ½ and 1 lb. on small substantial fiber spools, the charge for which is very small. This makes the method of handling quite convenient where small quantities are used.

The Webster & Perks Tool Company, Springfield, Ohio, announces that the grinding and polishing stand and accessory department of its business has been sold in its entirety to the Hill-Curtis Company, Kalamazoo, Mich., which will continue this business. The Webster & Perks Tool Company will hereafter concentrate upon the exclusive manufacture and sale of the W&P line of universal and plain cylindrical grinding machinery.

The Globe Ticket Company, Philadelphia, Pa., celebrated its thirtieth anniversary of incorporation on June 25 by an excursion of its employees, numbering about 450, to Atlantic City. All were entertained as guests of W. E. Hering, president of the company. This company has just enlarged its factory space by almost 20 per cent, so that it now occupies eight floors of its building at 112-114 North Twelfth Street, Philadelphia.

The Root Spring Scraper Company, Kalamazoo, Mich., manufacturers of spring snow scrapers and lifeguards, reports that shipment was recently made of four hundred scrapers for the new cars now being built for the Detroit Municipal Railway. The scrapers were delivered to the manufacturers of the cars who will install them. Several smaller orders from old users of the equipment have also been filled.

Albert Taylor, manager North Atlantic District, the Electric Storage Battery Company, Philadelphia, died suddenly in New York on July 6. Mr. Taylor, who was a graduate of Princeton University, joined the Electric Storage Battery Company in 1898 as a salesman in its New York office, having previously been with the Edison General Electric Company, the United States Electric Company (absorbed by Westinghouse), and the Stanley Electric Manufacturing Company. In January, 1900, he was made assistant manager of the company's New York office and two months later became manager. In February, 1920, Mr. Taylor was selected as manager for the North Atlantic District, embracing branches in New York, Rochester and Boston, and covering the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York and part of New Jersey.

New Advertising Literature

The Ward Leonard Electric Company, Mount Vernon, N. Y., has issued a booklet describing its "vitrohm" (vitreous enameled) resistor units.

The Delta-Star Electric Company, Chicago, Ill., is distributing bulletin No. 36, devoted to its high-tension air-brake switch and outdoor substation equipment. This bulletin contains forty-eight pages and will be mailed upon request.

The William B. Scaife & Sons Company, Oakmont, Pa., has issued a booklet entitled "Facts About Water Purification for Steam Generation." This treats of the various substances to be found in water used for steam generation and describes method of softening and purifying the water to prevent scale and corrosion in the boiler.

The Thompson Electric Company, Cleveland, Ohio, has issued a folder describing its safety disconnecting hangers, which enable high lamps to be lowered away from the electric circuit for cleaning and renewals. The use of these hangers makes reflector and lamp cleaning easy and safe and much more likely to be done since they bring this maintenance work down to the ground instead of requiring some one to climb to it.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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Wanted, Specific Data on Electric Locomotives

HASN'T there been enough general discussion on certain features of heavy electrification? Most engineers agree that electrification generally will decrease the operating ratio by increasing the traffic and by saving coal, but that each problem is a case for special study as to the ultimate saving involved and the system of electrification to be chosen. All the foreign commissions have ended their study of American systems and installations by saying "it depends on the specific application."

Why should there not be some more definite discussion on the electric locomotive? Shall the motors be built on the axles, should direct gearing or quill drive be used, should connecting or coupling rods be employed for transmission, and how does freight or passenger service affect these decisions? What is the best method to lubricate the motor, and where should the motor be placed so that it can be inspected and repaired with the greatest ease? What kind of control should be used and where should it be located? What real basis for rating the motors can be devised?

On matters of this sort there seem to be plenty of opinions of a diverse character, but a great dearth of reliable data collected from service operations. There have been enough installations of various kinds to accord data which would fix some features of design and enable railway men to have some definite knowledge in regard to heavy electrification equipment. Topics along this line could well be selected for some of the coming association or club meetings on heavy electric traction rather than the general economies of the subject.

How About a Cushion?

THE use of equipment until it falls to pieces, the deferred maintenance on tracks, the worn crossings and high rates of acceleration and braking have developed the fact that the failure of many car parts is due to fatigue and to metal crystallization caused by shock loads.

A bad track necessarily increases the stresses on a car by causing the frame to sway, by at times raising diagonally opposite wheels and by throwing parts out of line on curves. It also injures and fatigues the metal in the axles, breaks bearings and causes intangible deterioration to the car, since the springs have a limited range of operation and serve only to relieve the shocks and strains on certain parts.

Another result of these conditions is the effect on service quality. Every passenger appreciates a car that does not jump or jar because of bad tracks. Every railway manager realizes the effect of bad tracks on schedules and power consumption and desires more riders to patronize his system. What are the remedies?

There are two which come to mind. One of these is to put the tracks and special trackwork in good shape. Money is not plentiful but enough should be found to purchase a grinder and repair tools and to pay repair gangs, even if some other things are neglected. The second remedy may be to make some change in car designs in the way of more cushions on the car parts. Educated to some extent by the rubber-tired vehicles with their easy riding qualities, people today are more particular about this point than they were. They like easy riding street cars as well as automobiles. This is a matter which can well be considered by car designers. Aside from the advantages derived in gaining public favor and thereby increasing patronage, there will also be quite tangible results in reduced maintenance costs.

How Can Mass Transport Remain a Monopoly?

THE disconcerting ease with which any desired kind of automotive service can be established by companies or individuals is something that threatens absolutely to imperil the permanence and the growth of the cheaper and basic forms of transport on rails which still remain necessary for the heavier work in moving the public. An unkempt, irresponsible example in the United States and Canada has been the jitney. In Great Britain a new antagonist, in addition to existing bus companies, has put in an appearance during this year through the falling away of certain war-time restrictions. Any one who now desires to establish a motor-bus service can do so upon payment of the national license fees for public utility vehicles without depending upon the consent of the local authorities. Thus, in any city where the community itself may not have secured the right to run buses, it will be possible for others to do so when, where and how they please.

Truly, this is an absurd situation, for in all the generations since the establishment of transportation franchises those who served as public carriers have had certain, definite responsibilities. But the development of the automotive vehicle has been so amazingly swift that the law is still a long way from dealing with it in a way that will protect those who have invested most in giving the public what might be called the "substantial" transportation service. This is indicated also by the fact that Parliament has just refused steam railroads the blanket right to run auxiliary or co-ordinating bus services, while making this grant freely to all others except municipalities. The reason for this invidious exception of the railroads has been attributed to a deliberate effort to stimulate wasteful competition instead of promoting co-operation on the part of many elements of the public—especially the commercial classes who ought to know that in the long run all waste must be paid for.

The present conditions in Great Britain offer a clear warning to both the electric and steam railways on this side that they had better hurry to get all the motor-bus rights possible if they want to avoid possible like treatment of them in the early future. Something more constructive than anti-jitney ordinances is needed if all the mass transportation in a district is to be kept under the direction of the organization with the greatest resources and experience and of proved reliability. That organization is the electric railway.

Much to Be Learned on Both Sides

DURING the past six months visitors to America have included railway managers and engineers from a number of countries abroad, seeking light on various traction problems. This fact should not beguile Americans into a belief that their practice is perfect or even better in all respects than that across the Atlantic. In one particular it is true America leads the world. It has more miles of track electrically equipped than any other country, and for this reason this country may be ahead in many technical features as regards transportation over rails. There is a much larger field here than in any single country abroad for a device which promises a saving in operating expenses, so it is not surprising that inventors and good inventions abound. It is not that European managers are behind their American colleagues in appreciation of technical advances but there is not the same opportunity for their development.

On the other hand, an obligation to depend on one's own resources has often been the means of developing an acute sense for utilizing the means at one's disposal, and it is probably true that American visitors to foreign shores would find as much in electric railway lines to instruct them as will be found here by those who come here from Europe and South America. This is particularly true in the commercial aspects of the business as well as in the co-ordination of various means of transit, such as bus and trolley. Where traffic is scant, prospective passengers have to be urged to take the cars, and this has made the art of merchandising transportation, with all that that expression implies, one worth cultivating, and American managers could do worse than to adopt some of the best traffic stimulators used abroad. To paraphrase the famous saying of Sir Roger de Coverley, "There is much to be learned (said) on both sides."

Limited Financing Can Be Done

A GOOD EXAMPLE of how an electric railway company may overcome the extreme difficulty of securing new money for capital expenditures is afforded in the accomplishment of the Gary Street Railway, related elsewhere in this issue. The officials met with that refusal from the usual financing agencies with which many railway executives are familiar, and they decided to see what could be done at home. Some badly needed reconstruction of important track on a street undergoing paving provided the necessity from which sprang new ideas. It was decided to try out the employees as a source of money, and the response was immediate and surprisingly generous. Having themselves a financial interest in the enterprise, the employees thereafter made ideal salesmen to peddle more of the same securities to the public, and they succeeded and incidentally earned a small commission on each bond sold.

The plan is particularly appropriate for the small company where the employees can be closer to the management. But it has also been followed with reasonable success in some of the large utility companies. Not only does it accomplish the immediate need of the company for new money, but it gives the employees a new and far more tangible interest in the success of the company and furthermore extends the distribution of these securities among local residents, which is greatly to be desired. Railway companies, both large and small, may well indeed seriously examine this Gary experience. The indirect results of better employee and public relations may be of even greater importance than the direct result of securing capital.

When one sees successful financing on such basis as this, it seems reasonable to suggest that no railway company should be willing to say that it cannot finance any badly needed new work until it has tried and exhausted the possibilities of employee-customer financing. Of course, there must be the condition that the securities so offered are sound and the prospects of earning the promised interest or dividends good.

Electrolysis—and Remedies

ELECTROLYSIS is to railway companies like inductive interference to power companies—it refuses to take a standardized treatment and causes constant irritation.

Local conditions make each cause of electrolysis worthy of special study. The effects of soil corrosion, soil constituents, system layout and equipment and climate conditions are so marked and the opinions of engineers differ so greatly as to the limits to be set for track to earth potentials, that each example of disease affords opportunity for a special clinic. Many years of experience in many localities, however, have afforded data and remedies. With these available it should be possible to cure each case after the correct diagnosis has been made.

There have been pro and con arguments on the "pipe drainage" system, the "insulated negative return" system, the "welded track" system, and there is the rather unique "three-wire" system used in Los Angeles, Winnipeg, Omaha, Milwaukee, and Wilmington. In some of these cities the three-wire system has been used to supplement or to supersede other systems. The data available do not prove it to be a cure-all for electrolysis but do prove that it greatly improves conditions if used with intelligence. It still appears that a well-bonded track or a welded rail track is the best general remedy, although soil conditions, light rails and heavily motored equipment, etc., may require the supplementary use of other systems.

Electrolysis is a fact that must be faced and the increased use of underground power and telephone cables, water and gas pipes, reinforced concrete and steel structures have increased the seriousness of its occurrence. In these days when track maintenance has been deferred by many railway properties, it would be a wise move to check up on track and electrolysis conditions and, if necessary, remove the causes before agitation by others affected stirs up a hornet's nest of public sentiment. The railways cannot afford to antagonize public sentiment by neglecting to remove causes for political or technical bludgeoning by outsiders. The fences must always be watched carefully in the railway industry.

Three-Wire Railway Distribution in Wilmington

Improves Regulation and Prevents Electrolysis—Trial Proves System Best Adapted to Radial City Districts—Substation Equipment Must Be Flexible

By A. P. Way
The American Railways, Philadelphia

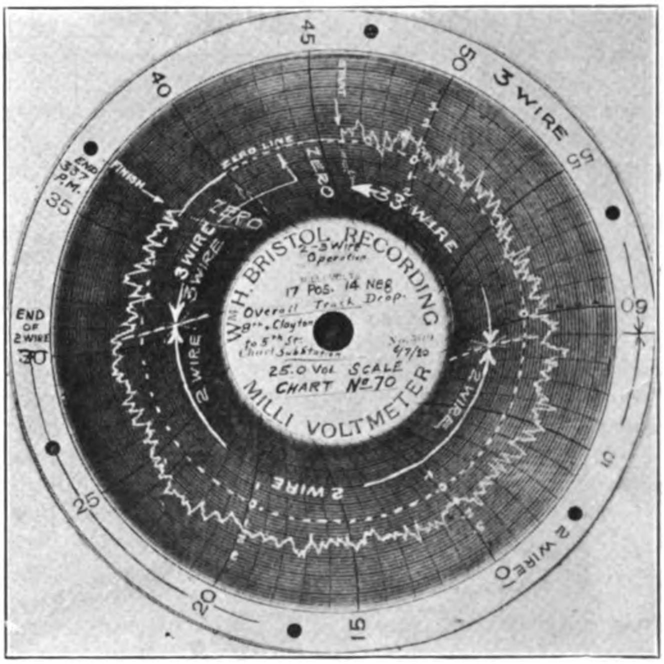
DURING 1915 there was a consolidation of electric railways in Wilmington, Del., and one large economy was accomplished by shutting down a steam generating plant in the southwest section of the town in order to carry the entire railway load from a larger plant in the northeast section nearer the load center. This necessitated the use of motor-driven boosters to deliver satisfactory operating voltage to two long suburban lines; also the distance of feeding some other divisions was materially increased. No provision had been made to take care of the additional return current into the plant, which was supplying a normal combined load of about 3,000 amp. with short-period peak loads of 4,000 to 4,500 amp. To make matters worse in regard to this return current, the Brandywine Creek was located between the plant and about 90 per cent of the load with only two single tracks on bridges and insufficient copper to supplement the rails.

When both plants were operating there were neutralizing potentials in the territory between them, making a resulting small track drop between stations with a corresponding small tendency for stray current, but when all current flowed in one direction the track drop was proportional to the sum rather than the difference of the currents.

It did not take long for the gas, water and telephone interests to find that their underground structures were in danger and they promptly notified the railway company. In that this difficult problem was worked out in close co-operation by engineers of all utilities interested, it is thought that a story as to how results were obtained and the difficulties encountered would be of interest to railway engineers.

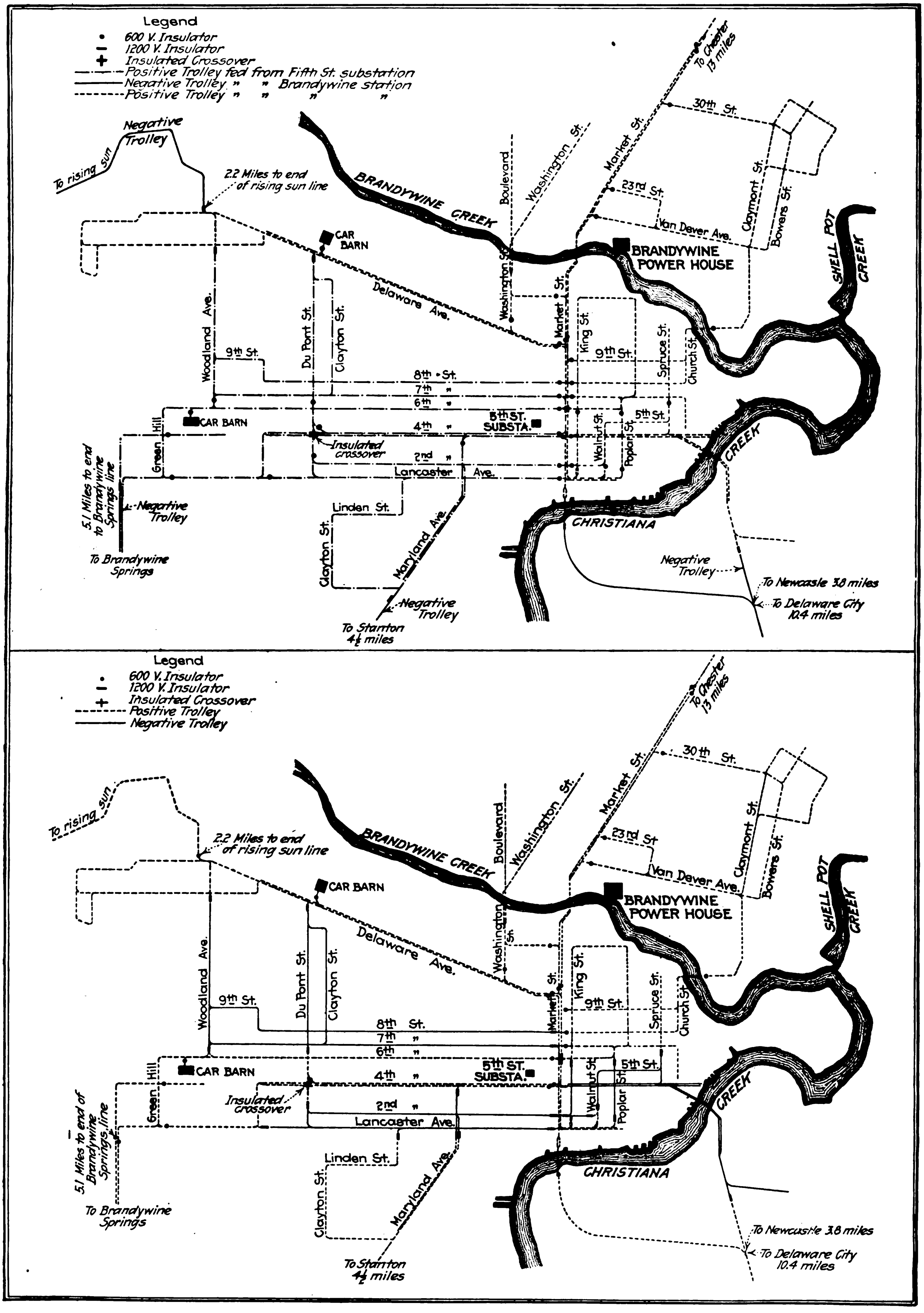
A very brief study of the distribution and a few preliminary tests showed clearly the cause of trouble, and without making an elaborate survey quick remedies were applied to remove temporarily the stray current in the neighborhood of the power house before a more thorough study could be made for more permanent remedies. It was found that all the underground structures were carrying considerable current toward the power house and these showed a relatively large positive potential to earth and to rails near the plant with the exception of the lead-covered power cables which were liberally drained at the plant. Further, there was considerable potential difference between different underground structures showing that there was a tendency for an exchange of current between them. To change conditions new drainage cables were erected to points along telephone cables and gas and water pipes on the south side of the creek and the underground structures nearer the plant were further drained while drainage of power cables was not increased. These steps were taken to reduce potentials between underground structures and to reduce potentials to earth but still to favor lead-covered cables to some extent. Considerable rebonding and renewal of jumpers about special work were accomplished as promptly as the much-disturbed labor conditions in that large powder manufacturing district in war time would allow.

A number of conferences of engineers of the utilities concerned were held and a plan was presented and put in operation. It was conceded that two or three substations in outlying districts would be the best remedy but labor was scarce and manufacturers could not supply the necessary equipment. After much delay two 500-kw. railway rotary converters were installed in the Fifth Street lighting substation near the center of the city railway load and 1¼ miles from the power house. These rotaries took care of nearly 20 per cent of the total load. The generators and switchboard at the power house were arranged to supply a three-wire railway distribution with the neutral connected to rails, and the negative bus to feeders of four long suburban lines to the west and south of the city, two of which had boosters. The positive bus was connected to the feeders nearer the station and to the north. The negative load averaged nearly 30 per cent of the remaining load on the station. This arrangement of trolley polarity and relative location of stations is shown in an accompanying illustration.



SPECIMEN CHART SHOWING OVER-ALL TRACK DROP WITH TWO-WIRE AND THREE-WIRE DISTRIBUTION

Two of the engine-driven generators were arranged with shunt fields separately excited through D.P.D.T. field switches by which either field could be connected to the positive or negative bus as desired. A simple fool-proof interlocking plug switch was used as a mechanical barrier to prevent the main switch being thrown to the wrong bus and also to supply field current to the proper terminal of the D.P.D.T. field switch. The four feeder panels were provided with double-throw switches in order that the feeders could be connected to either the positive or negative bus. The series boosters automatically functioned properly.


Legend
• 600 V. Insulator
− 1200 V. Insulator
+ Insulated Crossover
Positive Trolley fed from Fifth St. substation
Negative Trolley " " Brandywine station
Positive Trolley " " " "
Negative Trolley
To rising sun
2.2 Miles to end of rising sun line
BRANDYWINE CREEK
CAR BARN
Delaware Ave.
Boulevard
Washington St.
Market St.
To Chester 13 miles
30th St.
23rd St.
Van Dever Ave.
Claymont St.
Bowers St.
BRANDYWINE POWER HOUSE
SHELL POT CREEK
Woodland Ave.
Du Pont St.
Clayton St.
King St.
9th St.
Spruce St.
Church St.
8th St.
7th "
6th "
5th St.
5th ST. SUBSTA.
4th "
Green Hill
Walnut St.
Poplar St.
Insulated crossover
2nd "
Lancaster Ave.
CREEK
CHRISTIANA
5.1 Miles to end to Brandywine Springs line
Negative Trolley
To Brandywine Springs
Linden St.
Maryland Ave.
Negative Trolley
To Stanton 4½ miles
Negative Trolley
To Newcastle 3.8 miles
To Delaware City 10.4 miles
Legend
• 600 V. Insulator
− 1200 V. Insulator
+ Insulated Crossover
Positive Trolley
Negative Trolley
To rising sun
2.2 Miles to end of rising sun line
CAR BARN
BRANDYWINE CREEK
Boulevard
Washington St.
Market St.
To Chester 13 miles
30th St.
23rd St.
Van Dever Ave.
Claymont St.
Bowers St.
BRANDYWINE POWER HOUSE
SHELL POT CREEK
Delaware Ave.
Woodland Ave.
Du Pont St.
Clayton St.
9th St.
8th St.
7th "
6th "
CAR BARN
4th "
5th ST. SUBSTA.
5th St.
Green Hill
Insulated crossover
2nd "
Lancaster Ave.
Walnut St.
Poplar St.
CREEK
CHRISTIANA
5.1 Miles to end of Brandywine Springs line
To Brandywine Springs
Linden St.
Clayton St.
Maryland Ave.
To Stanton 4½ miles
To Newcastle 3.8 miles
To Delaware City 10.4 miles

Above, Original, and Below, Present, Arrangement of Three-Wire Distribution System in Wilmington

Out on the line 24-in. section insulators were provided to separate positive and negative trolleys. Shorter ones would probably have been adequate but those used were found in a manufacturer's stock at reasonable prices. For mechanical reasons a long section insulator was selected instead of two standard 8-in. insulators and those used have given perfect satisfaction. The location of these insulators was carefully selected in order to reduce the probability of both trolley poles being put up at once and so short circuit the insulator, and it was found that the best location was half way between intersecting streets. Through an error opposite polarities were placed on each side of some standard 8-in. section insulators, in which case arcs were carried and maintained across insulators by passing cars until the insulators were destroyed or the breakers at the plant opened.

CITY TROLLEY POSITIVE, SUBURBAN NEGATIVE

The current for the four suburban lines to the west and south of the city passed outward over the same tracks through the central district that carried the return current from that central district, so that the resulting current flow in the city tracks was much reduced, which correspondingly reduced the average over-all potentials and therefore the tendency for stray current. This practically eliminated the positive areas of underground structures about the power house and the current flow in drainage was reduced to values only one-third or a quarter of previous values. This is what would be expected when the total resulting current returning to the station was approximately only one-third, although the railway output was reduced by only about 20 per cent by transferring some load to the Fifth Street substation.

In this three-wire distribution in Wilmington only entire feeders were reversed in polarity since it would have complicated car operation to subdivide them further. Moreover, there was not enough copper to give satisfactory voltage on further subdivision. However, in these long sections of positive track there was a tendency for the underground structures to carry a small portion of current and deliver it to cars operating over them. This caused a small floating positive area along these structures directly under the cars, but since this resulted in a two-way voltage condition at any given point, of relatively short duration of positive polarity, it was considered that the actual corrosion of these structures was quite negligible. This conclusion was substantiated by a very painstaking and practical investigation made by the National Bureau of Standards and published in their Technological Paper 72, also in proceedings of A.I.E.E., 1916. However, certain owners of underground lead structures were not ready to accept the idea of practical immunity from damage, particularly in the case of the nationally important New York-Washington underground telephone line that passed for a number of miles under one of these tracks of reversed polarity. This telephone cable was of such great importance during the war that all agreed that no chances could be taken. In this case the cable was made negative to earth at all times by draining it at a number of points through limiting resistances with separate line connected to the negative bus of the Edison direct-current system at the Fifth Street substation, the neutral of which is grounded indirectly to the railway return bus and therefore to the telephone drainage. Later a motor-driven booster was used as it was more economical. Two-way voltage conditions also existed in reference to gas and water pipes in some localities, but these were generally of short duration of positive polarity.

PECULIAR EFFECTS ON SUBURBAN SECTIONS

The distribution of current to long suburban sections of positive rail beyond a city network of normally negative rail leads to some peculiar conditions. One suburban line of positive trolley runs to the northeast along the Delaware River for 14 miles to Chester, where it is also supplied from another station. Along this line near Naaman, about 8 miles from Wilmington, where the tracks cross a small stream, it was noticed that the telephone lead-covered cables showed a two-way voltage condition to earth and always negative to track whenever the Wilmington plant was running three wire. This positive condition had no relation whatever to operation of the cars of that division and it was evident that current was leaving the cables for some other section of the railway distribution. An explanation was advanced that some division of positive rail was responsible, but engineers representing underground structures would not accept this statement until it was definitely proved by graphic charts.

Whenever this load of reversed polarity was removed or supplied by current from positive trolley, the telephone cable at Naaman was decidedly negative to earth at all times. Apparently the tracks did not carry all the positive current required for the long suburban line to Delaware City, and some of the current actually did flow along the tracks and telephone cable to the northeast and pass into moist earth near Naaman to reach the tracks toward Delaware City by way of parallel low-resistance paths along the river, although Naaman and Delaware City are 18 miles apart as the crow flies. Part of the positive condition of telephone cables under the Stanton line, which was remedied by the boosted drainage line, was similarly caused by current endeavoring to get to this same Delaware City line of reversed polarity.

FAILURE OF GENERATOR FORCES CHANGES

However, in April, 1918, before the difficulties were corrected, the largest railway generator in the Brandywine plant was damaged beyond repair which required quick action and allowed radical changes. It was deemed inadvisable to replace the lost railway generating capacity in the Brandywine plant, as it was some distance from the load center. Fortunately, at an associated railway property there were two 750-kw. rotaries available which were rushed to Wilmington and installed in the Fifth Street substation with the two 500-kw. rotaries already in operation. This increased the substation capacity sufficiently to allow it to carry 75 per cent to 80 per cent of the entire railway load. Later a substation was installed at New Castle which supplied the Delaware City line south, thus removing the expensive operation of the booster and the difficulties of stray current from this long suburban line. With the Brandywine plant carrying only the load north of the Brandywine Creek and the Delaware City line supplied separately, it was found that the balance of the load could not be carried satisfactorily from the Fifth Street station without an expensive installation of negative copper to supplement the tracks with some adaptation of an insulated negative return system to prevent unreasonable stray currents, or without resorting to an unlimited pipe drainage system. This latter was opposed by owners of underground structures and not generally approved by the railway management. Rather than install another substation beyond the city limits to the southwest, the three-wire distribution was again used, but quite differently from the former practice at the Brandywine plant.

In the substation, rotary converters could be arranged for reversal of polarity more conveniently than generators, as they could be maintained as self-excited machines. A plan of mechanical interlocking was provided by field plug switches to prevent the main switch from being thrown to the wrong bus, and the switchboard was provided with positive and negative buses of 1,200 volts with neutral connected to rails and certain feeders were provided with double-throw switches similar to the arrangement at the Brandywine plant for its feeder panels.

ELECTROLYSIS TESTS—WILMINGTON, DEL.—COMPARISON THREE-WIRE AND TWO-WIRE OPERATION

Date	Time		Oper.	Positive Post	Negative Post	Chart No.	Dist.	Max. Volts		Average Volts				Alg. Aver.	Remarks
	From	To						+	—	+	%	—	%		
Location—Front and Washington Streets															
6/11/20	11.10	11.30	3-W	Earth	Cable	75	..	0.3	0.22	0.08	60	0.04	40	...	Cable negative 60%
	11.30	12.00	2-W	Earth	Cable	75	..	0.31	......	0.13	100	......	...	...	Cable negative 100%
	12.00	12.08	3-W	Earth	Water	76	..	0.8	0.4	0.35	99	Momentary		...	Water negative 99%
	11.30	12.00	2-W	Earth	Water	76	..	0.9	0.016	-0.3	99	Momentary		...	Water negative 99%
	11.00	11.30	3-W	Gas	Earth	77	..	0.088	0.100	0.015	40	0.030	60	...	Gas negative 60%
	11.30	11.36	2-W	Gas	Earth	77	..	0.100	0.06	0.030	50	0.020	50	...	
	11.00	11.30	3-W	Cable South End	Cable North End	78	4′	3.8MV	......	1.5MV	100	......	...	...	Current flow north 100%
	11.30	11.36	2-W	Cable South End	Cable North End	78	4′	4.4MV	......	3.0MV	100	......	...	...	
Location—Front and Tatnall Streets															
6/11/20	2.00	2.30	3-W	Cable	Earth	79	..	......	1.5	......	...	0.8	100	...	Too heavily drained
	2.30	2.37	2-W	Cable	Earth	79	..	......	1.6	......	...	1.2	100	...	Too heavily drained
	2.00	2.30	3-W	Earth	Gas	80	..	......	0.12	......	...	0.04	100	...	Gas positive 100%
	2.30	2.37	2-W	Earth	Gas	80	..	......	0.14	......	...	0.08	100	...	
	2.00	2.30	3-W	Earth	Water	81	..	......	0.18	......	...	0.08	100	...	Water positive 100%
	2.30	2.42	2-W	Earth	Water	81	..	......	0.30	......	...	0.16	100	...	Water positive 100%
	2.00	2.30	3-W	Cable South End	Cable North End	82	5′	12MV	......	7MV	100	......	...	...	
	2.30	2.38	2-W	Cable South End	Cable North End	82	5′	12MV	4MV	9MV	60	2MV	40	...	Current flow north
Location—Delaware Avenue and Jackson Street															
6/14/20	3.09	3.30	3-W	Cable	Earth	90	..	......	1.4	......	...	0.8	100	...	
	3.30	4.00	2-W	Cable	Earth	90	..	......	2.2	......	...	1.3	100	...	
	3.09	3.30	3-W	Cable South End	Cable North End	91	..	4.8MV	......	1.8MV	100	......	...	...	
	3.30	4.00	2-W	Cable South End	Cable North End	91	..	......	2.4MV	......	...	1.4MV	100	...	
	3.17	3.30	3-W	Gas	Earth	92	..	......	0.1	......	...	0.03	100	...	
	3.30	4.00	2-W	Gas	Earth	92	..	1.8	0.1	0.8	65	0.05	035	...	
	3.16	3.30	3-W	Gas	Bell cable	93	..	1.0	......	0.35	100	....	...	...	
	3.30	4.00	2-W	Gas	Bell cable	93	..	1.4	......	0.70	100	....	...	...	
	....	....	3-W	Cable	Gas	Ind.	..	......	0.4	......	...	0.2	100	...	
	....	....	2-W	Cable	Gas	Ind.	..	......	1.4	......	...	0.6	100	...	
Location—Delaware Avenue and Adams Street															
6/14/20	2.00	2.30	3-W	Cable	Earth	94	..	......	1.0	......	...	0.4	100	...	
	2.30	2.40	2-W	Cable	Earth	94	..	......	1.4	......	...	0.8	100	...	
	2.00	2.30	3-W	H. P. gas	Earth	95	..	......	0.25	......	...	0.14	100	...	
	2.30	2.45	2-W	H. P. gas	Earth	95	..	......	0.25	......	...	0.14	100	...	
	2.00	2.30	3-W	Cable South End	Cable North End	96	7′	2.0MV	0.4MV	0.6MV	60	0.01	40	...	
	2.30	2.40	2-W	Cable South End	Cable North End	96	7′	1.6MV	3.2	0.9MV	50	2.0	50	...	
	2.00	2.30	3-W	High pressure gas	Water	97	..	......	0.4	......	...	0.3	100	...	
	2.30	2.45	2-W	High pressure gas	Water	97	..	......	0.4	......	...	0.3	100	...	
	2.15	2.30	3-W	High pressure gas	Rail	Ind.	..	......	3.8	......	...	1.5	100	...	
	2.36	2.49	2-W	High pressure gas	Rail	Ind.	..	......	4.4	......	...	2.0	100	...	
	....	....	3-W	Cable	Gas	Ind.	..	......	0.6	......	...	0.4	100	...	
	....	....	2-W	Cable	Gas	Ind.	..	......	0.6	......	...	0.4	100	...	
	....	....	3-W	Bell cable	Power cable	Ind.	..	......	0.3	......	...	0.1	100	...	
	....	....	2-W	Bell cable	Power cable	Ind.	..	......	0.3	......	...	0.1	100	...	
	....	....	3-W	Cable	Track	Ind.	..	......	2.2	......	...	1.2	100	...	
	....	....	2-W	Cable	Track	Ind.	..	......	2.2	......	...	1.2	100	...	

An accompanying illustration shows the relative location and extent of positive and negative trolley sections. It will be noticed that all the sections supplied with negative trolley have sections of positive trolley beyond and on either side and to some extent nearer the substation. With the interconnection of tracks and cross lines the over-all potential drop in any section of one polarity is small and the exchange of current from track of one polarity to track of opposite polarity is much less than by the original plan when the long lines of negative trolley extended beyond the city limits. The station output averages about 2,000 amp. with peak load of about 3,000 amp., 20 to 30 per cent of which is supplied to negative trolley.

A conception of the principle of the three-wire distribution can best be obtained by considering the accompanying illustration which assumes a total of nine cars taking 50 amp. each. With three cars operating on negative trolley in the middle of the group the over-all track drop from *D* to *A* would be that caused by 150, 100 and 50 amp. between *A* and *B*, and the gradient is always toward the station. With all cars operating from positive trolley the over-all track drop from *A* to *D* would be the result of 450, 400, 350, 100 and 50 amp., or seven and a half times the drop in the first case, assuming that the load is equally distributed and the track is all of the same resistance throughout. Furthermore, the drop from *B* to *A* in the three-wire systems will be one-quarter the drop between the same points under two-wire operation and the current returning to the plant will be one-third.

TESTS SHOW IMPROVED CONDITIONS

After the installation had been completed for some time, a joint test was made by representatives of gas, water, telephone and railway interests to determine the difference between two- and three-wire distribution out of the Fifth Street substation. In this test one-hour graphic charts were used almost entirely, showing about half an hour's record of three-wire operation followed by about half an hour's record of two-wire operation at the same location without change of instruments or connections. This was accomplished by simply throwing the double-throw feeder switches at predetermined times.

Thirteen of the fourteen records of over-all track voltage drop to outlying points showed a reduction of

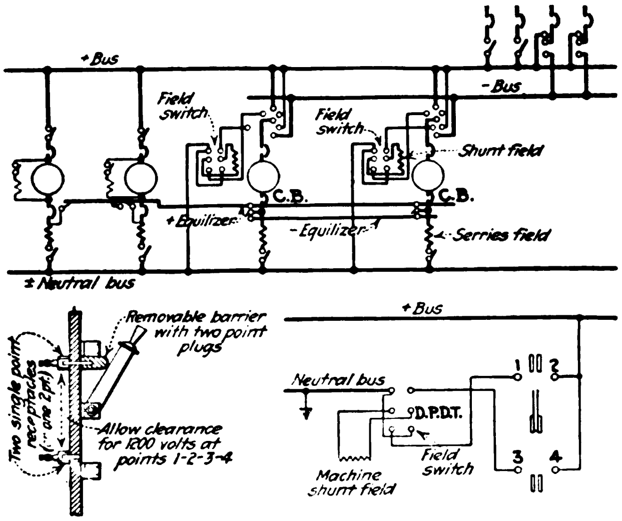
30 to 60 per cent, three records showed short-period reversals. Current flow in telephone lead-cable drainage was reduced by about 40 per cent. Current flow in power lead-cable drainage was reduced about 60 per cent, and current in the drainage of gas and water pipes was reduced about 50 per cent. In the area supplied by the Fifth Street substation current flow in underground structures was reduced from 10 to 80 per cent but in some outlying sections there were reversals of current flow varying from 10 to 30 per cent of the time. The potentials between underground structures and from structures to earth were generally reduced as would be expected. A total of about 300 graphic records were made and many readings with indicating instruments were recorded, but the former were relied upon where accurate comparisons were to be made, since they introduced the time element.

A sample graphic chart is shown in an accompanying illustration, as is also a form used in tabulating records for comparison.

CONCLUSIONS

The three-wire distribution as first installed by making remote suburban lines operate with a negative trolley was not very satisfactory, and it would doubtless have required considerable expense to make it more effective. The negative trolley section hung approximately midway between sections of positive trolley is much better in that the average potential gradients are always toward the plant. Furthermore, a continuous gradient toward the end of the line all the time on long suburban lines with negative trolleys is objectionable.

The three-wire operation of Fifth Street substation substantially reduced over-all track potentials, current flow in underground structures, drainage currents into substation, potentials between structures and potentials between structures and earth to such values that equivalent results could be accomplished only by a very heavy expenditure for return copper or the construction of a substation to take care of suburban lines.

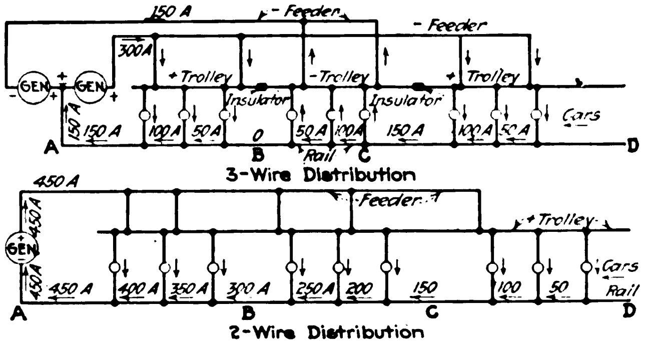


SCHEMATIC ARRANGEMENT OF GENERATORS AND SWITCHES FOR THREE-WIRE OPERATION

The operating voltage at cars, particularly at remote points in the neighborhood of junction between positive and negative trolleys, was considerably improved.

At many points a two-way voltage condition existed between some underground structures and earth or other structures, but where the positive conditions were of relatively short duration and small values it was considered that damage could not easily occur. There have been one or two locations of cable failure where these two-way voltage conditions of short duration of positive polarity exist, but since there have been cable failures where cables are continuously negative it is held that the predominating cause is something other than stray currents.

The three-wire railway distribution provides a very economical and practical plan, particularly for city districts of heavy loads where there are numerous parallel and intersecting tracks. The expense of providing the additional distribution bus and reversing the polarity of one or more machines, or its equivalent, is very reasonable. Care should be taken to have a good load factor on the machines carrying the reversed polarity. The greatest economy is derived in the saving of return copper. At Wilmington there are only about 2,400 ft. of 500,000 circ.mil return copper cable in addition to an equivalent of 1,200 ft. of 1,000,000 circ.mil cable necessary to connect the station return or neutral bus to the tracks at the two nearest locations.



DIAGRAMMATIC COMPARISON BETWEEN TWO-WIRE AND THREE-WIRE RAILWAY DISTRIBUTION

In Wilmington today the three-wire system for railway distribution from substations has been applied with success to the entire system with the exception of about 10 per cent of the load north of Brandywine Creek, which is carried by the power house and a small substation used to supply a suburban line south of the city.

Motor Trucks in New England

UNDER the title "Root, Hog or Die; the New Englander and His Railroads," Philip Cabot discusses New England transportation problems in the August *Atlantic Monthly*. While most of the article relates to steam railroad problems, the author has quite a little to say about the competition being given to the railroads in freight transportation by motor trucks. According to him, at the present time, 2,000,000 ton-miles are being made annually by trucks in New England, and five years hence, if this growth continues, the figure will be 60,000,000. The cost of this transit in depreciated highways falls principally on the taxpayer, and 2,000 miles of highway will have to be reconstructed in Massachusetts alone during the next five years. The cost at $40,000 a mile will amount to $80,000,000. Even a tax of 10 cents a ton-mile (corresponding to about $600 a truck per year) would not cover the cost of destruction to the roads caused by these trucks. The proper agency for carrying freight in New England, in the author's opinion, is the railroad, except for distances of 6 miles or less.

The Problem of the Fare

Lord Ashfield in a Magazine Article Analyzes the Factors on Which Fares Should Be Based and Discusses the Relative Merits for British and American Cities of the Zone or Differential Fare

IN THE *19th Century and After* for June, 1921, Lord Ashfield, chairman of the board of directors for a number of the transportation systems in London, contributes an article of 9,000 words or more on flat and zone fare systems. At the beginning of his article he points out that London and New York present parallel features in urban transport, but that New York has the flat fare system based on 5 cents, whereas London has a differential fare system ranging according to distance from 1d. to 1s. or more. Continuing, he says, in part:

Both systems appear to have a general development of passenger traffic, and recent figures of rides per head as shown below are uncannily similar:

RIDES PER HEAD

	1920	1913
London	404	301
New York	421	352

The average fare in New York is just over 5 cents, whereas in London it is just over 1¼d. or about a half. In 1920 investigation of financiers and experts in New York indicated that 8 cents was necessary, and in London the figure was nearly 3d. This raises the issue of the comparative merit or demerit of the contrasted systems of fares. The subject will be discussed under four heads, namely: (1) The fare as the index of the value of the service received; (2) the fare as the index of the value of the service rendered; (3) the fare in relation to the cost of service, and, finally (4) the fare in relation to public or civic policy.

If persons live scattered around in suburbs and work in the center of the city and each day are carried to and from their work, the value of the service received by each of them may be said to be identical. It is not of any more real value to be carried 5 miles than 3 for this necessary purpose. In fact, the travel is often a bother, and the time occupied is an expense. Is it therefore reasonable to add to the expense by charging a higher fare? There in brief is the economic argument which leads to the flat fare —one price for all rides. But though the bare service received by the passenger may be identical in value for all, the effects of the service are dissimilar, and, overlooking for the moment other considerations, the real value might just as well be reflected in the fare as in the rent or rates. For instance, in London the rent for equivalent accommodations normally falls as the center is left. In New York it is reported that the rent for the same accommodations in upper New York is the same as in lower New York and that the accommodation is the same.

The flat fare of America is the consequence of an accidental circumstance, the denominations of the coinage. The smallest effective coin in constant use in England is a penny. In America it is the nickel. This disparity in value at the very starting point of a fare system must be a governing factor in the development. In England a differential fare scheme must start with a penny as its initial fare and the question is: What is a fair pennyworth of travel? In the small cities it was found that the cost of the average length of journey taken in them was amply met by the collection of a penny from every passenger. In the larger cities, where the distances to be covered were greater, the penny was insufficient, and as the penny was deemed the indispensable starting point for a fare system, additions were made to it for the further distances, and the differential fare became inevitable.

In America the same question was presented except that it was: What is a fair nickel's worth of travel? Apart from the recent breakdown of the 5-cent fare owing to the war, there were cases in which the extension of the cities had already proved too great a strain upon it. In Chicago and New York (1916) the length of journey had reached 6½ and 5¾ miles respectively on the elevated and subway lines, while on the street railways it exceeded 4 miles, and revision in some form could not long have been avoided. Would American practice follow English practice and from the initial flat fare develop as required fares at higher rates for the extending routes of street railways?

The 5-cent flat fare having prevailed for so long a period and the development and extension of the cities having taken place under the conditions established by it, it has become the ingrained custom for America. The greatest resistance is shown to the introduction of the zone or differential fare. It is realized that it must mean alterations in land values and property values, distribution of population, decentralization of the city and the creation of local centers of activity and amusement. Every vested interest is opposed to it. It is a change of a revolutionary character. Therefore America struggles to keep the flat fare, and it has disappeared in favor of a zone fare system in thirteen cities only.

The question of giving change is also a consideration. No one cares for odd cents.

When a flat fare reaches a level of 10 cents its acceptance must be held to indorse the principle that every ride, irrespective of length, is the performance of service of equal value to every rider. But as a measure for expanding the volume of traffic to the utmost it cannot be sound. Surely some must pause and reflect on the value of the service to be received before paying away their dimes for a brief journey. There is interesting confirmation of this in the average carloads of American and English street railway systems. In spite of the fiercer temporary congestion in American cities, the average carload on an English system is about half as heavy again as on an American system. This is the refreshing fruit of the low initial fares which induce casual riders at all hours of the day. In Berlin also an increasing flat fare has driven away passengers. In contrast with this the underground railway of Berlin, which had a differential fare scheme based on the number of stations covered by the journey, has at least been able by more flexible adjustments of its fares to maintain itself in a solvent condition. There is a narrow upward limit to a flat fare. It tends to disaster where this narrow limit is exceeded. It depends for its validity upon the principle that all journeys are of equal value to the passengers. As soon as the passengers become conscious of a difference in the value of the rides received they become willing and anxious to recognize a difference in the fare paid. In fact, they are found to insist upon a system of fares which commends itself to them as equitable before they will ride freely.

THE FARE AS THE INDEX OF VALUE OF THE SERVICE RENDERED

The nature of the service rendered in general is the passenger-mile, so that the observation of this principle demands a system of differential fares increasing with distances covered. At the outset, however, a distinction must be drawn between a zone system and a differential system of fares. A zone system of fares defines a series of areas and establishes a rate of charge for each area. The fare paid for a journey across several areas is the sum of the charges applicable to those areas. An intending passenger near to the boundary of an area is induced to walk to the boundary to save one of the charges. This feature has been noticeable in American cities where outer zones have been added to the initial 5-cent central zone at a charge of 2 cents per zone covered. It is a common defect in a zone system that the fares are not overlapped. This inequity is the mistake which has spoiled and wrecked so many of the ventures into zone schemes in America.

The differential system of fares is based upon stages, being the distances between station and station, or between point and point used in defining the fares. At any point there is a complete system of fares for that point in relation to every other point, and the points are usually of such a number that for each rate of fare there is a choice of two or three as destinations in every direction.* Thus the fares are always flexible and capable of fare adjustments to the total distance covered wherever the passenger starts or finishes his journey. This is the system of fares to which experience has always tended in this country [Great Britain]. Whatever experiments there may have been with flat fares, as when the Central London Railway was the "twopenny tube," they have uniformly broken down into a differential fare scheme, and the financial results of the change have been uniformly beneficial.

As already explained the 1d. fare is the dominant fare here, and every scheme of fares must, at any rate before the war change in price level, have taken it into account. It was too low a unit on which to found a flat fare system. Thus, as soon as journeys exceeded a length of 2 miles on the average, the higher fares were secured by additions to the 1d. for the further distances. Table I shows the rates of fare and number of passengers carried at each rate of fare for the three principal agencies of passenger transport in London in 1913.

TABLE I—SHOWING PASSENGERS (LAST 000 OMITTED) AT DIFFERENT RATES OF FARE IN 1913 ON LONDON TRANSPORTATION SYSTEMS

Ordinary Passengers	Underground Railways*	Per Cent of Total	Motor Omnibuses	Per Cent of Total	L.C.C. Tramways	Per Cent of Total
Number of passengers carried at fares of:						
1d. or less	22,376	33	464,933	69	368,714	86
Over 1d. up to 2d	30,412	46	148,035	22	51,229	12
Over 2d. up to 3d	12,814	19	43,462	6	6,717	2
Over 3d	997	2	19,898	3	450	..
Total	66,599	..	676,328	..	427,110	..
Average fare paid per ordinary passenger	1.8d.	..	1.3d.	..	0.9d.	..

* London Electric and Central London Railways only. Other records not available in detail.

The percentages reveal the relative importance of the different fares. The question whether the same number of people would have paid the average fare as a flat fare is the test of the soundness of the policy. All the available evidence is against the proposition. Almost every change in fare made in London over the decade that preceded the war has shown as its immediate results something approximating to the same gross receipts. The passengers rose or fell in numbers as the fare fell or rose in rate. The product was little altered. When, however, the upward change in fare was justified, the volume of traffic at the new fare was not checked except temporarily, but soon continued to rise again with the general growth of travel.

The critical argument in favor of the differential fare may be studied in the case of the halfpenny fare conducted on the chosen ground of Glasgow. While the average expenses and charges per passenger carried never fell below 0.70d., as much as 64 per cent of the total number of passengers carried were being charged no more than a halfpenny. In the last full year of their currency the number of passengers at halfpenny fare was 305,000,000. Ten years earlier it was 62,000,000. The expansion of traffic had been sensational and warranted their introduction. The passengers were created from those who previously had walked on account of the 1d. fare. The footwalks were cleared of pedestrians and the vacant seats in the tramcars filled. So long as there were vacant seats in the tramcars it was expedient to fill them at any price, for every passenger brought in helped to pay a share of the cost of operation and so averaged them down to a smaller sum per passenger. The Glasgow halfpenny fares were withdrawn on May 31, 1920, when they had become uneconomic in reality as well as in appearance.

A converse illustration is the introduction of the cheap midday fare of 2d. on the London County Council Tramways. The motor omnibuses were compelled to follow the practice in self-protection. The results for the motor omnibuses was that in a week 198,000 passengers used the cheap tickets, represented in part by passengers already riding at the ordinary fares and therefore gaining by the special cheap fares, and in part by further passengers induced to ride by reason of the cheaper facility. The loss on the former passengers is estimated at £9,500, the gain on the latter passengers is estimated at £8,750, so that the ultimate loss is £750 a week. Here the abandonment of the differential fare over 2d. led to a diminution of earning power because the especially attracted traffic was insufficient to balance the reduced earnings from the existing traffic.

So far all the evidence shows that the settlement of a scheme of fares on the basis of the value of the service rendered is generally approved and leads to the creation and retention of the maximum volume of traffic. This feature is a most important argument in favor of the differential fare. The short distance traffic, which a differential fare system encourages, is ordinarily casual traffic, arising not at the times of peak load when the change-over from home to business or business to home is taking place, but throughout the day. It occupies the vehicles when they are more nearly empty and it is turned over quickly, one passenger succeeding another and occupying the same seat. It must have been a misguided transference of these characteristics of short distance traffic which led up to the cheap midday fare for long distance traffic, for a little reflection shows they are not applicable. Long distance traffic is not casual, it moves with a purpose and therefore is not stimulated by cheapness to a satisfactory extent. It also persists in occupying the seats, for it cannot be turned over. Finally, a differential system of fares seeks a satisfactory average fare over all passengers, and if fares are introduced below this satisfactory average on the one side, they must be balanced against fares above this satisfactory average on the other side.

The strongest case for the differential fare has resulted from the general advance of all fares consequent upon war conditions. To make, as in America, an initial charge of 7, 8, 9 or 10 cents per ride is obviously a depressing treatment for traffic. As the desired average fare gets higher, it becomes more surely convenient and politic to reach this average by actual fares both above and below it. Table II gives the results for the revision of fares on the Underground Railways in September last and is based upon an analysis of the local ordinary traffic for a week in September, 1920 and 1921.

TABLE II—SHOWING EFFECT ON TRAFFIC OF FARE INCREASE, LONDON UNDERGROUND RAILWAYS

Passengers Carried	February, 1920		February, 1921		Loss	
	Number (1)	Per Cent of Total (2)	Number (3)	Per Cent of Total (4)	Number (5)	Per Cent of Total (6)
Over one station distance	171,370	6	117,689	4	53,681	31
Over two stations distance	423,934	14	325,864	12	98,070	23
Over three stations distance	431,478	14	396,093	15	35,385	8
Over four, five and six stations distance	1,074,465	36	991,222	37	83,243	8
Over more than six stations distance	906.956	30	839.857	32	67,099	7
Total	3,008,203	..	2,670.725	..	337,478	11

The table shows two inter-related but expected features. First, that the longer the journey taken the smaller the percentage loss in traffic. The percentages in the last column fall steadily. Second, that the higher the fare the larger the proportion of long distance traffic carried.

THE FARE IN RELATION TO THE COST OF SERVICE

The third principle which might govern the determination of a scheme of fares is the cost of service. In practice it runs so nearly parallel with the value of the service rendered, unless the circumstances are exceptional, that there is a chance of the two aspects not being clearly distinguished. An analysis of costs shows that there are some charges, like terminal and overhead expenses, interest, rentals, reserves, and fixed charges, which properly may be divided equally among all of the passengers carried. Another set of expenses are those concerned with the running of the cars, and these may properly be proportioned to the passenger-miles run. An analysis of costs, as applied to the tube railways in London, shows for 1913-1915 a total initial charge per passenger of 0.95d. and in 1920 1.25d. and for the train working and track expenses per passenger mile, for 1913-15, of 0.20d. and for 1920 of 0.40d. A comparison between the scale actually adopted for ordinary fares in the recent revision and the theoretical scale based on this analysis is set out in Table III.

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* [EDITORS' NOTE—In other words, fares are not determined by fixed zone lines but by the distance traveled by the passenger.]

TABLE III—SHOWING THEORETICAL AND ACTUAL SCALE OF FARES

Theoretical Scale, d.	Distance Not Exceeding, Mile	Actual Scale, d.
1.85	1	1.50
2.15	1½	2.00
2.75	2½	3.00
3.35	3½	4.00
4.25	5	5.00
5.15	6½	6.00
6.05	8	7.00
7.25	10	8.00
8.45	12	9.00

There could hardly be a closer approximation between theory and practice. It will be seen that the scales commence with a moderate initial charge and that as the distance increases the addition grows less in proportion. It gives a flattening effect with the accumulation of miles but never becomes wholly flat. The rate per mile charged to passenger regresses with each mile of the journey. Such a scale corresponds intimately to the value of the service rendered and bears fairly on the passenger. It has public advantages in relaxing the burden for the outlying suburbs and so encouraging the spread of population. This flattening out of the fare scale is an intermediate state between acutely differentiated fares and flat fares.

Already the public or civic relationship of a fares policy has been anticipated, but it is not possible to omit them from regard for long. It is a matter of serious regret that fares have become a political issue. Maybe it is safer to discuss America than London. The 5-cent flat fare was an excellent opening for the transport agency. It was exceedingly remunerative, readily paid and effective in spreading out the town beyond walking distance. When a change was needed to maintain the credit and efficiency of the transport agency, it was bitterly resented. A big American city is a single unit. It has a theater center, a shopping center, a business center and all traffic converges upon these unique spots. The flat 5-cent fare encouraged this. The zone fare has the opposite influence. It tends to decentralize. As soon as it costs more than 5 cents to reach what is wanted, the time has arrived when that which is wanted must move and disperse. It is an educative contrast to survey a big American city and London. London is a place of submerged towns, but though they are submerged they are not lost. The differential fare has been their safeguard and prevented Westminster, for all its magnificence, entirely obliterating them.

It is said that the flat fare prevents congestion of the population on an urban site, but are American cities any less congested than English cities? Boston, Mass., for instance and Birmingham are alike in density of population, so are Cleveland, Ohio, and Sheffield. Brooklyn matches Manchester; Manhattan equals Bethnal Green or Shoreditch, Southwark or Stepney. There is nothing to choose. The city of Paris proper, which, almost unique among European cities, has a flat fare, is the most congested of all.

From a public point of view the most significant measure of success attaching to a scheme of fares is the enlargement of the habit of travel. Freedom of movement is the essential condition of healthy urban lines. In New York and London this is assured. Every citizen—man, woman or child—travels on the average over 400 times a year. It is hard to realize what a vast accomplishment this is. The mere time consumed must be a goodly slice of life. And all those journeys have to be paid for. They represent for London, in a typical family of five, a sum of more than £16 out of the family income, four weeks' pay for a workman. Yet it is cheap. Free movement results in a growing sense of solidarity.

In conclusion, while there would appear to be a favorably balanced argument for the differential fare, sufficient has been said to show that there can be no dogmatism about a theory of fares. There is certainly not one fare scheme adaptable to all urban conditions. The information used for this article was collected in the study of the specific problem of fares for London, and it is hoped that it may lead to the right scheme of fares being adopted. Similar studies would lead to similar right solutions for other cities, and this article sketches a line or lines of approach to the problem of fares.

Safety Cars Make Good in Oakland

On Dec. 1, 1920, the San Francisco-Oakland Terminal Railways substituted ten standard Birney safety cars for five two-man cars on a route in Oakland. These cars operate over eight blocks on Broadway, Oakland's principal business street, on a short run between Seventh Street and Broadway and Alcatraz Avenue and are sandwiched in between larger double-truck, two-man cars on long through runs.

Over these eight blocks there are nine other car lines averaging 182 cars per hour, as well as four intersecting car lines, with the crossings under the control of traffic officers. On these four intersecting cross streets there is a total service of 170 cars per hour. Broadway also accommodates a very heavy movement of automobiles in both directions as well as a large amount of cross traffic from the side streets.

COMPARATIVE RESULTS OF SAFETY CAR OPERATION—OAKLAND, CAL.

	10 One-Man Cars April, 1921	*vs.* 5 Two-Man Cars Nov., 1920	Increase or Decrease	Per Cent Change
Car-miles operated	30,534	15,262	15,272	100.00
Per car-mile:				
Receipts	25.01c.	33.80c.	*8.79c.*	*26.0*
Expenses—Platform	7.42c.	11.05c.	*3.63c.*	*32.8*
Power	1.72c.	4.65c.	*2.93c.*	*62.9*
Net receipts*	15.87c.	18.10c.	*2.23c.*	*12.32*
Seat-miles	977,092	610,478	366,614	60.0
Seat-miles per car-mile	32	40	*8*	*20.0*
Per 100 seat-miles:				
Receipts	78.17c.	84.49c.	*4.32c.*	5.*12*
Expenses—Platform and power	28.56c.	39.25c.	*10.69c.*	*27.20*
Net receipts*	49.61c.	45.24c.	4.37c.	9.67
Power consumed at 1.409 cents per kilowatt-hour	37,282	50,364	*18,082*	*26.00*
Power consumed per car-mile	1.22	3.30	*2.08*	*63.0*
Revenue passengers	127,294	85,970	41,324	48.0
Revenue and transfer passengers	154,432	104,208	50,224	48.2
Passengers (all kinds) per c-m	5.07	6.84	*1.77*	*25.9*
Load factor—per cent use of seats	15.82	17.12	*1.30*	....

* After deduction of platform and power expenses only.

Through this maze of traffic the movement of safety cars has been accomplished without delay, inconvenience or accidents, and the results, as shown in the accompanying table, indicate that with 100 per cent increase in cars operated and 60 per cent in seat-miles the receipts have increased 48 per cent, although the number of seats per car has decreased 20 per cent. An analysis based on the car-mile as a unit of comparison indicates receipts decreased 26 per cent and that net operating revenue after deducting power and platform expense (all others being considered unchanged) decreased but 12.32 per cent, indicating in reality a gain of 13.68 per cent in favor of the safety car.

On a seat-mile basis due to a traffic gain of only 48 per cent the receipts are still 5.12 per cent off, even though platform and power expenses show a reduction of 27.2 per cent. The benefit from the change, however, is more clearly reflected in the gain in net operating revenue, which amounts to 9.67 per cent.

Bus or Retrack?

A Study on the Place of the Motor Bus, Particularly in Cases Where the Existing Traffic on Electric Railways Is Not Sufficient to Justify New Rail and Continuance of the Paving Burden

BY WALTER JACKSON
Consulting Engineer

DURING the early spring of 1921 the writer had occasion to consult for the J. G. Brill Company and others on a number of situations where the motor bus is well adapted to supplement and even supplant the electric car with advantage to the operating company.

One of these is where a high-voltage interurban railway is required by ordinance to make stops for local passengers in one of the towns through which it operates. No city car for the voltage used is practicable, so that the suggestion has been made that the local traffic be handled by motor bus. Such a plan would not only relieve the interurban cars of an unprofitable class of traffic but by cutting out these local stops would increase the scheduled speed of the interurban cars. In this instance it is merely a question of determining whether there are enough local city riders along the interurban route to make a separate bus line worth while. Unlike the following cases, this situation has not yet been analyzed in detail.

SITUATION 2—CROSSTOWN ROUTE ON M STREET

A second and far more important case is that of a large Eastern electric railway which had a number of situations involving the alternative of motor buses, for retracking or for extensions of existing lines. One was a tie line (situation 2, M Street) with a double track 1.1 miles of route in length, connecting two trunk lines. Most of the traffic consists of passengers who transfer to or from one of the intersecting trunk lines. During the greater part of the day the cars on this 1.1-mile route are operated as shuttles, but during the usual peak hours a certain number of cars are through-routed over this line from one of the two trunk lines, though at large expense. The question of the future of this route, which has never been profitable, came up through the decision of the city to repave the street. As the railroad was subject to the usual paving burden, a renewal of the trackway and paving for 18 in. each side of the rails, the cost* would have been as follows:

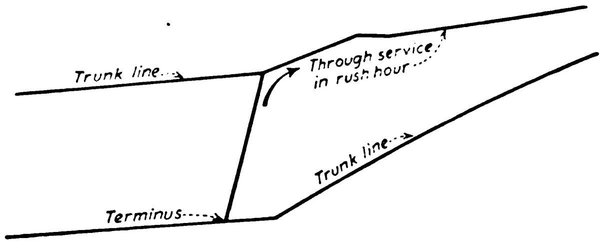
IF DOUBLE TRACK	
Track labor and material	$72,372
Paving labor and material	19,278
Total	$91,650
IF SINGLE TRACK	
Removing one track and repairing and relocating the other track in center of street	
Track labor and material	$49,342
Paving labor and material	11,428
Total	$60,770
Net cash cost of removing track poles and overhead if track service is abandoned	$10,396

An analysis showed that only 1,700 passengers (850 each way) made use of this route on business days. Of this number 1,100 were through-route (3.4 miles) rush-hour riders and the rest were transfer passengers. The headway during non-rush hours was fifteen minutes and during rush hours was seven and one-half minutes. Only 62,400 car-miles were run on the 1.1 mile section of this route during a year. The cost of the proposed investment in track and paving ($91,650) at 8 per cent would amount to $7,332 per year, which would be equivalent to 11.7 cents per car-mile.

On the other hand, it was estimated that one twenty-five-seat all-steel bus at $8,000 with one as reserve would do the same shuttle service. As the factor of cost of removing old track, etc., would be the same whether bus or car was used, the relative capital requirements worked out as follows:

	Buses	Cars
First cost as described	$16,000	$91,650
Fixed charges per year with 62,400 vehicle-miles (cents)	2.1	11.7
74,000 vehicle-miles (cents)	1.7	9.9

The cost of operation (for a two-man car) was 35 cents per car-mile. The expenses of the bus on the basis of a useful life of the bus of 100,000 miles and a gasoline consumption of 6 miles to the gallon worked out as follows:



Situation 2

OVER-ALL COSTS PER BUS-MILE

	Cents
Interest on investment	1.7
Depreciation, 100,000-mile life	8.0
*Conducting transportation	12.0
Maintenance of equipment, except tires	4.0
Repairs and renewals pneumatic tires	5.0
Gasoline and lubrication	5.5
Garage inspection and general license fees, insurance	3.8
Total	40.0

*This item is very high because of the long layovers on this particular route and because the wages were figured as two-thirds instead of one-half the car wages. On routes with more revenue-miles per hour, as on fairly long runs, this figure would be 10 cents or less.

In other words, the bus would cost 40 cents per vehicle-mile as against 45 cents for the cars. With a larger number of buses certain of these figures could be reduced appreciably. It should also be remembered that the great advantage of the motor bus to the electric railway in instances like these does not lie so much in the annual savings as in the release of large sums of money for more productive purposes than the retracking and repaving of unimportant car routes. If, as occurred in this case, the proposal to supersede track by motor bus operation leads to a proposal to eliminate paving and other burdens if the track is retained, so much the better. The progressive management cannot lose either way by any plan that puts the two methods on a fairer basis of comparison.

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*NOTE: All figures were prepared during the winter of 1920-21 and early spring of 1921. Present costs of both track and bus are lower, but it has been thought wiser to make no changes from the figures in the original reports.

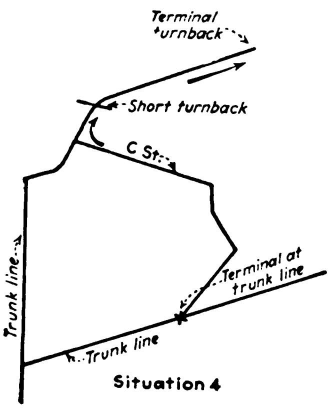
SITUATION 3—ANOTHER CROSSTOWN ROUTE

Situation 3, which may be called A Street, resembles the M Street situation in being a cross connection between two trunk lines. However, it is only 0.6 mile long and almost all of its traffic flows toward one of the trunk lines mentioned. Through service is given, but as the distance to the trunk line is short and as the through cars on this route take a rather circuitous route in going to the city most of the residents of this district walk to one or the other of the trunk lines when going to the business district. When the time approached for retracking and repaving the estimates proved to be as follows:

Estimate of cost for rebuilding existing double track with 7-in. girder rail, repaving with recut granite, grouted joints and concrete base on A Street

Special work for turnout		$2,000
6,500 ft. 7-in. girder rail		22,750
3,325 treated ties		6,650
6,650 ft. track laid ready for paving, stone ballast		13,300
Teaming, watching, etc.		2,500
Removing 6,650 yd. existing granite paving	$2,660	
Removing 6,650 yd. existing track	1,665	4,325
		$51,525
Plus 20 per cent		10,305
		$61,830
Less credit for scrap material		3,990
		$57,840
Add		
266 M recut granite blocks	$5,320	
6,650 sq.yd. concrete base, furnished and laid in track and brows, teaming, etc.	9,975	
6,650 yd. paving, ditto	9,310	
	$24,605	
Plus 20 per cent	4,921	$29,526
Total cost	....	$87,366
Alternative estimate covering five-year rehabilitation for same location		$72,800

A factor which affected the situation was that this part of A Street was a vital part of the positive and negative feeder distribution system, serving as a tie between two operating districts. Therefore, if the rails, trolley wires and feeders were removed because of bus operation, it would be necessary to furnish equivalent copper at an estimated cost of $11,000.



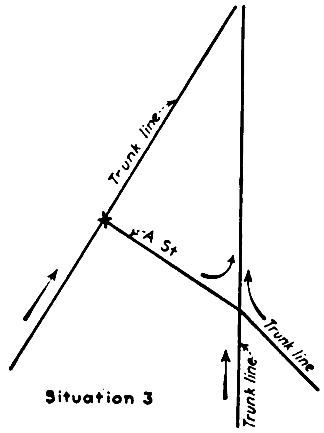
Situation 4

Examination of the operating statistics showed that the number of car-miles run on the 0.6-mile section of A Street was but 40,000 a year, or 114 miles per week day. The normal headway was fifteen minutes and the rush-hour headway ten minutes. Only 500 people a day used the service within this part of the run. Consequently two buses during the rush hours and one bus during the other hours would meet all shuttle service requirements. The relative over-all cost was then worked out as follows:

Cost of track and paving renewals	$87,366
Investment charge on same at 8 per cent a year	7,200
Investment charge per car-mile operated, on basis of 40,000 car-miles per annum	18 cents
Although this route is run with safety cars, this tremendous increase in overhead would make the over-all cost per car-mile at least	45 cents or $18,000
The outside cost of two twenty-five-seat all-steel buses at $8,000 each, plus $11,000 for new feeders and $7,718 net cost of track removal, is in new money	$34,718
Or per bus-mile (40,000 miles) per annum	8.7 cents

Assuming twenty-five-seat motor bus operation to cost, say, 45 cents, instead of 40 cents per bus-mile because of unusually high overhead to be charged against it, we still break even. In this case, then, the railway would have to find only $34,718 instead of $87,366 in new money, the difference being made available for more productive uses than retracking and repaving this kind of location.

It has been stated that this route actually handled more passengers en route on the overlapping section of its run than it did in its own territory. So the question arises as to how to take care of these strictly trunk-line passengers. Inasmuch as this trunk line is already served by two routes, it was suggested that, instead of shortening the A Street route, it be abolished entirely, because any extra carrying capacity desired could be obtained by running somewhat larger cars and some more mileage on the two regular trunk-line routes or on only one of them.



Situation 3

Without going into detailed explanations, it may be stated that the net result of eliminating the A Street route entirely would be to save 99,000 car-miles per annum, the difference between the 160,000 miles actually run on the overlapping section and the 61,000 car-miles which would have to be added to one of the trunk-line routes. At 45 cents per car-mile the saving of 99,000 car-miles would be $44,500 per annum.

Thus this particular study developed a condition where the replacement of cars by buses makes easier the elimination of wasteful, overlapping mileage, and so leads to greater savings than if no rerouting, but simply a direct replacement of car by bus, had been considered.

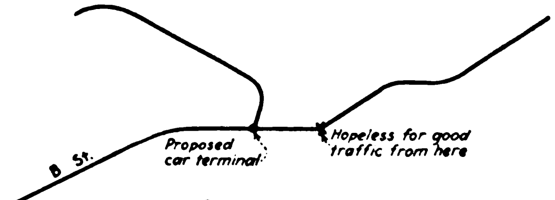
It may be of value to add that if the buses were to duplicate the present A Street route for its full length the result would be a loss instead of gain, even after taking into consideration the track reconstruction cost of part of the route as detailed.

SITUATION 4—ANOTHER EXAMPLE OF REDUCING LOSSES

Situation 4 (C Street) relates to a third type of cross connection through almost desert territory. The round-trip runs are 4 and 3 miles respectively, according to where cars are turned back on one of the trunk lines intersected. Only ½ mile or so of the cross-connection is built up and paved, the rest of the run passing through swamps and an oil and gasoline storage district that offers no hope for future traffic development. Through this section the only paving is the granite strip put down by the railway and used cheerfully by all the tank motor trucks going to and from the storage district. The city will have to pave all of this road sooner or later. The two-man cars on this route operate only 99,000 car-miles a year, with an average of only 1.05 revenue passengers per car-mile. Even with the inclusion of transfer passengers, there are less than two passengers per car-mile. The crew expense alone is more than double the total revenue. On a typical week day 300 car-miles were run for 491 patrons.

In place of the 99,000 car-miles per annum, it has been suggested that the company operate 72,000 bus-miles, giving an equivalent service on C Street itself, namely, 2.7 miles round trip, instead of running up any part of one of the intersecting trunk lines. A twenty-five-seat bus would be more than ample, and two of this size would be enough to maintain the present fifteen-minute headway.

The only investment items chargeable against the motor bus in this case comprise the price of two twenty-five-seaters, say $16,000, and the eventual charge of $11,000 for replacing the rail return with other negative feeder—a total of only $27,000 new money, of which it would not be necessary to use more than $16,000 at once. Because of the conditions obtaining on this street, the rail might remain in place purely as a return circuit until such time as the street is repaved.



Situation 5

In contrast with this sum, the $27,000 new money that bus operation would entail (aside from eventual removal cost of track, etc.), is the company's way department estimate that the cost of retracking and repaving of this 8,400 ft. double track would amount to a total of $160,000.

SITUATION 5—POSSIBLE ELIMINATION OF UNPROFITABLE EXTENSION

This case differs from the foregoing in that it relates to the possibility of replacing a thin-traffic terminal section by means of a motor bus shuttle instead of paying heavy expenses incident to the widening of a street. The portion to be widened is practically one-quarter mile long and is in good territory, but the district for the remaining 0.85 mile of this route is hopeless from a traffic standpoint for topographical reasons. It is therefore a question as to whether it would not be more economical to terminate the car line at the point where the street widening is to begin and to handle the trifling traffic for the 1.10 miles beyond by means of a shuttle bus.

For convenience, the whole route may be referred to as B street. On inquiry it was found that if the track and line on the last 0.85 mile were removed now the company would have to spend $15,410 net owing to the requirement of restoring the paving, but if it waits until the paving is renewed in the course of time by the city the net outlay would be only $1,460. To summarize the actual cash outlay in each proposition, it was determined that the company must either lay out at once $29,934 cash for the street widening project or pay $14,000 for two sixteen-seat buses plus $1,460 at some time in the future.

As regards the number of people to be served by the buses on the last 0.85 mile, the "on and off" traffic records showed that out of 540 outbound riders on a business day, 240 were in the first quarter mile and but 180 in the last section of 0.85 mile. Of inbound riders, only 224 got aboard in the 0.85-mile section and 326 in the quarter mile adjoining the proposed terminus of the shortened car line. This traffic, or even twice as much, could be handled with one bus during the off-peak hours. A second bus could go on for three, four or more hours as experience would dictate.

In view of the few stops required, the single bus used all day should make four round trips of 2.2 miles each, or 8.8 miles an hour, readily. It, or the relief bus, would make, say, 160 miles a day or 58,400 miles per annum. With rush-hour supplementary mileage, the total might be placed at 65,000 bus-miles per annum in place of the 60,823 car-miles it was suggested to remove. The comparative costs would then work out as follows:

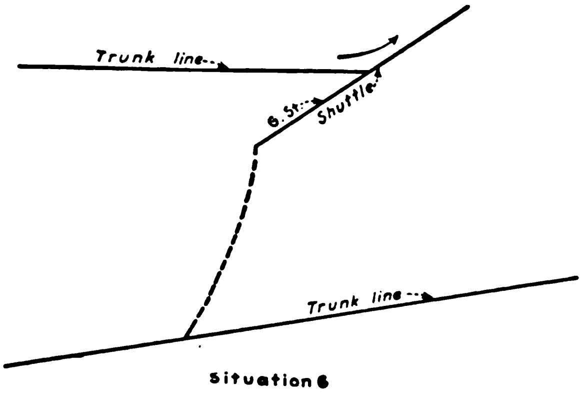
60,283 car-miles at 45 cents per car-mile	$27,127
65,000 bus-miles at 40 cents per bus-mile	26,000

Even if the cost of car operation over all, because of safety car service, is taken at 40 cents, in contrast with the 50 cents over-all cost of the whole system, car operation would still cost as much as bus operation per vehicle-mile. Should the bus operation be debited $15,410 for removal of track and line, etc., the added investment charge of $1,233 would be on the basis of 65,000 miles a year operation, or only 1.9 cents. However, in practice, a higher bus cost might not appear at all because of the high figures assumed for small-number bus operation in these estimates.

SITUATION 6, G STREET—BUSES FOR A "ONCE-WAS" TRACKWAY

Once upon a time, as in the fairy stories, a suburban railway system had come into the city's outer territory via 1.3 miles of open track construction to make a cross-town route long before there was any semblance of a town in that territory. Eventually, 0.46 mile of this 1.3 miles was taken up. Today the district is still sparsely settled, but the dwellings already built give promise that it will be a high class suburb within the next two or three years.

The city now intends to pave what we will call G Street for the entire 1.3 miles, including the 0.8 mile vestigial track operated by the city railway as a safety car shuttle. The cost of extending this shuttle 0.46 mile so that it will intersect with a trunk line at each end plus the cost of paving obligations works out as shown in the following statement:



Situation 6

NINE-INCH GIRDER RAIL CONSTRUCTION

No ballast unless actually required, concrete paving base and 5-in. grouted blocks with granite joints:

Trackwork	$25,710
Overhead construction	2,700
Paving and base	14,500
	$42,910

From a study of the traffic statistics, the following set-up was derived:

COMPARISON CAR VS. BUS, G STREET

Present car operation, fifty-three round trips of 1.624 miles each daily	86.1 miles
Annual car-miles	31,426
Passengers carried on weekdays, approximately	200
Cost of future operation if line is extended to other trunk line, making the round-trip distance 2.54 miles.	
Annual car-miles on basis of three round trips an hour and 2.54 miles per round trip, approximately	50,000
Cost of the extension (0.458 mile) would be	$42,910
8 per cent annual investment charge on this extension would be	$3,432
Which is equivalent on 50,000-mile operation to a fixed car-mile charge of	6.8 cents
The investment charge per car-mile on two $8,000 buses at 50,000 miles would be	2.56 cents
The over-all cost of 50,000 car-miles at 45 cents per car-mile would be	$22,500
The annual over-all cost of operating these buses would be 40 cents × 50,000, or	$20,000
Saving through motor bus operation, per annum, approximately	$2,250

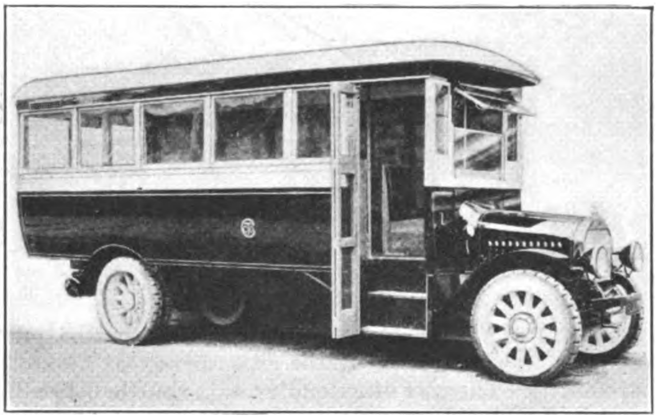
In conclusion, it may be pointed out that when the original full-length route was in operation the passengers, few as they were, insisted upon through service so long as they saw a track connection. Should motor buses be operated, shuttle service will be considered a matter of course, thus preventing the return to wasteful, through operation.

Bus Route for Pennsylvania

Traction Company Finances Supplemental Motor Bus Company to Operate Between Oil City and Franklin to Meet a Popular Demand—Operation Started July 15

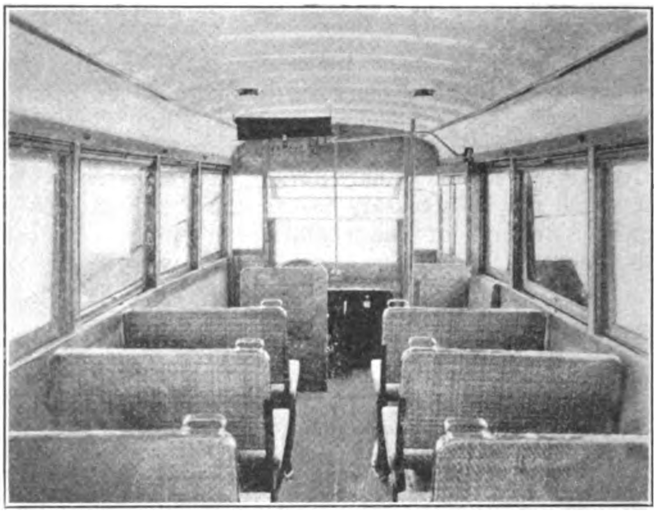
A RATHER interesting motor bus service supplementing existing trolley lines was inaugurated on July 15 by the Citizens Transit Company with a twenty-five-passenger Mack-Brill bus.

The Citizens Traction Company furnishes local and interurban service in and between Oil City and Franklin, two cities 8½ miles apart on the Allegheny River in the northwestern part of Pennsylvania. The entire country between these two cities is very mountainous, and on account of the rugged contour the electric railway company found it necessary to follow the ravines and valleys to find an operative grade. This made necessary a line 12 miles long in order that through service might be furnished between these two cities. The shortest route, however, lies along the banks of the Allegheny River, and there was at one time a line connecting the two cities along the north bank of the river. However, for 1½ miles of this distance the hills rise abruptly from the riverbed, so that the electric railway lines necessarily had to be built on heavy grades, a construction which proved to be exceedingly difficult and operation so hazardous that service on this 1½-mile link was ultimately discontinued. This left two short routes, one between Oil City and Reno Village and the other from Franklin east to Rocky Grove.



EXTERIOR OF MOTOR BUS, SHOWING INCLOSED STEPS OF CONVENIENT HEIGHT

In December, 1920, a concrete highway constructed on an easy grade was completed from Reno Village to Franklin, a distance of 4½ miles, on the north bank of the Allegheny River. With the completion of this road the Citizens Traction Company met a popular demand for service along this shortest route by the operation of its cars from Oil City to the village of Reno and connecting with the recently inaugurated bus route from Reno to Franklin, the latter service being conducted by the Citizens Transit Company, incorporated for the purpose, as the Citizens Traction Company's charter did not include railless operation.



INTERIOR OF BUS LOOKING FORWARD

The bus is scheduled to make one round trip per hour connecting with the Oil City-Reno cars at Reno and the local lines in the heart of Franklin. The through fare on the combination bus route between Oil City and Franklin is the same as has heretofore been charged, namely, 32 cents by cash fares or 30 cents by tickets.

The body is the Brill design for this capacity of bus and is mounted on a Mack 2-ton chassis, model AVDR, of the International Motor Company. The underframe is of composite construction and the body of wood sheathed on the outside with No. 18 sheet steel. The two-leaf folding doors are manually operated from the driver's position and inclose the double stationary steps. There is also an emergency door in the center of the rear end of the body, which is glazed in the upper portion, conforming to the rest of the construction. An outstanding feature of the body design is the use of single drop sash. This permits lighter roof construction and, consequently, lowers the center of gravity.

The interior finish is of ash with top carlines showing. Agasote is used on each side below the windows. Seating accommodations are provided by five Brill "Waylo" stationary type seats on each side of the aisle and a seat extending across the rear end of the body for five passengers. The section of this seat in front of the emergency door is removable. All transverse passenger seats have backs and cushions of the spring type upholstered in cane. The driver's seat is upholstered in leather.

It is a significant point to note that the management

does not expect an increase in revenue from this bus installation, since much of the traffic will undoubtedly be diverted from the through electric railway service furnished via Monarch Park, a distance of 12 miles.

Electric Railways Operating Motor Buses

ACCORDING to a census of automotive equipment recently taken by the ELECTRIC RAILWAY JOURNAL there are twenty-five electric railway companies in the United States that are today operating passenger motor buses. These companies either own or control the operation of 128 motor vehicles and four trailers which represent an investment of approximately $495,000.

There seems to be only one type that predominates, namely the 20 seat vehicle, of which there are 27, with the 17 passenger second with 21 vehicles. The 16 seat vehicle is third in favor with 17 and of the 12 passenger type there are 16. There are eleven 30-passenger bodies and ten that have a seating capacity of 18.

The prepayment system of fare collection is used in the majority of instances, the exception being the Pacific Electric Railway, Los Angeles, which uses both the prepayment system and the Ohmer register; the Connecticut Valley Street Railway, Greenfield, the Rooke register, and the Escañaba Power & Traction Company, the overhead register. The method of fare collection is not specified by the Bakersfield & Kern Electric Railway, San Francisco Municipal Railways, Dubuque Electric Company, St. Joseph Railway, Light, Heat & Power Company and Lincoln Traction Company.

The accompanying table shows the seating capacity, the year of purchase and the kind of tires used.

Buses Do Large Business

Statistics from Pacific Coast State Show that One Dollar of Investment Earns Three in Revenue per Year—Margin of Profit Not Large

AN OUTSTANDING feature of recent development in the motor bus business in California is the consolidation of companies in the interest of more economical and efficient operation. A typical case is the recent formation of an association in Stockton, whereby sixty cars formerly operated by a number of small companies and individuals, after more or less continuous competition over 280 miles of highway, have been put under a common administration which is expected to make material improvement in service and profits to owners. Combinations have been formed in both south and central parts of the state, and stage depots, where a number of lines have a common terminal, are becoming popular.

Records of the California Railroad Commission for the year ended Oct. 31, 1920, show that 350 motor bus passenger carriers reported for the year total receipts of $6,856,161 and expenses of $6,028,821. A total of 157 freight transport carriers, reporting for the same period, showed receipts of $2,401,336 and expenses of $2,292,889. The tables on page 320 give some weighted averages for the motor bus passenger companies affiliated with the Motor Carriers' Association of California and also for three individual typical routes.

With improvement of operating conditions, better roads and more business, the type and style of passenger cars has been very greatly improved. The accompanying illustrations show a typical passenger car of a few years ago and the present modern semi-closed

DATA COVERING MOTOR BUSES OPERATED BY ELECTRIC RAILWAY COMPANIES (JULY, 1921)

Name of Company	No.	Type	Year of Purchase	Seating Capacity (Each)	Capacity of Chassis	Tires
Arkansas						
Intercity Terminal Ry., Argenta	4	Mack	1915	20	2 tons	Pneumatic
	3	Oldsmobile	1920	16	1 ton	Pneumatic
California						
Bakersfield & Kern Elec. R.R.	2	Studebaker	1918	12	......	Pneumatic
	3	Ford	1920	12	......	Pneumatic
Pacific Electric Ry., Los Angeles	2	Case	1917	24	......	Solid
	2	Reo	1920	16	......	Pneumatic
San Francisco-Oakland Ter. Rys.	4	White	1921	18	2½ tons	Pneumatic
Pacific Gas & Electric Co., Sacramento	1	Ford	1916	12	......	Pneumatic
	1	Dodge	1918	14	......	Pneumatic
	1	Dodge	1919	14	......	Pneumatic
California						
San Francisco Municipal Rys	5	White	1918	30	......	Pneumatic
	1	White	1919	30	......	Pneumatic
	3	White	1920	30	......	Pneumatic
San Jose Railroads	1	Case	1916	16	......	Pneumatic
	1	Ford	1919	12	1 ton	Pneumatic
Santa Barbara & Suburban Ry	3	Studebaker	1917	16	......	Pneumatic
	3	G. M. C.	1920	16	......	Solid
Stockton Electric Ry. Co.	1	Moreland	1915	16	......	Solid
	1	Moreland	1916	16	......	Solid
	1	Moreland	1917	32	......	Solid
Connecticut						
The Connecticut Company	8	Reo	1921	12	......	Pneumatic
	3	Packard	1921	27	......	Pneumatic
Iowa						
Dubuque Electric Company	3	....	1918	15	......	....
Maryland						
Baltimore Transit Co., controlled by United Rys. & Elec. Co., of Baltimore	20	White	1917	17	......	Solid*
Massachusetts						
Bay State System	1	Garford	(a)	30	......	Pneumatic
	1	Reo		20	......	Pneumatic
	1	Oldsmobile		20	......	Pneumatic
Connecticut Vy. St. Ry., Greenfield	3	Cadillac	1919	20	......	Pneumatic
Holyoke Street Ry	2	Reo	1921	16	......	Pneumatic
	1	Internatl.	1921	16	......	Pneumatic
Michigan						
Escanaba Pwr. & Trac. Co.	1	White	1919	14	......	....
Missouri						
St. Joseph Ry., Lt., Ht. & Pwr. Co.	1	G. M. C.	1917	..	¾ ton	Pneumatic
Nebraska						
Lincoln Trac. Co. (not in use)	1	Oldsmobile	1920	12	......	Pneumatic
	1	Ford	1920	13	......	Pneumatic
New York						
Niagara Gorge Bus Line (Controlled by Niagara Gorge R.R. Co.), Niagara Falls	1	White	1918	22	......	Pneumatic
	1	Stewart	1918	17	......	Pneumatic
	1	Mack	1920	30	......	Pneumatic
	1	Packard	1921	32	......	Pneumatic
Oklahoma						
Okmulgee Tract'n Company	6	Oldsmobile	1920	42	......	Pneumatic
	4	Lauts	1920			Solid
Pennsylvania						
Citizens' Transit Co., controlled by Citizens' Traction Co., Oil City	1	Mack	1921	25	2 ton	Solid
Johnstown & Somerset Ry.	1	Packard	1921	22	......	Pneumatic
Texas						
Ft. Worth Auto Bus Co., controlled by Northern Texas Traction Co.	8	White	1917	20	......	Pneumatic and Solid
Washington						
Seattle Municipal Ry. Co.	1	White	1919	20	......	Pneumatic
	1	White	1919	20	......	Pneumatic
	1	Garford	1920	18	......	Pneumatic
	1	Garford	1920	18	......	Pneumatic
Wisconsin						
Milwaukee Elec. Ry. & Lt. Co.	1	Packard	1919	40	......	Pneumatic
	8	Reo	1919 20	20	......	Pneumatic
	1	Nash	1920	40	......	Pneumatic

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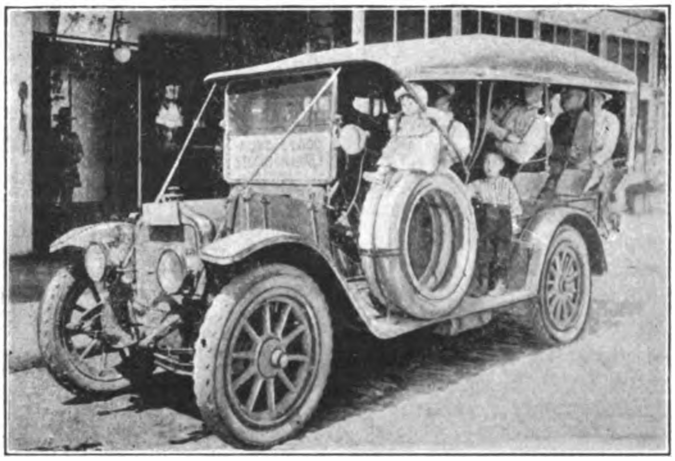
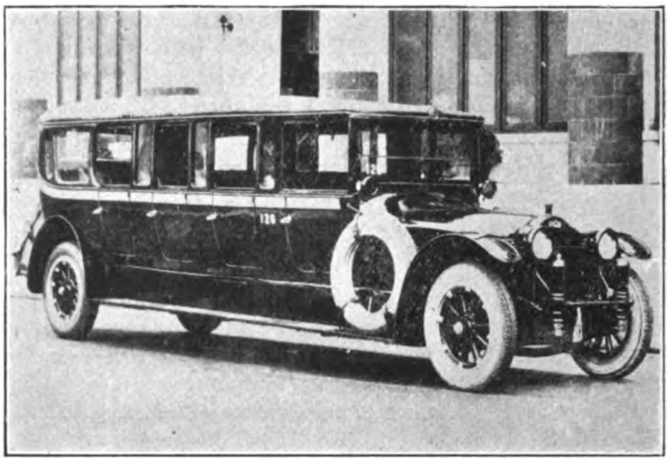
* On Sewell Cushion Wheels.

(a) Operated on contract basis for railway company.



Typical Early Type Motor Bus Operated in California Service



Typical Present Day Type of Semi-Inclosed Bus Now in Extensive Use

bus of a type being used in many parts of the state. Today bodies are built with the idea of giving a maximum amount of comfort to the passenger. As will be noted the appearance is good and an endeavor has been made to follow the best practice in stream lining.

The low type chassis and body are now coming into favor as it seems to have been pretty well established that a lowering of the center of gravity results in a saving on tires and adds materially to the safety of operation.

ANALYSIS OF PASSENGER TRANSPORTATION COSTS—MOTOR CARRIERS' ASSOCIATION OF CALIFORNIA—YEAR ENDED DEC. 31, 1920

	Actual	Unit	Item
Number of companies	7	....	......
Mileage of highway used	1,182	....	......
Passenger cars	196	Per mile highway	0.1656
Total seating capacity	2,671	Average per bus	13.6
Bus-miles operated	11,430,061	Per mile highway	9,690
		Average per bus	58,400
Passengers carried	4,315,874	Per mile highway	3,660
		Per bus-mile	0.379
Passenger revenue	$2,149,541	Per mile highway	$1,820
		Per bus-mile	18.8c.
		Average fare per passenger	48.7c.
Operating expenses	$2,319,135	Per mile highway	$1,965
		Per bus-mile	20.35c.
Taxes and licenses	$19,868	Average per bus	$101
Liability insurance	$72,839	Average per bus	$372
Investment	$776,315	Average per bus	$3,970

NOTE.—There are a total of eighteen companies in the passenger motorbus transportation service operating over 3,400 miles of highway, and having available for service 412 vehicles capable of seating 5,603 passengers. Only seven furnished complete information as shown above.

ANALYSIS OF OPERATING COSTS—TYPICAL PACIFIC COAST BUS ROUTES

	Motor Transit Company, Los Angeles (a) Actual	Per Bus-Mile	Western Motor Transport Company, Oakland(a), Actual	Per Bus-Mile	Tacoma (Wash.), Olympia Stage Line (b), Actual	Per Bus-Mile
Traffic per month average	300,000	.....	......	.....	......	.....
Maximum mileage per month per bus	9,000	.....	......	.....	......	.....
Average monthly bus-mileage	505,000	.....	70,000	.....	29,096	.....
Passenger revenue	$114,000	27.60	$27,500	39.25	$7,836	26.95
Costs of Operation:						
Fuel					618	2.12
Oil	$13,290	2.63	......	3.00	69	0.24
Tires	15,507	3.06	......	3.50	528	1.82
Repairs (parts and labor)	19,387	3.80	......	4.70	(c) 125	0.43
Depreciation	......	.....	......	3.00	1,250	4.30
Miscellaneous	......	.....	......	.....	115	0.39
Drivers	19,051	3.77	......	3.50	1,156	3.98
General superintendence	......	.....	......	.....	350	1.20
Other expenses	35,000	6.92	......	.....	......	.....
Insurance	......	.....	......	1.00	166	0.57
Rent	......	.....	......	1.50	50	0.17
Printing and advertising	......	.....	......	1.00	100	0.34
Office expense	......	.....	......	2.00	200	0.68
Total	102,235	20.22	16,240	23.20	4,727	16.24
Taxes and licenses	......	.....	......	.....	44	0.15
Interest at 7 per cent	......	.....	......	.....	300	1.03
Surplus	......	.....	......	.....	2,765	9.53
No. of motor buses	......	.....	......	.....	7	.....
Type of machine	White	.....	White	.....	White	.....
Model	......	.....	......	.....	15	.....
Seating capacity	......	.....	......	.....	14	.....

(a) Figures for May, 1921. (b) Figures for September, 1920. (c) Estimated.

Detroit Trolley Buses

Bids Asked for Trolley Buses that Can Easily Be Converted Into Gas-Driven Units—To Have All-Steel Body Seating Twenty-Nine Passengers

THE Department of Street Railways of the city of Detroit has recently asked for bids on fifty trolley buses. Ten of these are for immediate delivery, but the others are not to be delivered until the first lot has been tested in service and any changes shown necessary in such operation have been agreed upon. Mention was made in the ELECTRIC RAILWAY JOURNAL for July 2, page 37, that the city was considering the use of this type of vehicle for supplementary service with existing rail lines.

The specifications provide that the chassis must be built to accommodate either electric motors or gas engines, so that in case operation of the trolley bus proves unsuccessful the vehicles can be easily converted into motor buses. Each bus is to seat twenty-nine passengers and must weigh light not less than 9,000 lb. and be capable of transporting a load of 7,500 lb. With these buses it is proposed to maintain a minimum scheduled speed of 8.5 m.p.h. with nine stops per mile and an acceleration of between 1½ and 2.0 miles per hour per second.

The specifications call for a metal body of the truss side type with structural steel angle sills formed to the shape of a wheel housing over the rear axle. Pressed steel posts and letter board are to be used and the roof is to be made of wood or Haskelite so that persons can be supported thereon without damage to the roof. Two trapdoors are to be put in the floor of the bus, one to be over the rear axle housing and the other over the motors. An entrance and exit door is called for on the right hand front side. It is to have about 26 in. clear way. The doors fold outward and are of the two-panel jacknife type and are operated by ball bearing, National Pneumatic Company's hand lever control. In the rear there is an emergency door controlled by an electric lock under glass which when broken releases the lock and allows the door to be opened. The windows are of the raised sash type and push up so as to give 12-in. clearway. The inside finish is birch, stained mahogany color, and the roof above the sash white enamel. Lighting is obtained from six 23-watt railway lamps on two circuits. One circuit covers five interior lamps, while the other covers one interior lamp, two headlights, a step light and an illuminated sign light.

Miscellaneous fittings called for include two Nichols-Lintern tail-lights, a Faraday buzzer system, Cutler-Hammer 500-watt 296-volt single-unit truss plank heaters, two of which are connected in series; Rex all-metal rollers, double coated curtain material and Curtain Supply Company's fixtures. Steel tubing is used as a railing to separate the driver from the passengers. An operator's mirror 22 x 8½ in. is located so that the operator can obtain a full view of the passengers in the bus. Three exhaust ventilators are located on the center line of the roof and are covered with metal shutters. Johnson type D fare boxes are conveniently mounted at the entrance.

The bids, which were opened Aug. 18, ranged from $7,325 to $10,500.

New Track and How It Was Financed

The Gary Street Railway Finances Locally the Reconstruction of 1.8 Miles of Track Using Mechanical Ties to Reduce the Thickness of Concrete and Avoid Too Great Rigidity

AUTHORIZED by the Public Service Commission of Indiana to issue $75,000 of first mortgage 5 per cent gold bonds for the purpose of reconstructing 1.8 miles of single track on Broadway, the main street of Gary, Ind., the Gary Street Railway set out to dispose of these bonds through the usual channels. President Charles W. Chase went east to dispose of the bonds there, while T. G. Hamilton, superintendent and purchasing agent, went to Chicago to see what could be done in that city. Both returned to Gary unsuccessful. But having faith in the merit of the securities offered and confidence in the future of Gary and its street railway property, they determined to dispose of these bonds locally.

A plan was evolved to first interest the employees in purchasing these bonds and then, having won their active interest, to endeavor to sell bonds to the public through the employees. Since the total outstanding first mortgage obligations of the company are only $375,000, including the present issue, whereas the value of the property as recently established by the Public Service Commission is $1,800,000, exclusive of good will or any franchise values, the officials felt perfectly safe in inducing the employees to invest their savings with the company.

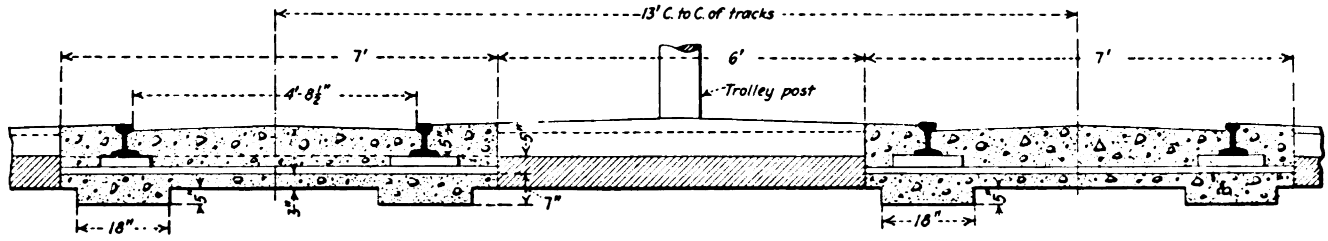
A letter setting forth the details was addressed to each employee and he was invited to buy as many bonds as he could for $85 cash, or $87.50 payable in ten months; that is, $4.37 from each semi-monthly pay, per bond. While the management has felt that it was very close to its employees, the response that came to the offer of bonds was a surprise even to them. Of the trainmen, 96.3 per cent bought from one to five bonds, while 76 per cent of the shopmen, 37.7 per cent of the trackmen, 57.5 per cent of the salaried employees and 68.1 per cent of the linemen also purchased one or more bonds. Altogether, of the 272 employees, 201 or 74 per cent, bought bonds, the total amount subscribed being about $35,000.

The assistance of the employees was then secured in disposing of additional bonds to the public, to whom they were offered at $90, the employee making the sale receiving a commission of $2.50 for each $100 bond sold. Through them and the efforts of the officials direct, an additional $25,000 of bonds were disposed of to the public. Some of the local materials dealers from whom materials used in the track construction were purchased, accepted some of these bonds in part or total payment. The names of the merchants who purchased bonds were posted in the carhouse so that the trainmen and other employees might know who was helping to support the street car company and incidentally them.

The employees seemed to take a great interest in this proposition and a number of them who could not purchase a bond came in to see the superintendent and tell him they were sorry they were not in a position to take a bond just then. At the time of this writing more than $60,000 worth of the bonds had been disposed of so that the necessary money for the new track was assured and construction work was well under way.

TYPE OF TRACK REPLACED

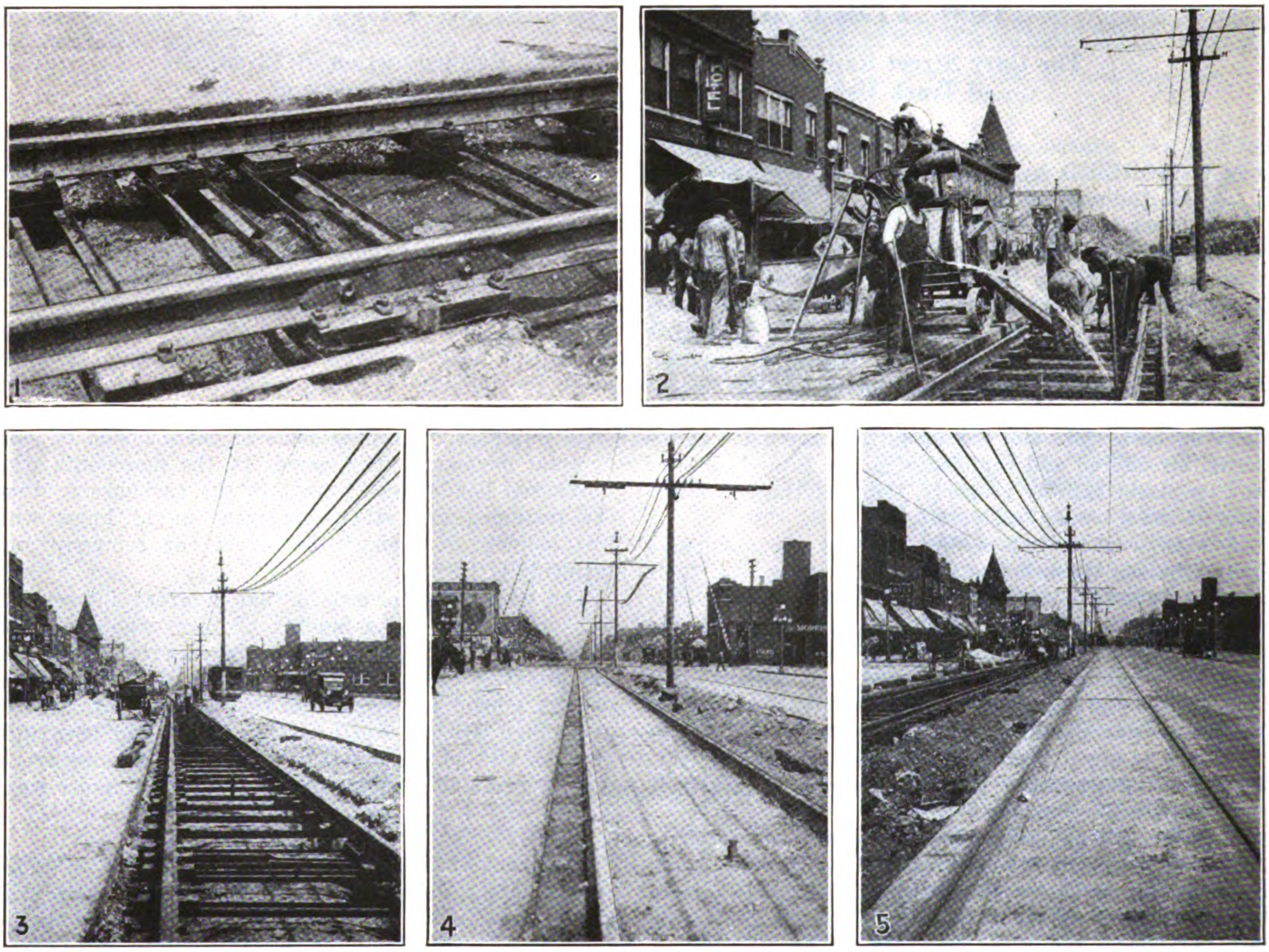
The track that is being replaced was built in 1907, shortly after Judge Gary established the new city among the sand dunes at the south end of Lake Michigan. It was laid with 60-lb. A.S.C.E. T-rail on oak ties directly on the sand, no other ballast being used. A concrete curb was built along either side of the 26-ft. trackway through the center of the broad street so that the sand was there confined. Simple four-hole angle bars were used to make the joints. This track has been subjected to a four-minute headway of local street cars all day, with a one and one-half-minute headway



CROSS-SECTION OF TRACK CONSTRUCTION SHOWING CONCRETE BEAM UNDER EACH RAIL during the morning and evening rush, and in addition has carried the cars of the Gary & Southern, the Gary & Valparaiso and the Gary & Hobart interurban lines which have operated over it hourly. Many of the ties are still good and are being reused on one of the interurban lines.

MECHANICAL TIES EMPLOYED IN NEW TRACK

The new type of track now being built is of solid concrete construction, including the paving, and employing Dayton mechanical ties, Indianapolis apex electrically welded joints and 90-lb. A.R.A. T-rail of Illinois Steel Company section 9020 rolled in 66-ft. lengths. Several reasons were involved in the selection of these mechanical ties for use in this track. Because the local city authorities were making extensive use of concrete paving, it was highly desirable that the street railway should use the same type of pavement so that the street would be uniformly surfaced. The use of mechanical ties with the concrete foundation and paving construction reduced the thickness of concrete required by such an amount that this saving, taken in conjunction with the greater spacing of ties and the minimizing of labor in assembling, made it possible to build this type of track employing the concrete paving desired by the city at practically no greater expense than a good construction using wood ties and employing a less permanent paving. Furthermore, the use of these special ties provided a certain amount of resiliency which was considered highly desirable when going to an otherwise rigid construction, the reduction of noise being a factor in this case also.



VARIOUS STAGES IN THE CONSTRUCTION OF TRACK IN GARY

No. 1—Construction at the joints where special joint tie and electrically-welded plate are used. Excavation under the ties at the rails to form longitudinal beam can also be seen.

No. 2—Pouring in the first layer of concrete. The sand soil is first packed down by wetting in advance of the concreting by means of a hose.

No. 3—Rail and ties assembled and subgrade excavated ready for pouring foundation concrete.

No. 4—Pouring of the concrete base carried up even with the tops of the ties completed.

No. 5—Appearance of the completed track showing expansion joint locations in the distance.

An accompanying drawing shows a cross-section of the track, from which it is seen that the concrete foundation was poured practically in the form of a beam under each rail. The surface of the trench was prepared so that the thickness of concrete along under the rails was about 7 in. under the ties and this was narrowed up to about 3 in. in the middle of the track. After the rails and ties were assembled, the track was blocked up to grade and alignment and the concrete poured up to the level of the base of the rails. This was allowed to set and thereafter the paving layer was poured and the whole structure allowed to cure three weeks before traffic was permitted over it. In adopting this more permanent type of construction an agreement was reached with the city whereby the width of street to be paved by the company was reduced from 26 ft. to 20 ft.

The rails were supplied in 66-ft. lengths and drilled with one hole at each end, used to hold the joint plate in position until welded. The use of this extra long rail and the absence of any drilling of rails or boring of ties minimized the amount of labor required on the job. A brace and socket wrench were used to set up the four bolts and clips on each mechanical tie. The joints in the rails were staggered and a special Dayton mechanical joint tie used at each joint. The two adjacent ties were spaced at 2-ft. centers from the joint tie and the remaining ties at 3-ft. centers. At the joints, the bond was formed by the welding of the Apex plate to the rail and the welding of the rail base to the tie plates. Cross-bonds were provided every 800 ft. by welding old 60-lb. rail, inverted, across underneath the base of all four rails of the two tracks. One of these cross-bonds was installed at either side of each railroad crossing and the two cross-rails then bonded together with a 5,000-circ.mil cable extending through the crossing and welded to the cross-rail on either side.

An expansion joint was provided every 40 ft. in the upper or pavement layer of concrete. These joints were made by inserting in the opening two strips of 6-in. x 3/16-in. elastite projecting above the surface of the pavement about 2 in. The two strips were then hammered down into the opening and one strip bent over either way, filling the surface completely and smoothing over the separation between sections so that the joint is not felt by passing vehicles.

In 1920, the Gary Street Railway carried 11,270,503 passengers and operated 1,930,000 car-miles. The rate of fare is 8 cents cash or fourteen metal tickets for $1, and six school tickets for 25 cents. In the month of May, 1921, 74.3 per cent of the passengers paid cash, 23.4 per cent bought tickets and 2.3 per cent rode on school tickets. In June the corresponding tickets were 69.5 per cent cash fares, 28.7 per cent ticket fares and 1.8 per cent school tickets. Despite the fact that the car lines cross seventy-two railroad tracks at forty-one locations, the average schedule speed of the safety cars used is 8.1 m.p.h. The total city system comprises 31.4 miles of single track. Normally the company carries about 40,000 passengers every week day, but at the present time, due to the slack business at the steel mills, the daily number of passengers is around 25,000. The safety car earnings run from 42 cents to 58 cents per car-mile on week days with seven to eleven passengers per car-mile. These figures are for the month of June, 1921, which is the lowest month in point of traffic that the company had had up to that time.

The double-truck Peter Witt type cars are earning from 46 cents to 76 cents per car-mile and carrying 6.9 to 10.8 passengers per car-mile. The wages paid to trainmen, most of whom have been with the company six or seven years or more, is 71 cents maximum for two-man cars and 76 cents for safety cars. The monthly operating ratio during the last six months has varied from 65 to 74 per cent, the latter having prevailed in June.

The Milwaukee Electric Railway & Light Company is equipping all its interurban cars with Miller trolley shoes. It has been using some of these shoes for a long time, but has found that they give a better life if all cars on a line are equipped with shoes rather than to have some trolley wheels mixed in. The wheels seem to pit or burr the wire slightly, producing a rough surface which makes the wear on the shoes more rapid.

Saginaw Service Still Suspended

Prospect for Resumption by Railway Appears Remote—Each Succeeding Day Drives Home the Inadequacy of the Bus

SAGINAW and Bay City entered, on Aug. 24, their third week without electric railway transportation and little is known when there will be a resumption of service. Otto Schupp, the receiver for the Saginaw-Bay City Railway, is out of the city, and company officials profess to know nothing of what the future holds for the two valley cities.

One jitney accident, in which five persons were seriously injured, and a near accident have awakened the members of the Council to the fact that the operators of jitney buses must provide adequate insurance for the protection of the riding public. Mayor B. N. Mercer has taken the stand that unless operators do this, he will fight to the end that the jitneys must cease operations. Commissioners Holcomb, Johnson and Hammel are with him in this attitude, but Commissioner Phœnix, who has at every opportunity taken a position against the railway, wants to require only a small policy, saying, "I will not vote for any insurance which will drive these people off the streets."

TYPE OF VEHICLE AT DEPOT GREETING VISITORS

This commissioner never would help the company and at an informal meeting of the Council and the bus operators, urged that they be allowed to charge 1 cent for a transfer to "help them along." He has introduced in the Council an ordinance for the regulation of the buses and while seeming to insist upon strict measures, any time the question of the amount of insurance to be required from each owner comes up, he backs up and stands as the friend of the bus owner.

At the present time there are fifty buses operating under a go-as-you-please schedule. As a result during rush hours there is an entire lack of accommodations for the public. In fact the only time a person is reasonably sure of having a seat is the middle of the forenoon. Double fares are being charged, as no satisfactory arrangement has yet been worked out for issuing transfers. The jitney men say "just as soon as the ordinance is passed and if we can work under it then we will issue the transfers."

No figures are available, but it is freely stated that probably not more than twelve of the bus operators own their vehicles. Citizens generally know them to be irresponsible from a financial standpoint. In political circles, Commissioner Phœnix is given credit for wanting to frame a strong ordinance, with the exception of the insurance section. When the buses fail under his rule it is expected he will urge that the question of municipal ownership of the railway be submitted to the people. Since he has been in the Council this has been his one big hobby. How far he will get of course no one knows, but there has never been any pronounced movement along this line.

To protect the city's interests, it is expected the Council will notify the railway this week to operate its cars, and then as a matter of form will allow thirty days to elapse before declaring the franchise forfeited. What effect this will have on the situation is not known. The United States District Court is in charge of the property and how the company can do anything has not been explained.

REO BUS WAITING FOR PATRONS

The members of the Council with the exception of Commissioner Phœnix are not satisfied to forfeit the franchise and if the receiver decides to operate, with the jitney competition removed, it is expected that the Council will be glad to accept the proposition.

It is now well known that the jitneys cannot take care of the transportation needs of the city. Should manufacturing conditions improve they would be swamped. The last available reports on the labor situation showed only about 45 per cent of the normal number of workers employed.

Otto Schupp, receiver for the railway, announced on Aug. 24 that a rough inventory of the property now being made will be completed for submission to the United States District Court during the week ended Sept. 3. Until then no change is likely in the status of the case, Mr. Schupp said.

The Council has allowed two weeks for jitney owners to furnish insurance on each bus at the rate of $5,000 for one person, and $25,000 for one accident. Mayor Mercer held out for a $50,000 policy, but was voted down four to one.

The president of the Fair Association appealed to the Council to allow the Michigan Railway to operate during fair week. The usual attendance at this event is 800,000, but members of the Council were not in favor of this proposal. Transportation to the fair will, therefore, depend largely upon the uncertain public jitneys. The Fair Association has a $75,000 loss to meet this year.

The suspension of service and the receivership are the culmination of about two and a half years of almost continuous difficulty—tie-ups, strikes, court actions and settlement proposals. They were the direct result of the action of the people in rejecting the franchise presented for consideration on July 19, last.

In all, there have been four suspensions of service since March 23, 1919, to the present. They totaled 37½ carless days with twenty-four days the longest suspension and two days the shortest. Three times the suspensions resulted from strikes for higher wages, which the company refused on the ground that it could not grant them without increased fares. Once, the first time, the company ran its cars into the carhouses in refusal to operate for the old 5-cent fare.

The election on July 19 came as a result of representations by the Saginaw-Bay City Railway to the Council that unless some provision was made for higher fares and relief granted from jitney bus competition and paving burdens, the company would be forced into bankruptcy.

In a series of conferences between city and company representatives the early part of June, the service-at-cost franchise was worked out. In asking for this conference, the company reminded the city of an agreement reached last November, when the cars started after their twenty-four-day tie-up, in which the Council agreed to take up consideration of a new thirty-year franchise and the other points on which the company asked relief.

The history of that tie-up goes back to last fall, when the motormen and conductors demanded a 50 per cent increase in pay, only to be told by the company that this was impossible unless the city granted an increase in fares.

After appealing to the Council for a 10-cent fare, which was rejected together with a compromise offer by the Council of an 8-cent fare, with tickets selling at five for 35 cents, the company offered another compromise: A 10-cent fare with tickets at four for 25 cents, but this was ignored by the Council.

The requests for higher fares denied, the railway officials refused the demands of the men, who then went on strike. The county fair was on at the time, and although the strike started technically on Sept. 30 the tie-up was postponed by an agreement between the men and the Saginaw County Agricultural Society by which the employees continued to run the cars for the three days remaining of the county fair week. They were paid by the fair society, which, in turn, was reimbursed by the company.

The following Sunday midnight the strike started. Developments came rapidly. The city went into Circuit Court and obtained a mandamus ordering the company to live up to its franchise, then had the officials cited for contempt of court when they failed to observe the court's order. The carmen reduced their wage demands to 10 cents an hour—about a 20 per cent increase. Then, without warning, and shortly after a conference between company officials and the Council, the company started the cars, giving the men the demanded increase.

Two weeks elapsed before the public learned the reason for this sudden resumption of service. Then the company, in a communication to the Council, disclosed the fact that it considered the Council had promised a higher rate of fare would be granted if service were restored, something all the members of the Council denied was done. The Councilmen asserted that they merely told company representatives they would not consider any rate proposition whatever until the cars were running, refusing to treat with the company until service was restored, on the ground that the street railway heads were "outlaws" while they failed to obey the court's order.

Negotiations continued until Nov. 1, the men meanwhile receiving the wage increase they had asked. Then the men, refusing to accept a wage cut which the company announced would be necessary because of the Council's alleged failure to keep its agreement, struck again, starting the twenty-four-day tie-up.

The public utilities committee of the Board of Commerce took a prominent part in the negotiations that followed. It proposed a $200,000 bond issue by the city to build extensions, and also proposed a fare increase to the company. These negotiations at first failed to produce results, as did efforts by the Federation of Labor to bring about adoption of the Plumb plan for controlling the railway.

The city went into court again, asking that the company be compelled to live up to its franchise and that its officials be punished for contempt of court. Circuit Judges E. A. Snow and Clarence M. Browne upheld the injunction which had been granted several weeks previously ordering the cars to run, and adjudged the officials in contempt of court. But before the contempt proceedings could be finished the company obtained a writ of certiorari from the Supreme Court, which operated as a stay of proceedings.

The cars remained idle despite the court's action in upholding the injunction ordering them to start. But meanwhile the Board of Commerce committee had been active, and in a conference on Nov. 23 an agreement was reached between the city, the company and the men by which the cars were started Nov. 25.

Under this agreement the men submitted to a wage cut which took them back to their wages before the October strike, while the Council agreed to regulate jitney bus competition and immediately to take up consideration of a new thirty-year franchise, the cars to run meantime at the 6-cent fare then in force. The franchise, which the Council on that date agreed to frame and to submit to the people, is the one which the voters so emphatically refused to accept on July 19.

BUS AT CURB ABOUT TO DISCHARGE PASSENGERS

But that series of troubles was not the first the city had experienced. The initial tie-up came on March 23, 1919, when the company suspended service as a protest against the action of the voters on March 5 in refusing to approve the 6-cent fare granted by the Council in July, 1918. This tie-up lasted five and one-half days, ending when the city went into Circuit Court and obtained an order compelling the railway to observe the provisions of its franchise contract.

The second suspension started July 25, 1919, when the company, operating at a six-for-a-quarter rate of fare, refused its men an advance in wages unless the 6-cent fare were restored. This fight the company won, restoring service July 31, after the Council adopted another 6-cent fare ordinance. The first ordinance granting this rate had been repudiated by the people, but the second, identical in every way, was approved by the people by a big majority in September, 1919.

Tentative Settlement Draft Presented

In the Vernacular, Des Moines Is Still Walking, but Getting Nowhere—Presence of Mr. Harris in City Desired—Manager Chambers in Chicago

AFTER an eight-hour conference between F. C. Chambers, general manager of the Des Moines (Ia.) City Railway, and a special committee from the Retail Merchants' Association on Aug. 23, Des Moines seemed no nearer a solution of its railway difficulties than previous to Mr. Chambers' visit to Chicago. Mr. Chambers brought back a tentative draft of a new franchise prepared by the Harris interests, and while the details of the draft have been kept secret, it is understood that the main stumbling block will be the fare provisions, as retail merchants do not feel that an 8-cent fare franchise can be passed in Des Moines now.

The immediate result of the conference was a request from the committee that Mr. Chambers return to Chicago and attempt to have A. W. Harris come to Des Moines personally to conduct the negotiations with the committee. Mr. Chambers has returned to Chicago but no announcement by him had been made up to Aug. 25.

Seven more bus licenses were granted by the City Council on Aug. 23 under an agreement that the vehicles would be allowed to continue operation until Sept. 2, which is the last day of the Iowa State Fair. All outstanding licenses expire automatically on Aug. 31. Ten more buses are said to be on the way from Kansas City and operators now claim that 106 buses are in operation. This the railway men deny.

Bus operators have started a campaign to sell the bus proposition to the city and called a mass meeting of all civic and commercial organizations with the City Council for Aug. 25. The Council accepted the invitation. This will be first of a series of meetings to impress upon the public the difficulties which buses have encountered.

Five touring cars are now being used from which to supervise and direct bus operation, and guards have been placed at railroad crossings for the first time. The operators have agreed to place all new buses arriving in the city on the fair grounds line and not to reduce service on other lines. It is claimed that twenty-five buses will operate on the fair grounds line. The fair started on Aug. 24, and for about five days it will be necessary to transport about 50,000 people a day.

City Councilman John Budd on Aug. 23 offered a preliminary plan for allowing the buses a three-year grant. He urged that a reliable corporation be granted a franchise and the present makeshift arrangement be abolished. Mr. Budd proposed a fleet of from 150 to 175 buses with a minimum seating capacity of twenty for each vehicle and a limit on seating capacity of thirty.

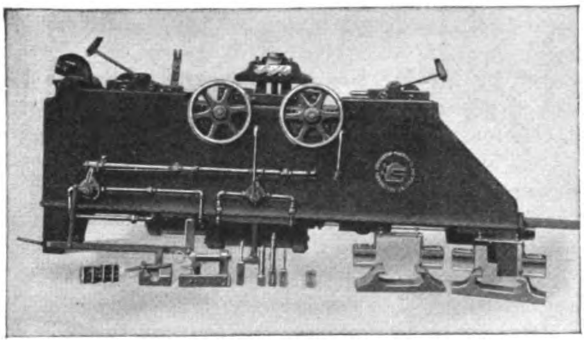
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Hose Dismantling and Assembling Machine

A New Device—Cuts Clamp Bolts, Removes Nipples and Couplings and Assembles the Various Parts of Air, Steam and Signal Hose, Which Speeds Up This Work Considerably

THE Covington (Va.) Machine Company, Inc., has placed on the market a new type of machine for dismantling and assembling air-brake, signal and steam hose. In addition to saving much time in performing this work, the use of the machine insures that all clamps, couplings, nipples, etc., are not strained or distorted in the removal operation, so that they can be used again without danger.



Machine for Dismantling and Assembling Hose

The accompanying illustration shows the machine as constructed, together with the entire equipment of tools for performing the various operations. To remove the fittings from old hose, the first operation is to cut the clamp bolts. This is performed by a special shear knife located to the left of the machine in the illustration. The operator places the hose in position and by pressing down the pedal the bolts are cut without injury to the hose clamp.

The coupling and nipple are removed by a single operation. To perform this operation the hose is clamped in the central portion of the machine and the nipple and coupling pullers are dropped into position.

The pressure for clamping the hose is obtained by moving the lever shown at the right and by moving the lever at the center of the machine air is admitted to the pulling cylinder, which removes both fittings, together with the clamp from the hose without injury. The operation for stripping the various types of hose is the same, but different sized tools are used to suit the different types of hose.

To assemble the fittings the new hose is laid between two straight clamping blocks which are brought together by the air pressure in the clamp cylinder. These blocks hold the hose straight and without danger of injury. The coupling is held in the same fixture as is used for dismantling and the nipple is placed on a centering fixture. The sliding heads which insert the fittings are brought together by moving the operating lever at the center of the machine to the left. The heads are then released and the hose clamps are brought together by means of the hand wheels and special jaws. The inserting and screwing up of the clamp bolts complete the operation.

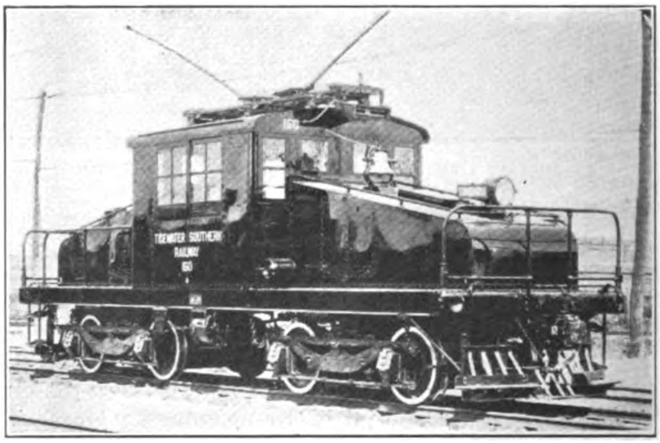
By the use of this machine it has been found that a single operator can readily dismantle 100 air hose per hour and assemble twenty per hour. The assembling operation is limited somewhat by the time necessary to screw up the clamp bolts, as this is the longest single operation in assembling.

New Locomotive for Tidewater Southern Railway

FOR handling increased interurban freight traffic in the San Joaquin Valley between Stockton and Thurlock, Cal., the Tidewater Southern Railway, a subsidiary of the Western Pacific Railway, has recently placed in operation a new General Electric 60-ton electric locomotive embodying several interesting features.

Designed for operation at 1,500 volts direct current, the locomotive is 37 ft. 4 in. long, 9 ft. 7 in. wide, with a total wheelbase of 25 ft. 5 in. It is driven by four 750/1,500-volt box-frame, forced ventilated railway motors through a single reduction gear of 69:17 ratio. The motors are arranged for shunted field operation, which gives a continuous rating on 1,500 volts of 14,500 lb. continuous tractive effort at 22 m.p.h. It will operate at reduced speed on 600 volts. The control is type M, single unit with two master controllers giving ten steps with four motors in series and seven steps with two in series and groups in multiple. The motors are permanently connected in groups of two in series.

The motor rheostats and various parts of the control equipment are housed under the sloping end cabs,



1,500-Volt Locomotive for Tidewater Southern Railway conveniently arranged for inspection and repairs. Current is collected through two pole trolleys which will operate through a range of from 14 ft. to 22 ft. above the rail.

There is a main switch with a magnetic blowout for opening the main circuit in emergency, or for inspection, and a complete equipment of auxiliary switches for the control of headlights, cablights, dynamotor blower set, compressor and compressor relay, control circuits, heaters, field shunting and control transfer.

Headlights as well as cablights, control and compressor relay are operated from the dynamotor, except when the locomotive is being run on 600 volts, when they are operated from the trolley. There are two CP-30 air compressors with a combined piston displacement of 70 cu.ft. per minute when delivering air at 100 lb. per square inch pressure. Air is supplied for sanders, bell ringer and control, in addition to the air brakes.

The present electrified system of the Tidewater Southern Railway is arranged for 1,200-volt operation, but will be changed over to 1,500 volts in the near future. The new locomotive was designed for operation at the higher voltage in view of the contemplated change in potential.

The locomotive carries all its weight of 120,000 lb. on the drivers. The cab is of the sloping end steeple type of construction, extending practically the whole length of the underframe, which consists of four heavy steel channels extending the entire length of the platform, and tied together by heavy steel end-frame castings. Each channel is riveted to the webs of the end frame castings and to the bolster plates on the bottom. The bolsters are built up of 1-in. steel plates, 10 in. in width riveted to all four longitudinal sills.

Concrete Breaker in Cleveland

THE accompanying illustrations show a new machine developed by Charles H. Clark, engineer maintenance of way, Cleveland Railway, to break up the concrete pavement, or the concrete under and between the ties, in street railway tracks. The former method of using a ponderous weight is replaced by employing five hammers of less weight, and dropped on a point. All the hammers can be used at one time, or each one independently. In case of manholes or soft spots this becomes necessary.

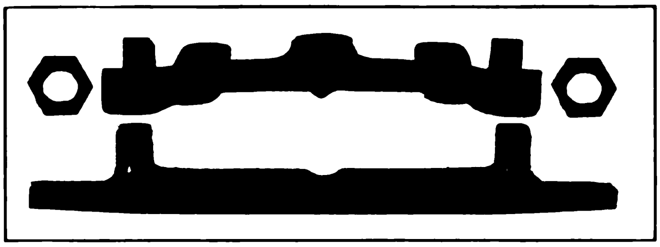
The car is moved at the rate of about 8 ft. per minute by the use of a separate clutch. The operation consists of spotting the car and allowing the weights to drop continuously till the concrete is shattered. The car is moved while the weights are going up.

The chains which carry the weight make a complete cycle in sixteen seconds which means two blows by each weight in this time, or a total of about thirty-eight blows per minute for the five hammers. The machine will break about 50 to 150 ft. of track per hour with two men at a labor cost of about 1 cent to 2 cents per foot of track.

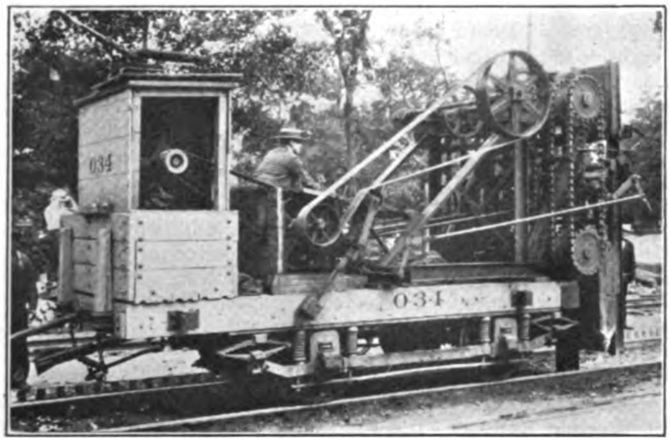
New Ear for Trolley Lines

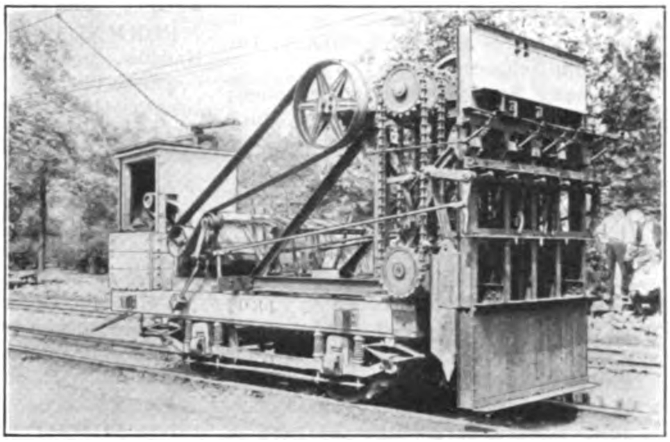
THE General Electric Company has recently developed a new form of strain ear, known as the Form S, for use in trolley construction. It consists of two parts, the shoe and the body, the latter being made of malleable iron and the former of either iron or brass as desired. It is installed without the use of solder.

The new ear has several distinct advantages over former types, in that it has a renewable shoe, or wearing part, and the shoe can be removed without the use of block and tackle, or without disturbing either the trolley or anchor wires. In applying it the body is put on the wire and the shoe clamped to it by means of bolts which fit on the threaded studs on the shoe. Once the body is in position it can stay there indefinitely, it being a simple matter to remove the shoe by loosening the clamping nuts.


STRAIN EAR DETAILS

In clamping the shoe into position the wire is slightly bent to follow the inequalities between the shoe and the body, which prevents the shoe from slipping on the wire. The anchor wires are attached to extension arms with 5-in. centers, preventing the trolley harp of a wild trolley from jamming or becoming wedged beneath the trolley and anchor wires. The shoe, which is the only wearing part, can be easily removed and replaced at a low cost without the necessity for special tools, and its cheapness helps considerably in lowering maintenance costs.





THIS CONCRETE BREAKER WILL DELIVER THIRTY-EIGHT BLOWS PER MINUTE

American Association News

Annual Convention Programs Ready

Programs of the American and Affiliated Associations Include Important Topics and Allow Time for Discussion

THE following tentative programs for the American and four affiliated associations have been prepared for the annual convention at Atlantic City, October 3 to 7. While possible changes may of course be made in these programs before Oct. 3, such changes should be slight and the programs here given present a fairly accurate outline of the meetings as planned.

Program of American Association

(All sessions open)

Monday, Oct. 3, 1921

9:30 a.m. to 5 p.m.

Registration and Distribution of Badges at booth at Boardwalk entrance to pavilion in front of Haddon Hall, corner of Boardwalk and North Carolina Avenue.

Tuesday, Oct. 4, 1921

9:30 a.m. to 1 p.m.

Meeting held in Vernon Room of Haddon Hall

Convention called to order.

Annual address of the president.

Annual report of executive committee.

Annual report of the secretary and treasurer.

Appointment of convention committees:

(a) On resolutions.

(b) On recommendations in president's address.

Special report of executive committee relating to recommendations on current matters and changes in constitution and by-laws.

Reports of committees:

Aera Advisory—Charles L. Henry, president Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., chairman.

Membership—F. R. Coates, president Toledo Railways & Light Company, Toledo, Ohio, chairman.

Company Section—Martin Schreiber, manager Southern Division and chief engineer Public Service Railway Company, Camden, N. J., chairman.

PAPER—**Contrasted Advantages of Service-at-Cost Contract Franchise and State Regulation**—EDWARD DANA, general manager Boston Elevated Railway, Boston Mass.

FORMAL DISCUSSION — ROBERT I. TODD, president Indianapolis Street Railway, Indianapolis, Ind.; S. B. WAY, vice-president and general manager Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

Reports of committees:

Publicity—Barron G. Collier, president Barron G. Collier, Inc., New York City, chairman.

Committee of One Hundred—Henry R. Hayes, Stone & Webster, Inc., New York City, secretary-treasurer.

Mail Pay—L. H. Palmer, assistant to president United Railways & Electric Company, Baltimore, Md., chairman.

National Relations—Charles L. Henry, president Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., chairman.

Joint Committee of National Utilities Associations—P. H. Gadsden, vice president United Gas Improvement Company, Philadelphia, Pa., chairman.

Wednesday, Oct. 5, 1921

9:30 a.m. to 1 p.m.

Meeting held in Vernon Room of Haddon Hall

Report of committee on nominations.

Election of officers.

Reports of committees:

Electrolysis—W. J. Harvie, general manager Auburn & Syracuse Electric Railroad Company, Auburn, N. Y., chairman.

Trackless Transportation—H. B. Flowers, vice-president and general manager United Railways & Electric Company, Baltimore, Md., chairman.

One-Man Car—R. P. Stevens, president Republic Railway & Light Company, New York City, chairman.

TOPICAL DISCUSSION OF ELECTRIC RAILWAY FINANCE—H. M. ADDINSELL, Harris Forbes & Company, New York City; F. E. FROTHINGHAM, Coffin & Burr, Boston, Mass, chairman. Other speakers to be announced.

PAPER—**Comparative Position of the Industry Today and Four Years Ago**—HENRY A. BLAIR, chairman, Chicago Surface Lines, Chicago, Ill.

FORMAL DISCUSSION — ROGER BABSON, president Babson Statistical Organization, Wellesley Hills, Mass.; EDWIN GRUHL, vice president North American Company, New York City.

Thursday, Oct. 6, 1921

9:30 a.m. to 1 p.m.

Meeting held in Vernon Room of Haddon Hall

Report of committee:

Valuation — Martin Schreiber, chief engineer and manager Southern Division, Public Service Railway Company, Camden, N. J., chairman.

PAPER—**The Interest of Manufacturers in the Present Electric Railway Crisis.**—Author to be announced later.

PAPER—**Electric Railways and Their Community Uses**—J. R. BIBBINS, manager Department of Transportation and Communication, United States Chamber of Commerce, Washington, D. C.

ADDRESS — HERBERT HOOVER has been invited to speak on the subject, **Use of Electric Railways in Improving Industrial Efficiency.**

Reports of Convention committees:

(a) On resolutions.

(b) On recommendations in president's address.

Unfinished business.

General business.

Installation of officers.

Adjournment.

EVENING SESSION

A general meeting of the American and affiliated Associations has been planned for one evening of the convention.

The committee on subjects is arranging for a speaker of national prominence, while the committee on entertainment promises additional attractive features.

Program of Engineering Association

Monday, Oct. 3, 1921

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at booth at Boardwalk entrance to pavilion in front of Haddon Hall, corner of Boardwalk and North Carolina Avenue.

2:30 p.m. to 5 p.m.

Meeting held in Solarium of Haddon Hall

Convention called to order.

Annual address of the president.

Annual report of the executive committee.

Annual report of the secretary and treasurer.

Appointment of convention committees.

(a) On resolutions.

Reports of committees:

Apprenticeship Systems—F. R. Phillips, superintendent of equipment Pittsburgh Railways, Pittsburgh, Pa., chairman.

Heavy Electric Traction — Sidney Withington, electrical engineer New York, New Haven & Hartford Railroad, New Haven, Conn., chairman.

Tuesday, Oct. 4, 1921

2:30 p.m. to 5 p.m.

Meeting held in Solarium of Haddon Hall

Reports of committees:

Power Generation—A. B. Stitzer, chief engineer Republic Engineers, Inc., New York City, chairman.

Power Distribution — Charles R. Harte, construction engineer the Connecticut Company, New Haven, Conn., chairman.

NOTE—The joint report of the committee on stores accounting, representing the stores accounting committee of the Accountants' Association and the committee on purchases and stores of the Engineering Association, will be held in Accountants' Room in the Hotel Chalfonte at 2:30 p.m.

Wednesday, Oct. 5, 1921

2:30 p.m. to 5 p.m.

Meeting held in Solarium of Haddon Hall

Reports of committees:

Way Matters—R. C. Cram, engineer surface roadway, Brooklyn Rapid Transit Company, Brooklyn, N. Y., chairman.

Buildings and Structures — D. E. Crouse, chief engineer Rochester & Syracuse Railroad, Syracuse, N. Y., chairman.

PAPER—**Work of the Underwriters' Laboratories** — GEORGE B. MULDAUR, general agent Underwriters' Laboratories, New York City.

Thursday Oct. 6, 1921

2:30 p.m. to 5 p.m.

Meeting held in Solarium of Haddon Hall

Reports of committees:

Equipment—Daniel Durie, general superintendent West Penn Railways, Connellsville, Pa., chairman.

Unification of Car Design—H. H. Adams, superintendent of shops and equipment Chicago Surface Lines, Chicago, Ill., chairman.

Standards—Martin Schreiber, manager Southern Division, Public Service Railway, Camden N. J. chairman.

Report of convention committees:

(a) On resolutions.

General business.

Election of officers.

Installation of officers.

Adjournment.

Program of Claims Association

Monday, Oct. 3, 1921

9:30 a.m. to 12:30 p. m.

Registration and distribution of badges at booth at Boardwalk entrance to pavilion in front of Haddon Hall, Boardwalk and North Carolina Avenue.

2:30 p.m. to 5 p.m.

Meeting held in Hall Pavilion of Haddon Hall

Convention called to order.

Annual address of the president.

Annual report of the executive committee.

Annual report of the secretary-treasurer.

Appointment of convention committees:

(a) On resolutions.

(b) On nominations.

Reports of committees:

On constitution and by-laws.

Interchange of Claims Statistics—H. D. Briggs, assistant general claim agent Public Service Railway, Newark, N. J., chairman.

Membership—C. G. Rice, manager Associated Bureaus, Pittsburgh Railways, Pittsburgh, Pa., chairman.

Resolutions—A. G. Jack, claim agent Wilmington & Philadelphia Traction Company, Chester, Pa., chairman.

Safety—

Subjects—W. G. Fitzpatrick, general claim attorney Detroit United Railway, Detroit Mich., chairman.

PAPER—**Constructive Argument as Opposed to Constructive Contentions in Accident Investigations and Adjustments**—LOUIS H. BUTTERWORTH, attorney Boston Elevated Railway, Boston.

Discussion.

PAPER—**Essential Points to Cover in Accident Investigation**—R. C. GREEN, attorney Cleveland Railway, Cleveland, Ohio.

Discussion.

Tuesday, Oct. 4, 1921

2:30 p.m. to 5 p.m.

Joint Meeting with Transportation & Traffic Association.

Meeting held in Vernon Room of Haddon Hall

Reports of committees:

Traffic Regulation—H. B. Flowers, vice-president and general manager United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Joint Committee on Safety Work—E. C. Spring, general superintendent Lehigh Valley Transit Company, Allentown, Pa., chairman; R. E. McDougall, general manager New York & Harlem Railroad, New York City, co-chairman.

Discussion.

Wednesday, Oct. 5, 1921

2:30 p.m. to 5 p.m.

Meeting held in Hall Pavilion of Haddon Hall

PAPER—**What Should Be the Method of Claim Departments in Handling Accidents and Claims?** — WALTER E. ROBINSON, claim agent Cincinnati Traction Company, Cincinnati, Ohio.

Discussion.

Free-for-all discussions:

(a) Value of Publicity in Claims Work.

(b) Best Method of Handling Hospital Cases.

(c) Auto Hazard.

(d) Using the Mails to Obtain Witnesses' Statements.

(e) Claims by Company for Damage to Its Equipment and How Such Claims are Handled.

Report of convention committees:

(a) On Resolutions

(b) On Nominations

Election of officers.

Installation of officers.

Adjournment.

Program of Transportation and Traffic Association

Monday, Oct. 3, 1921

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at booth of Boardwalk entrance to pavilion in front of Haddon Hall, Boardwalk and North Carolina Avenue.

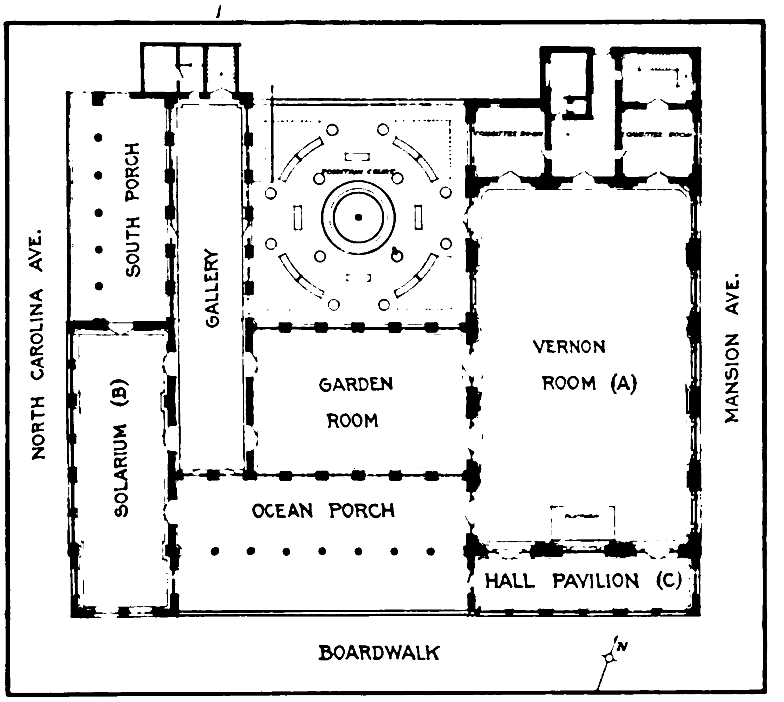
2:30 p.m. to 5 p.m.

Meeting held in Vernon Room of Haddon Hall

Convention called to order.

Annual address of the president.

Annual report of the executive committee.



ARRANGEMENT OF MEETING HALLS FOR ANNUAL CONVENTION AT ATLANTIC CITY

A—Meeting hall of the American and the Transportation and Traffic Associations.

B—Meeting hall of the Engineering Association.

C—Meeting hall of the Claims Association.

NOTE—The Accountants' Association will hold its meetings at the Chalfonte Hotel, except as noted in the program.

Annual report of the secretary and treasurer.

Appointment of convention committees.
(a) On resolutions.
(b) On nominations.

Report of committee:

Merchandising of Transportation—J. H. Alexander, vice-president Cleveland Railway, Cleveland, Ohio, chairman.

Discussion.

Tuesday, Oct. 4, 1921

2:30 p.m. to 5 p.m.

Joint meeting with Claims Association.

Meeting held in Vernon Room of Haddon Hall

Reports of committees:

Traffic Regulations—H. B. Flowers, vice-president and general manager United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Joint Committee on Safety Work—E. C. Spring, general superintendent Lehigh Valley Transit Company, Allentown, Pa., chairman; R. E. McDougall, general manager New York & Harlem Railroad, New York City, co-chairman.

Discussion.

Wednesday, Oct. 5, 1921

2:30 p.m. to 5 p.m.

Joint meeting with Accountants' Association.

Meeting held in Vernon Room of Haddon Hall

Reports of committees:

Joint Committee on Economics of Schedules—Edward Dana, general manager Boston Elevated Railway, Boston, Mass., chairman; A. G. Neal, comptroller Washington Railway & Electric Company, Washington, D. C., co-chairman.

Discussion.

Joint Committee on Express and Freight Traffic Promotion and Costs—F. W. Coen, vice-president Lake Shore Electric Railway, Sandusky, Ohio, chairman; L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ond., co-chairman.

Discussion.

Thursday, Oct. 6, 1921

2:30 p.m. to 5 p.m.

Meeting held in Vernon Room of Haddon Hall

Report of committee:

Personnel and Training of Transportation Employees—James P. Barnes, president Louisville Railway, Louisville, Ky., chairman.

Discussion.
Suggestions.
General discussion.
General business.

Report of convention committees:
(a) On resolutions.
(b) On nominations.
Election of officers.
Installation of officers.
Adjournment.

Program of Accountants' Association

Monday, Oct. 3, 1921

9:30 a.m. to 12:30 p.m.

Registration and distribution of badges at booth at Boardwalk entrance to pavilion in front of Haddon Hall, corner of Boardwalk and North Carolina Avenue.

2:30 p.m. to 5 p.m.

Meeting held in Accountants' Room in Hotel Chalfonte

Convention called to order.
Annual address of the president.
Annual report of the executive committee.
Annual report of the secretary-treasurer.

Appointment of convention committees:
(a) On resolutions.
(b) On nominations.

Reports of committees:

Standard Classification of Accounts—H. L. Wilson, treasurer Boston Elevated Railway, Boston, Mass., chairman.

Representing Accountants' Association at the annual convention of the National Association of Railway and Utilities Commissioners—C. S. Mitchell, comptroller Pittsburgh Railways, Pittsburgh, Pa., chairman.

PAPER—**Electric Railway Cost Accounting**—JOHN HALL BOWMAN, C. P. A., Price, Waterhouse & Company, New York City.

Discussion.

Tuesday, Oct. 4, 1921

2:30 p.m. to 5 p.m.

Meeting held in Accountants' Room in Hotel Chalfonte

Joint Report—Stores Accounting.

Stores Accounting Committee of the Accountants' Association—R. A. Weston, special accountant the Connecticut Company, New Haven, Conn., chairman. Committee on Purchases and Stores of the Engineering Association—H. W. Staub, purchasing agent United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

PAPER — **Departmental Accounting, including Budget Control of Construction and Operating Expenditures—H. C. HOPSON, C. P. A., 61 Broadway, New York City.**

Discussion.

PAPER—**Construction Accounting—W. E. JONES, assistant comptroller United Electric Railways, Providence, R. I.**

Discussion.

Wednesday, Oct. 5, 1921.

2:30 p.m. to 5 p.m.

Joint meeting with Transportation and Traffic Association.

Meeting held in Vernon Room of Haddon Hall

Reports of committees:

Joint Committee on Economics of Schedules—Edward Dana, general manager Boston Elevated Railway, Boston, Mass., chairman; A. G. Neal, comptroller Washington Railway & Electric Company, Washington, D. C., co-chairman.

Discussion.

Joint Committee on Express and Freight Traffic Promotion and Costs—F. W. Coen, vice-president Lake Shore Electric Railway, Sandusky, Ohio, chairman; L. T. Hixson, auditor Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., co-chairman.

Discussion.

Accounting members will return to Accountants' Room in Hotel Chalfonte.

Reports of convention committees:
(a) On resolutions.
(b) On nominations.
Election of officers.
Installation of officers.
Adjournment.

Nominating Committee Appointed

PRESIDENT GADSDEN announced the following as the nominating committee of the American Association for the 1921 election. The committee was requested to report nominations as soon as practicable:

J. H. Pardee, president J. G. White Management Corporation, New York, chairman.

P. S. Arkwright, president Georgia Railway & Power Company, Atlanta, Ga.

F. G. Buffe, general manager Kansas City (Mo.) Railways.

W. A. Draper, vice-president Cincinnati (Ohio) Traction Company.

E. C. Faber, Barron G. Collier, Inc., New York.

Thomas Finigan, American Brake Shoe & Foundry Company, Chicago.

The appointment of this committee at this time is in line with the announced policy of the executive committee and is an invitation to the members at large to offer suggestions to this committee regarding the officers to be elected this fall.

Entertainment Committee Holds Meeting

THE Entertainment Committee in charge of activities for the Atlantic City Convention, Oct. 3-6, of which E. C. Faber, New York, is chairman, held its first meeting at association headquarters on Aug. 15.

The committee considered several plans for entertainment. A sub-committee was appointed which has, since the meeting, visited Atlantic City and prepared several suggestions for the entire committee to consider at its meeting Friday, Aug. 26. The entertainment features will be comprehensive, and all in attendance will be assured of not having any excess time on their hands.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Daniel W. Smith a Seer

No Future for Surface Electric Railways, Says Candidate for Mayor of Detroit

The possibility of the railway question in Detroit, Mich., again being made a political issue in the coming election for Mayor, became evident with the announcement by Daniel W. Smith, candidate for Mayor, that a communication has been prepared and will be sent to the Council requesting action by that body directing that plans be prepared at once by the Mayor and the Street Railway Commission, and estimates be obtained on the cost of a comprehensive rapid transit system to be owned and operated by the city.

TRANSPORTATION REPORT IN PREPARATION

At about the same time the Street Railway Commission announced that a report would be made public which covers the complete transportation system in Detroit, including surface lines, subway and elevated road possibilities. This report has been in preparation two months.

The reason given by Mr. Smith for sending his communication to the Council at this time was that no steps have been taken by Mayor Couzens leading to rapid transit. It was further claimed that the present plan for municipal railways threatens to bring the city to the point where the city's bonding limit would be reached, without provision for a rapid transit system and no money available for carrying out such a system.

In referring to Mayor Couzen's proposed plan to operate jitneys and buses on Fort Street and Woodward Avenue, until tracks can be laid, in event the Detroit United Railway removes its tracks from these streets, as ordered by the city, Mr. Smith states that the situation which will result from such arrangement may reveal the lack of vision on the part of the present administration in carrying out the program for a municipal transportation system.

Mr. Smith questions the wisdom of paying $288,000 for the Fort Street and Woodward Avenue tracks of the Detroit United Railway, or taking over any of the property of the Detroit United Railway on streets that can be better served by rapid transit.

SUBWAY SUGGESTED

A subway is suggested to be run in a northerly direction from the heart of the city to the Ford plant, or some place farther north. This, it is stated, should connect with the rapid transit elevated lines of the improved type running as crosstown or east and west lines. These lines, Mr. Smith states, should be augmented with motor buses, trackless trolleys or with some other surface lines all fitted into a system that will be adequate for Detroit's needs. Mr. Smith states that all large American cities are on the eve of a radical change in transportation methods.

Mr. Smith cites that jitneys are a product of hard times, but that the significant point remains that the working men and women in Detroit even in a period of depression, have been willing to pay a fare twice that collected on the electric cars, in order that they may shorten the running time between their homes and places of employment.

According to Mr. Smith, "the handwriting on the wall" is daily becoming more evident—that there is no future for surface electric railways, the people demanding more speedy means of transportation than can be afforded by surface lines.

Fresno Franchise Conferences to Continue

The conference held early in the present month between members of the City Commission of Fresno, Cal., and officers of the Fresno Traction Company over the new indeterminate franchise submitted to the commission by the railway adjourned without any settlement of the points at difference between the commission and the officials of the railway. In the opinion of City Attorney Johnston, the franchise in the form in which it was submitted by the railway would have to go to a vote of the people of the city before it could be put into effect by the city government. Members of the City Commission agreed that it was useless to go into a discussion of the details of the city charter until this question had been settled.

OPINION DIVIDED OVER RECENT STATUTE

The attorneys for the railway are understood to have taken the position that the franchise as proposed by the company could be passed by the City Commission. It was suggested by Commissioner Anton that pending another meeting, the City Attorney of Fresno should communicate with other cities where the indeterminate franchise is in effect and secure the opinion of the City Attorneys on the various points that are in doubt in the present situation in Fresno.

The differences of opinion that exist as to the probable authority of the city to proceed with the negotiations have arisen over the fact that in 1919 the State Legislature passed a general statute for granting resettlement franchises by cities operating under a freeholder charter.

Safety Council Progressing

Community Wide Plan Well Under Way to Reduce Accidents—Railways Co-operating

The Chicago Safety Council, started April 16, 1920, has since been actively at work in a community-wide plan of education to reduce the loss of human life and property through accidents and carelessness. The council is organized as a department of the Chicago Association of Commerce and functions by means of four divisions and twenty committees and operates through the homes, schools, churches, industries and civic organizations, thus reaching and instructing practically the entire community in its important activities.

A school for safety supervisors was conducted by the Safety Council from Sept. 14, 1921, to March, 1921, with an average attendance at fifteen meetings of 475 men, the school graduating 283 men qualified to supervise safety work in industry. Beginning Dec. 2, 1920, a foreman's safety instruction course was conducted from which 310 men were graduated on June 7. Of these graduates, fifty were employees of the Chicago Elevated Railways. The average attendance at ten meetings was 525 foremen, representing approximately 50,000 workmen. A police and traffic committee was organized and has been energetically at work to prevent traffic accidents. On June 28 a motor drivers' safety instruction course was concluded, in which an average of 610 chauffeurs and truck drivers received practical instruction in safety, rules of the road, automobile mechanics, etc., and diplomas awarded to 469 graduates. A juvenile safety committee was completed which is now making an intensive study for the purpose of minimizing accidents to juveniles, representatives of the Boy Scouts, Camp Fire Girls, boys' clubs, etc., servon this committee. An electric transportation committee was also organized, which is devoting its attention to the prevention of accidents involving the operation of street cars, elevated trains, taxicabs, motor buses, etc. Beginning Oct. 9 a "No Fire, No Accident Week" will be promoted in conjunction with the semi-centennial anniversary of the Chicago fire. Extensive plans are being laid for a safety campaign throughout the entire city.

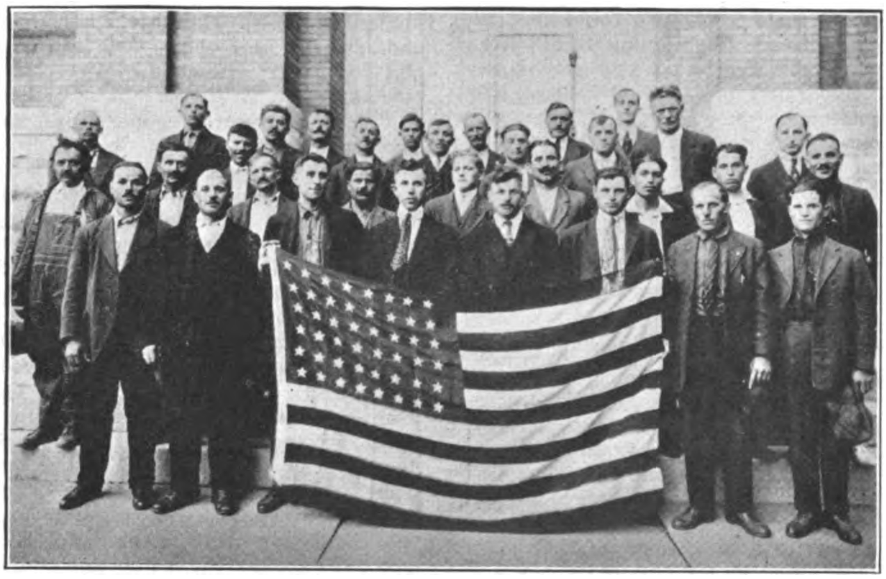
The transportation companies in Chicago are, of course, taking an active part in this work, and will derive considerable benefit from the wide activity along safety lines that is being fostered by many influential men and through numerous organizations and committee.

Making American Citizens

North Shore Line Is Conducting Evening Classes for Its Trackmen, 78 per Cent of Them Foreigners

The Chicago, North Shore & Milwaukee Railroad is taking an interest in making American citizens of its trackmen, most of whom are foreigners. The company believes that in so doing not only would it be a material aid in the general need for Americanization work throughout the country, but that it would also result in making better employees of the men. The story is well told by Luke Grant in the July issue of *The North Shore Bulletin*, published by the company for the entertainment and edification of its patrons.

When it was decided a few months ago to begin a campaign of Americanization work among the track gangs of the North Shore Line, a general survey was made to obtain accurate information. The survey disclosed that at the time there were 129 men, including foremen, in these gangs and that 101 of them, or 78 per cent, were not American citizens. Twelve men were eligible to full citizenship, but 85 men, or 66 per cent, had not declared their intentions to become citizens, although they had been in the country upward of five years. In fact the average length of time in the United States of all the men was eleven years. The men ranged in age from eighteen to sixty years, the average being thirty-six years. Eighty-two men, or 64 per cent, could not write the English language and 58 per cent could not read it. Twenty-nine of the men, or 22 per cent, could not speak English and 27 per cent could neither read nor write their native tongue.



NORTH SHORE LINE TRACKMEN AT WAUKEGAN COURT HOUSE TO TAKE OUT FIRST PAPERS

When the subject of attending evening school and learning to read and write English was broached to the men, the response was instantaneous and almost unanimous. True, the men were given to understand that the company preferred to have American citizens on its payrolls, who could speak and write our language, and that may have influenced some. There could be no mistaking, however, the earnestness of most of the men to attend school and their eagerness to learn. One of them expressed what was in the mind of many when he said through an interpreter, he would give $1,000 if he could learn to read and write English.

That the men are taking a great interest in the work is shown by a glance at the weekly report of C. G. Goodsell, director of Americanization work, showing the attendance. A full attendance is, of course, hardly to be expected, because at times there is emergency work to be done which necessitates the men absenting themselves from the classes. In spite of that a number of sections showed an 80 per cent attendance and Section No. 4 was 100 per cent. That section appears to have 100 per cent attendance week after week.

On the whole road there are fourteen regular section gangs and one extra gang and the schools are located to make it as convenient as possible for the men to attend. The classes are so arranged that each gang has two evenings a week. There is also a school for foremen. The classes are given "home work."

The teaching of English among the track laborers is made to fit in nicely with the safety work conducted by the North Shore Line. Each month a special car is run along the line from Evanston to Milwaukee and it picks up the track gangs wherever they happen to be at work. The car is then run to the nearest side track and a safety meeting is held at which some speaker gives the men an instructive talk on safe practices. The gang is taken back at the end of the meeting and the car proceeds to the next point. That method insures a full attendance of the men at safety meetings, because they are being paid for their attendance, but if they do not understand the English language they cannot derive much benefit from the talks.

Behind the whole plan is the big idea of making American citizens out of a class of laborers who are under a heavy handicap. Mr. Goodsell, the director, is assisted by J. S. Hyatt, engineer of maintenance of way, and by his assistant, F. J. Cramer.

Reduced Pay in Allentown

A reduction of a little less than 10 per cent in the wages of motormen and conductors of the Lehigh Valley Transit Company, Allentown, Pa., became effective on Aug. 1. The following is the same scale that was in effect on Aug. 1, 1919:

	Cents Per Hour
First year	44
Second	48
Third	50

Twelve cents an hour extra for overtime. A guarantee of $2.25 a day.

Wages Cut 4 Cents an Hour

Approximately $60,000 a year will be saved to the Memphis (Tenn.) Street Railway by the wage award which has been made by the arbitration committee. Wages of all employees are cut 4 cents an hour by the award. This amounts to $2.08 a week on the average for each man. The new wage scale under the award is 43 cents an hour for first-year men, 48 cents for second-year men, and 53 cents for men with three years or more service.

W. J. Bacon, representing the railway employees, opposed any cut in wages. Thomas H. Jackson, representing the company, sought a reduction of 12 cents as asked by the company. Judge Ben L. Capell was chairman of the board.

Franchise Contracts Discussed

The Illinois Committee on Public Utility Information has issued a pamphlet, "Rate Contracts Between Municipalities and Utilities," prepared by Walter A. Shaw, an engineer and at one time a member of the State Utilities Commission. Mr. Shaw discusses the question of contracts and commission rulings from the viewpoint of the public representative. In view of the recent agitation over the charge that the Illinois State Public Utilities Commission broke contracts existing between utilities and municipalities in readjusting rates to meet existing conditions the booklet is very timely. In another pamphlet, the fifth of a series issued by the Illinois Committee, the legal status of rate contracts between utilities and municipalities is discussed. Material in this bulletin consists largely of citations from court decisions, findings of commissions and views of men who have made a special study of regulation and franchises, together with a statement set forth in question and answer form relative to the subject of so-called rate contracts.

Franchise Vote in Houston on Sept. 27

The City Council of Houston, Tex., has set Sept. 27 as the date on which an election will be held at which qualified voters will pass on the new street railway franchise, which has just been completed after extended negotiations between the city and officials of the traction company.

The new franchise provides for an extension of 15 years from 1935 of the present franchise with certain changes. Valuation of the property of the Houston Electric Company is placed at $6,000,000 plus any capital expenditures since March, 1920. The new franchise also provides for earnings of 8 per cent on the agreed valuation and allows 4½ per cent depreciation.

The city has the right to demand a reduction in fare, which is now 7 cents, when earnings of the traction company reach the 8 per cent authorized. The city also has the right to call for a revaluation of the property as soon after the acceptance of the franchise as the city may deem expedient. In case the voters approve the franchise, the traction company is given thirty days in which to file notice of its acceptance.

Helpful Editorial on Accidents

Efforts by the management of United Railways, St. Louis, Mo., to convince the public that it is the car riders who suffer when juries return excessive judgments against the transportation company is showing results through the press. In an editorial a few days ago the *Post-Dispatch* said:

> Street car carelessness cost car riders $715,268 last year That is what the United Railways paid out in verdicts for damages, court fees and compromise settlements as shown by the report of Col. A. T. Perkins, manager for the receiver. In theory the company paid it. But this is only a pleasant fiction. The public paid it. A certain percentage of the fares went for that purpose. That is one reason why it costs 7 cents to ride on St. Louis street cars.

The editorial directed attention to the fact that suing the railway is one of the most popular indoor pastimes. Last year 708 persons tried their hand at it. The plaintiffs won $515,268 and the plaintiff's lawyers got about $225,000. The cost last year was $318,000 more than the year before, and the way things are going now it looks as if the cost this year will be more than $1,000,000. Says the *Post-Dispatch* further:

> The one pleasant fact is that three-fourths of the cases are compromised. That shows that the spirit of compromise is present, and that is a good thing. Where there are so many passengers and so many employees there is bound to be some carelessness and some accidents which call for adjustment. The more they are settled out of court the less the cost to the traveling public.

Grand Rapids Case Considered Again

The City Commission of Grand Rapids, Mich., met as a committee of the whole recently to discuss anew the proposal to grant a franchise to the Grand Rapids Railway with provision for a basis of return commensurate with the needs of the company.

It was stated by Attorney Knappen and concurred in by L. J. DeLamarter, manager of the railway, that the best of three proposals, both for the welfare of the public and the company, would be a valuation of $7,000,000 with an 8½ per cent return. The commissioners all practically agreed that the $600,000 revenue is essential to the welfare of the city as well as the company, in order that the service might be improved.

The company representatives stated a 10-cent fare for transient and casual riders, with tickets sold to regular patrons at four for 25 cents, would take care of the revenue at the present time, and that later this fare might be lowered.

A Jitney Editorial

The accompanying editorial appeared in the Aug. 16 issue of the Greensburg (Pa.) *Record*. It is given here as an indication that lessons from the Des Moines jitney experience are being learned by the public of other cities as well. The editorial is, of course, only one of a great number of such comments, but it does bring home strikingly the lesson of the trolleyless city.

Jitney or Street Car?

Out in Des Moines, Iowa, on the first day of this month all street car service was discontinued because of the inability of the street car company to pay running expenses, due to jitney competition.

Can the reader conceive what the situation would be in Westmoreland county if our own street car lines were put out of commission? The writer has had the experience of being in one city where there were no street cars, but that was at Newport, R. I., in the aristocratic section of the city where practically each member of the family had a "super-six" and the maids and butlers rode on bicycles. "We" traveled on "Shank's Mare" and would have given a great deal to have heard the welcome gong of a street car and gladly turned our shekels over to a blue coated conductor, with the confidence that we would reach our destination regardless of tire and engine troubles.

When it comes to a "toss up" between the street car and the jitney, give us the good old street car that is there when you want it, and you know that the conductor is not going to stick a revolver in your face and turn your pockets inside out, or beat it out a side street with your wife, or daughter, for a ransom—the auto bandit never kidnaps a mother-in-law.

If a street car company can't run on a five-cent fare then give 'em eight cents. The street cars are compelled to run rain or shine, hail or snow, while the jitney driver may be snoozing away until the weather becomes favorable. The jitney has its place, but it will have to get on a trolley and make a noise like a street car before it can fill the bill of the fast growing population of our towns and cities.

New Power Contract Submitted at Toledo

Street Railway Commissioner Wilfred E. Cann has announced that the Toledo Railways & Light Company has submitted a new power contract which would save the Community Traction Company approximately $160,000 a year over the rate now being paid. The new contract would date back to Feb. 1, the time when the service-at-cost franchise went into effect. The report says:

> After numerous conferences with representatives of the Toledo Railways & Light Company, we have received what is emphatically stated to be a final proposition on the power rate; this new rate to be $24 per annum per kwh. for installed capacity as a demand charge plus 9 milles per kwh. for consumption plus the operation of the coal clause.
>
> For the six months ending July 31, the rate per kwh. on the basis would be 1.87734, and the total saving in the power bill over the same period would amount to $77,327. For the operation of the coal clause the net cost per kwh. for the next six months should be slightly less than 1.87, and the total reduction of the power bill for the first year of operation should be approximately $160,000. This offer is submitted on the basis of a one-year contract only and with the idea of a revised rate beginning Feb. 1 of next year. Upon the basis of $160,000 saving in power cost, reducing the monthly credits to the maintenance and repair fund, increased revenue from interurban travel, and the strictest economy in operation, I am convinced that by Oct. 1 we can have actual cash credits in each of the funds equivalent to the accrued set up, and by Feb. 1, which will complete the first year of operation, the deficit to the stabilizing fund should be reduced at least $40,000 leaving it with a balance of $220,000.

Injunction for Jitneys at Rockford

The Fay Motor Bus Company, Rockford, Ill., which has been operating several lines of buses in Rockford for more than two years, under a certificate of convenience and necessity issued by the Illinois Public Utilities Commission, recently decided to go into full competition with the city lines of the Rockford & Interurban Railway, and attempt to supply transportation throughout the city at a 5-cent fare. The bus company has heretofore charged 10 cents and has been but partially in competition with the railway, which is charging a rate of fare of 8 cents. The decision to operate throughout the city was not preceded by a certificate from the commission, and consequently the railway was able to secure an injunction. This promptly put a stop to such operation.

The hearing on this temporary injunction will probably be had on Aug. 29 or shortly thereafter. Meantime Thomas J. Fay, president of the bus company, is endeavoring to secure the passage of a city ordinance permitting operation of buses throughout the city on a 5-cent fare. If such an ordinance were passed, the bus company assumes that this would be a strong inducement to the state commission to grant the certificate required. Mr. Fay has been active recently in an endeavor to secure a franchise to provide the complete transportation service in Des Moines, Ia.; in Decatur, Ill., and other places. It is understood that his 10-cent bus lines in Rockford have been popular and profitable.

Details of Detroit's Trolley Bus Bids Announced

The following bids have been received by the Street Railway Commission, Detroit, for furnishing 50 trolley buses, specifications for which are given on page 320 of this issue:

	Bidder	Bid per Bus F.o.b. Detroit
1.	J. G. Brill Co., Philadelphia, Pa.	
	First 10	$8,744.00
	Remaining 40	8,544.00
	Goodyear pneumatic tires additional	300.00
2.	Standard Motor Truck Co., Detroit, Mich.	
	Total of 50 (war tax included)	8,950.00
	Pneumatic tires, additional	735.00
	Delivery first 10 120 days from order.	
3.	National Safety Car Equipment Co., St. Louis, Mo.	
	Total of 50	7,325.28
	Delivery first 10 from 7 to 10 weeks.	
4.	St. Louis Car Co., St. Louis, Mo.	
	Total of 50	7,800.00
	Delivery to begin 100 days after order.	
5.	Packard Motor Car Co., Detroit, Mich.	
	Total of 50 with St. Louis Car Co. body (war tax included)	8,065.09
	Total of 50 with Cincinnati Car Co. body (war tax included)	8,127.75
	Total of 50 with Osgood-Bradley Co. body (war tax included)	8,230.55
	Total of 50 with Kuhlman Car Co. body (war tax included)	9,486.36
	Delivery, one complete 60 days, 20 in 60 to 90 days, and 50 in 90 to 120 days.	
6.	Mack International Motor Truck Corp., Detroit, Mich.	
	Total of 50 (war tax included)	9,988.00
	Total of 10 (war tax included)	10,488.00
	Pneumatic tires, additional	350.00
	Delivery of first 10 in 80 days, then 2 per week. Complete in 108 working days.	
7.	Trackless Transportation Co., New York, N. Y.	
	Total of 50 (exclusive of war tax)	8,195.00
	Pneumatic tires, additional	200.00
	Delivery from 90 to 120 days.	

Car Men Express Views

Employees of the Memphis (Tenn.) Street Railway have been conducting little talks in the *News-Scimitar* on the troubles of the street railway man, his ideas on service, etc. "Uncle Billie Miller," in the opening article of the series, discussed "When to Get Transfers." Another article is written by B. E. Hudson, a veteran motorman, who speaks on behalf of all his associates of the Memphis Street Railway. He makes an especial appeal to automobile drivers to allow the car man to have the right-of-way on his own car tracks. He says in part:

> We motormen want to make our schedules—we want to carry our passengers to their destinations quickly, and not keep people waiting at points ahead.
>
> Help us to make good records with the company—and good names with the public.

New Plans Submitted for Handling Freight

Representatives of the Indianapolis Street Railway and of Indiana interurban companies appeared before the Public Service Commission recently to show the necessity for a terminal charge at the freight terminal on Kentucky Avenue. The companies are asking for a charge of 3 cents on each 100 pounds of freight handled.

Under a new contract, which has been entered into, additional buildings will be constructed in ground occupied by the Kentucky Avenue terminal, and practically all freight business will be moved from the Terminal Station. The railway, under this arrangement, will have nothing further to do with freight facilities other than furnishing tracks and power. At the present time the railway owns all the facilities at the Terminal Station and rents them to the interurban companies.

At present the railway is charging 15 cents a car mile for the use of tracks and power and 75 cents a round trip for the use of the Terminal Station. Under the new arrangement, it was explained, the interurban companies will pay between 21 cents and 25 cents a car mile for tracks and power.

The commission, when passing on street-car rates in Indianapolis, called attention of the car company and the traction lines to the present inadequate facilities for handling freight at the present terminal station. The companies were ordered to submit plans for the improvement of the situation, and the Kentucky Avenue terminal station idea was agreed on by the companies. Arthur L. Brady, president of the Union Traction Company, presented the plans for the improvement.

Wages of Municipal Railway Employees May Be Cut

In preparing the city budget for 1922, members of the City Council of Seattle, Wash., adopted a policy of making a cut of 50 per cent in the blanket increase in pay granted to all city employees in 1919. This action would mean a reduction in the wages of the employees on the Seattle Municipal Railway of 25 cents a day in all cases. The present wage scale is $4.75 for the first three months' service, $5 for the second three months and $5.25 thereafter. This time last year the men asked for an increase of 25 per cent in their pay, but this was denied by the Council. A reduction of wages for trainmen has not, however, been definitely decided upon by the Council.

Wage Cut Pending Settlement.—Employees of the Tacoma (Wash.) Municipal Street Railway have signed an agreement which reduces their wages from 3 to 5 cents an hour. The new scale is similar to that in effect on Aug. 1. 1919, providing pay of 50, 55 and 60 cents an hour instead of 55, 59 and 63 cents, which the men were receiving. This cut will be in effect on Aug. 31, pending negotiations.

News Notes

May Abandon Line.—Unless traffic increases on the line of the Asheville & East Tennessee Railroad, which operates between Asheville and Seaverville, a distance of 9 miles, the line will be junked. The preference for jitneys is assigned as one reason for the unsuccessful operation of the electric property.

Wage Cut on Interurban.—The conferences between the officers of the Ohio Electric Railway, Springfield, Ohio, and representatives of the trainmen have resulted in an agreement on the wage question. The new scale provides a maximum wage of 49 cents an hour for interurban men, which is a cut of 11 cents an hour from the old scale. The cut for the first year is 8 cents an hour for the first three months and 9 cents an hour for the next nine months. City men will receive a maximum of 46 cents an hour, or 11 cents less than they receive at the present time. The cut for the first year amounts to 8 cents an hour for city men.

Government Will Appoint Wage Umpire.—Developments are tardy in the wage situation between the Montreal Tramways and its employees. The men are working under the 12½-per cent reduction put in force on Aug. 16, pending the sitting of the board of arbitration granted on the men's application to the Federal Department of Labor. A. Brossard, chosen as the union representative on the board, and A. P. Frigon, appointed by the Federal Minister of Labor to represent the company on default of the latter to name its own representative, have failed to agree on a third man to act as chairman, and he also will be appointed by the Minister.

Coming Association Meetings

Iowa Electric Railway Association

THE Iowa Electric Railway Association will hold its mid-year meeting for operating men at Waterloo, Iowa, Sept. 15 and 16.

Colorado Electric Light, Power & Railway Association

THE Colorado Electric Light, Power & Railway Association will hold its eighteenth annual convention in conjunction with the second annual convention of the Rocky Mountain Division of the National Electric Light Association at the Hotel Colorado, Glenwood Springs, Col., Sept. 19, 20 and 21. On the same date a meeting of the accounting section of the N. E. L. A. will be held at the Hotel Colorado, and it is expected that members from all over the United States will be present.

Financial and Corporate

$44,788,237 Value Found

Expert for City of New Orleans Revises His Figures Upward More Than $11,000,000

F. W. Ballard, Cleveland, Ohio, expert employed by the commission government of New Orleans, La., to advise it on utility problems, has reported his findings. Mr. Ballard values the properties of the New Orleans Railway & Light Company at $44,788,237, on which amount he says a return of 8 per cent should be allowed. He recommends no change in the rates for energy, but proposes a 7-cent fare and a reduction in the rate for gas to $1.30 per 1,000 cu.ft. He approves the statement of the company that $23,242,000 is needed for improvements during the next five years. He favors the election of residents of New Orleans to the directorate of the company. He recommends an indeterminate franchise for the company. His statement of the value of the various departments of the company is as follows:

Railway department	$21,379,414
Electric department	10,030,071
Gas department	7,523,365
Total	$38,932,850
Loans to city	185,000
Unamortized obsolete property	5,670,387
Total	$44,788,237

In the total for the railway department there is an item of $3,342,913 for intangibles, franchises, administration and organization. Mr. Ballard explains that the table does not include anything for going concern value nor any allowance for promotion expenses. He does not believe it would be possible at this time to determine these costs, and points out that in the valuation of 1918 the city took the position of not allowing for these items. He expresses doubt, however, "if we would be sustained in this contention by the courts; the probabilities are that some allowance would be made for these items."

The report of Mr. Ballard has, for the time being, been relegated to the background, a new angle to the controversy having developed as the result of the activities of Commissioner Paul Maloney, of the Department of Public Utilities. Commissioners Roy, Black and Murphy, however, are not unfavorably disposed towards the Ballard report. Even though Mr. Ballard's finding is not absolutely in harmony with their views, they realize that the light and power problem is a matter which should be settled at once, if industrial disaster is to be averted. Mayor McShane sides with Commissioner Maloney in opposing the report.

Commissioner Maloney is for scrapping the Ballard report and breaking off relations of any kind with utility experts. With this idea in view, he propounded a number of interrogations to the city attorney, the gist of which was whether or not the city was not the rate-making power in the controversy. City Attorney Kittredge, in making reply, holds to the opinion that the Commission Council, and the Commission Council alone, is vested with this authority.

This makes for a brand new issue in the matter and has contributed not a little in adding to the complexities of the problem and in increasing the lack of harmony in taking quick action upon the Ballard report. Armed with this opinion, Commissioner Maloney declares the Commission Council has the same authority to fix the rates of fare as the Louisiana Service Commission has to fix the freight and passenger rates over rail lines in the State. He is of the opinion that the New Orleans Railway & Light Company should come to the Commission Council and ask for the rate it wants and that a hearing should then be had to determine the merits of the application.

Thomas F. Cunningham, president of the Board of Trade, in criticising the tardiness of the city in reaching a settlement of the matter, calls the attention of the Commissioners to the fact that, in their failure to reach a solution of the railway problem, they overlook the greater and more important matter to be solved, namely, the rehabilitation of the electric light and power plant.

Mr. Ballard, who reported to the city last year a valuation of $34,586,000 for the property, was retained again by the city, as he expresses it, "to take under consideration the valuations which have been made and to bring these values up to date, to the end that a settlement may be made of the pending actions, or failing that, that my report to you may be one that can, in the light of all the decisions of the courts, be sustained by me in any matters which it may be necessary to litigate."

George C. Earl, general superintendent of the Sewerage & Water Board, has submitted a report to Commissioner Paul Maloney, in which he recommends acquisition by the city of the street railway, electric and gas properties outright at the lowest value the courts will sustain. His report read:

> Every effort I have made to formulate an adequately safeguarded privately-owned utility franchise which would induce capital to undertake to maintain a utility service, is either so unattractive to private capital, or so obviously an unnecessary burden upon the taxpayers that I have ceased to believe that a mutually acceptable and adequately safeguarded franchise is possible.

Figures given out by the New Orleans Railway & Light Company, showing its earnings, appear to bear out Mr. Ballard's estimate of the value of the company and its co-related interests, and the possibility of an 8 per cent return on a valuation of $44,700,000, with a 7-cent fare.

$43,341 Deficit in Toledo in July

At the regular monthly meeting of the board of control at Toledo, Ohio, it was shown that the monthly deficit of the Community Traction Company, operating under service-at-cost, had been decreased by $9,621, as compared with the previous month, although receipts still show a tendency to decline each month. There was not a quorum of the board of control present at the meeting so all business was held over until Aug. 22. The report, however, was published.

The net result of July operation after payment of operating expenses and credits to the various funds shows a deficit of $43,341. The gross income from all sources was $274,185, a decrease of $2,488 over the previous month. This decrease was less than that noted from month to month. The passenger revenue shows a decrease of $5,321, while revenue from other sources increased. The charge to maintenance and repairs, due to extensive summer work, increased in July by $8,877. Car mileage for the month increased 22,607 miles.

The city lines reflected a reduction in car mileage of 168 car miles while the Toledo Beach line increased the daily average by 205 car miles. During July every line in the city showed a daily loss running from $3 to $137 and the net decrease in riding per day throughout the system amounts to $437.

The commissioner has accumulated a surplus of $79,011 in the maintenance and repair fund and throughout the rest of the year will cut down the monthly credit to this fund so as to leave a reserve of $5,000 by Feb. 1.

The depreciation fund shows $56,666 on hand. There was credited to it during the month $10,625. The whole balance represents cash with the exception of $21,250. The sinking fund, which represents the city's ownership in the property, received a cash payment this month of $17,708, its full allotment for the first time since the ordinance has been in operation. This fund now is at the $106,249 level. Cash credits to the injuries and damages and tax reserves were made, giving each fund a surplus.

Financial Relief Absolutely Necessary

Whether Manistee, Mich., will continue to have electric railway service will depend upon the decision of the State Public Utilities Commission. Recently the City Council denied the petition of the Manistee Railway for permission to abandon service, but recommended that the company seek relief from the State Public Utilities Commission.

Manager Kressler declared that his company is in real distress financially. He expressed a desire to turn over the lines to the city to operate or to permit the city to dispose of the franchise. The number of passengers carried during June was given as 13,998. The daily receipts range from $28 to $30.

Havana Income Increased

Net of the Havana Electric Railway & Light Company Increased Nearly 14 Per Cent

According to the annual report of the Havana Electric Railway Light & Power Company, Havana, Cuba, for the year ended Dec. 31, 1920, the electric railway department contributed 44.2 per cent of the gross earnings from operations, and omnibuses only 0.4 per cent. The balance was from the sale of electricity and gas. The report states that the gain in gross earnings from operation of the entire property were 22.14 per cent greater than in 1919; the total operating expenses 32.9 per cent greater; the total net earnings from operation 11.9 per cent greater, and after deducting United States and Cuban taxes the gain was 13.8 per cent.

RAILWAY CONTRIBUTES LESS TO INCOME

The relative standing of the railway department has declined seriously. In 1914 it contributed 54.6 per cent of the total net earnings of the company, while in 1919 it gave 40.6 per cent and in 1920 only 30.2 per cent. The marked decrease in 1920 was due mainly to the increase in wages, which form a much larger proportion of the total operating expenses than in the others and for which there has not been time to institute any compensating economies. The loss of earnings during the strike in August also contributed. For several years past the railway has needed cars faster than it was possible to supply them, hence it has lagged somewhat behind the others in the development of possible business.

In connection with this comparison railway operation has materially improved in efficiency, the power used has increased 23 per cent since 1914, while the passenger car miles operated has increased 26.8 per cent and the traffic handled 73.6 per cent. The increase of passengers relative to car miles is too large, which indicates that this service has fallen behind and needs to be extended. Plans for an improved passenger car are now being worked out, and it is expected to increase the capacity, cut down the dead weight, and decrease the time required for building.

An analysis of the statistics as to railway operation shows an increase of 17.5 per cent in the earnings per car mile. This was due entirely to the heavier loading of cars. Even with the new cars added to the service in November and December, the number of passengers per car mile was not reduced and there is no doubt but that an immediate large increase in the number of cars would prove profitable.

STATISTICS OF HAVANA ELECTRIC RAILWAY & LIGHT COMPANY AS TO TRANSPORT OPERATIONS

Revenues:	1920	1919	Per Cent. Change
Passenger revenue	$4,850,969	$4,185,488	15.8
Other car earnings	135,860	177,610	*23.55*
Miscellaneous earnings	92,905	....	.....
Stage earnings (animal)	(*a*)	58,409	.....
Omnibus earnings	46,950	63,742	*26.30*
Total operating revenue	$5,126,685	$4,485,249	14.2
Operating expenses:			
Maintenance	$653,499	$454,336	43.8
Depreciation reserve	381,397	228,845	66.2
Transportation	2,505,108	1,745,569	43.5
General	295,450	229,397	29.0
Stage expenses (animal)	(*a*)	61,540	.....
Omnibuses	41,511	50,925	*18.5*
Total	$3,876,965	$2,770,612	39.8
Net earnings from operation	$1,249,720	$1,714,637	*27.1*
Taxes	101,950	108,200	*5.7*
Gross income	$1,147,770	$1,606,437	*28.8*
Deductions:			
Interest	557,214	567,261	*17.7*
Trigo annuities	3,368	3,345	0.7
Total deductions	$560,582	$570,606	*17.6*
Net income to profit and loss	587,188	1,035,831	*43.3*
Traffic handled:			
Passengers carried	97,019,389	83,709,762	15.9
Passenger car miles	13,668,249	13,507,527	1.2
Car mile statistics:			
Passenger earnings (cents)	35.49	30.98	14.5
Operating expenses (cents)	25.27	17.98	40.5
Passengers carried	7.12	6.21	14.62

Difference. (*a*) Sold July, 1919. *Italics* indicate decrease.

Receivership May Be Lifted

Amicable settlement of the financial affairs of the Memphis (Tenn.) Street Railway is reported to be in a final stage of completion. The actual return of the property to former officials and management of the railway may be deferred for some time owing to the problems which enter into relinquishing the lines, but a public announcement of a settlement is expected this month.

Whether the problem of an increased fare entered into the negotiations between the creditors and the management has not been disclosed. Negotiations between New York capitalists holding paper of the railway and the former management have been in progress for some time and a compromise has been considered from varied angles. There has been much speculation as to the conditions of the proposed reorganization, but nothing definite has been divulged which would tend to disclose upon what terms the various creditors will participate in the reorganization.

Successor Company at Savannah Chartered

The Savannah Electric & Power Company, Savannah, Ga., has been incorporated to take over after foreclosure and sale the Stone & Webster properties in Chatham County. The new company will have a capital stock of $4,800,000 to be divided into shares of $100 each, of which $1,300,000 will be first preferred stock, $1,000,000 preferred stock and $2,500,000 common stock. The first preferred will be known as debenture stock and entitled to cumulative dividends at the rate of 8 per cent a year, the preferred stock at the rate of 6 per cent. The three classes of stock will have equal voting power.

The incorporators named in the petition are A. A. Lawrence, E. H. Abrahams, Paul Fusillo, John J. Bouhan, Alvah Herzog, H. Mercer Jordan, Lewis A. Mills, Jr., Thomas F. Kearns, W. H. Bedgood and Robert L. Colding.

While no announcement to that effect has been authorized it is generally understood that the formation of the consolidated company foreshadows an application to the United States Court for discharge of the receivership which has continued for more than a year. The reorganization plan was submitted to the stockholders some time ago by a committee, and the formal application for a charter for the new concern indicates that the stockholders have approved the plan. No immediate changes in the policies of the company are said to be contemplated as a result of the reorganization.

The plan for the reorganization was reviewed briefly in the issue of the ELECTRIC RAILWAY JOURNAL for July 30, page 182.

Receiver's Certificates in Default —Foreclosure Ordered

The property of the Second Avenue Railroad, New York, N. Y., has been ordered sold by the Supreme Court on Sept. 1 in foreclosure proceedings. The sale is the result of judgment obtained for default on principal and interest on $3,140,000 of receiver's certificates. The suit was instituted by the protective committee representing the holders of the receiver's certificate. In addition to the back interest now due, there are back taxes, water charges and other claims of approximately $290,000. The property includes approximately 23 miles of track and a carhouse. The block on which the carhouse is situated comprises fifty-two city building lots. It is assessed at $1,395,000, of which $590,000 is said to represent the value of the land.

Electric Lines Improve in 1920.—According to figures recently published by the Wisconsin Railroad Commission electric railways and interurbans operating in that state carried 177,795,571 passengers in 1920 against 161,995,506 in 1919. Total earnings increased from $11,222,239 in 1919 to $14,698,638 in 1920.

Merger Enabling Legislation Approved

Legislation which will have an important bearing on the electric railway situation in the capital, has been agreed upon by the District of Columbia committee of the House of Representatives. The measure is known as the Woods bill and provides authorization for a merger of the Capital Traction Company and the Washington Railway & Electric Company. It also authorizes a merger of the combined companies with the Potomac Electric Power Company, but precludes any merging of the Washington Railway & Electric Railway Company with the power company.

The bill relieves the railways of the obligation of paying the salaries of crossing policemen, but it levies a tax of 50 per cent on all earnings above 7 per cent of each railway. The gross earnings tax is reduced from 2 to 1 per cent.

In case of a consolidation of the railway with the power company, separate accounts must be kept of income from railway operations and from the sale of power. The Public Service Commission is authorized to pass upon the reasonableness of all expenditures of the railway.

The bill further provides that unless a merger is effected by July 1, 1922, the Public Utilities Commission may establish two rates of fare on the lines of the two companies.

Strike Loss $1,564,124 in Six Months

During the first six months of 1921 the United Traction Company, Albany, N. Y., suffered a loss of $1,564,124 and a decrease of 18,544,974 passengers carried, according to the report which the railway has filed with the Public Service Commission. Five of the months covered are included in the strike period. The report itself says: decrease between 1921 and 1920 due to strike which started Jan. 29, 1921. Normal conditions have not yet been reached on the lines of this company.

In short, the cost of operating the lines of the United Traction System during the strike period was considerably more than during the corresponding period of last year when normal conditions prevailed.

During the first six months of this year the company carried 4,504,418 whereas in the first six months of 1920 the number of passengers carried was 23,049,392, the loss this year being 18,544,974. During the six months of 1921, one month—January—witnessed operation under normal conditions.

During April, May and June of the current year the passenger revenue was $60,745, while during the same months of 1920 it had been $805,152, thus showing a loss for the quarter this year of $744,406.

Notwithstanding the small income the operating expenses for the quarter were $720,705, as compared with $689,592 in the like quarter of 1920, or an increase of $31,112. The "conducting transportation expense" increased from $347,742 in the quarter of 1920 to $458,712 in the quarter of 1921. This same account shows an increase of $377,419 for the half year. General and miscellaneous expenses rose from $98,587 to $117,058. The net loss for the quarter after deducting all interest charges, was $809,393.

The passenger revenue during the first six months of 1921 was $313,491, and during the corresponding months of last year it was $1,564,958. This year the net loss for the first half of the year was $1,564,124, and during the first six months of 1920 there was a loss of only $102,720.

Debentures Retired by Texas Electric Railway

The Texas Electric Railway of Dallas, Tex., has filed an amendment to its charter increasing its capital stock from $10,500,000 to $12,660,000, to provide for the issue of $2,160,000 of first preferred stock to retire debentures of that amount. The amendment was filed in the office of the Secretary of State at Austin by Jack Beall, president of the company.

Mr. Beall explained that the increase in capital is not being made with a view to providing capital for improvements or betterments of any kind, but is merely to carry out an agreement made at the time of the consolidation of the Texas Traction Company and the Southern Traction Company on Jan. 1, 1917, under the name of the Texas Electric Railway. At that time a written agreement was entered into that $2,160,000 in debentures would be taken up by an issue of first preferred stock at the end of five years. Most of the new stock issue holders are residents of Dallas and towns along the line of the Texas Electric Railway.

Transfer of Toronto Railway to City Delayed

Hope has been abandoned of the City of Toronto, Ont., taking over the property of the Toronto Railway on Sept. 1. The arbitration proceedings under which the city will acquire certain of the property of the company prior to its transference to the Toronto Transportation Commission will not be completed until after that date. Partly in consequence of this state of affairs the annual general and the special meetings of the stockholders of the Toronto Railway, fixed originally for Aug. 19, have been postponed to Sept. 30.

In a statement to shareholders, Sir William Mackenzie, president of the railway, said:

> Every effort has been made by your directors to hasten the negotiations for the sale of the company's power and radial interests. The most important questions have now been settled in principle, and the draft agreement submitted by our solicitors to the Hydro Commission has at last been returned with amendments which are now being discussed between our own and the commission's solicitors.
>
> There remain for settlement certain questions in the working-out of the transaction which possess considerable importance, and it will not be possible to have the agreement finally settled and a statement of the effect of it prepared and sent to the shareholders by Aug. 19, which renders a further adjournment essential.
>
> While the delays which have taken place are regrettable it is now felt by your directors that very substantial progress has been made and that the main difficulties have been surmounted. It is confidently hoped that no adjournment beyond the one now indicated will be necessary, but should such be you will be notified at least one week before the date of meeting.

On Sept. 1, when the commission was due to take over the lines, the traffic is at its heaviest on account of the Canadian National Exhibition then being held, and it is, therefore, not proposed to introduce any new routing immediately. In addition certain physical alterations and connections must be made before new cars can be run, or before the lines formerly owned by the city and those of the railway can be connected. These alterations and connections cannot be made till after Sept. 1.

Financial News Notes

Deficit Piling Up in Findlay.—A deficit of $2,036 during July in the operation of the Findlay, Ohio, city lines under service at cost was reported by the Street Railway Commission. The seasonal decline in traffic was advanced as the reason for the drop in returns. The stabilization fund has dropped from $20,000 to $13,001 as a result of monthly deficits since March. For betterment the company has expended $4,200. Fares are now 10 cents cash, seven tickets for 50 cents or two for 15 cents. The cash fare was 8 cents when the new plan was put into operation.

Plane at Cincinnati Abandoned.—The Fairview incline plane at Cincinnati, Ohio, has been shut down permanently. Bert L. Baldwin, an engineer who examined the plane, reported recently that the structure was beyond repair and that if that mode of transportation was to be continued the plane would have to be rebuilt entirely. To do that, Mr. Baldwin estimated, would cost the Cincinnati Traction Company approximately $55,000. In view of the cost of replacing the incline and of the fact that it still would continue to be a hazard traction officials agreed to abandon the structure.

Decrease in "Saltair" Income.—The Salt Lake, Garfield & Western Railroad, Salt Lake City, Utah, known as the "Saltair Road," in its annual report for 1920, made to the State Utilities Commission, shows an increase in operating expenses of $21,563 over 1919, and a decrease in income of $42,042 compared with the preceding year. The total railway operating revenue for the year was $188,044, an increase of $35,835 over the year 1919. The net revenue from the Saltair beach properties, owned by the railroad, was $15,755, a decrease of $13,685 from the net revenue of the preceding year.

Traffic and Transportation

One-Man Cars Saved Tampa

Manager There Summarizes Lessons of Three Years' Experience With "Katydids"

One-man cars are the biggest factor in maintaining a 5-cent fare in Tampa, Fla., according to T. J. Hanlon, general manager of the Tampa Electric Company, which operates Birney one-man cars on practically every division. The cars, nicknamed Katydids by the Tampa *Tribune*, are proving time savers and nickel gatherers.

"We get many a nickel that we wouldn't," is the opinion of Peter O. Knight, vice-president and general counsel for the company, and the Stone & Webster supervising director for all their Florida properties. He says that the one-man car enables a seven-minute schedule where a fifteen minute schedule was in vogue before, and that the fellows who used to be picked up by passing friends in autos generally find a street car passing before the auto does, and hop aboard.

Mr. Hanlon and Mr. Knight agree that the spirit of fairness which the citizens and their officials have always shown toward the company at Tampa is a factor also in maintaining a lower rate.

Questioned by the correspondent of the ELECTRIC RAILWAY JOURNAL at Tampa as to the reasons why the Tampa Electric Company has been able to continue the 5-cent fare Mr. Hanlon stated that there were several allied reasons for the low fare in Tampa. Among these he declared were the spirit of co-operation existing between the county and city authorities and the company; the division of overhead charges between the lighting and railway department and the introduction of the Birney car.

In speaking of the latter, Mr. Hanlon said:

> I am told that there was considerable comment when the Birney cars first appeared on the streets of Tampa. They were such a complete departure from the open type so long used in this city. Of course, like any other new thing, the only real test is what experience shows. It was not long before the public found that the Birney cars made faster time and came more frequently than the two-man cars they had replaced. This caused the people to patronize the Birney cars more than they had the other cars. This verdict was rendered in the increased number of fares collected, in a way which was unmistakable.
>
> The way the Birney cars appealed to our men was, of course, of importance to us. The matter has worked out to the complete satisfaction of the trainmen. No one ever lost his job due to the Birney cars, because they were introduced gradually and, as a matter of fact, as many men are now employed as when these cars were first introduced. Then again we have put in service more of the Birneys than the number of two-man cars replaced. In addition to the above, we pay the Birney car operator 10 per cent more than other trainmen.

When asked about the effect of the Birney cars on the accident situation, Mr. Hanlon consulted his records. Apparently for the last calendar year the Birney cars in Tampa ran 1,666,135 miles and the two-man cars 1,326,402 miles. The Birneys in that period had 734 accidents, the two-men cars 755 accidents. Hence each Birney ran 2,239 miles before it had an accident, and each two-man car only ran 1,757 miles before it had an accident. Over 27 per cent more miles per accident for the Birneys. Mr. Hanlon said:

> The question you have asked is one that came up continually when the Birney car was introduced in Tampa. We have been operating the Birneys for three and one-half years, so that our statistical record of accidents as between one-man and two-man cars is based on a great deal of experience.
>
> Many people when they see figures like those, think them paradoxical. They think taking one trainman off a car makes its operation more hazardous. On the contrary, the figures showing one-man operation, based on the record of millions of car miles, to be safer than two-man operation, are just what we ought to expect.
>
> Lots of people said that one man couldn't do two men's work. Well, it doesn't work out that way at all. Our men prefer the Birney cars to run on, because they find the work so much more interesting, entirely aside from the 10 per cent extra pay, which helps of course.
>
> To the public the Birney car means more service, quicker service and safer service. To the trainmen it means more interesting and better paid work. To the company it means more economical operation and that in the end helps the public through lower fares. Without these cars the fare would be 7 or 8 cents.

Questioned as to why the economy to the public and company and increased pay to trainmen couldn't be applied to the big cars as well as to the little ones, Mr. Hanlon said:

> That matter is already under consideration. Of course we will first equip the big cars with the same safety devices as the Birney cars have before entrusting them to one man to operate. The results so far have been satisfactory to the public and company and we hope to continue the development of one-man safety operation.

Trailers Dropped Except During Rush Hours

On account of the loss of traffic owing to jitney and motor bus competition, the Detroit (Mich.) United Railway has revised its car schedule on the Jefferson Avenue line. The interval of time between cars has been decreased and trailers have been dropped except during the rush hours of the day.

While industrial travel has been materially decreased for some time as compared with last year's traffic, due to the reduction in forces at some of the factories, this condition is gradually improving. With the Ford plant in Highland Park running with a record output, but with a decrease in workmen, and other auto plants increasing their forces, industrial traffic is increasing.

While no figures are given out by the Detroit United Railway as to the loss in traffic due to jitney competition, the changes in schedules were made in an endeavor to regain some of the lost revenue and the results have been favorable. The number of jitneys in the city of Detroit has decreased owing to a recent Council ordinance requiring each jitney driver to provide a bond for $1,000.

Alton Jitneys Restrained

Public Autos There Required to Suspend by Court—Must Now Secure Proper Certificates

Under the Illinois Commerce Commission law, which holds that a transportation line must be able to certify that it is both a necessity and a convenience, the United States District Court in East St. Louis has put the jitney buses out of business at Alton, Ill. This was accomplished on Aug. 17 when Federal Judge English made permanent a temporary injunction granted in July at the request of the receivers of the Alton, Granite City & St. Louis Railway restraining the several jitney men defendants from operating the buses. The buses threatened by their competition to hurt the railway to an extent that might require it to suspend.

The contention of the defense that interstate transportation was not involved was overruled, the railway being in the hands of receivers. It is now intimated that the bus operators may apply to the Illinois Commerce Commission for permits, but in the meantime the buses have been withdrawn from service.

RECEIVERS RESORT TO COURT

To the informal representations of W. H. Sawyer and Fred E. Allen, the railway receivers, little attention was paid by the Alton city officials when it appeared that unless something was done to curb the unfair jitney operation the railway must cease business. The receivers had been laying new track and repaving part of the streets in Alton, but the jitneys continued to roll over the new pavement and when it became evident the city officials would take no action, the matter was taken into the Federal court.

The jitneys were not operated by transportation companies and had no authority from the Illinois Commerce Commission. The railway fare is 8 cents. The jitneys were charging a nickel. They took the cream of the short haul traffic. They did not operate at all hours. They left the traffic of the dull periods for the railway. These are merely some of their sins.

As soon as the buses quit, the revenue of the street cars in Alton showed a decided gain. It is still too early, however, to indicate just how much average increase in fares will result from the stopping of unfair competition. Mr. Sawyer says he hopes the passing of the jitneys will put the railway in a position to carry out its improvement plans and operate successfully. If the jitney men go before the Illinois Commerce Commission they can be compelled to pay taxes as transportation companies and be forced to obtain permits, which may take much time.

Jersey Hearing Postponed

Argument on Appeal of Public Service Railway to Ignore Commission Ruling Put Over to Sept. 13

Judges Rellstab and Davis, sitting together in the United States District Court at Trenton, N. J., on Aug. 18 denied the motion made to dismiss the proceedings in the Public Service Railway fare case and the motion to include as defendants in the suit the municipalities served by the railway. Later the judges modified this order to the extent of recognizing the cities as "friends of the court." In this way they have opened means for the participation of the cities in the conduct of the case to an extent that may make it unnecessary for the municipalities to renew their appeal to intervene as full fledged parties to the proceedings.

At the close of the session of the court on Aug. 18 it was decided to hear final argument on Sept. 13. The appeal of the railway is for an order from the court which will prevent interference with the company collecting a 10-cent fare. The Board of Public Utility Commissioners recently decided that a 7-cent fare with a 2-cent transfer charge should be established in place of the then existing 7-cent fare with a charge of 1 cent for each transfer.

Most of the session on Aug. 18 was given over to argument of L. Edward Herrmann, counsel for the Public Utilities Commission, who contended that the Public Service was not attacking the constitutionality of the state utility law, therefore could not appeal under Section 266 of the federal judiciary act.

This was admitted by Robert H. McCarter for the company. He then pointed out to the court that Section 266 as amended in 1913 provided that this statutory court could issue an injunction restraining enforcement or execution "of any order made by an administrator or commission acting under and pursuant to the statute of such state."

The court said it had no authority to act then inasmuch as the statute required three judges to sit. Judge Rellstab said, however, that he would deny the motion, reserving the right for Mr. Herrmann to appeal to the full court when it convenes Sept. 13.

Interurban Seeks to Restrain Autos

Judge Cross of the Ottawa County Circuit Court, sitting at Grand Haven, Mich., on Aug. 6, refused to issue a temporary injunction restraining motor buses and motor freight vehicles in competition with Grand Rapids, Grand Haven & Muskegon Railway from operating until the suit brought by interurban against operators of bus lines could be tried. Judge Cross' decision permits stage lines to operate until the case can be tried in Circuit Court on its merits.

The bill of complaint filed by the railway alleged that the defendant motor lines were operating in defiance of the laws of the State regulating the operation of stage coaches over the highways; that the operators of the motor vehicles named do not hold franchises from the cities and villages through which they pass, as required by the stage coach law, and that certain of the operators have failed to comply with provisions of the law.

The bill states that the Grand Rapids, Grand Haven & Muskegon Railway's earnings have been greatly decreased and that the investment in the railway is jeopardized by the unfair and unregulated competition of the autos.

Increased Service Offered If Jitneys Are Regulated

The Indiana Union Traction Company has submitted to the City Council of Muncie, Ind., a proposal to give Muncie a service with cars as frequently as seven minutes apart, and not farther apart than twelve minutes, in place of the present fifteen and twenty-minute service. The company asks in return the enactment of an ordinance forbidding jitneys to operate in the streets occupied by the railway and giving the company permission to construct a line in Madison Street from Kiby Avenue to Fifth Street, this being an extension of the Heekin park line, for the purpose of making two loops in the eastern and southern part of town. Under the ordinance suggested there would be nothing to prevent jitneys from operating in the territory served by the railway as long as the automobiles do not use the streets in which the railway operates.

Fare Case at Birmingham Appealed by City

Formal notice of appeal from the decision of the Alabama Public Service Commission granting an 8-cent fare with a 2-cent transfer charge has been filed by the city of Birmingham with the Public Service Commission.

Under the public utilities act, adopted by the last Alabama Legislature, all appeals from decisions of the Alabama Public Service Commission must be made to the Circuit Court of Montgomery County. Appeal may then be taken from that court to the Supreme Court.

Records of the hearing of the application of Lee C. Bradley, receiver for the Birmingham Railway, Light & Power Company, which resulted in the granting of the increased fares, will be certified to the Circuit Court of Montgomery. The case will be set in regular order before the judge sitting in the Chancery division.

City officials state that the validity of the Public Utilities bill, giving the Alabama Public Service Commission exclusive right to regulate fares charged by public utilities of the state, will be attacked by separate proceedings, which they say will be filed in court in a short time.

A ticket provision of the order of the Public Service Commission, by which the railway sells fifteen tickets for $1, is proving popular in Birmingham. The tickets are being used very extensively by regular patrons of the system.

Straight Fare in Memphis

Memphis Goes to Seven Cents With No Ticket Sales—Riding Still Falling Off—Wages Cut

Passengers on the cars of the Memphis (Tenn.) Street Railway were greeted on Aug. 19 with the announcement that the sale of ten tickets for 65 cents had been discontinued that thereafter a straight 7-cent fare would apply. Tickets already purchased will be received as fare during the month and after Sept. 1 they will be redeemed at the purchase price.

One year and one day before, the fare had been advanced from 6 cents straight to 7 cents, with ten tickets for 65 cents. The average fare per passenger received under the plan that has now been discontinued was 6.9 cents, so that the elimination of the sale of tickets will, if traffic holds up, add but little to the revenues of the company. Traffic during August has been at the lowest point reached during the year. If traffic conditions improve the receivers are hopeful another advance may be avoided, but if conditions do not change for the better an advance in fare to 8 cents cash, with ten tickets for 70 cents, is in prospect. Two months must elapse, however, before another change in the rate can be requested.

20,000 Fewer Passengers in July

The increase in fare was not altogether unheralded in advance, for officials of the railway had recently referred inquiries about the fare prospects to the record in the recent wage arbitration and to further declines in gross revenue during July. Operations for July in Memphis added $20,559 to the deficit in the fare index fund, as compared with $15,056 for June. The company carried 20,345 fewer passengers in the thirty-one days of July than it did in the thirty days of June. The total deficit to date from Aug. 1, 1919, is $200,318.

The receivers admit that they were much disappointed at the recent wage award, which resulted in a cut of 4 cents an hour in the pay of trainmen. The receivers asked a reduction of 12 cents an hour. Based on July's business, the cut of 4 cents an hour would have saved the company about $4,800, while the cut of 12 cents asked by the management would have saved about $15 000.

In his testimony before the wage arbitration board, T. H. Tutwiler, receiver for the company, stated that the receivers for the company refrained from increasing the fare on July 1 because they expected a substantial reduction in wages, in keeping with the reduced cost of living.

The order under which the receivers are operating provides that: In the emergency that the fare index fund continues to decrease for two succeeding months after an increase in the rate of fare, then the commission may announce an emergency change in the rate of fare and put into effect the next indicated rate of fare forthwith.

New Bus Routes Authorized in Washington

Extension of the Washington (D. C.) Rapid Transit motor bus service over four new routes has been authorized by the Public Utilities Commission. The commission took its action at the request of the bus company. In its petition to create the new routes, the bus company stated that "after five months of practical experience we have accumulated figures which, in our opinion, warrant additional bus lines in this city." In extending the bus lines, the commission also allowed an increase in the number of passengers the machine can carry to thirty-two—twenty-one seated and eleven standing. The transit company asked the commission to increase the number of passengers to thirty-five, but the commission ruled that such an increase would overload the machines.

Bus Company Enlarges Operation

The Selectmen of Saugus, Mass., have granted to the Lynnfield Community Bus Company, Inc., a license to operate in North Saugus through Spring Street or Walnut Street to the Lynnfield lines. This license was granted at the behest of the North Saugus Improvement Club, which requested that the Lynnfield bus be allowed to run in opposition to the motor bus service started on Aug. 1 by the Eastern Massachusetts Street Railway, which has since been taken off, from the terminal of the car line at the Lynn city limits to Corbett's Square, North Saugus.

The motor bus line of the railway did not prove popular with the North Saugus residents. They have preferred to walk a distance and pay a higher fare to ride on the Lynnfield Community bus rather than patronize the motor bus operated by the railway.

This bus line covers a part of the territory once served by the trolley line from Lynn to Wakefield. The trolley abandoned operation some time ago.

Detroit Bus Company Builds Own Garage

A new garage for the Detroit Motor Bus Company is being rapidly pushed to completion. The building is located at the foot of Terminal street. It will be 120 ft. x 140 ft. in dimensions, one story high. The materials being used in erecting it are brick and steel. The estimated cost is $75,000.

W. S. Evans, president of the Detroit Motor Bus Company, announces that seventy buses will soon be in operation in response to the wide demand for the opening of additional routes in various sections of Detroit. The service furnished by the company has become remarkably popular, so much so that crowds around some of the stations become so dense at times during the evening hours that it is altogether impossible to accommodate the waiting passengers. Practically every part of the three routes now being traversed by the buses follows street car lines but future plans provide for a network of bus lines covering the residential sections.

900 Buses Dispatched a Day from Seattle Terminal

The Motor Transportation Service Company, Railway Exchange Building, Seattle, Wash., announces that the conversion of the old fire station at Third Avenue and Pine Street into a motor bus terminal will be completed in about thirty days. New loading and unloading platforms will be provided. When completed, the station will be the terminus for every motor bus concern operating from Seattle. About 900 motor buses will enter and leave the station in a twenty-four-hour day. G. R. Sumpter is president of the company.

Key Route Gets Permission to Operate Motor Buses

An ordinance has recently been passed by the city of Oakland, Cal., permitting the San Francisco-Oakland Terminal Railway to extend its service on the West Sixteenth Street and Piedmont Avenue lines by using the motor bus. Passage of the ordinance by the City Council was necessary inasmuch as a previous ordinance restricted the operation of jitney buses. The operation of motor buses under the present regulation extends transportation service from the termination of the existing electric railway lines.

Motor Companies Slow to Comply With Law

The Graham law, which classifies inter-city motor bus lines as public utilities and makes them subject to regulation of the Public Utilities Commission of Ohio, is being complied with only half-heartedly. As a result the commission is about to begin an investigation to ascertain why so few of the 500 or more bus lines operating in the State have filed tariffs. At the time the law went into effect on Aug. 15 only six lines had filed their tariffs and only two of these conformed to regulations. A fine of $1,000 a day is provided for negligence in filing tariffs.

The commission has drafted a set of rules for the bus lines which makes it mandatory for them to file time tables, maintain established routes, run on regular schedules, etc. Annual reports covering financial and operating transactions are required to be made.

Bus Service Out of Columbus

The Ohio Motor Bus Company, now operating a bus line between Columbus and Westerville, started a new line from High and Broad Streets, Columbus, to Bexley on Aug. 1. The buses operate from 6 a. m. until midnight, but it is planned to establish an "owl" service. The fare is 5 cents to Franklin Park and 10 cents to Bexley. An 8-minute schedule is operated during the rush hours.

Trolley Freight Between Camden and Trenton

The Public Service Railway will establish freight service between Trenton and Camden, N. J., beginning Sept. 1. The rates have not yet been announced. Stations will also be established at Palmyra, Riverside, Beverly, Burlington, Florence, Roebling and Bordentown. There will also be "curb stone" stops at Delair, Cambridge, Plaza Park and Fieldsboro. Proprietors of garages near these stops will be made special agents. Provisions will be made for persons to have freight picked up at places along the line which are not designated as freight stops.

Transportation News Notes

Trackless Trolley Demonstrated in Norfolk.—The trackless trolley, which has been in use on the lines of the Virginia Railway and Power Company in Richmond, Va., has been moved by the company to Norfolk, Va., where the value of the vehicle is being demonstrated to the public.

Ticket Fares Cut by Suburban Line.—The board of directors of the Homestead & Mifflin Street Railway, Homestead, Pa., has ordered a reduction in the cost of ticket fares. Strip tickets which now sell at fourteen for $1 will sell at sixteen for $1. Cash fares will remain at 8 cents.

Temporary Rates Extended.—Temporary rates of the Fargo-Moorhead Street Railway, Fargo, N. D., have been extended to Sept. 3. This is pending a decision in the case, through an order issued by the State Railroad Commission and officially announced in its last bulletin. The rate is 7 cents.

Fares Advanced to Ten Cents.—The Public Service Commission has given permission to the Alabama Power Company to charge 10 cents on its lines in Huntsville. The company was operating on a 7-cent fare granted last year and proved that this rate produced a very small increase in revenue.

Jitneys Barred from Railway Streets.—The City Council of Aberdeen, Wash., recently passed an ordinance barring jitneys from all streets served by lines of the Grays Harbor Railway & Light Company. Jitney interests have secured legal representation, and it is stated the matter will be carried by them to the courts.

$10,000 Addition a Month Expected.—The increase in ticket fare at Toledo, Ohio, from eight for 50 cents to six for 40 cents, which went into effect on Aug. 20, is expected to yield about $10,000 a month additional revenue. Officials of the Community Traction Company believe that by next spring fares will begin to return step by step back to a nickel fare.

Rerouting to Expedite Traffic.—The City Council of Indianapolis recently accepted three proposals for rerouting interurban cars and West Washington Street cars. The recommendations were put into effect on June 26. Interurban routes have been changed so as to eliminate traffic from the already congested trunk lines on Virginia and Massachusetts Avenues.

City Answers Fare Petition.—In answer to the petition of the Durham (N. C.) Public Service Company before the Corporation Commission for a 10-cent fare, the city attorney has prepared a request for a reduction in fares from 8 cents to 7 cents. The city contends that an increased fare will work to the detriment of the company since there has been a notable decrease in passengers carried since the fare was advanced from 7 cents to 8 cents.

Ten-Cent Units Desired.—The Millville (N. J.) Traction Company has applied to the Public Utility Commission for permission to increase its rates from 7 cents to 10 cents. Last year the company abolished commutation tickets and the fare from Millville to Vineland was increased from 10 to 14 cents. The company recently took up its tracks from Millville to South Millville due to heavy losses. The hearing is scheduled for Sept. 6 at Trenton.

Plea Made for Jitneys.—Fifteen thousand persons, most of whom reside in the south and west sections of Indianapolis, are said to have signed a petition requesting the City Council to refrain from eliminating the jitney. The petition is being held in readiness for presentation to the Council in case the ordinance to regulate jitneys is called out of committee. The petition said: "We know what the street car service was prior to the introduction of the jitney and what it will be again if you permit the jitney to be abolished."

1,300,000 Fewer Passengers a Month.—The Cincinnati (Ohio) Traction Company has cut its service about 10 per cent because the company is handling 1,300,000 fewer passengers each month this year than during the corresponding months last year. Normally about 12,000,000 passengers are carried each month. Walter A. Draper, vice-president, in explaining the action taken by the officials of the company, said the closing of several large factories in the industrial centers was responsible for the curtailment of service.

City Will Not Act.—The City Commission of Hoquiam, Wash., after consideration of the drafting of an ordinance denying to jitneys the use of certain streets, as requested by the Grays Harbor Railway & Light Company, has announced that it will take no action in the matter. The commissioners state, in part: "From an examination of the ordinance submitted, it is apparent that the ordinance, if passed, would absolutely prohibit the operation of stage lines between this city and Aberdeen, as well as local jitneys. Under the form of city government here, it is possible for a petition to be filed initiating an ordinance whereby the same may be submitted to the voters of the community for acceptance or rejection."

Eight-Cent Zone Rate Allowed.—The State Public Utility Commission of New Jersey has dismissed the application of the New Jersey & Pennsylvania Traction Company for an increase from 7 to a 10-cent fare in each of its four zones between Trenton and Princeton, but allowed the company an increase of 1 cent for each zone, making cash fare 8 cents. The company, however, is directed to sell four tickets for 30 cents. The rate of fare within the Trenton city limits must remain at 3 cents, the company's franchise containing a clause to that effect. School children may buy commutation tickets to be used on school days at the rate of twenty-five tickets for $1.

New Publications

Steam Boiler Engineering

Twenty-seventh edition. Published by the Heine Safety Boiler Company, St. Louis, Mo. Cloth, 6 x 9 in., 639 pages, 400 illustrations.

Combined in this twenty-seventh edition of "Helios," which summarizes the latest commercial developments in boiler design practice, are the experience of both the technical staff of the Heine Safety Boiler Company and other eminent authorities. Covering all the phases of boiler practice from design to installation, tests and operation, it contains all the data and information of the company's long experience, to which is added sufficient theoretical explanation for clarity, so that the book is very valuable to any steam engineer.

Analysis of Electric Railway Problem

By Delos F. Wilcox, Ph.D., 809 pages. Published by the author. New York City.

At the conclusion of the hearings conducted in 1919 by the Federal Electric Railways Commission, the services of Dr. Wilcox were engaged by the commission to aid it in analyzing the testimony gathered and to make suggestions to the commission with reference to its report. The analysis thus prepared by Dr. Wilcox forms the greater part of the book under review. The plan followed has been to group selected parts of the testimony under appropriate chapter headings and discuss the points made. Altogether there are fifty-four chapters in the book.

Dr. Wilcox frankly says in his preface, "My analysis of the evidence presented to the Federal Electric Railways Commission confirms me in the opinion that no permanent solution of the electric railway problem, consistent with public interest, is possible except in public ownership." This viewpoint is naturally presented throughout the volume and is set forth in the fifty-four conclusions in Dr. Wilcox's summary, which forms part of the fifty-fourth chapter entitled "Public Ownership and Operation the Ultimate Solution." The author does not hesitate to admit that there are many difficulties in the establishment of even this solution. Thus, our governmental structures, in large measure, are unsuitable for the assumption of this responsibility. Railway properties extend beyond the boundary lines of municipalities and other political subdivisions. Municipal powers for incurring debts are largely exhausted. There is lack of free development of constructive policies in public administration. Nevertheless, he thinks that many of these difficulties are artificial and can be removed in time and that the proper policy now is to direct attention toward the removal of the legal, financial and administrative barriers now opposed to this objective.

From these comments the idea must not be derived that Dr. Wilcox's book is only a plea for municipal ownership and operation. It contains many interesting facts taken from the stenographic reports of the meeting and arranged under logical heads for discussion and comparison. These include statistics of the results of fare increases during 1917, 1918, and 1919, taken from a data sheet sent out by the secretary of the commission in December of the latter year, a list in tabular form of the strikes on the principal electric railway systems in the United States during 1919, giving date and duration of strike and approximate loss in revenue, a table giving wages of employees on unionized properties, etc. Six chapters are devoted primarily to different phases of the labor problem. One of these is entitled "the union labor program" and describes the plan put forth by the union officials at the hearing, and one is entitled "the right to strike," a weapon which the author thinks should be taken away, as the public's right to have local transportation service go on without interruption is paramount.

There are two appendices. One is a discussion of the local transportation issues in New Jersey in the form of a report transmitted to Governor Edwards on July 19, 1920. The other is a discussion of the Denver traction situation in the form of a report prepared for a civic commission in Denver.

On the whole railway officials will find much to interest them in the book.

Fare Increase Allowed in Minneapolis

The petition of the Minneapolis Street Railway, filed on June 24 and heard on Aug. 23, for a cash fare of 7 cents and four tickets for 25 cents, has been granted by the state commission, effective on Sept. 1. Further action of the city to take the matter into the courts depends on the orders of the council. The hearing of a similar request for an emergency advance in fare by the St. Paul City Railway was begun on Aug. 25.

Personal Mention

J. H. Sundmaker Resigns

Chief Engineer of Ohio Electric Opens Consulting Engineering Office in Cincinnati

After an absence of eight years from Cincinnati J. H. Sundmaker, widely known in the engineering world, has returned to his birthplace and is now in private practice as a consulting engineer, with offices in the Union Trust Building. During these eight years Mr. Sundmaker was chief engineer and director of all subsidiaries of the Ohio Electric Railway, with headquarters at Springfield, Ohio.

Mr. Sundmaker's resignation as chief engineer of the Ohio Electric lines was effective on July 31. G. D. Nicoll, assistant chief engineer, took over the supervision of the engineering work when Mr. Sundmaker left. It is understood that Mr. Sundmaker's place will not be filled and that Mr. Nicoll will retain his present title as assistant chief engineer.

Mr. Sundmaker has been identified with the Ohio Electric lines for the last eight years. Millions of dollars have been spent in the improvement of these lines under his direction. Mr. Sundmaker is optimistic about the future of interurbans. He believes that the Ohio Electric lines can be made to pay a good return, notwithstanding the general use of the automobile and the motor truck. As he reviews the past and looks into the future he states that he feels that the interurbans have come to stay and that no amount of competition can interfere with their successful operation if business is coaxed and expenses are reduced.

Since taking up his position as chief engineer in 1913, the year that the great flood swept that section and caused great damage to property, including that of the Ohio Electric Railway, Mr. Sundmaker has been steadily at work building up the system. Notwithstanding the present financial situation in which the roads are involved, the lines are considered in splendid shape for service. With the expenditure of a limited amount of money it is pointed out that the roads can be made to give a substantial return on the investments, after the general readjustment contemplated.

Mr. Sundmaker states that if the tracks of the Ohio Electric Railway and the other lines operating in connection are placed entirely on private right-of-way and attention paid to increasing business the interurbans can be reorganized on a paying basis. He says that every means should be adopted to move tracks from locations where expensive construction is necessitated, such as in paved streets.

Mr. Sundmaker has the honor of building the longest single span highway bridge in the United States. The new bridge was built in 1906 across the Big Miami River at Elizabethtown, Ohio. It is claimed that this is the longest single span structure of its kind ever erected. It is 600 ft. long.

On Nov. 3, 1909, announcement was made in Cincinnati that City Engineer J. H. Sundmaker had prepared a most comprehensive and important proposal for the welfare and advancement of Cincinnati, which would be submitted at the next meeting of the City Council. This contained detailed specifications for Cincinnati electric lines and a union depot scheme for steam roads.

Mr. Sundmaker has always lived in Ohio. Born in Cincinnati, he received his early education in the primary and elementary schools of that city. Along in 1887 he entered an engineering class conducted by Prof. William Eisele, under what was known as the "co-operative plan of working and studying at alternate periods, which is now in operation at the University of Cincinnati, the idea having been copied from Professor Eisele. Completing his education under the guidance of Professor Eisele, Mr. Sundmaker associated himself with Col. E. F. Jewett in general engineering work. Later he became engineer for Hamilton County, of which Cincinnati is a part. During the administration of Mayor Leopold Markbreit from 1908-1909 Mr. Sundmaker was city engineer of the city of Cincinnati.

J. H. SUNDMAKER

When Dr. Charles Schwab was elected Mayor he appointed Mr. Sundmaker Director of Public Works, which position he held from 1910 to 1911. In 1913 Mr. Sundmaker went to Springfield and took charge of operations of the Ohio Electric Railway and its subsidiaries.

Mr. Crowley General Storekeeper of International Railway

R. J. Crowley has been appointed general storekeeper of the International Railway, Buffalo, N. Y. Mr. Crowley joined the International Railway in 1918 as general clerk to the superintendent of equipment. At one time Mr. Crowley was in charge of furnishing material for the large construction work on the fire equipment department of the Interborough Rapid Transit Company. Previous to that he was with the Norton Company at the time of the electrification of the various street railways of New York City and also during the building of the Long Island Traction Company.

"Bill" Goodwin Receives Loving Cup

The presentation to W. L. Goodwin of a huge silver loving cup as a token of esteem and devotion introduced a personal note into the annual outing of the Independent Associated Electrical Contractor-Dealers held at Grant City, Staten Island, on July 30. Mr. Goodwin, who is assistant to the president of the Society for Electrical Development, was the guest of honor and the presentation of the silver loving cup came as a complete surprise to him. He made acknowledgment in a characteristic speech, assuring the donors that while the spirit which prompted the gift was fully appreciated, he considers his efforts a duty and a pleasure, and entertains no thought of obligation on the part of those who enjoy the benefits.

E. F. Weber has been appointed soliciting agent of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., as a successor to L. G. Vetter.

C. M. Bange, has been appointed master mechanic of the Interstate Public Service Company, with headquarters at Scottsburg, Ind., to succeed H. H. Buckman, whose resignation was announced in these columns on Aug. 6.

Kazutada Sakurai, equipment engineer Tokyo Municipal Bureau of Electricity, Tokyo, Japan, is making a tour of the United States for the purpose of studying the electric railways. He is particularly interested in car building, car repair shops, car houses, etc.

Prof. Arthur M. Greene, of Rensselaer Polytechnic Institute, has accepted the call of the trustees of Princeton University to become dean of the engineering school and professor of mechanical engineering. He will take up his new duties in September, 1922. Prof. Greene is a graduate of the University of Pennsylvania and also holds an honorary degree of D.Sc. conferred in 1916. He has taught mechanical engineering at Drexel Institute, at the Universities of Pennsylvania and Missouri, and at Rensselaer. He has been prominent in the American Society of Mechanical Engineers as manager and vice-president and at the present time is chairman of the research committee.

C. D. Emmons has succeeded F. E. Farwell as secretary of the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa. The positions of claim agent, electrical engineer and road master are now being filled respectively by R. G. Murray, S. J. Fairbanks and C. Formaker.

J. C. Hector resigned in July from the position of assistant treasurer of the Bellingham Division of the Stone & Webster interests in the Puget Sound territory. His resignation has opened the way for the advancement of C. E. Stroop, chief clerk in the office of W. E. Best, assistant treasurer of the Seattle Division, to the vacant Bellingham position. Mr. Stroop will be succeeded in the Seattle offices by W. N. Ringrose, of the Bellingham offices, who assumed his new position Aug. 1. Mr. Hector, who was among the most popular figures in the Bellingham organization, has gone to California, where he has joined a brother-in-law at Los Angeles, in the operation of a group of producing oil wells.

Obituary

R. T. Lozier, consulting electrical engineer in New York, died Aug. 21, of pneumonia. He was 52 years old. Mr. Lozier was connected from 1883 to 1890 with the Edison interests. Later he was associated with the Allis-Chalmers Company.

W. C. Rogers, retired Cincinnati business man who, during his two terms as representative from Hamilton County to the Ohio Legislature from 1892 to 1896, fathered and put through the Rogers Bill, granting a fifty-year franchise to the Cincinnati (Ohio) Street Railway, died at Oakland, Cal. Mr. Rogers, who was seventy-five years old, was well known in Cincinnati as a theatrical producer, and a leader in the coal business. The fifty-year franchise, which Mr. Rogers was responsible for obtaining for the traction company, has been the center of discussion during the controversy that has recently been taking place between the city of Cincinnati and the company.

Epes Randolph, president of the Arizona Eastern and the Southern Pacific de Mexico, and one of the pioneer railroad men of the Southwest, died on Aug. 22. Spending his early years in the West, he was assistant engineer for various railroads in the South and Mexico from 1876 to 1885, and as engineer from that time until 1895, when he was superintendent of Southern Pacific lines in Arizona and New Mexico. From 1901 to 1904 he was vice-president and general manager of the Los Angeles Railway and Pacific Electric Railway, and held the same positions later in other railway companies until 1911, when he was appointed to the positions he held at the time of his death.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Increase in Coal Production

Current Rate Is Still a Million Tons a Week Behind the 1914 Average for Corresponding Period

For the first time in two months the production of soft coal has turned definitely upward. The output during the second week of August is estimated by the Geological Survey at 7,726,000 net tons. Not only was this an increase of 551,000 tons over the output of the week preceding, but it was the largest attained in any week since June 11, though the present rate of production is below that in other recent years. In the corresponding week of 1917 over 10,100,000 tons was produced; in 1918 the figure was 11,770,000 tons; a year ago it was 11,813,000. In 1919, a dull year for the coal trade, the corresponding week showed 9,100,000 tons. Even in 1914, a year of business depression, the August output averaged 8,700,000 tons a week. Before the current rate of production can equal even the 1914 rate it must be increased almost another million tons a week.

Production of soft coal during the first 190 working days of the past five years, the period over which records of weekly output extend, has been as follows:

Years of activity	Years of depression
1917....337,591,000	1919....273,403,00
1918....359,409,000	1921....241,548,00
1920....320,807,000	

It will be seen that the year 1921 is in round numbers 32,000,000 tons behind 1919, 79,000,000 tons behind 1920, and about 107,000,000 tons behind the average of the war years. Compared with the average of all four years, it is 81,000,000 tons behind.

Undoubtedly the largest factor in this subnormal production is a decrease in consumption resulting from the depressed condition of industry. The latest month for which consumption data are available is May, 1921. In that month the consumption for railroad fuel was probably only 81 per cent of the 1920 average; for electric utilities, only 78 per cent; and for coke manufacture, only 38 per cent. Exports in May, 1921, were but 87 per cent of the 1920 average.

Storage Battery Demand Mostly for Replacements

Buying of storage batteries for control and lighting of multiple-unit trains is of about normal activity, according to manufacturers' reports. There has been the usual steady but not large volume of orders from railways for replacements. This type of battery, designed to furnish the power for operating the control circuit of all multiple-unit equipment, such as electric locomotives, subway, elevated and interurban trains, depends for its sales largely of course, upon the purchase of new equipment. It is stated by battery manufacturers that a large sale of new equipment is not to be expected just now, but they are looking forward optimistically to business that will accompany the purchase of electric locomotives for heavy traction work.

Prices of batteries have not changed materially since the first of the year when they took a slight drop. They have followed very closely, the trend of labor and raw material prices. The present price of lead, at present 4.4 cents, is about one-half of what it was a year ago, though prices several months ago were a fraction of a cent lower than they are now.

Portland Cement Production Increases in July

More cement was produced in the United States in July than in June, and more cement was shipped than was produced, according to figures prepared under the direction of Ernest F. Burchard of the United States Geological Survey. Both production and shipments in July exceeded the average for July in the last five years.

The production for the first seven months of 1921 is more than 97 per cent of the quantity manufactured in the corresponding months of 1920 and more than 52 per cent of the total production in 1920; the shipments are more than 96 per cent of those for the corresponding period of 1920 and more than 52 per cent of those for the whole year 1920.

Stocks at the end of July were over 1,470,000 bbl. larger than on Dec. 31, 1920, and a little above the average for July in the five preceding years, though somewhat less than at the end of June. The production of finished Portland cement for July was 9,568,000 bbl., while the number of barrels shipped was 10,301,000.

The production of clinker (unground cement) during the seven months amounted to more than 53,000,000 bbl., and the July production exceeded 9,000,000 bbl. July stocks of clinker are reported as more than 4,300,000 bbl.

Electric Railway Proposed for Japan

Application has been made to the government of Japan, according to *Electrical Industries*, for a charter to build a high-speed electric railway between Tokyo and Nikko, a distance of eighty miles.

Rolling Stock

Centralia (Ill.) Traction Company has purchased two new safety cars built by the Cincinnati Car Company and purchased from the National Safety Car & Equipment Company, St. Louis. The Centralia & Central City Traction Company has also bought two cars of the same make from the same firm.

The Columbus (Ga.) Railroad Company has given out the following information on the four safety cars which were recently ordered from the St. Louis Car Company as previously mentioned:

Number of cars ordered	4
Date of delivery	Oct. 15, 1921
Builder of car body	St. Louis Car Company
Type of car	Single-truck safety
Seating capacity	32
Weight	16,000 lb.
Length over all	28 ft. ½ in.
Truck wheelbase	8 ft.
Width over all	8 ft.
Height, rail to trolley base	9ft. 9 in.
Interior trim	Bronze and mahogany
Roof, arch or monitor	Arch
Air brakes	Westinghouse
Armature bearings	Ball
Axles	3⅜ in. O.H. steel, heat treated
Car signal system	Faraday
Car trimmings	Bronze
Couplers	Flat steel, 1 in. x 2½ in.
Curtain fixtures	Curtain Supply Company (Pantasote)
Curtain material	Double-faced Pantasote
Designation signs	Hunter illuminated
Door operating mechanism	Air or hand lever
Fare boxes	Johnson
Fenders or wheelguards	H&B lifeguards
Gears and pinions	General Electric
Hand brakes	Steel tubing with ratchet wheel
Heater equipment	None
Headlights	Golden Glow
Journal bearings (if ball or roller)	Roller
Lighting arresters	General Electric
Motors, type and number	GE. 258C
Registers	International
Sash fixtures	Compression springs
Seats	Haywood Brothers and Wakefield Company
Seating material	Wood slats
Step treads	Feralun, 3 in. wide
Trolley catchers or retrievers	Ohio Brass Company
Trolley base	Ohio Brass Company
Trucks	St. Louis Car Company
Ventilators	Utility Ventilation Company
Wheels (type and size)	Rolled steel 16 in.

Track and Roadway

British Columbia Electric Railway, Vancouver, B. C., has completed the repaving of Government Street with regard to the relaying of the tracks. Within a short time the city will complete the laying of the asphalt.

Los Angeles (Cal.) Railway will start soon on the reconstruction of Spring Street from First to Seventh Streets. The work will include the installation of new ties and rails and the leveling of the roadbed. The present 72-lb., 6-in. rail will be replaced by 116 lb., 7-in. girder rail. Construction work on Maple Avenue from Washington Street to Santa Barbara will be completed shortly.

Savannah (Ga.) Electric Company will spend $40,000 in extensions to the Tri-State Exposition Grounds, a distance of about 3½ miles. Work will be started as soon as the franchise is granted. It will be necessary to build double lines of tracks on West Broad Street from the present double line terminal at Thirty-ninth Street, south to Forty-fifth Street, and a single line, with turnouts, on Forty-fifth to the fair grounds, where a terminal will be made between the Morehouse and Johnson buildings, with a loop in the fair grounds.

Alton, Granite & St. Louis Traction Company, Alton, Ill., is making extensive improvements in Alton. Work on track renewal is in progress on State, Third, Piasa Streets and Broadway. Other track work consists of putting in new ties, lining and resurfacing. The work is estimated at $150,000.

Asheville (N. C.) Power & Light Company has been given the sum of $10,000 by J. T. Harney to help defray improvement expenses. It was with the hope that the West Asheville car line could be extended to Harney Heights in order to give service to the people of that section that the offer was made. The Harney brothers have sold large tracts of land in this vicinity recently.

Southern Public Utilities Company, Charlotte, N. C., has completed its reconstruction and paving on Liberty Street, Winston-Salem. An additional switch was put in on this street. The car on the Liberty Street in new track construction and paving represents an investment of approximately $40,000.

International Railway, Buffalo, N. Y., will be asked by the State to give up its franchise of the old Niagara Falls interurban line unless it agrees to pay its share of the paving between the tracks. Through cars between Buffalo and Niagara Falls are now routed over the high-speed line. Only local cars use the old river road line.

Shawnee-Tecumseh Traction Company, Shawnee, Okla., has begun an extensive program of reconstructing bridges and improving its lines. A new steel girder bridge will replace the wooden structure across the North Canadian River. The company also intends to purchase new equipment for both the rolling stock and track department in order to increase its service.

Northern Cambria Street Railway, Patton, Pa., has agreed, it is reported, to do about five miles of construction work on the route between Carrolltown and Spanglen. The trolley route has been holding up construction on the highway, but at a recent conference the State Highway Commissioner was informed that the company would make all necessary route changes.

Reading Transit & Light Company, Reading, Pa., has completed an extension whereby through express service from any point on the Reading division to the Norristown division and all parts of Philadelphia is possible. This new piece of trackage in Boyertown, Pa., was approved by the Public Service Commission. Heretofore the Reading and Norristown divisions have been separated by the Colebrookdale branch of the Philadelphia & Reading Railway.

Power Houses, Shops and Buildings

Charlottesville & Albemarle Railway, Charlottesville, Va., expects to purchase one 3,000-kw. horizontal steam turbine and two boilers.

London & Port Stanley Railway, London, Ont., has completed an $8,000 terminal improvement plan. At the town station in Port Stanley improvements will be effected by putting in a concrete foundation and remodeling the interior.

Indiana Service Corporation, Fort Wayne, Ind., will spend about $125,000 in power improvements. Very soon the ground will be broken for a new power distributing plant on Webster Street. The improvement will enable the company to secure a central distributing point for power generated at the power house on Spy Run Avenue. It is estimated that the cost of the new building alone will exceed $25,000, while the equipment will cost $100,000 or more. Other changes are contemplated, among them being the erection of a large carhouse and car shops on the property along Spy Run Avenue to the north and west of the present power plant.

Recent Incorporations

Portland-Linnton (Ore.) Railway, has been incorporated with a capital stock of $40,000. The incorporators are J. B. Schaefer, Louis Osberg and S. F. Parr.

Savannah Railway & Power Company, Savannah, Ga., has been incorporated with a capital stock of $4,800,000. This is the successor company to the Savannah Electric Company.

Duncan, Ardmore & Lawton Interurban Company has filed its charter with the Secretary of State at Oklahoma City. The company is capitalized at $10,000. The incorporators are J. W. Marshall, A. Harris and F. T. Harris. Headquarters of the company will be at Duncan, Okla. It is proposed to promote and build an interurban line from Duncan to Ardmore and Lawton.

Trade Notes

American Steel & Wire Company announces the appointment of H. S. Durant as sales agent and M. W. Floto as assistant sales agent at its Detroit office, to succeed M. Whaling and T. J. Usher, Jr., resigned.

Delta-Star Electric Company, Chicago, has opended a direct district office at 294 Washington Street, Boston, Mass. This office is in charge of Messrs. Anderson & Van Rosen, who have for several years been connected with the Delta-Star Engineering Department at Chicago.

The Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, announces that it has engaged the services of Ralph R. Rugheimer, who will be responsible for its activities in the coal fields of eastern Kentucky, Virginia and southeastern Ohio. Mr. Rugheimer has a thorough knowledge of the company's apparatus and has had considerable experience in its installation and operation.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., it is reported, is the company which the government of Chile, South America, has decided upon to go ahead with the electrification of the state railway which runs from Valparaiso to Santiago, with a branch cutting up to Los Andes in the Andes Mountains and thence across to Buenos Aires. The Westinghouse company, however, as yet has made no statement in the matter.

The Malcolmson Briquet Engineering Company and the St. Louis Briquette Machine Company have consolidated under the corporate name of the Malcolmson Engineering & Machine Corporation. The company will continue to act as engineers and contractors for the building of complete plants for fuel briquetting, and for drying crushing and screening of coal. It will also maintain an engineering department devoted to the generation and use of steam, special furnace design and other heat problems. In addition it will manufacture "Rutledge," "Komarek" and improved roll-type briquetting presses, fluxers and other special machinery and machine parts, direct and indirect heat dryers and vibrating screens. The officers of the new company are: C. T. Malcolmson, president; G. Komarek, vice-president; C. E. House secretary, and W. J. Monahan, treasurer. The offices of the company are located in the Old Colony Building, Chicago; 818 Security Building, St. Louis, and 39 Cortlandt Street, New York City.

John C. Robinson, after thirty years' continuous service in Boston as manager of New England sales for William Wharton Jr., & Company has terminated that connection. He will devote himself to his interests in the firm of Harrington, Robinson & Company of that city, an organization well known in the iron and steel trade. Starting at the time he did, Mr. Robinson has seen and participated in the many changes in street railway and steam railroad transportation methods. His pleasing personality coupled with his thorough knowledge of the track business, has made him a host of friends in both fields, as well as in the Wharton Company. The office of the Taylor-Wharton Iron & Steel Company, and William Wharton Jr. & Company in the future will be located at Room 235, Boston Safe Deposit Building, 201 Devonshire Street, Boston, in charge of Walter H. Allen.

A. J. Manson, of the New York district office of the Westinghouse Electric and Manufacturing Company has been appointed manager of the railway division for this district.

New Advertising Literature

Inspection and Energy Meters. — The Economy Electric Devices Company, Chicago, has issued a two-page folder giving particulars of results secured with Economy meters on the cars of the Eastern Massachusetts Street Railway. Besides the advantages from the standpoint of indicating the proper car inspection interval, the meters showed energy savings as high as ½ kw.-hr. per car-mile. The company has now contracted for inspection dials on meters of 700 active cars which include 251 new safety cars.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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Can Injunctions Alone Crush Competition?

A VISITOR to a neighboring jitney-infested city can study an entirely new aspect of the car versus jitney bus problem. One of the dizzily numerous ordinances, commission orders, injunctions, etc., apparently forbids the jitney buses from making a direct collection of fare from the passenger. But has this phased (or is it fazed?) the busmen any? Apparently not. Booths and salesrooms in stores have been established at convenient places where for the modest fee of 25 cents one becomes a full member of the Lively City Bus Association. Full membership covers the right to buy strip tickets at 5 cents per ticket, which is legal tender for fare. But the process may be short-circuited in this way: If the guileless stranger on offering cash is spurned by the law-observing driver, there is nothing to prevent one of the club members in the bus from courteously offering to sell a ticket to the outsider and thus preserve the driver from the temptation of accepting cash.

"What a farce," many a reader will say, and rightly. But, surely, a little reflection will show that the farce would be short-lived if there were not in the community a sufficient number of people determined to patronize the jitney bus service at all hazards. It is possible for the courts to issue all sorts of injunctions, but the long drawn out struggle with jitneys even in Seattle, where the street railway is clearly not being run for profit, proves that the self-propelled vehicle must have certain intrinsic advantages which appeal so much to the public that it will not willingly relinquish this form of transportation despite the shabby shape in which it has usually appeared to date. Should the day come when the motor buses are maintained at street railway standards by reliable operators many of the present objections urged will lose caste with that influential part of the public that today will not ride in the disreputable looking jitney at any price. Consequently, it seems worth while to reiterate the advice that the electric railway in making the motor-bus a part of its transport system must go the jitney busmen one better by using vehicles and giving service that will be so obviously superior to the privateering sort that the public will no longer go out of its way to help in the circumvention of orders of regulatory bodies.

N. E. L. A. Is Using the Movies

LAST year, in the issue of Sept. 25, the ELECTRIC RAILWAY JOURNAL suggested to the electric railways that they take advantage of the extraordinary educational power of motion pictures as a means of furthering the effort to win public understanding and good will. It was also suggested that the national association of the industry could well undertake the preparation of a film for the broad use of the member companies. Following this original suggestion, a great deal of other matter was published on the same subject, giving the views of a number of railway men on the high worth of the idea in general and on the details of its execution. There seemed to be a great deal of interest in the proposal.

Since then several companies have had a film made as an individual proposition, but for various reasons the American Association has been unable to undertake this new phase of publicity work in a definite way. Meantime, the National Electric Light Association has taken up this method of expanding its publicity work and has completed a very interesting short film, which was first shown at the June convention in Chicago and is now being distributed to the central station companies for general use. It is certainly to be hoped that this very effective means of reaching the public will receive full consideration in connection with the contemplated publicity campaign of the Committee of One Hundred.

Creditor Asks for Receivership for I. R. T.

THE application of a creditor of the Interborough Rapid Transit Company for the appointment of a receiver for that company was not unexpected. For the past two years the officers of the company have frankly declared that an increase in revenue per passenger was necessary for the solvency of the company. The immediate cause for financial embarrassment is the fact that the company has $38,000,000 of notes coming due Sept. 1. If these should be extended by the holders it may be that with the falling prices of materials, lower wages, and possibly other future savings, together with possible future relief to be granted by the New York Transit Commission, a receivership can be avoided. During the next few weeks, possibly the next few days, the matter will be decided, as Judge Mayer, before whom the proceedings have been brought, has asked the company to show cause on Sept. 1 why a receiver should not be appointed.

In the meantime, a variety of explanations have been put forth from different sources both as regards the reasons for the application for a receiver and those which have brought about the present unfortunate financial condition of the company, which four years ago was paying dividends of 20 per cent annually, and which as late as 1918 distributed 17½ per cent in dividends to its stockholders. Certain prominent city officials see in the application "another attempt through the federal courts to raise carfares in this city to 8 and possibly 10 cents." A candidate for Mayor who is strongly demanding the retention of a 5-cent fare declares a receivership unnecessary if the property should be operated by a man of the type of Mr. Mitten of Philadelphia, while a New Jersey financial company which has had previous litigation with the Interborough considers the actual deficiency much more than that set forth in the annual reports. No official statement had been made by the company or by the Transit Commission up to Aug. 31, except that Mr. McAneny, chairman of the commission, said its plans for reorganization of the transportation situation in New York would not be affected to any appreciable extent whether the company remained under the control of its corporate officers or was taken over by a receiver. In an interesting address delivered Aug. 30 in Cincinnati, however, Mr. Harkness, a member of the commission, in discussing transit tendencies in New York, outlined as some of the causes for the present situation the drifting policy adopted by the local authorities in regard to the question of fare and the attitude of the company with its present franchise of "demanding something and conceding nothing."

Whether the application for a receiver will be granted or not, the situation undoubtedly now has been brought to a crisis. An important and fortunate feature in the case is the legislation last spring by which far-reaching authority to grant transit relief was given to a commission, which has since been appointed. While no report has yet been made by the commission, its members in the past have a high reputation for good judgment, and it is to be hoped they will find a solution for the exceedingly tangled transit situation in New York.

It is certainly anomalous that an enterprise should experience a growing loss with an increasing gross business, yet should apparently be so helpless to make a change. It is also anomalous that in a city covering so large an area and so dependent for its prosperity upon good transportation as New York practically every local railway company is in financial straits, with none in notably prosperous condition.

Passengers per Car-Mile Not a Sure Service Index

THE expression "revenue passengers per car-mile" or "total passengers per car-mile," while the most convenient single term available as an index of traffic is likely to be most misleading if taken at its face value, especially if comparison is being made between different railways and even successive operating periods of the same railway. The less-used figure of "seats per passenger carried" is also subject to the same danger of misinterpretation. To prove this statement, a few illustrations will be presented.

First, assume that a comparison is made that Road A averaged nine passengers per car-mile in 1920 and that Road B averaged but six passengers per car-mile. It does not follow at all that Road A had more crowded cars. It may have been operating forty-eight-seat cars at five-minute intervals, while Road B may have been running thirty-two-seat cars at two and one-half or three-minute intervals. Thus Road B may prove to have carried the greater number of people if the comparison is made on the basis of "passengers per mile of route operated."

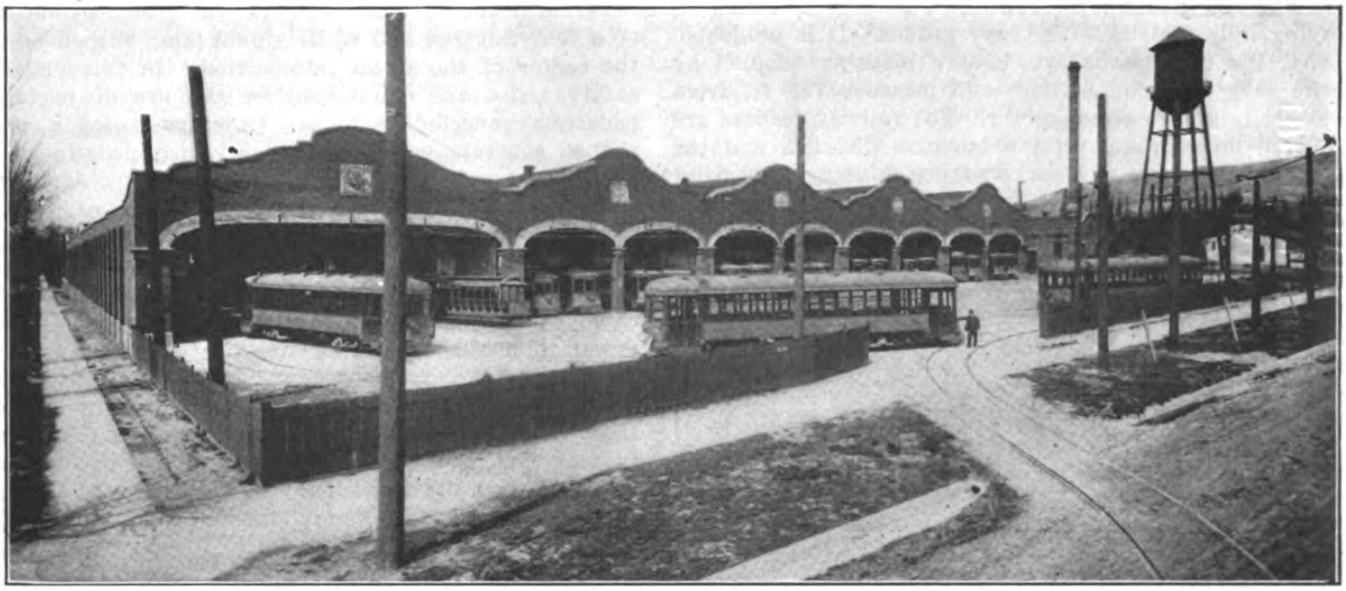
Second, density of traffic and standard of service are entirely different things, but confused if regard is taken only of the "passengers per car-mile" statistics. Suppose that through the inauguration of off-peak fares, short-ride fares, unlimited-ride passes or other means, there occurs a heavy increase in non-rush hour travel. This would be reflected by an increase in the unit of comparison "passengers per car-mile"—by, say, 20 per cent; but it would be wrong to suppose that there had been any lowering of the standard of service. The reason for this conclusion is the fact that practically every electric railway averages one and one-half to two seats per passenger carried when taken on its all-day operating basis, whereas it may not do better than 0.75 seat per passenger carried during the rush hours. Any increased travel during the off-peak hours therefore comes at a time when there are more seats than passengers. Hence, an increase in the average or all-time "passengers per car-mile" figures does not mean that the public is getting less service than before. In cases of this kind it means just the opposite, namely, that the public is making better use of the railway's facilities than before. Contrariwise, an increase in seats or car-miles per passenger carried might be coincident with poorer service, as when a severe fare increase cuts traffic 20 per cent while the daily car mileage is cut but say 10 per cent.

Perhaps the most conspicuous recent example of this is in the 5-cent suburban rides of the Boston Elevated Railway. Most of this short-haul travel flows counter to the heavier long-haul tidal traffic carried at 10 cents. It is conceivable that one, two, three or more passengers per car-mile could be added to the figures of straight 10-cent travel, and yet the 10-cent riders would have practically as much accommodation as before. That is why an 80 per cent increase in the local, short-haul traffic of the Everett-Malden district can be absorbed so readily. An example on a smaller scale is that of Racine, Wis., where the users of the unlimited-ride dollar-a-week passes are found to average nearly four rides a business day. This means, of course, that one pair of rides is taken during the off-peak hours, thus raising the density of traffic without lowering the standard of service or adding unprofitable mileage.

In between Boston and Racine, there is San Diego's zone fare. The fact that the first quarter of 1921 shows a 14 per cent increase in the 5-cent or short-haul riders over the first three months of the zone fare (January-March, 1920) indicates that the retention of this rate for more than one-third of the patrons has a tendency to stimulate short rides during the off-peak hours. Most of these additional short rides would not come unless the service was good, because this class of traffic will walk if headway and seating are unsatisfactory. A 10½ per cent increase in the sale of two-zone 7½-cent tickets at San Diego also indicates that the plan of selling four tickets at a time, as against 10 cents cash, induces a growing proportion of the two-zone riders to take luncheon rides if they are not too far away from their work, or else to be more liberal in other non-compulsory riding. At any rate, the fact that San Diego for this first quarter of 1921 shows about 24 per cent increase in passengers per car-mile and 1.43 as against 1.94 seats per passenger in the same quarter of 1920 is far more likely to be proof of the better use of the plant for the permanent good of the customer than proof of an arbitrary cut in service for the temporary good of the company. In this case, both patron and operator benefit, whereas an inexperienced reading of the "passenger per car-mile" and "seat per passenger" figures would lead to caviling rather than praise of the managements involved.

Utah Light & Traction Optimistic

Wartime Conditions Are Improved and the Labor Situation Is Satisfactory—The Public Co-operates to Remove Paving Burden—Unique Publicity Methods Are Employed in Utah—The Company Has a Splendid Carhouse and Self-Contained Repair Department



CARHOUSE OF UTAH LIGHT & TRACTION COMPANY

THE Utah Light & Traction Company operates in Salt Lake City under a franchise which expires in 1955. In keeping with its environment, the company is optimistic and is devoting its efforts toward a speedy consummation of its financial and transportation ideals. Like the story of other railway properties, the war brought on a series of wage increases, followed by fare increases, until the present schedule of a 7-cent cash fare or sixteen tickets for a dollar was instituted. The peak of the financial difficulties seems to have been reached in that a wage reduction has been agreed upon recently. The money thus saved has been utilized to care for deferred track maintenance.

Salt Lake City has a population of about 120,000 and is a miracle city when its history and location are considered. The optimism and hard work of the pioneers have transformed a desert into a rich agricultural district, with the city as its metropolis. Today the parks, broad streets and imposing business blocks of Salt Lake City compare favorably with those of any other American city. The railway's property in the city was completely rehabilitated during 1907, 1908 and 1909 by the Harriman interests, so that now it is modern in every respect. The company's tracks thoroughly cover the city and extend into all the important suburbs and suburban towns, serving a population of approximately 141,000 people with a mileage of single track of 146 and total passengers carried during the year 1920 of 40,500,000,

The Utah Power & Light Company owns the $1,000,000 capital stock (entire issue) of the Utah Light & Traction Company and leases and operates for ninety-nine years from Jan. 1, 1915, all the electric power, light and gas properties of the Utah Light & Traction Company.

Some of the power properties owned by the Utah Light & Traction Company and now operated by the Utah Power & Light Company are:

Pioneer hydroplant	6,500 kw.
Weber hydroplant	2,500 kw.
Granite hydroplant	1,500 kw.
Stairs hydroplant	1,800 kw.
Jordan steam plant	16,000 kw.

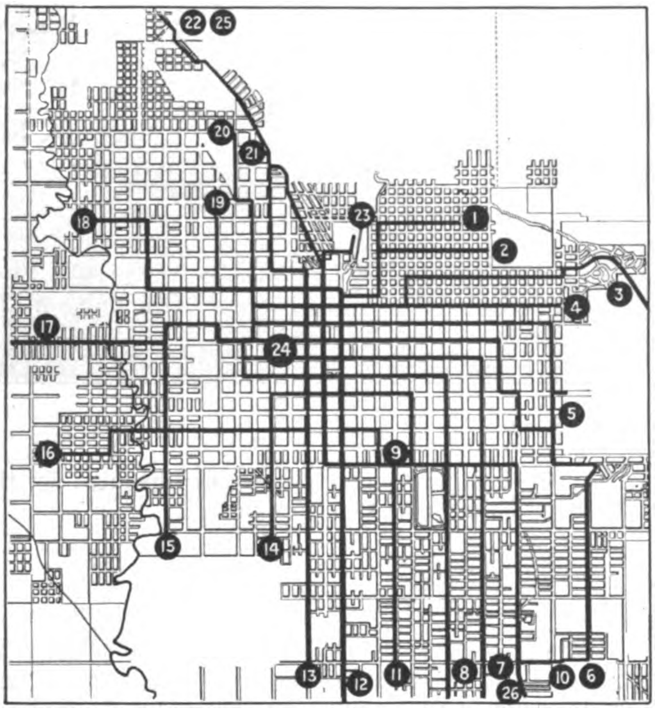
The railway company has car tracks on 66 miles of 72 total miles of paved streets in Salt Lake City. These paved streets are from 72 to 132 ft. wide and the company has been required to pave and maintain a street width of 21 ft. 8 in. on all its double-track installations. This paving investment requires about ¾ cent per revenue passenger to care for interest, depreciation and maintenance and places a heavy financial burden on the railway. Prospects are encouraging for legislative relief, but in the meantime the railway is using every possible expedient to extend service without increasing the investment in paved streets.

A beginning was made in 1920 to establish elevated center parkways, 44 ft. wide and 6 in. high, on certain of the streets to carry the double tracks of the railway. This parkway has a 6-in. curb and is grass covered excepting at street intersections. Due to the dry climate irrigation is necessary to maintain the grass and an underground pipe is placed in the parkways to afford water, furnished by the city, from sprinklers arranged at convenient intervals. The artistic effect of the installation is very good and the reaction on public sentiment has been splendid. It affords, in effect, a private right-of-way to the railway, reduces accidents, permits cheaper construction in that standard 72 lb. rails are used, reduces maintenance and at the same time is acceptable to the public since the street is 72 ft. wide and ample space remains for other traffic.

Another installation utilizes the fact that one of the city parks parallels the street for quite a distance. The company has installed its tracks in the park on a grass parkway near the street in such a manner as to give it the equivalent of a private right-of-way without detracting from the beauty of the park. The results of these methods of installation are encouraging and combined with the favorable legislative attitude and the good will of the public will probably result in the ultimate solution of the paving situation.

ROUTES AND SCHEDULES

The city has a level downtown district and an outlying hilly district with heavy grades. It is unique in that the city blocks are 10-acre plots as adopted by the early Mormon settlers and measure 792 ft. from street center to street center. The railway feeders are placed underground in the business districts and the trolley support is of span construction using steel poles with ornamental cast-iron bases. The transportation system is based on twenty-six routes each of which traverses both the level downtown section and the heavy grades of the Wasatch foothills. Each of the 172 passenger cars displays its route number on its dash and a complete schedule and map of the route is published and distributed by the railway. This little publication is in the form of a pamphlet about 5 in. long by 3 in. wide containing forty pages of material.



MAP OF SALT LAKE CITY SHOWING STREET CAR ROUTES
Key numbers show patrons the route to take to a desired destination.

This booklet describes the routes by streets, and indicates the scheduled leaving time of cars from the end of the line and the time cars leave downtown. It contains also sectional plats of Salt Lake City with each of the routes indicated thereon. The routes are numbered from 1 to 26 inclusive and the booklet is so arranged that the route number covering any portion of the city may readily be obtained by turning to the large scale city plat in the center of the booklet. After the reader finds the route number from this complete plat, it is easy from page 1, which carries an index of all routes, to find the pages which give a sectional plat to large scale accompanied by a description of where any particular route starts and finishes, including a complete time schedule for inbound and outbound cars at several locations. The booklet also takes advantage of Salt Lake City's attractions to point out different points of interest to tourists with directions for reaching them.

Salt Lake City, due to its wide streets, permits good schedules and offers but little opportunity for traffic congestion. On several of the main intersections in the towntown districts a traffic officer is stationed in a tower near the curb and controls the traffic by means of a four-way red and white signal lamp suspended at the center of the street intersection. In this district safety aisles are maintained by the use of portable pedestals connected by chains. Iron pipe is cast in cone-shaped concrete bases and several such pedestals are connected together depending upon the traffic demands.

The cars are very attractive modern type of pay-as-you-enter design and operate with fare boxes. They are painted a buff and yellow and are washed frequently in order to maintain them in an attractive condition despite the action of smelter fumes or other detrimental atmospheric effects. No one-man cars are used in the city, as labor opposed their use during the war and financial conditions have been unfavorable since that time. Salt Lake City has no large manufacturing industry and has plenty of room to expand in all directions, so the railway company is not subjected to very great shifts in traffic or to industrial peak loads.

SPECIAL TRACKWORK AND EQUIPMENT

The company has discontinued the use of manganese inserts at intersections and instead uses bolted built-up special trackwork. The bolts are "drive fits" with the threaded ends of small diameter so as to avoid injury. The filler is planed down and a tapered steel insert 36 in. long is placed on top. These inserts are changed as they become worn, and this policy greatly aids in reducing the noise at crossovers.

Due to climatic and soil conditions and to questions of maintenance, the company has shown a marked tendency toward the location of all controls and apparatus in the car and not under it. The signal batteries are located over the entrance doors with a consequent great reduction in maintenance, and even the headlight resistances have been maintained at zero cost since they were located on the ceiling of the vestibule. To avoid breakage and obtain low maintenance cost, many of the headlights on the interurban cars have been placed on top of the car, just over the front window instead of on the dash. These headlights are arranged so as to burn 250-watt Mazda lamps with adjustments for a fixed beam angle and intensity. The air governor has also been located above the doors in the vestibule, and in this location operates much more satisfactorily. The location of the air valve, door lever, gong, stool sockets and other controls has been determined by a vote of the employees and is standard for all cars. An improvised "buggy top" door mechanism is used on the changed over pay-as-you-enter cars, whereby one-eighth turn of a 10-in. lever opens or closes the vestibule doors.

A unique type of work car has been made which can be used as a reel car, track harrow or both. Near smelters and where slag gets on the tracks this car is used as a harrow to loosen the lava roadbeds. The harrow proper consists of an old crossover hung on a windlass operated chain under the center of the car.

In this framework are fixed thirteen pointed steel teeth each of which is 2 in. square and about 18 in. long. When needed, the crossover with the teeth inserts is dropped on the track and dragged along the ground between and outside the rails to break up the slag. The device has proved very efficient for certain conditions.

The company has developed many ingenious ways of using scrap pieces of equipment, such as steel and old rail. A very convenient light crane car has been constructed almost entirely from old 72-lb. rails. The sills of the car and the crane proper form a very rigid built-up structure which has proved very useful on the system.

CARHOUSES AND SHOPS

The carhouses, shops and yards of the railway company are located about six blocks from the center of the downtown district. These buildings occupy an entire block 680 ft. square. The carhouse proper is about 430 ft. x 230 ft. and is equipped with several tracks which have a 1 per cent slope toward the rear. The carhouses, shops and store buildings are well designed mission type structures of red brick, steel and concrete. The front is arranged in a series of arches, each of which spans two tracks in the carhouse. In the end wall of each bay over the supporting pier is the monogram of the company with dimensions about 6 ft. square. Motor-operated rolling steel doors are fitted under each arch. The roof has over 200 skylights in it, each of which is about 8 ft. x 16 ft. In the carhouse the tracks are on concrete pit walls for a length of about 200 ft., the pit floors having a 1 per cent grade. These pits are placed under each track with shallow pits on either side. These shallow pits collect the snow or water that drops from the sides of the car when in storage after a trip, permit easier journal inspection and facilitate car washing. Each pit is lighted by lamps which are about 10 ft. apart on either side of the pit wall. Over each track a trolley trough has been made of 4-in., 5½-lb. channel iron with edges turned down. These channels are electrically bonded and insulated from the steel roof trusses by means of wooden blocks. The advantage of the channel type of overhead construction lies in the fact that it permits rapid movement of a car forward or backward without changing the trolley, which in this carhouse would cause delay due to the presence of a sprinkler system. Any tendency for slack in overhead conductors is also eliminated and an exceptional method of isolation is conveniently obtained with a switch and circuit breaker for each section.

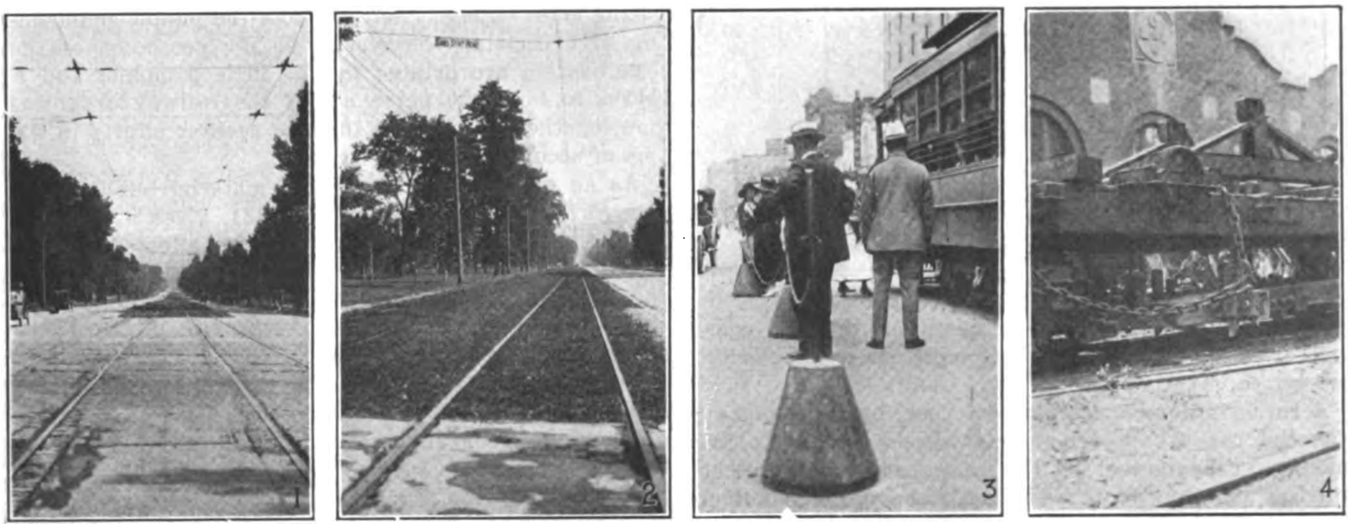
The carhouse is equipped with a two-deck International sprinkler system. This sprinkler system is universal throughout the structures and is controlled from several locations by electrically operated push-buttons. A water storage tank for reserve is located on the block.

The shops, offices and storerooms are well lighted and conveniently arranged. The storeroom has a main floor, balcony and basement and is protected from fire by a complete sprinkler system. Especially constructed rooms are used in the basement for the storage of oil and paint, while spare parts and smaller stores are kept in indexed steel bins or trays on the main floor. The company carries a large stock of material and stores due to its distance from railway supply manufacturers.

The carpenter and slight repair shop has five tracks, each of one-car capacity, and is well equipped with small tools and benches. For the repair of the outside veneered car side panels 20-gage sheet iron is now used instead of wood veneer, which depreciated rapidly because of local service conditions. Great care is taken to install this sheet-iron veneer so as to avoid the entrance of any moisture, and the experience with this type of construction has been very satisfactory.

The paint shop has four tracks each with a capacity of two cars. On an average of once in three years each car receives one coat of a special enamel paint on the main body and about every eighteen months a coat of varnish is used on the other parts. The enamel paint which is used has been selected after a great deal of experience with several types of paints and enamels and has given remarkable satisfaction. Two painters and one helper care for all the work in the paint shop. A balcony in the paint shop is used to eliminate dust and dirt when painting or varnishing seats, sashes, or other small parts.

The sandhouse is equipped to use either wet or dry sand and contains stoves, elevators, screens and bins. The sand is sacked from the bins and then the sacks are located in a sand car which is spotted near the

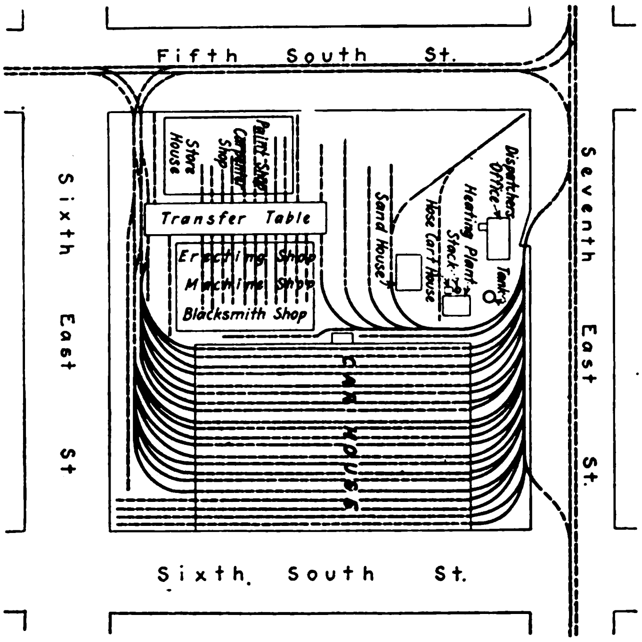


FAST SCHEDULES AIDED BY GOOD TRACK LOCATIONS

No. 1—Double-track construction in elevated center parkway.
No. 2—Double-track construction in park adjacent to a street.
No. 3—A flexible safety aisle in a congested district.
No. 4—Reel car used to support a unique track harrow.

incoming cartracks. Each returning crew upon reaching the sand car places its quota of sand in the car before checking in. This arrangement has proved superior to other methods.

The main repair shop is equipped with forging machines, 1,100-lb. air hammer, a punching machine, drill presses, an acetylene outfit, a complete rail bending and cutting outfit, and other standard equipment. Due to its location, the company is forced to be practically self-contained with respect to its repairs and has developed a very good repair shop and some ingenious and unique "shop kinks" from its experiences. It has recently reground all the cylinders of the car compressors and put in slightly larger pistons with splendid success.



Plat Showing Layout of Shops and Carhouses

A rather unique operation performed by the company was the use of old rolled-steel wheels and axles for making brake hangers. The scrap material was cut into suitable length with the acetylene torch and then drawn into 1½-in. round bars. The bars were then forged in an Ajax forging machine to a ball on each end, after which the balls were flattened by the hammer and punched to fit the brake-head cone.

This method was used when steel was expensive and hangers produced were excellent, but the present practice is to use 1½-in. round mild steel in connection with a 1½-in. Ajax forging machine and a 1,100-lb. steam hammer. The hangers are all case hardened after forming. Two hangers are used on each brake beam and about 1,200 are in service. The renewals amount to about 200 per year on the cars, which are mostly four-motor types weighing from 40,000 to 56,000 lb.

Steel scrap wheels are formed by the splendid shop equipment into the following tools: Open-end and socket wrenches; anvil tools and tongs; air hammer swages and formers; forging-machine dies; asphalt-cutting chisels and stone-masons' hammers.

Seven of the pits in the repair shops are equipped with car hoists, which greatly facilitate repair operations. The street brooms are subjected to a thorough soaking in a special pit before being placed in operation, as this process results in a large saving due to the decreased brittleness of the brushes. The transfer table has been equipped with snowplows with resultant decreased trouble from snow in winter operation. Previous to the installation of these plows on the table much delay was caused by the transfer table pit filling with snow. For snow-fighting work and for hauling gravel and other construction materials, the company has three locomotives, one switch locomotive and fifty work cars.

Public Policy and Publicity

The railway management realizes that public relations comprise a large percentage of railway operating success, and this company, under the able direction of H. W. Dicke, general manager, has secured the cooperation and good will of the public to a remarkable extent. One of the chief instruments for informing the public of railway conditions is a publication called *Car Fax*, which is freely distributed on all cars at frequent intervals. The public is informed of the plans of the company and is made aware of all railway conditions through this publication. A case in point is that preliminary to the recent wage reduction *Car Fax* informed the public that the money saved would go toward deferred track maintenance, and when the reduction was obtained this announcement was immediately followed up by the appearance of repair gangs on the main streets. Letters from the public commending or criticising the service or the personnel of the organization are printed in this little pamphlet and it serves to bind the personnel of the railway organization together and inspire them to greater efforts in the line of securing public good will.

As an example of the type of material published in *Car Fax*, the issue of July 23, 1921, gives a complete résumé of the financial condition as affected by the 7-cent fare and ventures to prophesy the future under that fare. The issue starts out with the headline "What the 7-Cent Fare Has Done." "On July 3, 1920, the present rate of fare (7 cents cash, 6¼-cent ticket in books of sixteen for $1, and the 4-cent school ticket in books of fifty for $2) became effective. With the close of the month of June, 1921, therefore, we have the results of operation for one year on the so-called 7-cent fare, and *Car Fax* is sure that its readers are curious to know just how much 'profits' the Utah Light & Traction Company has made and is making on the 7-cent fare."

The paper goes on to state that the company has always held to the policy that the patrons were entitled to know everything, and that if they did, the company as well as its patrons would fare better than they would if each were suspicious and distrustful of the other. During the past twelve months a total of 38,737,540 passengers were carried, and the total amount of money collected was $2,142,481.79, or an average of 5.53 cents from each passenger. The exact number of each class of passengers carried, together with the revenue re-

TABLE I—STATISTICS FOR ONE YEAR WITH THE 7-CENT FARE AS PUBLISHED IN *CAR FAX*

Operating Revenue:				
Cash-fare passengers.....	16,052,259	@ 7c.	$1,123,658.13	
[1]Adult-ticket passengers..	14,749,896	@ 6¼	921,868.50	
Adult-ticket passengers...	890,204	@ 5c	44,510.20	
School-ticket passengers..	1,197,643	@ 4c	47,905.72	
[1]School-ticket passengers.	151,308	@ 3c	4,539.24	
Transfer passengers......	5,569,953	no charge		
Express, mail and miscellaneous revenue.....			20,513.95	
Total..........				$2,162,995.74

[1] The 5-cent adult tickets and the 3-cent school tickets shown above were in the hands of the public on July 3, 1920, and according to the Public Utility Commission's order the company was obliged to honor them up to July 31, 1920.

ceived therefrom, as well as from the carrying of express, mail, etc., is given in the printed statement.

The company's costs for operating this property during the past year were as follows:

Operating Expenses:		
Repairs and upkeep of track and pavement	$166,327 56	
Repairs and upkeep of cars	136,553 35	
Power to operate, heat and light cars	235,501 91	
Wages of conductors and motormen	747,628 16	
General and miscellaneous expenses (including accidents)	206,770 33	
Taxes and licenses	123,000 00	
[3]Depreciation reserve	144,725 00	
Total operating costs		$1,760,506 31
Net operating revenue		$402,489 43
Property investment		$8,669,695 13
Rate of return upon the investment	($402,489 43 :-: $8,669,695 13)—4 64%	

[3] The amount of depreciation reserve was fixed by the Public Utility Commission.

The figures used as the property investment is the value placed upon this property for rate-making purposes by the Public Utility Commission as of June 30, 1918, plus additions to property from that date to December 31, 1920.

The net operating revenue of $402,489.43 for the past year represents an annual return of 4.64 per cent upon the investment in the property, or just about enough to meet the interest at 5 per cent on the money borrowed (through the sale of mortgage bonds) on the property. *Car Fax* goes on to state that no dividends have been paid by the Utah Light & Traction Company for five and one-half years, and that profits are absolutely unknown. In fact, states the paper, "There can be no profits under governmental regulation of public utilities." All that the owners of public utility securities can hope for is a fair return in the nature of interest upon their holdings.

In predicting results of operation during the coming year under the existing conditions, *Car Fax* states that it will not venture to hope for a reduction in carfare because the company will have to spend considerably more money for repairs to track, pavement and cars than it has been spending during the past few years. The paper then goes on to state that with a return of only 4.46 per cent upon the investment in the property as compared with obtainable returns of better than 6 per cent upon U. S. Liberty bonds and from 8 to 10 per cent upon investments in reputable businesses, the public can readily understand why the railways are hard up. The company is optimistic, however, and hopes that with the decreasing costs for materials and wages, the time will come when the property will be prosperous and it will be able to expand and extend its lines into every section of the community. It points out that the street railway is a necessity to any community, and that it will greatly aid in the growth and development of any community. *Car Fax* concludes by stating that the company appreciates the confidence of the people and wants to reciprocate by placing all of its cards on the table face up.

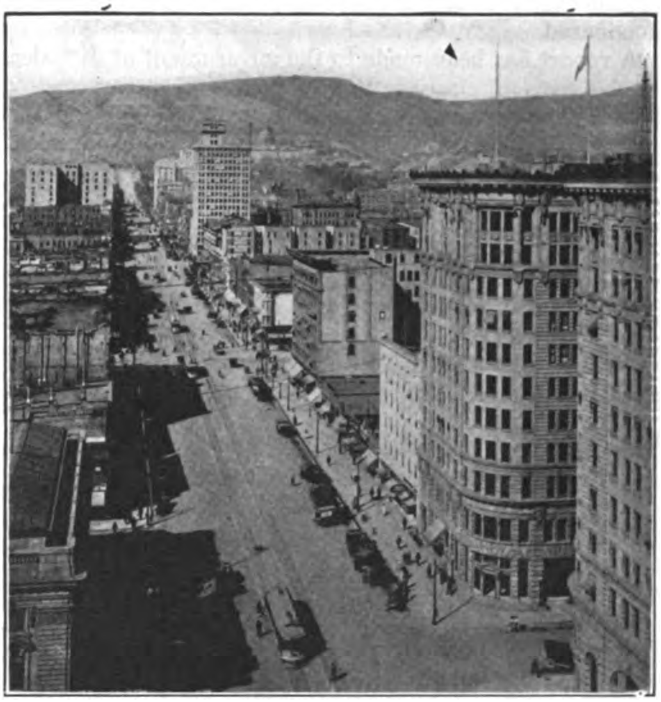
TABLE II—UTAH LIGHT & TRACTION—OPERATING STATISTICS FOR LAST FOUR YEARS

	1917	1918	1919	1920
Gross earnings	$1,597,315	$1,602,000	$1,855,281	$2,069,482
Operating expenses and taxes	1,133,307	1,142,893	1,245,752	1,489,283
Depreciation	30,000	25,000	150,000	144,725
Operating ratio	0 73	0 73	0 75	0 79
Car-miles	5,627,762	5,466,576	5,303,783	5,316,913
Car-hours	566,086	544,084	525,216	528,022
Number of cars	86	83	80	80
Total passengers	40,320,109	36,174,985	39,521,505	40,512,223
Passengers per car-mile	7 1	6 6	7 4	7 6
Passengers per car-hour	71	66 4	75 3	76 8
Car-miles per car-hour	9 9	10 0	10 1	10 0
Earnings per car-mile	$0 28	$0 29	$0 35	$0 39
Earnings per car-hour	$2 82	$2 95	$3 54	$3 09
Expenses per car-mile	$0.20	$0 21	$0 26	$0 32
Expenses per car-hour	$2 03	$2 14	$2 66	$3 10

Jitneys cause no trouble in Salt Lake City, because regulatory legislation was passed before they obtained a foothold. Power is purchased from the Utah Power & Light Company under very favorable rate schedules, since it is largely hydro-electric. Thus, the railway company has been spared two of the trials encountered by many other operators—the coal shortage and the jitneys.

CONCLUSION

The Utah Light & Traction Company is a splendid example of Western traction and illustrates by its prosperous condition, optimistic attitude and ingenious installations the results that ability can accomplish with a railway property under severe handicaps inherent in an agricultural community very distant from industrial centers. It is unique in that it operates in a city and district where conditions are such as to give a very static daily and yearly passenger traffic free from fluctuations due to industrial or climatic changes.



VIEW OF MAIN STREET, SALT LAKE CITY

Extensive Electrification Plans

World's Survey Shows that Many Countries Are Preparing to Substitute Electricity for Steam—The Present Shortage of Coal Is an Important Factor

THE *Electric Railway & Tramway Journal* for July 8 is a "Special World Issue" and contains data in regard to proposed electrifications in many countries. The following is a summary of the more important data given:

SOUTH AMERICA AND WEST INDIES

In the Argentine the electrification of the suburban lines of the Buenos Aires Western Railway is making progress. The entrance to Buenos Aires is over the city lines of the Anglo-Argentine Tramway Company. Other railway electrification is in contemplation.

In Bolivia electric power will be used on a trans-Andine line from Las Paz to Yungas now under construction. Electricity was selected because of the high price of coal and the presence of large water-power resources along the route. There is at present a 56-

mile electric railway in the eastern part of the republic.

Considerable additional electrification is proposed in Brazil, following the completion of a section of the Paulista Railway, already described in this paper.

In Chile tenders have been invited for the electrification of the Valparaiso-Santiago and the Santiago-Talca lines, and the electrical equipment of a 20-mile section of the Nitrate Railways is being seriously considered.

A report has been made to the government of Jamaica of the cost of electrifying its railway system of 197 miles. The expense is estimated at £1,257,000 and the proposal is urged by commercial interests in Jamaica.

EUROPE

Austria is intending to equip 652 km. of railway route, the work to be completed by June 30, 1925. Of this length 412 km. are single-track lines and 240 km. are double-track lines. Hydro-electric power will be used.

As a result of a trip of inspection, a commission of the Belgian State Railways has recommended the adoption on that system of 1,500-volt direct current with third rail.

It has been estimated by the three principal railway companies in France that the electrification of 8,800 km. of their lines will effect an annual economy of 1,500,000 tons of coal (based on the traffic of 1913). An official commission to study the relative advantages of the different systems has made a tour of the United States and other countries, and has recommended high-tension direct current.

In Great Britain it is believed that nothing further is likely to be done until the railways return to private control and the electrification of railways advisory committee has presented its report. This committee has now been sitting more than twelve months. An interim report in July recommended standardization of both methods and appliances. A few of the lines are making extensions of their electrical divisions.

Italy has extensive electrification plans because of the high cost of coal and the large amount of water power available in the Alps and Apennines. At present the three-phase system of working predominates, this being used on 390 km. of route and 650 km. of track, but there is some trackage equipped with direct current, including a high-voltage direct-current railway between Turin and Lanzo. The railway administration proposes a program of future electrification covering 2,000 km., the total length of the state railway system being 14,000 km. It is expected that this equipment would effect an economy of about 500,000 tons of coal. Active work has been begun on a 2,400-volt line from Rome to Port of New Ostia, a distance of 25 km. Both electric locomotives and motor car trains will be used, and it is hoped the line will be in operation by 1922.

The mountain division of the North of Spain Railway (42 km. in length) is being electrified, and several other projects will probably be taken up soon.

In Sweden the hydro-electric department has asked the government to include estimates of 51,050,000 kroner in the budget of 1921 for the extension of hydro-electric works, some of which are intended for use in connection with a supply of power to the proposed Stockholm-Gothenburg Railway, and the railway administration has asked for a vote of 26,000,000 kroner for 1922 in addition to the 23,000,000 kroner approved for 1921 for the execution of works for the conversion of the same railway. The cost of the complete electrification of the line is estimated at about 90,000,000 kroner.

The Swiss seem definitely to have adopted the single-phase system which is in use on the St. Gotthard line, the latest line to be equipped and the most important through-line between Switzerland and Italy. Generally 7,500 volts will be used on the trolley line during the period of operation by both steam and electricity, and 15,000 volts will be used when steam traction is suppressed.

A part of the proposed program of the Soviets in Russia, as is well known, is the construction of a super-power system and considerable railway electrification.

ASIA, AUSTRALIA AND AFRICA

The electrification program of the Japanese railways is reported to include from 500 to 700 miles during the next five years, starting with lines around Tokio. Work has also been begun on a tube line in that city.

The electrical equipment of some of the suburban divisions of the steam railroads entering Bombay, India, is being seriously considered.

The Ceylon government has ordered a detailed survey made of that island's hydro-electric resources with a view of possible electrification of some of the lines.

Melbourne, Australia, is completing its electrification of suburban lines which will involve sixteen substations, 145 miles of track, and 702 cars. Forty-four and a half miles are now in operation, and the last of the system as at present planned will be completed, it is thought, in February, 1923. The capital cost of the present scheme when completed will be approximately £5,000,000. Considerable suburban electrification will also probably be undertaken at Sydney, Australia.

The contract for the electrification of a mountain section of the Midland Railway of New Zealand has been placed with the English Electric Company. The section is a little more than 8 miles in length, of which 5 miles are in a tunnel.

The general manager and chief engineer of the hydro-electric department of the Tasmanian government, after an inspection of properties of this kind in the United States, Canada and Switzerland, recommends development of that country's hydro-electric resources. He reports 26,000 hp. is already being used, 70,000 hp. is being developed, and it is hoped eventually to develop 400,000 hp. Several electrifications are proposed.

Some work has already been done on developing hydro-electric power in Java, and it is expected that when a station in the residency of Batavia is finished, part of its current will be used in the operation of the Batavia Railway.

The South African Parliament has authorized the prompt electrification of two sections of government railways, and tenders have been called for from various countries. One section is for a suburban division with heavy passenger traffic extending out from Cape Town. The length of route is 22½ miles, of which 15½ miles is double track. Sixty-four motor cars and sixty trail cars would be required. The other division is a mountain section between Durban and Pietermaritzburg, a distance of 70 miles. The cost for the equipment of this line, including power stations, is £2,921,400.

Merchandising Transportation

In This Final Talk of the Series on the Merchandising of Transportation the Author Explains How Sales Can Be Increased Through the Good Will of the Public and How that Good Will May Be Cultivated

By W.H. Boyce
General Manager Beaver Valley Company, New Brighton, Pa.

Fifth Annual Newspaper Men's Dinner. Mr. Boyce Entertains the Newspaper Men in the Vicinity of New Brighton Once a Year at Dinner. In This Group He Will Be Seen the Third from the Left of the Middle Row

THE most valuable asset a street railway can have on its books is the good will of the public.

Manufacturers rate the value of good will at millions of dollars, and good will is simply the result of the confidence which people in general have in the character of an organization.

To build up good will and extend your radius beyond your present circle is your responsibility. Advertising is one of the mediums that will carry the character of your railway organization to your public and help form opinion.

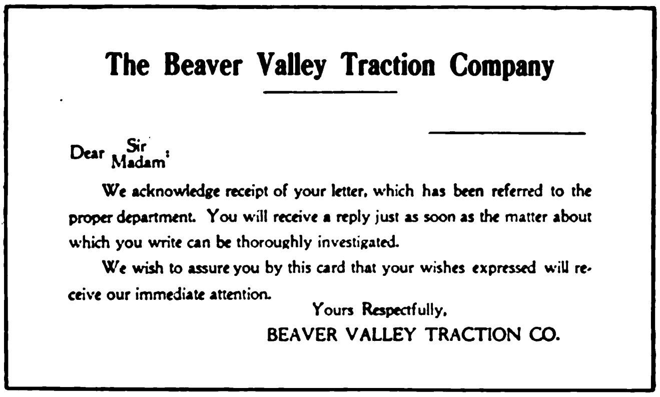
Public opinion is the greatest power in the world. Without properly formed public opinion a company is lost. Favorable public opinion can be cultivated for your property if you are alive to the fact that you are dealing with human beings.

Successful business men have long since demonstrated that success is achieved through the cultivation of elements of human interest in business. You like to trade at such places—places where there is a friendly desire to satisfy in every particular. We understand where this is the case that the heart is right, yet there may sometimes be financial reasons why in every particular satisfaction cannot be given. All electric railway companies have their financial troubles, yet all of us can do more to have our public understand these difficulties. In such cases advertise them through your employees (who should be put in possession of the facts) at your clubs, in the lodges, on the golf course, and through newspaper copy, circular letters and car cards.

Present conditions call for economy in operation. You may not be able to do all you want to reach your ideal, but for the salvation of your company do all that you can.

Traditional practice is not enough today. Times and conditions have changed. Some railway operators have not. Wake up! Eight million men have bought automobiles which are taking your traffic and at the same time increasing your operating expenses through increasing your operating difficulties and accident hazards.

Wake up. Leave the wake. Burn the crape. Put pep,



The Beaver Valley Traction Company

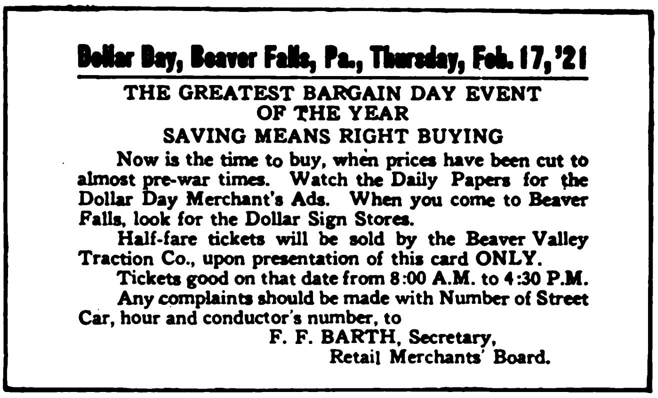
Dear Sir Madam:

We acknowledge receipt of your letter, which has been referred to the proper department. You will receive a reply just as soon as the matter about which you write can be thoroughly investigated.

We wish to assure you by this card that your wishes expressed will receive our immediate attention.

Yours Respectfully,
BEAVER VALLEY TRACTION CO.

Card of Acknowledgment Sent to Letters of Complaint



Dollar Day, Beaver Falls, Pa., Thursday, Feb. 17, '21

THE GREATEST BARGAIN DAY EVENT
OF THE YEAR
SAVING MEANS RIGHT BUYING

Now is the time to buy, when prices have been cut to almost pre-war times. Watch the Daily Papers for the Dollar Day Merchant's Ads. When you come to Beaver Falls, look for the Dollar Sign Stores.

Half-fare tickets will be sold by the Beaver Valley Traction Co., upon presentation of this card ONLY.

Tickets good on that date from 8:00 A.M. to 4:30 P.M.

Any complaints should be made with Number of Street Car, hour and conductor's number, to

F. F. BARTH, Secretary,
Retail Merchants' Board.

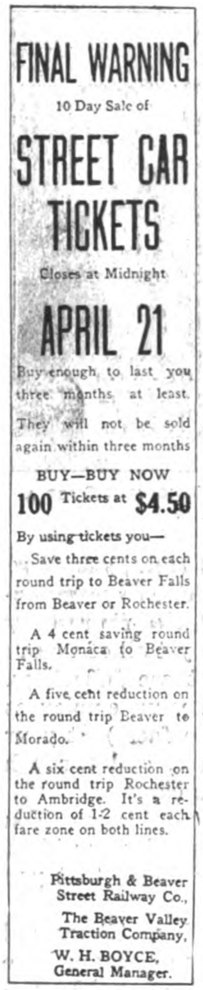
Postal Card Sent Out by Retail Merchant Board, Feb. 17, 1921, Explaining About Reduced Fares new ideas and new thought into the merchandising of transportation.

Cultivate your public with the knowledge that "all eggs look alike but they 'ain't.'" You may be able to reach the auto-riding highbrow, but don't overlook all of your every day car riders. Many of them are influential office-holding persons. They are all public-opinion formers and car riders. If you can't speak their language, get some one who can. Your experience, integrity and good intentions alone are not enough. But when all of them are backed by continuous interest on the part of your employees and yourself—then a different story.

Don't forget that the heart must be right.

Your interest in all civic matters, the expenditure of your time, money and effort in local commercial or civic bodies, these are evidences of your good faith.

If you are too busy attending to details to undertake this work, why should I waste my time writing these articles and you waste yours reading them. True economy must prompt you to get proper and sufficient assistants to care for small matters.


FINAL WARNING

10 Day Sale of

STREET CAR TICKETS

Closes at Midnight

APRIL 21

Buy enough to last you three months at least. They will not be sold again within three months

BUY—BUY NOW

100 Tickets at $4.50

By using tickets you—

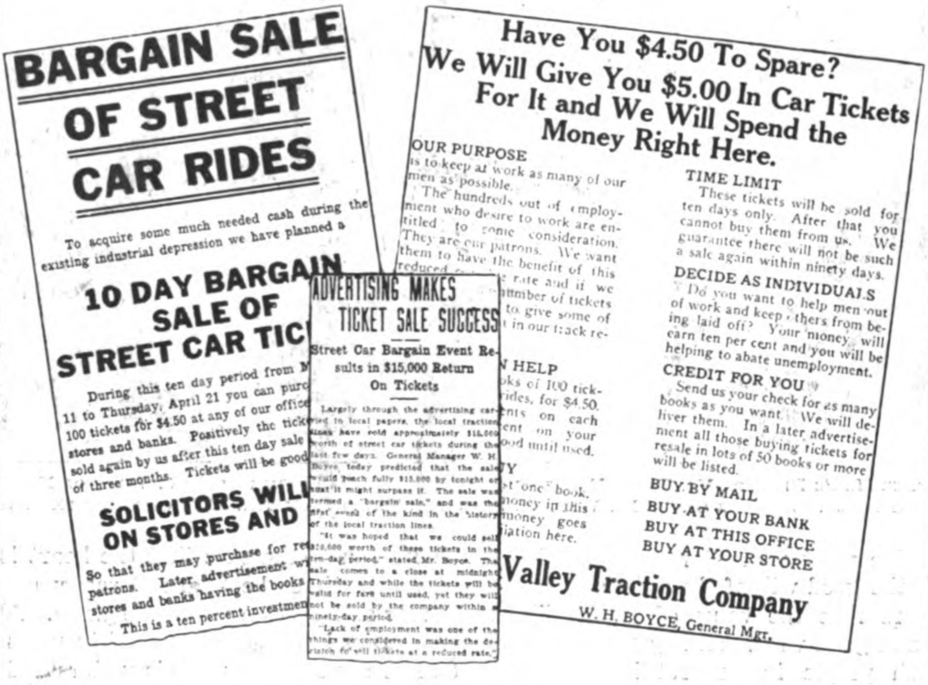
Save three cents on each round trip to Beaver Falls from Beaver or Rochester.

A 4 cent saving round trip Monaca to Beaver Falls.

A five cent reduction on the round trip Beaver to Morado.

A six cent reduction on the round trip Rochester to Ambridge. It's a reduction of 1-2 cent each fare zone on both lines.

Pittsburgh & Beaver Street Railway Co.,
The Beaver Valley Traction Company,
W. H. BOYCE,
General Manager.


BARGAIN SALE OF STREET CAR RIDES

To acquire some much needed cash during the existing industrial depression we have planned a

10 DAY BARGAIN SALE OF STREET CAR TIC

During this ten day period from M
11 to Thursday, April 21 you can purc
100 tickets for $4.50 at any of our offic
stores and banks. Positively the tick
sold again by us after this ten day sale
of three months. Tickets will be good

SOLICITORS WILL
ON STORES AND

So that they may purchase for re
patrons. Later advertisement w
stores and banks having the books

This is a ten percent investmen

ADVERTISING MAKES TICKET SALE SUCCESS

Street Car Bargain Event Results in $15,000 Return On Tickets

Largely through the advertising carried in local papers, the local traction lines have sold approximately $15,000 worth of street car tickets during the last few days. General Manager W. H. Boyce today predicted that the sale would reach fully $15,000 by tonight or that it might surpass it. The sale was termed a "bargain sale," and was the first event of the kind in the history of the local traction lines.

"It was hoped that we could sell $10,000 worth of these tickets in the ten-day period," stated Mr. Boyce. The sale comes to a close at midnight Thursday and while the tickets will be valid for fare until used, yet they will not be sold by the company within a ninety-day period.

"Lack of employment was one of the things we considered in making the decision to sell tickets at a reduced rate."

Have You $4.50 To Spare?
We Will Give You $5.00 In Car Tickets For It and We Will Spend the Money Right Here.

OUR PURPOSE
is to keep at work as many of our men as possible.

The hundreds out of employment who desire to work are entitled to some consideration. They are our patrons. We want them to have the benefit of this reduced
e rate and if we
number of tickets
to give some of
t in our track re-

N HELP
oks of 100 tick-
rides, for $4.50.
nts on each
ent on your
ood until used.

Y
st one book.
money in this
money goes
iation here.

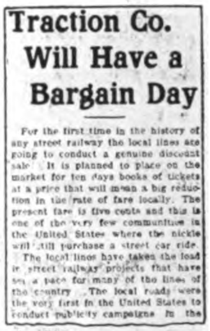
TIME LIMIT
These tickets will be sold for ten days only. After that you cannot buy them from us. We guarantee there will not be such a sale again within ninety days.

DECIDE AS INDIVIDUALS
Do you want to help men out of work and keep others from being laid off? Your money will earn ten per cent and you will be helping to abate unemployment.

CREDIT FOR YOU
Send us your check for as many books as you want. We will deliver them. In a later advertisement all those buying tickets for resale in lots of 50 books or more will be listed.

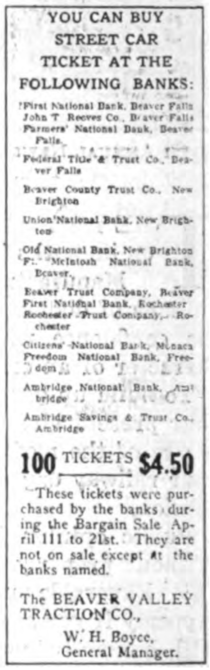
BUY BY MAIL
BUY AT YOUR BANK
BUY AT THIS OFFICE
BUY AT YOUR STORE

Valley Traction Company
W. H. BOYCE, General Mgr.


Traction Co. Will Have a Bargain Day

For the first time in the history of any street railway the local lines are going to conduct a genuine discount sale. It is planned to place on the market for ten days books of tickets at a price that will mean a big reduction in the rate of fare locally. The present fare is five cents and this is one of the very few communities in the United States where the nickle will still purchase a street car ride.

The local lines have taken the lead in street railway projects that have set a pace for many of the lines of the country. The local roads were the very first in the United States to conduct publicity campaigns in the


YOU CAN BUY STREET CAR TICKET AT THE FOLLOWING BANKS:

First National Bank, Beaver Falls
John T. Reeves Co., Beaver Falls
Farmers' National Bank, Beaver Falls.

Federal Title & Trust Co., Beaver Falls

Beaver County Trust Co., New Brighton

Union National Bank, New Brighton

Old National Bank, New Brighton
F. McIntosh National Bank, Beaver.

Beaver Trust Company, Beaver
First National Bank, Rochester
Rochester Trust Company, Rochester

Citizens' National Bank, Monaca
Freedom National Bank, Freedom

Ambridge National Bank, Ambridge

Ambridge Savings & Trust Co., Ambridge

100 TICKETS $4.50

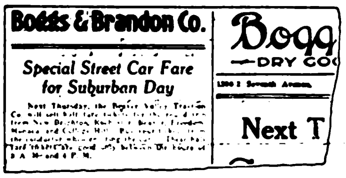
These tickets were purchased by the banks during the Bargain Sale April 111 to 21st. They are not on sale except at the banks named.

The BEAVER VALLEY TRACTION CO.,
W. H. Boyce,
General Manager.

Features of the Beaver Valley Traction Company Publicity

From April 11 to April 21, 1921, the company had a "bargain" sale of tickets, or a reduction of 10 per cent. These tickets were on sale at various banks, stores and factory offices and were good until used. This bargain sale was advertised as shown in the upper series of illustrations.

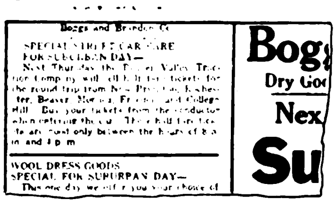
The lower series of illustrations show how the Beaver Valley Traction Company co-operated with the merchants of its localities by reducing its fares for special events such as "dollar" days, and the exhibition of Charlie Chaplin in "The Kid." The reproductions show how many of the merchants called attention in their newspaper advertisements to this fare reduction by the company.


Boggs & Brandon Co.

Special Street Car Fare for Suburban Day

Boggs
DRY GO

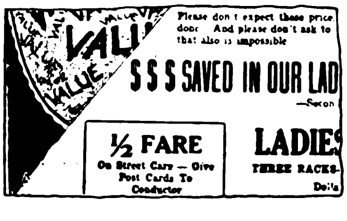
Next T


Boggs and Brandon Co.

SPECIAL STREET CAR FARE FOR SUBURBAN DAY—
Next Thursday the Beaver Valley Traction Company will sell half fare tickets for the round trip from New Brighton, Rochester, Beaver, Monaca, Freedom and College Hill. Buy your tickets from the conductor when entering the car. These half fare tickets are good only between the hours of 8 a m and 4 p m

WOOL DRESS GOODS
SPECIAL FOR SUBURBAN DAY—
This one day we offer you your choice of

Bogg
Dry Goo
Nex
Su



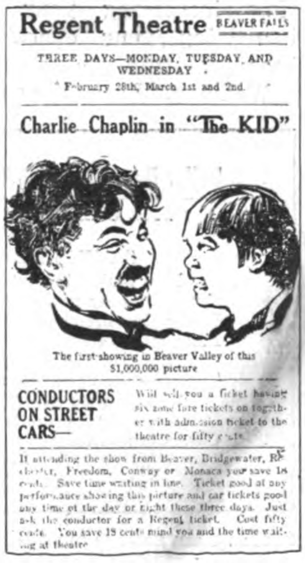
Please don't expect these price door. And please don't ask to that also is impossible

$ $ $ SAVED IN OUR LAD

—Secon

½ FARE
On Street Cars — Give Post Cards To Conductor

LADIES
THREE RACKS
Dolla


Regent Theatre BEAVER FALLS

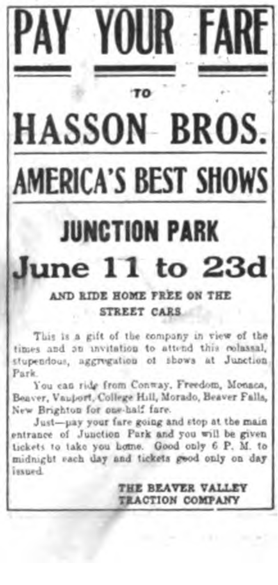
THREE DAYS—MONDAY, TUESDAY AND WEDNESDAY
February 28th, March 1st and 2nd.

Charlie Chaplin in "The KID"

The first showing in Beaver Valley of this $1,000,000 picture

CONDUCTORS ON STREET CARS—
Will sell you a ticket having six zone fare tickets on together with admission ticket to the theatre for fifty cents.

If attending the show from Beaver, Bridgewater, Rochester, Freedom, Conway or Monaca you save 18 cents. Save time waiting in line. Ticket good at any performance showing this picture and car tickets good any time of the day or night these three days. Just ask the conductor for a Regent ticket. Cost fifty cents. You save 18 cents mind you and the time waiting at theatre.


PAY YOUR FARE

TO

HASSON BROS.

AMERICA'S BEST SHOWS

JUNCTION PARK

June 11 to 23d

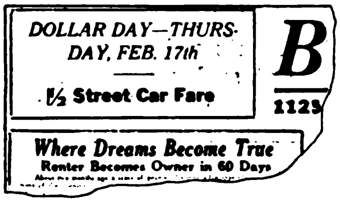
AND RIDE HOME FREE ON THE STREET CARS

This is a gift of the company in view of the times and an invitation to attend this colassal, stupendous, aggregation of shows at Junction Park.

You can ride from Conway, Freedom, Monaca, Beaver, Vanport, College Hill, Morado, Beaver Falls, New Brighton for one-half fare.

Just—pay your fare going and stop at the main entrance of Junction Park and you will be given tickets to take you home. Good only 6 P. M. to midnight each day and tickets good only on day issued.

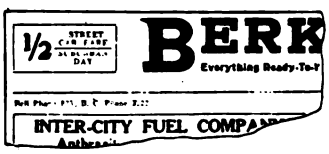
THE BEAVER VALLEY TRACTION COMPANY


DOLLAR DAY—THURSDAY, FEB. 17th

½ Street Car Fare

B
1123

Where Dreams Become True
Renter Becomes Owner in 60 Days


½ STREET CAR FARE SUBURBAN DAY

BERK
Everything Ready-To-

INTER-CITY FUEL COMPA

STREET CAR FARE
1-2 Fare on Suburban Day

SUBU
THI

SUBURBAN DAY SALE OF
Fall

After all is said and done all methods of merchandising transportation are partly wasted without the good will of the public. It is yours for the asking and doing—

GOOD WILL OF PUBLIC CAN BE HAD

IF the heart is right;

IF you are not a double dealer;

IF you are a good mixer or know you can afford to employ one or more;

IF you can take the time to read of what the other fellow is doing;

IF you are not so smothered with detail that you do not find time to do new constructive thinking;

IF you realize that some of the sales methods of other successful men are applicable to your business;

IF you "keep your ear close to the ground";

IF you are human and realize that your business success comes from human beings;

IF you are not penny-wise and pound-foolish with expense accounts;

IF you know that adverse public opinion costs you car riders and damage claims;

IF you deal fairly and squarely with employees and public;

IF you realize that there is a lot in that Golden Rule;

IF you know that your regulations and rules should be tempered with human kindness, but not to the extent of lax discipline;

IF you let the members of your organization (who are just disseminators of "inside stuff") know what is going on;

IF you do not permit favoritism to be shown;

IF you realize that today the trouble with that individual might have been overwork, financial or domestic;

IF you know that there have been known cases of supervising officers being of insufficient mental capacity, out of touch with the rank and file, or tyrannical;

IF you know that fair dealing draws men together and that square dealing holds them together;

IF you feel that the transportation game is the greatest game ever;

IF you are a hard player and a good loser;

IF you are not "Mister" to all the people in your community;

IF you remember that, "A soft answer . . . .";

IF you recognize all the rights of others;

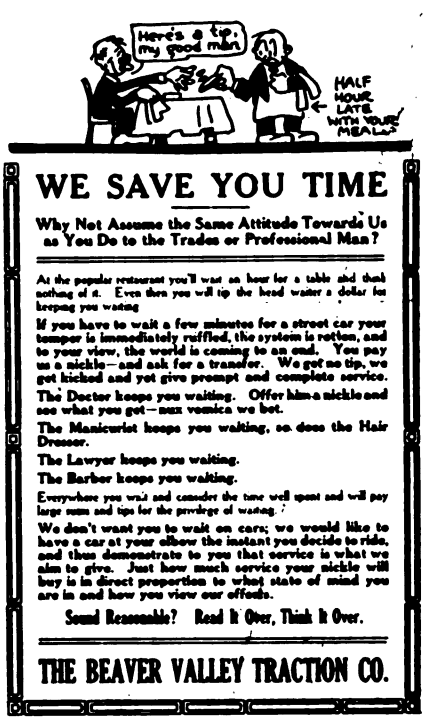
IF you know that America's transportation facilities have done much toward democracizing her;

IF you know that it is more blessed to commend than to condemn;

IF you can be true to yourself.

IF you play the game fairly—and put all the cards on the table.

But, it is now 2:30 a.m. IF I don't get to bed I won't be in shape tomorrow to meet the "IFS." I must not get into that condition; for, believe me, being able to recognize the "IFS" and call them by their first names is a paying proposition in the cultivation of the good will of the public and the merchandising of transportation.


Here's a tip, my good man
HALF HOUR LATE WITH YOUR MEAL

WE SAVE YOU TIME

Why Not Assume the Same Attitude Towards Us as You Do to the Trades or Professional Man?

At the popular restaurant you'll wait an hour for a table and think nothing of it. Even then you will tip the head waiter a dollar for keeping you waiting

If you have to wait a few minutes for a street car your temper is immediately ruffled, the system is rotten, and to your view, the world is coming to an end. You pay us a nickle—and ask for a transfer. We get no tip, we get kicked and yet give prompt and complete service.

The Doctor keeps you waiting. Offer him a nickle and see what you get—nux vomica we bet.

The Manicurist keeps you waiting, so does the Hair Dresser.

The Lawyer keeps you waiting.

The Barber keeps you waiting.

Everywhere you wait and consider the time well spent and will pay large sums and tips for the privilege of waiting.

We don't want you to wait on cars; we would like to have a car at your elbow the instant you decide to ride, and thus demonstrate to you that service is what we aim to give. Just how much service your nickle will buy is in direct proportion to what state of mind you are in and how you view our efforts.

Sound Reasonable? Read It Over, Think It Over.

THE BEAVER VALLEY TRACTION CO.

ADVERTISEMENT ON DELAYS

THE BEAVER VALLEY TRACTION COMPANY

New Brighton, Pa., Feb. 17, 1921.

DEAR SIR:

You have a fine store. Show windows nicely dressed. Sales people neat appearing and courteous. You have a large stock. You can give a prospective purchaser a large selection.

But you cannot make large sales nor many sales unless you get people into the habit of coming to your store. You know the most buying is done in the crowded store. More goods are sold to the "sight" buyer.

You go to New York, to the shop or to the mill, just so that you can see the goods. Manufacturers have traveling salesmen for the purpose of "showing the goods." That conclusively proves that the sale made through exhibition of the goods is the satisfied sale, and, also that exhibiting the goods sells.

Now we are getting to the point.

Telephone orders must be delivered. The expert telephone salesman has not yet been developed; in the present stage they are order takers, and in reality do not sell or increase business for you.

To encourage shopping by telephone detracts from the number of sales possible when the customer calls in person, and increases your number of deliveries. The telephone, of course, has its use in the business but as a sales adjunct it does not compare favorably with the personal contact.

Can you not so frame your advertising that it will get more people into your store? Here is where our interest comes in. Get them to ride down. It keeps them in a good humor. When the people are riding you are selling more goods. When they walk or stay at home your business falls off. You could even afford to refund the car fare on purchases over a certain amount.

In what way can we help you to get the people to visit your store?

Very truly yours,

GENERAL MANAGER

CIRCULAR LETTER SENT TO EACH STORE PROPRIETOR IN THE DISTRICT IN FEBRUARY OF THIS YEAR

THE BEAVER VALLEY TRACTION COMPANY

New Brighton, Pa., Jan. 28, 1921.

TO GENERAL MANAGER OF THE FACTORY ADDRESSED.

Dear Sir:

In order that we may promote the punctuality of, and give improved transportation service to your employees, will you kindly fill out and mail the following facts in the inclosed envelope:

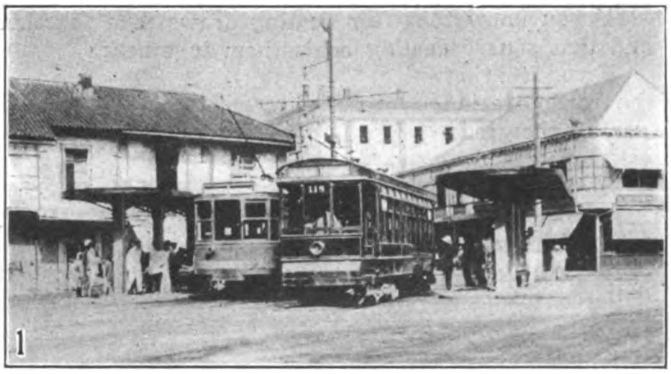
Number of persons employed during normal times ....
Number now working..................
Time work starts........................
Time of quitting.........................
Number of female workers................

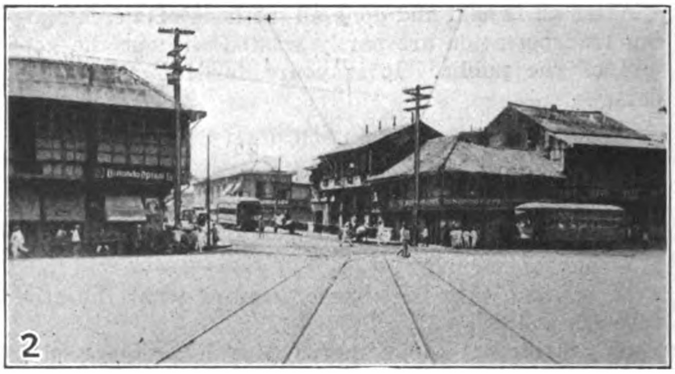
It will also help us to serve you better if you will advise us when you increase or decrease the number of your employees.

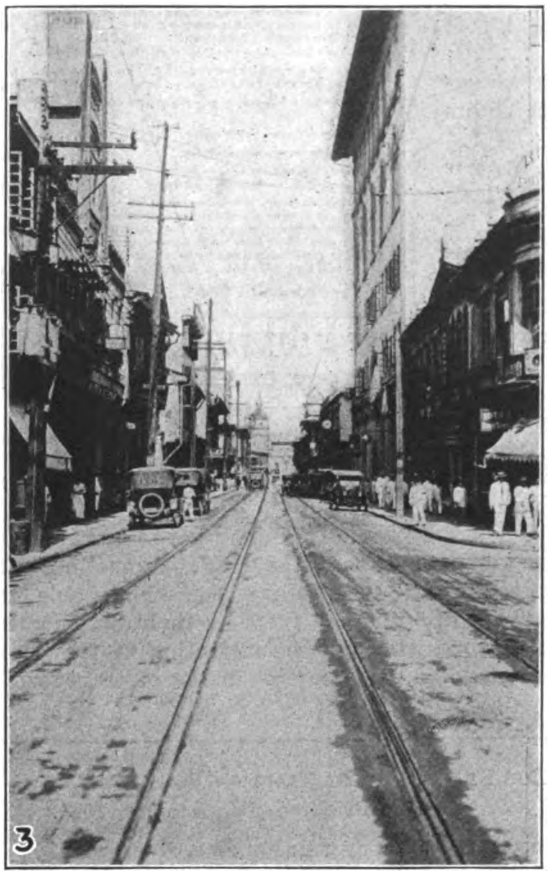
Signed ....
Name of Plant..................................
....

Return to:
W. H. Boyce, General Manager,
New Brighton, Pa., in the
inclosed envelope.

CIRCULAR LETTER SENT TO EACH FACTORY IN THE DISTRICT IN JANUARY OF THIS YEAR







Views in Manila on the Meralco Line

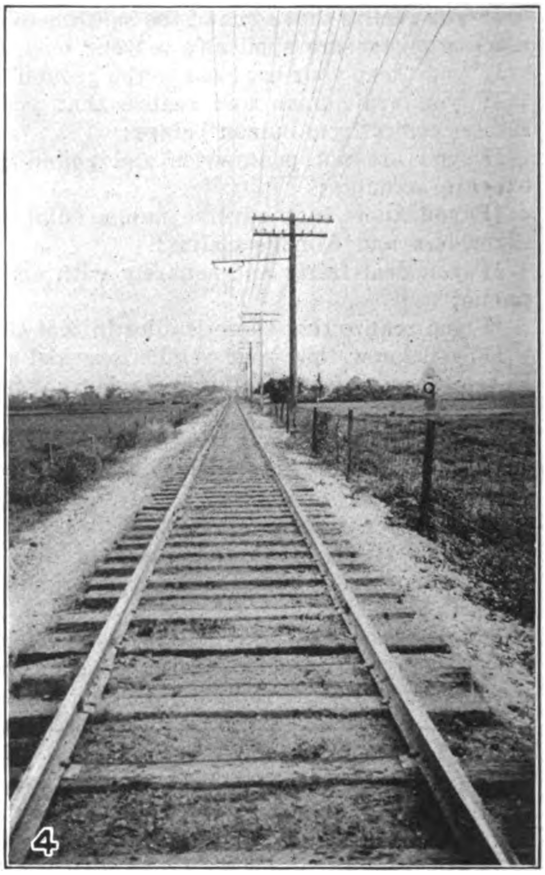
No. 1—Waiting station at Plaza Goiti.

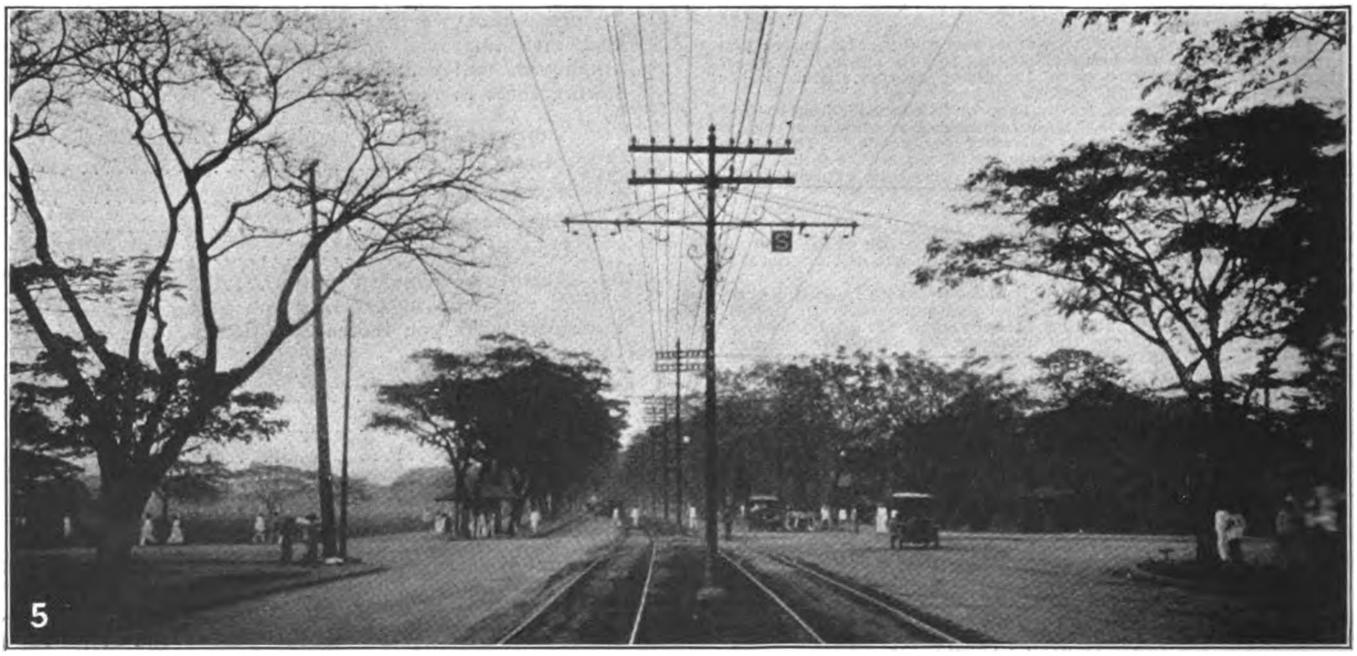
No. 2—Plaza Binondo, looking toward Blanco Bridge.

No. 3—A typical business street.

No. 4—A section of open track construction.

No. 5—Center pole construction in one of the fine boulevards in Manila.

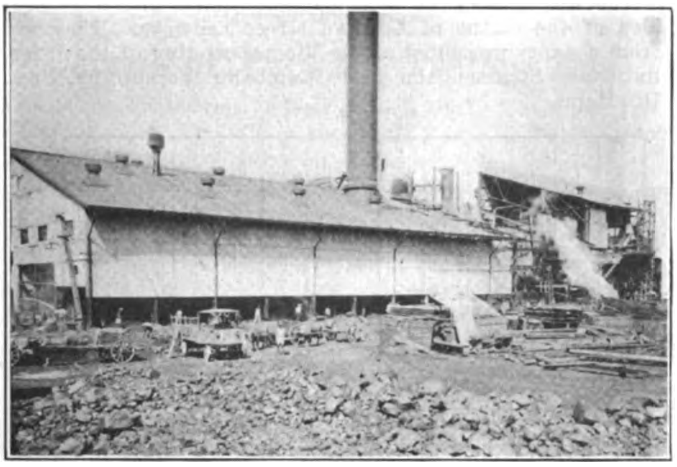




Manila Railway Business Growing

ONE of the largest utility properties outside the United States, conducted by an American company, is the Manila Electric Company, which operates the electric railway and light system at Manila, Philippine Islands. The outstanding capital stock (all common) is $5,000,000, on which the company has paid dividends every year since 1906. The rates from 1906 to 1914 varied from 3 per cent to 7 per cent; since 1914 the rate has been 6 per cent each year. The earnings of the company, both gross and net, have been larger this year than last, in spite of the fact that the Philippine Islands have felt the world-wide business depression of the last twelve months. But it has not been as acute there as in many parts of the United States, as there have been no large manufacturing plants to close down.

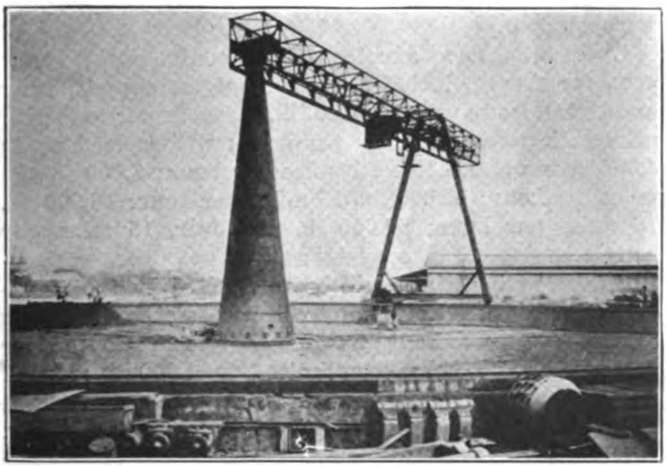
The company owns 52 miles of track, about 130 passenger motor cars and a number of trailers, the latter used principally during the rush hours. At present the company has a number of open cars, but these are being converted to semi-convertible end-entrance cars. The cars are divided into two sections to provide accommodations for first-class and second-class riders. The two compartments are separated by a leather strap extending across the aisle. Otherwise there is no difference between the accommodations supplied to first and second-class passengers, and when the car reaches the end of the line the compartments are reversed. Eighty per

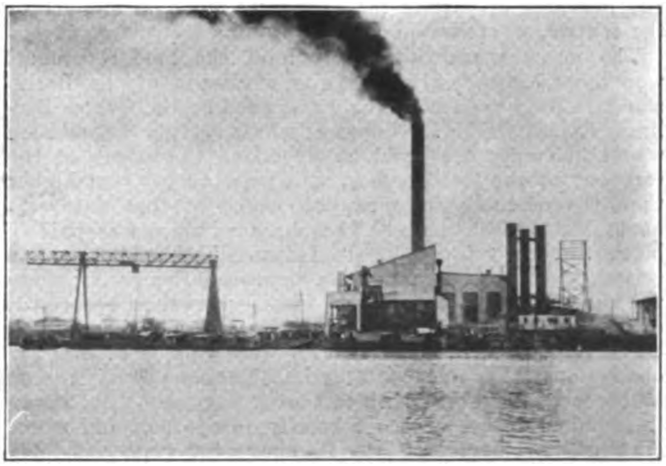

This Boiler Room Is Well Ventilated

Spanish Architecture Is Used in Main Carhouse and Office Building

The Company's Ball Team, Champion of the Manila Bay League

The Ball Team Was Also the Winner of the "Quezon" Cup


Open Storage Bunker Recently Completed


Power Station from the River

cent of the traffic is second class. The first-class fares are: cash, 6 cents, and tickets, 5 cents. The second-class fares are: cash, 5 cents, and tickets, 4 cents.

At present power is being supplied from a steam station of over 10,000-kw. capacity and a new 5,000-kw. turbine generator is now being installed. Most of the coal used comes from China, and the company has recently completed a large storage bunker with circular crane, as shown in one of the accompanying illustrations. Other typical views are shown. The property is operated by the J. G. White Management Corporation.

German Conditions Not Favorable

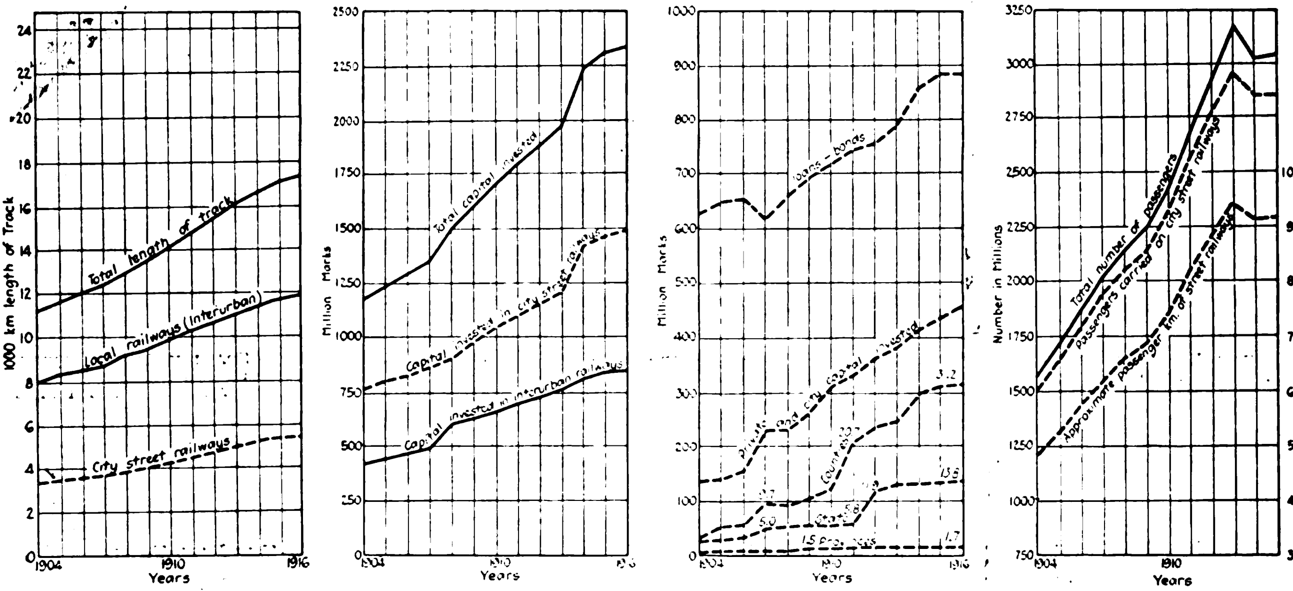
Some Properties Are Being Taken Over in Whole or in Part by Municipalities, but Cities Have Difficulty in Financing Improvements

AFTER the German revolution a number of German street railway systems were taken over in part or in whole by the municipalities. This policy was accepted without opposition in most cases by the owners. Track and rolling stock had deteriorated considerably during the war and large capital investments would have been required in the early future. This fact and the great cost of materials greatly facilitated negotiations for the transfer of ownership. The method of municipalizing differed in various cases. The most frequent forms were the following: (1) Purchase of the assets; (2) purchase of the capital stock, after which in two cases the company was dissolved; (3) purchase of part of the company's stock, in most cases the control, whereby the company retained ownership.

The most extensive transaction of the kind mentioned was the taking over by the city of Berlin of the Berlin street railway system, which was owned by the Grosse Berliner Strassenbahn Aktiengesellschaft. This transaction was effected by the purchase of all of the assets of the company by the municipality, at a price 40 per cent higher than the nominal share capital, which at that date was about 100,000,000 marks. The purchase price was paid in bonds issued by the city. In Leipzig the stockholders received city bonds at par, plus a small cash bonus per share for their property. In Erfurt the city acquired two-thirds of the capital stock of the company, the transfer being made at 1,030 marks per share, while the last stock exchange quotation was 1,580 marks. The management gives as a reason for such sacrifice that it regarded "the future financial situation of the formerly prosperous and sound enterprise as hopeless." In Hamburg the state took over 56,130,000 of the total capital stock of 103,530,000 marks. Private investors thus retain the controlling interest, while the state is the largest stockholder. After 1943 the state may take over the property at a price based on the average gross revenue of the previous five years. The state also guarantees interest and amortization of the bonds.

Public ownership of the railway properties has not greatly improved their financial status. In fact, it has been rather the reverse, and a number of cities are actually contemplating the transfer of the railway back to a private organization in which it is intended to keep a part interest. This seems imperative for the reason that the large capital investments required for making up the deficit and for renewals of rolling stock, track and the necessary maintenance generally exceed the financial ability of the city's treasury. Moreover, the organization of the municipalities is not elastic enough financially to raise new funds, city loans being out of favor with the public. For providing fresh capital, the commercial company proves by far the better organization.

The statistics in the accompanying charts give a general idea of the status of German street railways. They are from a paper presented at the Vienna meeting of the Internationale Strassenbahn und Kleinbahn Verein, by Prof. Dr. Helm.



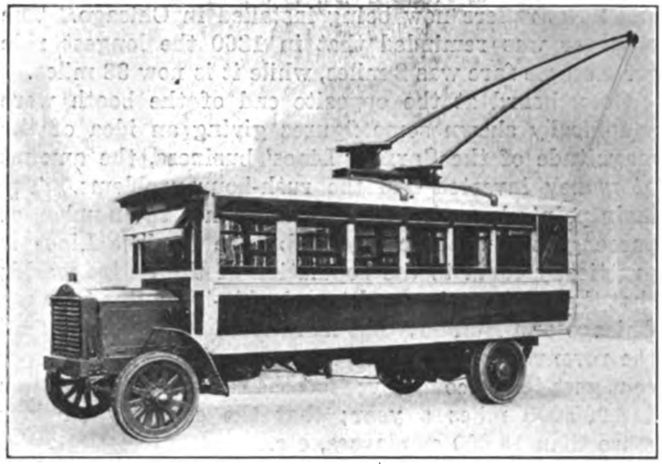
MILEAGE STATISTICS AND CAPITAL INVESTED IN GERMAN STREET AND INTERURBAN RAILWAYS—DIVISION OF CAPITAL IN CITY ELECTRIC RAILWAYS—STATISTICS OF PASSENGER TRAFFIC

Auto Men Adopt Truck Speed and Weight Allowances

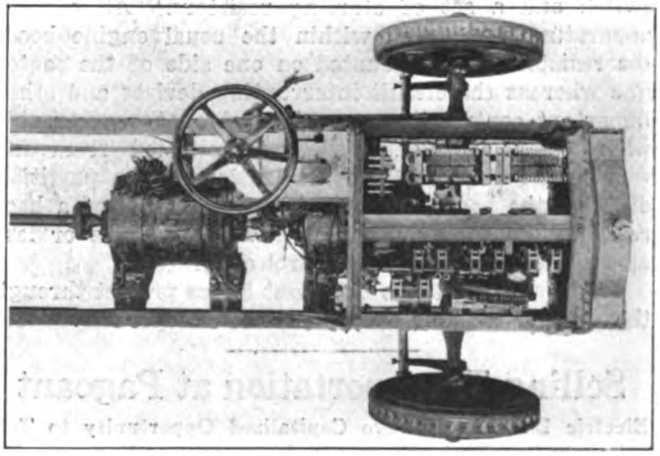
AT A RECENT session of the motor truck members of the National Automobile Chamber of Commerce new standards for body weight allowances, gross weight, chassis, body and total load and new standards for speed were adopted.

Under the new standard the speeds adopted are now, for trucks, including gross weight, chassis, body and total load, up to 2,800 lb. when equipped with pneumatic tires, 25 miles per hour; with a load up to 4,000 lb. on solid tires 25 miles per hour; 8,000 lb., 20 miles per hour; 12,000 lb., 18 miles per hour; 16,000 lb., 16 miles per hour; 20,000 lb. and over, 15 miles per hour.

These speed ratings will be recognized by the manufacturers as a maximum and will not be exceeded under any conditions. Body weight allowance adopted for 1 and 1½-ton trucks was limited to 1,200 lb.; for 2 and 2½-ton trucks, 1,500 lb.; for 3, 3½ and 4-ton trucks, 2,000 lb.; for those of 5 tons capacity and over, 2,500 lb.



Packard Trolley Bus Complete with the Standard Gas-Engine Chassis



Front End of Chassis Showing Method of Mounting Equipment

Details of Packard Trolley Bus

Trial Tests in Detroit of New Vehicle Make Favorable Impression on City Officials — Brill Body on Packard Chassis with Westinghouse Electrical Equipment

THE trolley bus recently built by the Packard Motor Car Company of Detroit to prove the adaptability of the Packard truck to electrical equipment has been given a try-out over a special line built on Harper Avenue by the Detroit Municipal Railway System.

This trolley bus differs in some aspects from others in that it is designed so it can be readily converted into a gasoline-driven unit without any material changes in construction. It also carried two trolley poles, one for each wire. While ultimate service with the trolley bus would undoubtedly require a loop for turning, tests have demonstrated that it was possible to Y the vehicle in a narrow street, the same as any self-propelled unit. The operation, however, required one shift of the trolley poles. With the two poles used such an operation was thought to be impossible, but it is evident the bus can run backward under its own power.

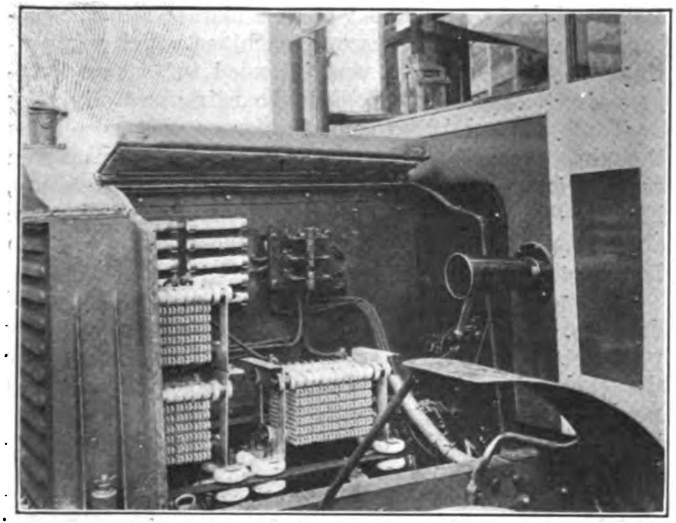
The foot type of control used affords smooth acceleration, and tests showed it could attain a speed of 15 m.p.h. in ten seconds. The maximum speed of the vehicle is 22 m.p.h. A motor-driven sequence switch controls the operation of the resistance notches as well as the transition from series to parallel operation. The speed of this sequence switch motor is directly affected by the current in the propulsion motors.

The design of the bus is shown in accompanying illustrations. It has a seating capacity of twenty-five with considerable space for standees. The floor height is about 2 in. more than the modern safety car and two steps are necessary for boarding. The body is about 25 ft. long. The complete vehicle weighs 11,800 lb., of which 57.5 per cent is carried on the rear wheels. The chassis, including motors, control apparatus and resistors, weighs 7,190 lb., which is 175 lb. less than if equipped with a gas engine.

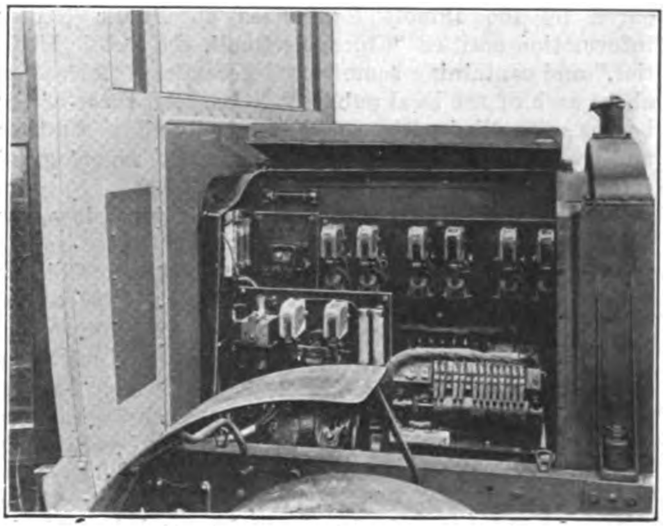
The body, built by J. G. Brill Company, is mounted on standard ED Packard chassis. Two 25-hp. Westinghouse safety car motors mounted in tandem furnish propulsion. The total gear reduction from motor to wheels is 1.75:1. The wheels mount 34-in. cushion tires.

The current collecting devices consist of two separate trolley bases with 18-ft. poles, swivel harps and 5-in. trolley wheels having U-shaped grooves. The trolley bases are mounted on the longitudinal axis, one 30 in. back from the other, with the front base elevated 10 in. above the rear base. The running board is approximately 11 in. above the ground.

The control apparatus includes two small electrically operated line switches complete with overload trip, six small resistance and transition switches, a foot controller, a manually operated reverser, a motor cut-out



Resistors, Fuses and Motor Cut-out Switch in Left-Hand Side of Hood



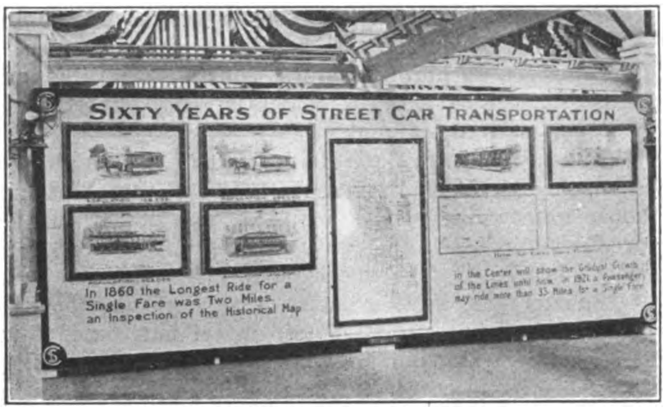
The Controller and Contactors Are Located on the Right-Hand Side of the Partition switch and a set of starting resistors. All of this apparatus is mounted within the usual engine hood, the resistors being mounted on one side of the center line whereas the circuit interrupting devices and other important control items are located on the other side where they are ventilated, yet protected from the weather as shown in the illustrations. The partition dividing the hood into two compartments is of a heat resisting insulating material which acts more or less as a switchboard for the control apparatus.

The reverse and overload reset levers project through the dash at a point convenient to the operator.

Selling Transportation at Pageant

Electric Lines in Chicago Capitalized Opportunity to Tell Nearly One Million People in Attendance at Pageant of Progress Facts About the Railways

THE Chicago Elevated Railways, Chicago Surface Lines and Chicago, North Shore & Milwaukee Railroad made the most of the recent Pageant of Progress held on the Municipal Pier in Chicago, July 30 to Aug. 14, to interest the people in attendance in the magnitude of the enterprises carried on by the local companies and to "sell" them on the character of service supplied. During the sixteen days of the pageant there was an average daily attendance of 55,000, of whom a large proportion stopped at the railway booths long enough to show interest and carry away new impressions and copies of the city map and small booklet prepared by the Illinois Committee on Public Utility information entitled "Chicago's Genii, the Public Utilities," and containing some very interesting information about each of the local public utilities. All three of the booths were filled with people practically all of the time and those who represented the companies report great interest and believe that, judging from the large number of questions asked and discussions entered into, the cause of the local railways was greatly helped.


SIXTY YEARS OF STREET CAR TRANSPORTATION
In 1860 the Longest Ride for a Single Fare was Two Miles. an Inspection of the Historical Map
in the Center will show the Gradual Growth of the Lines until Now. in 1921 a Passenger may ride more than 33 Miles for a Single Fare

SIXTY YEARS OF STREET CAR TRANSPORTATION AS DEPICTED BY CHICAGO SURFACE LINES

CHICAGO IS A CITY OF GREAT ENTERPRISES
FACTS ABOUT THE CHICAGO SURFACE LINES
WORLD'S POPULATION 1,730,294,324
SURFACE LINE PASSENGERS CARRIED IN ONE YEAR 1,353,171,493
DISPOSITION OF REVENUE

A FEW STARTLING FACTS PRESENTED IN A WAY TO MAKE AN IMPRESSION

John E. Wilkie, assistant to general manager Chicago Surface Lines, having in mind the general diffidence of the public toward statistics, endeavored so to portray four or five main points that the guests would naturally absorb them, or at least take away the correct impression. Across one end of the booth in which the Surface Lines' exhibit was displayed was a series of beautifully water-colored pictures showing the progress of the type of cars used since 1860, carrying the memory of the "old timers" back to the horse-car days and through the cable cars, early electric cars, to the modern street cars and new trailers now being installed in Chicago. The observer was reminded that in 1860 the longest ride for a single fare was 2 miles, while it is now 33 miles.

On a board at the opposite end of the booth were graphically shown some figures giving an idea of the magnitude of the Surface Lines' business, the amount of money invested and the rush-hour problems. The main points brought out here were that the number of passengers carried in a year by the Surface Lines is practically equal to the population of the entire world; that the trackage is equal to a double-track line between Chicago and Buffalo; that more than 50 per cent of all the revenue collected goes to wages, while only 4.71 per cent goes to the company; that the cars travel more than 118,000,000 miles a year; that the company employs more than 15,000 employees, etc.

In the center of the booth was a four-wing board on which were mounted enlargements of pictures showing the great traffic congestion and therein explaining some of the causes of delay to the street cars. A transfer-counting machine which will count accurately 800 transfers a minute attracted a great deal of attention, this being operated almost continually and impressing how the company values and accounts for all transfers. The thing which perhaps startled the visitors most of anything was the large box made up to represent the bulk of one day's supply of transfers used on the Surface Lines. This is almost astounding even to a railway man. It is shown in an accompanying picture and it measures 7 ft. 7 in. x 4 ft. 10 in. x 3 ft. 10 in.

A good deal of interest was also manifest in the picture shown by two photoscope machines which ran continually. One of these was intended to teach safety-first lessons and showed chiefly boarding and alighting accidents and affording some humor as well as serious thought. The other photoscope showed pictures taken at some of the beaches, parks, ball parks, Art Institute, Field Museum and various spots of beauty and pleasure about the city, and each view carried directions as to how to get there by street car.

Having anticipated warm weather and shortage of drinking facilities, the Surface Lines' booth became very popular as a watering spot. On the first day, before the concessionaries got started, a police detail was necessary to line the people up for a drink and one hundred 5-gal. bottles of water were served that Sunday afternoon. Another popular feature of the exhibit was the map of the city telling about points of interest and how to get there. About 30,000 copies a day of this map were given away.

METROPOLITAN ELEVATED RAILROAD

	1895	1920
Population served	339,287	642,562
Property value (Logan Square)	$100	$750

SOUTH SIDE ELEVATED RAILROAD

	1893	1920
Population served	93,374	420,716
Property value (Sixty-third and Halsted)	$40	$1,750

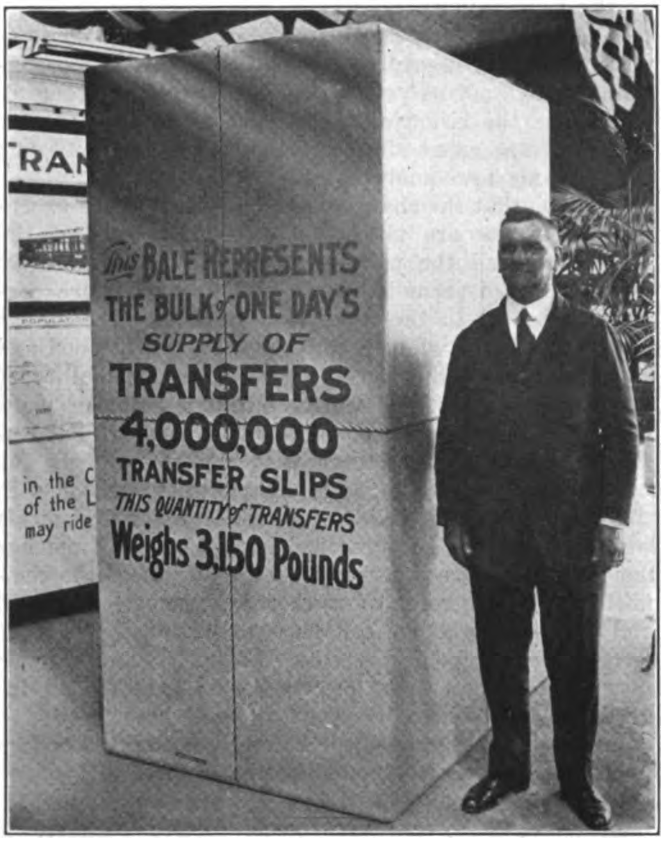
OAK PARK ELEVATED RAILROAD

	1893	1920
Population served	94,602	156,982
Property value (Oak Park)	$50	$300

NORTHWESTERN ELEVATED RAILROAD

	1900	1920
Population served	238,679	431,636
Property value (Wilson Avenue)	$60	$2,000

It is to be regretted that, despite various attempts, the exhibit of the Chicago Elevated Railways would not photograph, for it represented a very fine piece of work. It consisted in the main of a huge map of the city mounted in a beautiful frame and showing, with the help of excellent illumination, the lines of the several elevated railways. Ribbons attached to the map at a certain section of the elevated lines extended out to tables of data on the sides of the booth where figures showed the relative population served and property value when the line was built and in 1920. The principal data thus shown are of interest to the railway field and are given in the table above.



THE THING WHICH PRODUCED THE MOST EXCLAMATIONS

Numerous pictures also showed how territory looked when the elevated was first built and how it looks now. Other pictures showed some of the elevated construction work, different types of equipment, etc. A map of the elevated railways contained in a folder, pointing out numerous places of interest in Chicago and how to get there, was also given away. Prominent display was also given to the figures showing that 2,500,000,000 people have been carried in thirteen years without a fatal accident to a passenger.

The exhibit of the Chicago, North Shore & Milwaukee Railroad consisted mainly of a darkened booth in which a motion picture, entitled "Along the Green Bay Trail," which is a very interesting little story designed to attract passenger travel to the electric line between Chicago and Milwaukee, was shown. This picture was run continually and it was surprising the number of people who would stop at the booth and see the picture clear through.

Wage Reductions Approach Deflated Cost of Living

AVERAGE wage reductions of approximately 15.9 per cent since the first of this year for over 4,540,000 workers in industrial concerns in twenty key industries throughout the United States are shown in an analysis of industrial wage tendencies made by the J. L. Jacobs Company, engineers and statisticians of Chicago. The survey made includes a digest of reports from official documents and reliable periodicals, covering 693 establishments or industrial groups which are typical of the industrial and utility activities of the country.

The summary analysis from the 693 establishments reporting show that approximately 43 per cent of these industries reduced wages 20 per cent or over; that 19.9 per cent reduced wages between 15 per cent and 19 per cent; that 30.4 per cent reduced wages between 10 per cent and 14 per cent, and that about 6.5 per cent reduced wages less than 10 per cent. This average wage reduction of 15.9 per cent for industrial workers throughout the country is still below the average reduction in the cost of living as reported by the United States Department of Labor, or 16⅔ per cent.

WAGE REDUCTIONS BY INDUSTRIES

Industries	Estimated No. Employees Affected	Average Wage Reduction, Per Cent
Cotton manufacturing	205,000	26.5
Hosiery and underwear manufacturing	7,000	24.3
Leather manufacturing	14,500	23.6
Boot and shoe manufacturing	25,000	22.0
Electrical manufacturing	70,000	21.5
Car building and repairing	15,000	20.8
Iron and steel manufacturing	400,000	20.7
Mining	125,000	20.4
Woolen manufacturing	100,000	20.3
Building materials manufacturing	6,500	18.7
Public employment	35,000	18.6
Rubber goods manufacturing	10,000	18.3
Silk manufacturing	20,000	18.2
Building trades (cities)	380,000	18.1
Paper manufacturing	23,000	16.7
Men's clothing manufacturing	100,000	16.7
Public utilities	115,000	15.9
Shipbuilding	105,000	14.7
Meat packing industry	200,000	13.7
Express employees	50,000	12.0
Steam railroads	1,829,000	12.0
Miscellaneous	705,000	17.6
Total	4,540,000	15.9

The outstanding reductions of wages that have been made in the last sixty days are among the public utilities, the building trades and the iron and steel industries. Nearly half of the total reductions in wages among the public utilities since the first of the year have been announced in the last sixty days. The available reports show that 109 utility companies, chiefly street railways, have reduced wages from 5 per cent to 40 per cent, the majority of the reductions lying in the range from 10 per cent to 20 per cent. No important strikes were reported following the wage reductions by these utilities. In the building trades there has been a continued voluntary action on the part of workers to accept lower rates of pay in the hope of increasing building activities. In some instances the reductions reported and accepted were the second that have been made since the beginning of the year. The iron and steel workers have received the second and in some cases the third reduction since the beginning of the year. Wage reductions in this industry average about 20.7 per cent.

The table on page 361 shows the average wage reductions and approximate number of workers affected, distributed according to the key industries. Were the railroad employees, whose salaries were reduced approximately 12 per cent, taken out of this group, the reduction of the remaining 2,700,000 employees would average 18.7 per cent.

Effect of Brakes or Slipping Wheels on Tires and Rails

THE rapid acceleration and the deceleration now used on street railways have introduced some rather dangerous effects caused by the brakes or by slipping wheels acting on the tires and rails. C. P. Sandberg in a paper read at the Engineering Conference, London, 1921, treats of these actions in a very interesting manner. The energy absorbed by the brakes is immediately converted into heat and this heat must be dissipated chiefly by conduction into the mass of metal behind the slipping surfaces. The rate of such heat conduction is limited and if the rate at which heat is generated is greatly in excess of this limit a marked local rise of temperature will take place. If the surface temperature does not exceed the lower limit of the critical range of the material then no marked changes will occur beyond those due to mechanical deformation and abrasion, but if the critical temperature is exceeded, then in any ferrous material containing over about three-tenths per cent carbon very definite structural changes will occur. If the thickness of the heated layer is small in comparison with the whole mass, then when the heating effect ceases the surface will be very rapidly cooled by conduction, and if the initial temperature is high the outer layer of metal will be left in a very hard or martensite state. The surface hardening in itself would not result in any detrimental effects were it not for other phenomena that occur due to this action. A study of surfaces under this condition indicates that the thermal formation of a hardened outer skin is accompanied by the sliding of one surface over the other to a point at which both surfaces have become so heated that they are soft and plastic and tend to seize together at numerous points of contact. While so united the surface layers are dragged bodily forward, forming an overlap in advance of each area of adhesion and a tear behind it. The adhesion is only momentary and the surfaces are quickly dragged apart and recommence to slip over one another until sufficient rise of temperature and softening have occurred to cause another seizing. This alternate action of seize and slip probably occurs many times per second during the application of brakes and gives rise to the jarring or squeaking noises which accompany such applications. The result is to produce a series of surface tears or cracks upon both brake shoes and the wheels or rails, the cracks running in a direction at right angles to that of the motion and forming at regularly spaced intervals, evidently bearing a relation to the periods of seize and slip. These notches and rough surfaces put the material in a condition for very easy failure under ordinary load and increase the maintenance costs.

Letters to the Editors

Discussion on Association Reorganization

FOLLOWING *the suggestions of President Gadsden and the executive committee of the American Association that the reorganization question be fully discussed, the* ELECTRIC RAILWAY JOURNAL *has solicited letters on the subject, both editorially and by a few personal communications and has offered space in its columns for the purpose. The following letters on this subject will prove of interest and value to the association in its study of the executive committee's recommendations.*

BOSTON ELEVATED RAILWAY COMPANY
BOSTON, MASS., Aug. 18, 1921.

To the Editors:

I have read with considerable interest the contemplated action in regard to reorganization of the association. I have not as yet had an opportunity thoroughly to analyze the situation, but in compliance with your request I am expressing certain opinions which come to me in my first analysis.

I believe that the changes recommended by the executive committee are all for the best interests of the association and the policies adopted by the executive committee also seem to me to tend toward more constructive effort in the work performed throughout the year. One point which I did not notice mentioned and about which I feel very strongly is the desirability of limiting the committee work to that amount of work which can be accomplished effectively without burdening the member companies with undue requests for information. I think there has been a tendency in the past to provide a list of subjects for a committee which in view of the practical limitations of time has not resulted in concentration of the efforts of the committee on the amount of work which they can do well and thereby produce constructive results; in other words, spreading the work too thinly. This plainly is not in the interests of progress, but tends to an indifferent attitude and does not produce results.

I note the recommendation that individual members from non-member companies be not admitted. I appreciate the basis upon which such a decision was reached, but it seems to me manifestly unfair because, if temporarily the powers that be in control of a property feel that from a policy standpoint they do not desire to become a member, the association is prevented from availing itself of the ability and desire to work of a capable executive or officer of that company who might personally be inclined and be of value to the industry. It seems to me it is a discrimination. I can see where should a bright, energetic individual in a company become associated and interested in the work he might be the factor which would secure for the association the membership of his company.

As regards the question of admission of municipally owned railways, there is ample ground for divergence of opinion, but from a broad viewpoint consistent with modern conditions and for the good of the industry and its credit at large, it would seem to me as if here again it was short-sighted policy to close the doors against men many of whom have drifted from privately operated companies to the service and are not less capable street railway operators. If they increase in numbers and feel this disbarment, there is likelihood of a separate organization, which certainly is not to the advantage of the industry as a whole.

As regards the training of potential presidential nominees, while in theory it may sound correctly, if by chance in the appointment to the lowest vice-president's position there comes a man who is not of sufficient caliber for constructive leadership it is not to the interest of the association to have him take the reins. On the other hand, while the arrangement provides that it is not absolutely necessary, it is unfortunate, both for the individual and for the effect it has in general, to be working along the line of succession and then have to break it. Too often in the past this arrangement has led to charges of clique control. An association as broad and far-reaching as the American Electric Railway Association must in all events be free from any such impression if it is to be of utmost service to this tremendous industry. The requirements of the time must dictate without any embarrassment about leaders.

I prefer the committee's recommendation of two junior living past-presidents with power of vote rather than all of the living past-presidents without power of vote, as I believe that the reorganization committee conclusions of the responsibility for management being placed squarely on the men elected is preferable to the indeterminate dropping in of living past-presidents. It would of course be wise to permit living past-presidents without vote to attend meetings out of courtesy and to secure the benefit of their experience, so that under the recommendation of the reorganization committee both advantages are possible, whereas under the recommendation of the executive committee they are not. EDWARD DANA, General Manager.

EAST ST. LOUIS & SUBURBAN RAILWAY COMPANY
EAST ST. LOUIS, ILL., Aug. 26, 1921.

To the Editors:

In your report of the meeting of the executive committee of the American Electric Railway Association held on Aug. 8, you in effect asked for a discussion of the revised constitution as drafted by the executive committee. As the intent of the adoption of the revised constitution is to rectify past errors and is a very important step, it seems but proper and meet that there should be a thorough discussion so that those who have not had the advantage of attending the reorganization and executive committee meetings may be better enabled to form their opinions as to the merits of the proposed changes.

All in all, the revised constitution appears to me to be a real step in advance, which will enable the association to go forward on a more business-like and efficient basis than ever before.

I am particularly impressed with the underlying thought that members of the executive committee are in the future to do real work and take real responsibility. This is as it should be. No man should accept office who is not prepared to accept the work and responsibility. The revised constitution makes it very evident that the executive committee is a working, managerial committee.

Another helpful step is the formation of sub-committees with real responsibilities, which will report to the executive committee at its monthly meetings. Heretofore sub-committees have been few in number and there have been no meetings of the executive committee for them to report to, except two or three times a year. Forcing a sub-committee to report to the executive committee once a month, and having it placed on record as to what its report is and what its recommendations are, puts the sub-committee members where they must take real responsibility and analyze the work assigned to them, at least to the extent that they may be able to make a report.

I am also much impressed with the new method of appointing the nominating committee long enough in advance of the annual meeting so that the nominating committee itself may have an opportunity to sound the sentiment of the membership, and the members may have an opportunity to express their views as to the future officers. This appointment of a nominating committee in advance appears most advantageous from every standpoint, and will especially remove any cause for complaint. Every one will have an opportunity to express his views in plenty of time, and the new officers elected will be as nearly as possible the choice of the membership at large, or if this is not the case it will be due entirely to the fault of the membership. Another factor is that nominations and elections have always taken place at the same meeting, and there has often been necessity for undue haste and the complication of finding out not only whom the nominating committee desired to nominate for officers but what timber was available. For these reasons and others, the adoption of the revised constitution will, all in all, be a real step in advance, but there are several sections which should, I believe, be given very thorough consideration.

The executive committee realized that although they had given very considerable thought and study to the revised constitution, there were possibly, and in fact probably, portions of the constitution which others, or even they themselves, might wish to change upon further thought or information. Accordingly the matter was left in such shape that amendments to the constitution can be modified or new ones moved and adopted on the floor of the convention, if desired by the convention. This action was taken premeditatedly and purposely so that the convention would not be forced to accept the revised constitution as drafted, but that, as finally adopted, it could and would be the sentiment of the convention.

ELECTION OF PRESIDENTS AND VICE-PRESIDENTS

Among the sections which provoked considerable discussion among the executive committee members themselves was the question of designation of vice-presidents. It has been our practice in the past to designate vice-presidents as first, second, third and fourth vice-presidents, and also as a rule to elect the senior available vice-president as president, move all the other vice-presidents up one notch and elect a new man as fourth vice-president.

The old or present constitution does not call for such designation, but it was perfectly constitutional and legal to follow this procedure. As a matter of fact, it has become so established by custom as to be almost obligatory on the nominating committee.

At the last annual meeting a resolution was passed to the effect that in the future the policy of the association should be to elect as president the man who was considered best fitted—taking all things into account—to lead us as president for the next year, regardless as to whether he had previously been a vice-president or had held any other office in the association.

But the underlying thought of the executive committee in adopting the portion of the revised constitution which covers this point was, as I understand it, that we should return to the old order; that is, that the regular routine should be to elect a fourth vice-president and promote each of the other three vice-presidents. The revised constitution does not say that this should be done, nor need it necessarily be done, but the new constitution has gone a step further than the old constitution ever did, in that the constitution itself calls for designation of vice-presidents.

In the discussion the executive committee brought out very definitely the fact that all of the executive committee were not agreed as to either what the constitution should say or what our procedure should be in the future. It was contended by the majority that in order to achieve the best results during his term of office the president should be one who had had past experience with the business of the association for say the past three years. The main contention of the minority was that the convention should be left absolutely free to elect as their president for the ensuing year the man who at that time was available and appeared to them to be the best man to lead them for the ensuing year. This may be, though not necessarily, absolutely contradictory to electing one of the vice-presidents to the presidency, and the main thought of the minority was that we should elect each year the man best fitted to be president for the ensuing year, and not elect (as *vice*-president) each year the man who we thought would in four years be the best available man for the presidency.

If it is the sentiment of the October convention that we should return to the old order and elect a fourth vice-president and promote the other vice-presidents, then the constitution, in so far as this part is concerned, should be adopted as written. If it is the thought of the convention that the membership should not be limited, by insinuation or otherwise, as to who at any future time should be elected president for the ensuing year, then the constitution as drafted should be changed and should state that there should be four vice-presidents *without designation.* This was the way the constitution read when it was recommended to the executive committee by the reorganization committee.

To state the matter boldly, this question may be said to resolve itself into whether we shall so arrange elections that a man shall be chosen president on account of his positive qualifications for the place or because his negative qualifications are not enough to disqualify him.

SHALL MUNICIPAL RAILWAYS BE ADMITTED?

Another point which brought forth considerable discussion was the question of admitting municipal railways to membership on the same basis as company members. This matter first came up last December at the Chicago meeting, at which time a committee was appointed to make a report as to the advisability of admitting municipal companies to full membership, there being a question as to whether or not the constitution provided for their admittance.

The committee took a referendum vote, as it were, among the members of the executive committee and prominent executives of the industry, some fifty altogether, and reported back that of those who had returned answers to the questionnaire, thirty-seven were in favor of admitting municipalities, and five were not in favor of admitting them.

When the matter came up in the reorganization committee some who had previously been in favor of admitting municipalities voted in favor of not admitting them, as, although those opposed to admitting municipalities were very few in number, they were most definite as to the mischief to be wrought to the association and the industry by admitting municipal railways to membership.

The result was that when the matter came up for final vote in the executive committee the vote was almost unanimous to exclude municipal railways from membership in our association. Judging from the replies received when the referendum was conducted, there is unquestionably a division of thought in our membership as to which is the proper course for the association to take. Those contending for the admission of municipal railways stated that due to the fact that executive or secret sessions of this association are now a thing of the past and that it is our policy to teach the truth openly and frankly, no harm could come to the association by admitting municipal railways, and that this frank, open-door policy would in the end be advantageous rather than otherwise. It was brought out that practically every act of ours is now open to inspection and that all and any data sent out by the association can be secured, if desired, by individuals or by municipal railways without being members, and moreover, that the association had nothing which it desires to conceal, but that it truly desires to acquaint the public and also the municipal railways as to facts.

Those opposing municipal railways being admitted to membership were just definitely opposed to municipal railways and therefore wanted none of them in any way connected with the association.

In this connection it should be understood that no member of the executive committee advocated municipalizing street railways, nor were any members of the executive committee in favor of such municipalization, but the minority were in favor of admitting such systems to membership on the basis that it was the better policy for the association and the industry.

The revised constitution as first drafted by the reorganization committee definitely admitted municipal companies to membership but the constitution was redrafted, so far as this matter was concerned, before it was reported back to the executive committee, and as it is now drafted no municipal railway can be admitted.

It is possible that a number of executives not belonging to the executive committee who previously were in favor of admitting municipal railways have by this time changed their minds, as did some of the members of the executive committee, but unless a very large number have done so, the majority of prominent executives to whom the referendum was sent are still in favor of admitting municipal railways to membership. The original referendum showed that of executives not members of the executive committee twenty-three were in favor of admitting municipalities and two were opposed to it.

PAST-PRESIDENTS ON THE EXECUTIVE COMMITTEE

The revised constitution as first drafted by the reorganization committee and reported to the executive committee proposed that the two junior past-presidents should be members of the executive committee, *with vote.* The present constitution provides that all past-presidents shall be members ex officio of the executive committee, *without vote*, and the revised constitution as finally left by the executive committee is practically worded as is the present constitution, that is, all past-presidents of the association are members ex officio of the executive committee.

The discussion regarding this matter was in no way personal but the reorganization committee reported in favor of limiting the membership of the executive committee to the two junior past-presidents only after considerable thought was given this matter. It is realized that past-presidents carry, even without vote, a very considerable weight in any discussion which may arise in executive committee meetings, and the newer members of the executive committee have a normal human tendency to accede to the desires of past-presidents, even though the thought of the new member is that such a course is not in keeping with his own present-day views as to what is best for the association as of today.

On the questions which came up for real discussion in working out the revised constitution, it was noticeable that past-presidents present, speaking broadly and generally, were in favor of continuation of past policies.

"AERA"

There was one question which brought forth considerable discussion in the reorganization committee, and that was the future policy of *Aera*. The *Aera* advisory committee was asked to make a report, and in their report they were very definite that *Aera* should be continued along the lines of the past, with the exception that it should broaden out and cover even more ground than was attempted in the past. This committee report was so definite that a large majority of the reorganization committee after hearing the report were in favor of continuation of *Aera* along the general lines of the past, with, however, the recommendation that duplication of articles appearing in or belonging to the technical press should be eliminated, and that we should co-operate with the technical press rather than be considered as a distinct competitor. The *Aera* advisory committee being naturally composed of members who have previously been prominently identified with *Aera*, and who were appointed due to the fact that they desired in general a continuance of *Aera's* policy, it was not in any way unnatural that this report should be favorable to the continuance of *Aera*. As to whether an unprejudiced committee not so closely identified in the past with *Aera* would have brought in the same report is, of course, open to question. The net result of the discussion, however, was that the situation was not changed and it was the thought that *Aera* should be continued, but substituting co-operation for duplication and competition. If this be carried out the solution will probably be acceptable to a great big majority of the membership. There is no doubt that there is a strong feeling on the part of a considerable number that *Aera* should not and cannot compete as a magazine with the technical press, but should limit itself to appeals to company section membership and to information and data which are needed by the industry but are not available through other sources.

So far as the constitution is concerned, no change was necessary, unless it was desired absolutely to stop publication of any magazine or bulletin, and the future policy of *Aera* rests with the executive committee through the executive secretary and the sub-committee on publications, under whose charge will come the preparation and publication of *Aera*.

Now, just one word in conclusion. I have written the above simply so that executives of member companies may give some thought before they arrive at Atlantic City as to just what we should or should not do in our new constitution. The association will, under the revised constitution, receive much benefit due to the executive committee in the future really functioning as business managers of the association, but the greatest good of all will be for the new constitution to reflect the thoughtful, analytical views of the membership. W. H. SAWYER, President.

NEW YORK, Aug. 18, 1921.

To the Editors:

Unfortunately for the purpose of present discussion, I am unable to attach sufficient importance to the proposed changes in constitution and by-laws of the American Electric Railway Association to justify me in making any extended comment. Rules for the guidance of men of affairs, such as the proposed requirement for monthly meetings of the executive committee, seem arbitrary and are to be avoided in the by-laws of all corporations and associations like the one under discussion.

The success of the efforts which the association will put forth to benefit the industry supporting it will depend not so much on the form of organization as it will upon the substance of its leadership. The right kind of leadership will develop forward-looking policies that may eventually assist in the rehabilitation of an industry that is now all but financially bankrupt.

JAMES D. MORTIMER.

BROOKLYN RAPID TRANSIT COMPANY
BROOKLYN, N. Y., AUG. 23, 1921.

To the Editors:

The recommendations of the special reorganization committee of the American Electric Railway Association were discussed editorially in your columns on Aug. 13. It will be remembered that the proposals made by that committee affect only the work of the parent association. Meanwhile the discussion has caused attention to be directed toward the possible need for the organization of a similar committee to study the work of the Engineering Association.

It has been felt in some quarters that the Engineering Association could greatly increase its effectiveness if some things were done in the way of reorganizing its methods, somewhat along the lines which have been prepared for the parent body. The question of size of committees has assumed a prominent place in the minds of those who have given thought to this subject. At present the committees are fairly large, with from twelve to fifteen members on the standing committees. It is seldom that a full committee meeting is held. Perhaps the nearest approach to this was reached this year when eleven of the twelve members of one committee were present at a meeting.

The number of meetings which can be held is limited, first, by the difficulty in getting members to travel long distances and, second, by the cost of attendance, which is now a direct burden upon the member companies whose men are upon the committees. It is thought that this burden tends to restrict membership in committees to those companies both able and willing to bear the expense. This may tend to keep good committeemen from active participation in the work. Another handicap to large committees is the difficulty and expense in providing copies of correspondence, and the correspondence of an active standing committee assumes large proportions. Again, the cost of preparation of reports in sufficient quantity to provide for the membership becomes a burden upon the unfortunate company whose representative happens to be a chairman. It is stated that one important report due to be issued this year required the constant work of two stenographers for two weeks.

The number of subjects assigned to standing committees is frequently too large, and even progress reports on many of them are not forthcoming. Fortunate indeed is the committee which can adequately report on more than three subjects.

The suggestion has been made that smaller committees should be the rule and that there should be more committees. For instance, the American Railway Engineering Association has five or six committees covering subjects which the Engineering Association attempts to cover by one standing committee. With smaller committees, each handling an important subject, there should be a much better opportunity for careful study of subjects and the reports on them could thus be treated more completely. As a matter of fact, the standing committees now have to divide into numerous sub-committees in order to get any work done, but this method divides the responsibility somewhat and often results in lack of production, with a tendency toward acceptance of sub-committee reports by main committees without careful study of details.

The task of assembling a report of any one of the large standing committees becomes a burden upon the chairman which consumes a great deal of time. Only the pride of the chairmen in having a creditable report keeps them from giving up the jobs in despair.

The matter of selection of subjects also seems to require a more careful consideration than has been given heretofore. Those subjects which are of the greatest practical value should have first consideration, and subjects which mainly call for theoretical consideration might well be assigned to individuals for treatment in monograph form. It is no secret that some of the best reports in the past practically have been the work of one man.

Many subjects cannot well be handled by large committees because of the lack of adequate information from member companies, who are generally becoming more and more adverse to answering questionnaires. Some better means for getting such information should be found, and perhaps the best way to get it is to employ a research engineer who can visit a sufficient number of properties to gather authoritative data covering a definite line of inquiry. Such a method of getting valuable and needed information would also tend toward increasing the use of association standards through the personal contact of the research engineer with the representative "local conditions" which now mitigate against the adoption of standards.

It is also thought that the committee reports should not all be dumped in a mass upon a busy engineer's desk about a month before the annual convention. He cannot possibly find time to digest them sufficiently to prepare suitable discussion, and one great failing now found is the lack of constructive discussion of reports on the floor of the convention. It has been suggested that the plan of having the reports printed in bulletin form and released to the technical press and printed in *Aera* as soon as they are prepared would be a great step in advance. This is now done by the American Railway Engineering Association, and the plan seems worthy of study relative to applying it to the work of the Engineering Association. But in order to make it effective there should be more certainty of continuity of committee membership and committee activity. As it now stands, all active committee work halts about July 1 and remains dormant until about Jan. 1. In other words, from five to six months are practically fruitless so far as committee work and study are concerned and the hardest work has to be done in the late spring and early summer when the heat and regular work of the members conspire against good work.

The writer calls attention to these matters in the hope that your columns will be utilized for the purpose of discussing means which may be adopted to secure greater and better results from the activities of the Engineering Association, as the work of this allied association affects practically all branches of the electric railway industry and every possible step should be taken to make its work of the greatest possible service to the member companies.

R. C. CRAM,
Engineer of Surface Roadway for Receiver.

England's Method of Handling Railroad Labor Problems

THE British Railways were returned to the owners on Aug. 14, after having been under government operation since 1914. It is of interest to note the new method adopted by the owners and the labor organizations for handling labor problems. The plan involves a national wages board or board of final appeal, a central wages board, railway councils, sectional railway councils and local departmental committees. The plan applies to all employees in the transportation department from station masters and freight agents down, to all engineering and signal employees and to other employees outside the shops.

The National Wages Board is to deal with subjects relating to rates of pay, hours and working rules referred to it by the Central Wages Board. It is to be composed of six railway men, six employees and four public representatives, with an independent chairman appointed by the government. It is given twenty-eight days to reach a final decision on any subject. Strikes are not to occur during this period because of the dispute before the board.

The Central Wages Board contains an equal number of representatives from the employees and the railways and does the real work in adjusting labor problems. The Railway Councils are regional co-operative boards who deal with regional applications of national rules, etc. The Sectional Co-operative Councils are five in number for each regional council and deal with more restricted labor problems and represent different departmental groups in a given region. Local departmental committees are still smaller subdivisions of the regional organization, dealing with local rules and conditions in each department.

The keynote is equal representation in the subordinate boards of the employees and the railway operatives and the public is represented only on the national board. Regional and even departmental applications of national agreements are provided and this marks the great difference between the American and English method for handling railroad labor problems.

New Molding Material for Cast Welds

Blow Holes in Thermit Welds Are Eliminated by the Use of a New Molding Material and New Style Mold Boxes
The Material Is Furnished at Cost

A NEW GRADE of molding material for thermit welding has recently been developed by the Metal & Thermit Corporation, New York, which, as proved by extensive researches and practical experiments, when used in accordance with the regular thermit practice, will definitely prevent blowholes and assure sound welds. This new molding material has already been introduced in many of the larger railway shops. The new material, designated as "thermit molding material," is quite different from ordinary molding material, and in all thermit work either this or a substitute which has been tested and approved by the Metal & Thermit Corporation should be used. In view of the great importance of using this new molding material it is now being sold practically at cost.

The design of the new molding material is based on the theory that good silica sand will stand the heat of the thermit reaction very well and that the weakness in all molding material is the clay binder. Therefore, there should be as little clay as possible in the mixture, in order to make the mold more refractory and to increase its porosity. It is logical, therefore, that the use of a plastic clay has been selected instead of a fire clay, as formerly. The sand and plastic clay are ground together in a foundry pan or moller, with the intention of coating each grain of sand with a minimum thickness of clay. This has resulted in a good, clean molding material, which should be rammed hard in the mold, which will stand up well under the preheating flame and which is extremely porous to the gases generated in the mold, resulting in a sound weld with a very clean exterior. Although suitable molding material can be made by increasing the clay content slightly and mixing the clay and sand thoroughly by hand, it is not so good as that made with a smaller clay content in the foundry pan or moller.

The mixture now being used is composed of three parts clean, sharp silica sand (100 per cent of which should pass through a screen having a 0.03 in. square opening, and 40 per cent of which should be retained on a screen having a 0.012 in. square opening) mixed with one part Welsh Mountain plastic clay. These parts are first thoroughly mixed in the moller together with one-fortieth part glutrin by volume and sufficient water (one-twelfth part) to bring to the proper consistency. If mixed by hand, the sand and clay must be dried before mixing (care should be exercised not to subject the clay to a temperature higher than 400 deg. F.) and thoroughly mixed before adding the glutrin and water. The glutrin should be mixed with the water before being added to the sand and clay.

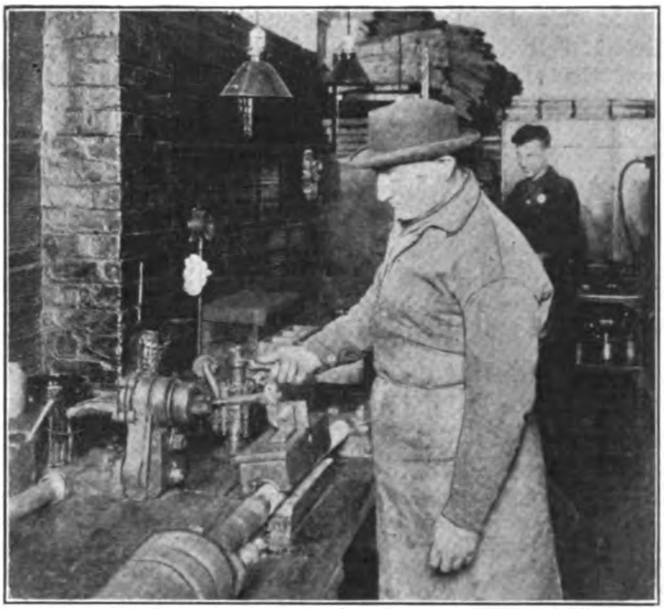
In case a plastic clay fatter than the Welsh Mountain be used, the mixing, of course, will have to be more thorough and less clay used. Welsh Mountain clay is being used in the present mixture because in carefully run tests it has proved to be the most refractory. The use of the new molding material necessitates harder packing next to the weld; in fact, the regular thermit rammer may be supplemented by the use, for instance, of a tool having an end ⅜ in. x 1½ in., so that the operator may be able to peen the sand next to the wax collar and the various patterns.

It is absolutely essential, in the production of sound welds, to be sure that no loose sand exists in the mold when the thermit steel is poured. This is why very hard ramming is advocated, also why it is most important to blow out all loose material from the interior of the mold by putting the preheating burner in the riser before the heating gate is plugged and to be sure that no sand is detached by the operation of inserting this heating gate. The burner should be removed from the riser before plugging the heating gate, because otherwise it may detach some sand which could not be blown out after the plug is in place. The heating gate plug should be thoroughly dry; and, if it has been carried in stock for some time, it should be warmed before using.

By perforating the side and bottom of the mold box, the escape of the gases which pass through the molding material is greatly facilitated. Holes ⅜ in. in diameter, spaced 3 in. or 4 in. apart, are sufficient. To facilitate the escape of gas from the bottom of the mold box, the mold should rest on blocks, not directly upon the foundry floor. As unnecessary molding material simply increases the resistance to the passage of gas, the mold box should be made as small as possible commensurate with safety. For example, in welding a 4-in. x 1-in. section, only about 4 in. of sand is necessary at all points, except, perhaps, on the pouring gate side. It is most important thoroughly to vent the mold box by forcing a rod or wire down at a number of points to within ½ in. or so of the collar. Care should be taken that these do not touch the collar because such vent holes will fill with steel and will therefore not facilitate the escape of gas.

Device for Installing Hose Fittings

THE accompanying illustration shows shop-constructed apparatus used for the inserting of nipples and couplings in air-brake hose at the Thirty-sixth Street inspection and overhauling shop of the Brooklyn Rapid Transit Company. Previous to the construction of this apparatus the nipples and couplings were inserted by placing the hose in a vise and pressing the metal parts into the rubber tubing by hand.



APPARATUS FOR INSERTING NIPPLES AND COUPLINGS INTO AIR BRAKE HOSE

The apparatus for holding the hose, as illustrated, consists of two clamping blocks, the upper one of which is hinged. The opening and closing of this clamp are accomplished by means of an air cylinder, which forms a part of the equipment of the company's cars and is used for the locking and unlocking of automatic couplers. This air cylinder is connected to the top clamping block by means of a lever and its operation opens up or closes the clamping portion. The part which fits around the hose is lined with canvas to prevent injury to the hose and also to provide increased friction for clamping. With the hose placed in position it is held clamped by turning an air cock, which admits air to the air cylinder. The nipple or coupling is then fastened to a threaded piston of another air cylinder and by the use of a brake valve air is admitted in sufficient quantity to force the fitting into the end of the hose. The pressure and speed are regulated to suit conditions. The air cylinder used for this latter operation was constructed in the shop. By the use of this apparatus one man can fit the couplings and nipples into a hose in a very short time and the job is thus rendered very attractive as well as providing an efficient means for doing this type of work.

Power-Operated Signals

A NEW type of signal motor has been developed in France and is now marketed by Tyer & Company of London. With this type of motor, which is being tried out on many English railways and is used on French lines to a large extent, the power to operate the motor is obtained from two sets of six Leclanché cells in parallel. Current is applied only when the signal is being lowered and the signal is held "off" by a small battery at the signal box, so there is considerably less consumption of power than is generally thought. The motor is situated on the signal post at any favorable location and takes up an incased space 15 x 12 x 12 in. deep. The mechanism is tested to lift 120 lb. The voltage of the motor battery is ten, the starting current is 2 amp., this gradually increasing to 3¼ amp. The resistance of the armature is 0.14 ohms and that of the field is 0.205 ohms. The motor is readily adapted to be operated from power supply mains by changing the winding slightly. A detailed description of the Tyer motor is given in the *Railway Engineer* for August, 1921.

The power-operated signal is being used to an increasing extent because of its many advantages in the protection of the apparatus associated with its application. The advantages for such signals are: 1. There is no strain on the signalmen as there are no heavy weights to lift. 2. The accurate "on" and "off" position of the arm is assured. 3. No adjustment of wire is needed to meet changes of temperature. 4. Fewer wires are present on the tracks for men to trip over or to be covered. 5. The distance from the signal box is immaterial and the signal may, therefore, be fixed in the best position for the driver's view. 6. There is a reduction in the number of working levers because the signal may be controlled by a switch providing the latter be interlocked with the relative stop signal.

With the power-operated signal the source of power is at the signal and a line wire is run from the lever in the signal box to the signal. The wire is connected to a switch on the lever in the locking mechanisms, and when, and not until, the lever is fully reversed a contact is made which electrically connects a small battery in the signal box. This battery operates a relay at or near the signal post and the relay, when operated, permits a current from the battery which operates the motor on the signal. The signal arm, when it has been lowered to the "off" position, automatically cuts off the motor battery from the motor, and the arm is held in the "off" position by an electrically operated brake. When the lever has been pulled to reverse, the first movement back to normal will break the contact on the lever and release the electric brake on the signal lever so that the signal will at once go to the "on" position. It is usual to employ an electric repeater, controlled by contacts operated by the signal arm, to indicate the condition of the arm.

A. R. A. Mechanical Division Will Not Meet This Year

Postponed Meeting Has Been Permanently Put Off, but Reports of Eight Committees Which Were to Have Been Presented at the Meeting Are to Be Submitted to Letter Ballot

AT A meeting of the Association of Railway Executives held in New York, July 1, 1921, it was decided that there should be no meeting of the Mechanical Division of the American Railway Association this year. A meeting was to have been held in Chicago, June 29 and 30, but it was postponed. This action was decided upon after the following resolution had been adopted:

"Whereas in view of the imperative need for the exercise of all possible economy, it is

"Resolved, That annual or special meetings or conventions of all organizations under the supervision of this body be indefinitely postponed or curtailed in every possible way."

Following the decision of the general committee of the Mechanical Division not to hold a meeting this year it was decided to submit through a letter ballot to the members the recommendations of the various committees which were to have been presented at the meeting in June. These reports include: (1) Specifications and tests for materials; (2) report on joint inspection of standard materials; (3) report of arbitration committee; (4) report on car construction; (5) report of committee on loading rules; (6) report on brake shoe and brake beam equipment; (7) report of committee on tank cars; (8) report on train brake and signal equipment.

The committee on specifications and tests for materials recommended a revision of the standard specifications for carbon steel axles for cars, locomotive tenders and engine trucks, also a revision of the present specifications for steel castings for cars and locomotives, combining these two into one specification. The committee further recommended that the association give serious consideration to establishing a definite time limit for revisons of specifications and other standards which will appear in the Manual, this limit to be preferably three years, during which no changes should be allowed except for reasons important to the interests of the association, and then only if the proposed changes received at least a two-thirds vote at the annual meeting of the division.

The committee on brake shoe and brake beam equipment reported that the subject of brake shoe key design and details involved in the fit of the shoe, head, face and key had been investigated and an examination of a large number of brake shoes on cars disclosed the condition of the keys being all the way down and still a loose fit. This indicated the desirability of a change in the key design. The committee submitted a new design of key with a suggestion that this be tried out for further consideration. The proposed key is thinner at the point, and has a somewhat greater taper than the standard key, so that it becomes $\frac{1}{2}$ in. thick at a point $3\frac{1}{8}$ in. from the end instead of just under the head. The drawing shows a tolerance of $\frac{1}{32}$ in. in thickness, which is a practical working limit if the key is drop forged or rolled.

Iowa Association Program

THE program for the mid-year meeting of the Iowa Electric Railway Association, to be held in Waterloo, Iowa, on Sept. 15 and 16, has been tentatively arranged to include the following main topics of discussion at the meeting.

A paper on "Transportation" will be presented by Maurice A. Welsh, superintendent Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa. Frank R. Grant, Westinghouse Electric & Manufacturing Company, Des Moines, Iowa, will present a paper on "Dipping and Baking Armatures." R. J. Smith, general manager and engineer maintenance of way Tri-City Railway of Iowa, will read a paper on "Laying and Maintaining Track." The subject of a paper to be presented by Herbert J. Connell, trial attorney Omaha & Council Bluffs Street Railway, Omaha, Neb., is "The Relation of the Claim Department to the Transportation, Track, Overhead and Mechanical Departments." A paper on the "Relative Maintenance Costs of One-Man to Two-Man Cars" will also be presented.

The exact place of holding the meeting has not yet been determined. This and further program details will be announced in a later issue.

National Safety Council

THE National Safety Council has decided to hold its annual convention in Boston, Mass., from Sept. 26 to 30. The national body recently received an invitation from the Boston organization, and after consideration agreed to make the Hub the scene of its meeting this fall.

The local safety councils in Massachusetts have just held a "safe roads" campaign in which several of the larger street railways took especial interest. H. B. Potter, assistant general manager of the Boston Elevated Railway, is president of the Boston branch of the Safety Council.

American Association News

T. & T. Subjects Committee

THE Transportation & Traffic Association announces the following as its subjects committee to report to the convention on subjects for the coming year:

G. T. Seeley, Pennsylvania-Ohio Electric Company, Youngstown, Ohio, chairman; J. P. Barnes, Louisville Railway, Louisville, Ky.; J. K. Punderford, the Connecticut Company, New Haven, Conn.; C. E. Morgan, Brooklyn City Railway, Brooklyn N. Y., and Edward Dana, Boston Elevated Railway, Boston, Mass.

The committee desires suggestions from the members at large so that its reports will be truly representative of live subjects in the transportation and traffic field.

Valuation Committee Report Ready

THE American Association valuation committee held an important meeting at association headquarters on Saturday, Aug. 27. The report of the committee was completed and it is expected that it will be available in pamphlet form previous to the Atlantic City convention. The committee has made some important recommendations in the report which will be discussed at the convention.

Those present were Martin Schreiber, Public Service Railway of New Jersey, Camden, N. J., chairman; W. H. Sawyer, E. W. Clark & Company Management Corporation, Columbus, Ohio; J. H. Hanna, Capital Traction Company, Washington, D. C., and W. H. Maltbie, United Railways & Electric Company, Baltimore, Md.

Engineering Subjects Committee

THE membership of the subjects committee of the Engineering Association has been announced as follows: L. V. Datz, American Cities Company, Birmingham, Ala., chairman; A. B. Stitzer, Republic Engineers, Inc., New York; C. H. Clark, Cleveland Railway, Cleveland, Ohio, and H. A. Johnson, Metropolitan West Side Elevated Railway, Chicago, Ill.

This committee is to report as usual at the convention on subjects for consideration during the coming year. The committee is asking for suggestions from the members at large to assist in formulating its report, so that subjects to be considered certainly will be those in which the members at large will be interested.

Entertainment Committee Ready

THE entertainment committee held a fine meeting at association headquarters on Saturday, Aug. 27. Under the direction of E. C. Faber, chairman, the committee prepared an entertainment program that will be sure to please the convention.

Some surprises are in store for members and the committee is to be congratulated on its originality in devising means for keeping everybody at the October convention happy.

Nominating Committee Correction

DUE to error in transcription, the name of W. H. Heulings, Jr., of J. G. Brill Company, Philadelphia, was omitted from the list of the nominating committee of the American Association as printed in last week's ELECTRIC RAILWAY JOURNAL.

The full committee therefore consists of the following: J. H. Pardee, P. S. Arkwright, F. G. Buffe, W. A. Draper, E. C. Faber, Thomas Finigan and W. H. Heulings, Jr.

As noted last week, this committee is desirous of receiving suggestions from the members of names for the various offices to be filled. If the members assume that the executive committee of the future will be made up according to the revised constitution as proposed, there will be elected this year:

One president.

Four vice-presidents.

Six members at large from operating companies, with terms expiring, two in 1922, two in 1923 and two in 1924.

Six members at large from manufacturing companies, with similar terms.

One treasurer.

Judge Paroles Gibson

AS WAS noted previously in these columns, the defaulting bookkeeper of the association, W. O. Gibson, was to present himself for sentence on Wednesday, Aug. 31. When he did so, Judge Rosalsky, who had been advised of Mr. Gibson's efforts at restitution, read from a New York statute dealing with such cases. From this statute it appears that the judge is given discretion to place the defendant on probation, in case the defendant has made restitution or efforts at restitution that satisfy the aggrieved parties. President Gadsden of the association was placed on the stand, and after stating the steps Gibson had taken to make restitution said he was willing for the judge to exercise his discretion and place Gibson on probation with proper restrictions.

The steps which Gibson has taken toward restitution are, first, to give a check to the association for something in excess of $5,800; and second, to make certain arrangements looking toward a settlement in the future of a substantial portion of the missing funds. This was apparently the maximum Mr. Gibson and his family could do, and it was considered advisable to place him on probation and allow him to make efforts to repay additional amounts, as he proposed.

Accordingly, Judge Rosalsky placed Mr. Gibson on probation for a period of fifteen years. He is ordered to report in person on the 12th of December of each year for fifteen years. He is ordered to report to the probation officer, either in person or by satisfactory communication, once each week, for a period of fifteen years. The court thus retains jurisdiction over the case during this whole time through the office of the probation officer.

Recent Happenings in Great Britain

More Evidence of Near Return to Normal in Railway Field—Glasgow Turns to the Bus—A. R. McCallum Quits the Underground

From Our Regular Correspondent

The railway and tramway undertakings are at last beginning to get over the results of the war. Possibly one cause of the great outburst of activity by the steam railway systems in the end of July and the beginning of August was the fact that the period of government control, which had lasted since the beginning of the war, was to come to an end in the middle of August. Then through the operation of the sliding scale wages have begun to come down in accordance with the fall in the official index figure of the cost of living, and coal is of course abundant since the miners' strike ended.

FOR the present holiday season the railway companies have offered passenger facilities better than any of the past seven years. Excursion trains and cheap tickets are in operation everywhere. The cheap fares, however, are only cheap by comparison with the present ordinary fares; absolutely, they are about the same as the pre-war ordinary fares.

Tramway facilities have also been increased, and at the time of the August bank holiday (which is a general holiday) more lavish services were run than for years past. The wages sliding scale for tramways was, however, more recently agreed to than in the case of the railways, so that the owners of the tramway undertakings have not yet begun to feel the benefit of lower wages. Within the last few weeks the index figure of the cost of living has ceased to fall—partly, at least, owing to the prolonged drought—and until it resumes its downward course wages will cease falling.

MOTOR VEHICLE IS POPULAR

Another striking development of the present holiday season is that of motor passenger vehicles. Last summer saw some activity, but now it may be said generally that all the most pleasant parts of England and Scotland are covered by services of motor omnibuses and motor coaches. The runs vary from an hour or two up to a duration of a week or more. The latter are of course organized tours. The main roads of the country are gradually being restored to good order, and more money is available for the purpose from the tax on motor vehicles. Petrol is abundant, and this form of holiday business is evidently profitable. In this connection it may be said that competition with tramways is only incidental, and of course tramway routes cover only a small proportion of the roads followed by the automobiles.

Hitherto the Glasgow Town Council has done nothing in the way of motor omnibuses, and has been content to work one of the most efficient and profitable tramway undertakings in the country. It is now proposing, however, to seek Parliamentary powers to operate motor omnibuses both inside and outside the city. Doubtless these vehicles will be auxiliary to and not competitive with the tramcars.

The British steam railway companies have had a set-back in an effort they made in the end of July to get general powers to carry both passengers and goods by motor vehicles on the public roads. For some time there has been under the consideration of Parliament a government measure called the railways bill—a long and complicated bill for meeting the post-war situation after the railways are freed from state control. It provides for the amalgamation of the railways of the country into a few great companies, and sets up a great deal of new government regulation. The railway companies brought forward a new clause for insertion in the bill to enable them to operate motor vehicles on the highways. The road transport companies and firms and the omnibus companies as well as the private automobile interests took alarm at the threatened powerful competition and a fight was expected, but just when it would have begun the Speaker of the House of Commons ruled the proposed clause out of order as being beyond the scope of the bill.

He laid it down that if such powers were to be granted it must be by separate legislation. Whether the railway companies will promote such legislation remains to be seen. Despite the outcry that has been raised against the railway companies' proposal, they have a good case for it in at least one direction. That is the transportation of goods for comparatively short distances. They convey the goods by road from the consignor to a railway station, load them into a train, discharge them at another station, and then take them by road to the consignee.

FREIGHT TRANSPORTATION COSTLY

Where the railway haul is not long, this is a slow and expensive process compared with what it would be if the companies could transport the goods by road direct from the sender to the receiver. Of course that is what the road transport companies are doing now, so that the latter got a fright. They are now safe—for the present at any rate. Should the railway companies make another effort to get the powers they want, they will also be able to contend that in very many districts they are the largest local ratepayers.

It is not surprising to learn that the London County Council has decided to promote no bill in the next session of Parliament to authorize the construction of additional tramways. In recent years the great bulk of such proposals have been rendered nugatory by the veto of the metropolitan borough councils. The highways committee of the Council also thinks that the Minister of Transport would report adversely on the schemes. The members consider that a remedy will not be forthcoming until there has been a complete and considered reorganization of the existing systems of passenger transport in the London area. The Council has already represented to the government the necessity of legislation to provide for the unified operation of local passenger transport undertakings in Greater London. Meantime the Council and the London General Omnibus Company have arranged an extension of the through-booking scheme between the tramcars and the omnibuses.

POWER-SAVING DEVICES BEING USED

The London County Council is now adopting experimentally on twenty-two cars a power-saving device which is reported to be in use on certain American tramways and is employed by the Metropolitan Electric Tramways in Middlesex. Its purpose is to grade the economy of the motormen in their use of propulsion current.

It is proposed the Birmingham City Council should seek powers in the next session of Parliament to run trackless trolley cars over any tramway route in the city. An example is given of a particular tramway which needs reconstruction. To reconstruct it would cost £95,000 at present prices, and the service would be run at a loss. To install the railless system would cost £54,000 less and there would be an estimated profit of £3,000 a year.

The ballot of the members of the Amalgamated Engineering Trade Union resulted in a majority in favor of accepting the employers' proposal for reductions in wages. Thus a strike has been averted. Reductions have been accepted by other unions also, so that there is some hope of the country being placed on an economic basis.

The dividends declared by the London underground railway companies for the half year ended June 30 last show material improvements as compared with recent half years, attributable doubtless to the increased fares. The London General Omnibus Company has also done better.

MR. McCALLUM RESIGNS

A. R. McCallum, who two years ago, along with other officers of the London underground railway companies, visited the United States to make a study of electric traction conditions there, has resigned his position as chief assistant to the mechanical engineer for the underground railways in order to take up an appointment with C. P. Sandberg Brothers, consulting engineers, who are well known in America as well as in this country. Mr. McCallum, who is a B.Sc. of London University and was a pupil with Dick, Kerr & Company in their Preston works, has been assistant mechanical engineer to the underground railways for nine years.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Another Week Lost

Discussion at New Orleans Believed, However, Not to Be Entirely Without Benefit

The City Commissioners of New Orleans have frittered away another week in conference with City Attorney Kittredge without result. Meanwhile, testimony in the street railway case, in the Federal District Court, involving the right of the city to interfere with the receiver in the collection of an 8-cent fare, has been postponed by Special Master Chaffee, from Aug. 20 to Aug. 29. Postponement was made by Mr. Chaffee in the hope that the city and the New Orleans Railway & Light Company might be able to reach an agreement by compromise out of court.

The Ballard report, on valuation and rate making, was submitted to the Commission Council on Aug. 24 by Commissioner Maloney of the Department of Public Utilities, with the indorsement: "Respectfully submitted without comment."

Mayor McShane has at last taken a fling at solving the railways problem. He thinks his plan will make for the settlement of the matter, with some modifications, perhaps, by the city. Briefly stated, the McShane plan offers to help the railways secure $5,000,000 of new money, said to be needed to replace present antiquated equipment, and allows the company an 8 per cent return on that amount. The Mayor is of opinion, however, that the property is worth only $40,553,500 and not $44,700,000, as fixed by the utility experts, called upon by the city to estimate its value, the last of whom was Mr. Ballard.

So as not to appear hostile to the company, Mayor McShane supplements these allowances in his proposed plan of settlement, with the further allowance of an 8 per cent return upon the difference between his estimate of the value of the property, namely, $40,553,500 and that fixed in the Ballard report, viz: $44,700,000, or $4,156,500. This means an 8 per cent return on $4,156,500, in addition to the 8 per cent return which he is willing to allow on the $5,000,000 of new money to be borrowed. On the balance of the securities of the company the Mayor says he is only willing to allow the interest called for on the bonds, which varies from 4½ per cent to 7 per cent.

Under this plan Mayor McShane declares the company would be allowed a return of $2,791,915 a year, as against a return of $4,031,560 called for under the Chappelle plan, and $3,129,000 and $400,000 new money, called for under the plan of the Committee of Forty.

Commissioner Murphy, of the Department of Finance, whose plan for the settlement of the tangle more nearly approaches that of the utility experts of national reputation, has been attending the daily executive conferences and has formed his own conclusions as to the prospects of these "talks" leading to a settlement. As a result he is insisting upon an immediate adjustment of the matter. In a published statement, Commissioner Murphy said:

> If the surplus is protected and the rates of interest on all of the new company's securities are properly fixed by the Commission Council (which is one function of the rate making body) I am firmly of the opinion that an 8 per cent return on the agreed valuation offers greater protection to the public for constantly increasing and expanding the service without increasing rates and fares.
>
> I stand willing, however, to accept any rate of return which will result in settling this problem along the lines of sound and correct principles. I believe, however, that no settlement, no matter how just or sound, can succeed without intelligent public understanding.

A conference was held on Aug. 25 and 26 by Mayor McShane and the members of the Commission Council with the executive committee of the Citizens' Committee of Forty. The meeting took place in the directors' room of the Hibernia Bank & Trust Company. R. S. Hecht, president of the bank, who was chairman of the conference, expressed the belief at the close of the meeting that the railway tangle was nearing a settlement, but beyond making this statement neither he nor the parties to the conference would disclose what had transpired. It is understood that a valuation of approximately $44,700,000 was tentatively agreed upon by a majority of the conferees. Another meeting scheduled for Aug. 27 was called off.

Commissioner Maloney of the Department of Public Utilities, when asked whether the Ballard report or a report of some kind placing a valuation upon the property with an adequate measure of return, would come up for discussion and consideration at the Aug. 30 meeting of the Council, replied that nothing in this direction would be attempted until some agreement had been reached as to a fair valuation of the property. Unless a compromise as to valuation and rate of return was effected with the railway company, the matter would be left to the courts for settlement. The outcome would be unsatisfactory in that event, to both the railway and the people.

Special Master Chaffee has again consented to postpone taking testimony until Sept. 5. This is taken to show that nothing was accomplished during the week at the daily conferences attended by the Mayor, the City Commissioner, the City Attorney and such members of the executive committee of forty as dropped in from time to time.

Another Municipal Route

First of Important Crosstown Lines in Detroit Placed in Operation by City

The first of the big crosstown lines planned as part of the municipal system of street railways in Detroit, Mich., was put into operation on Aug. 25, when cars were started on the Charlevoix-Buchanan route over a distance of 10½ miles with a single track mileage of 21. This car line now serves districts not touched by car lines heretofore. A portion of the line had been in operation previously. One-man safety cars are now being operated, but it is intended to replace part of these cars with Peter Witt type cars under contract to be delivered in the fall. At the same time the Van Dyke Avenue line was put into operation giving service to a residential section which had been without car service. The Van Dyke line is a tributary to the new crosstown line.

On the day service was started on the new line the suit started last September by residents of Eliot Street to enjoin the construction of the municipal line on their street, one of the thoroughfares traversed by the new crosstown line, was dismissed by Judge Dingeman in the Wayne Circuit Court.

The city now has cars operating over 32 miles of lines. The short sections which served a purely local patronage are now connected into a network of lines serving the east side. The crosstown line connects this system with the west side of the city and further service will be installed in a few days by opening up the Moran-Palmer lines.

It is further reported that other extensions of the municipal lines will be announced as soon as the day-to-day agreement lines constructed by the Detroit United Railway are taken over by the city, after the report of the Board of Arbitration which is to convene again on Sept. 6. The effectiveness of the city lines depends to a great extent upon the Fort Street and Woodward Avenue lines now operated by the Detroit United Railway, which are still the subject of controversy and which the city needs to reach the heart of the city.

Future Service to Be Discussed

Although the Ottawa (Ont.) Electric Railway has two more years under its contract to furnish transportation service to the residents of the city, agitation has been renewed looking toward the enactment of a service-at-cost arrangement. The Board of Trade is making provisions for a general field day some time in September, when the whole question of future service by the railway will be discussed.

Service Resumed at Des Moines for State Fair

Company Guaranteed Against Loss—Terms of Proposed New Franchise Grant Now Available

The most important development in the railway situation at Des Moines, Ia., during the week ended Aug. 27 was the temporary resumption of railway service after a three weeks' shutdown, to continue only for the period of the Iowa state fair. The resumption of service came as a result of a petition filed with Judge Wade of the federal court by attorneys for the State Agricultural Society. The petition was not filed until after officials of the Agricultural Society had made a trip to Chicago to go over the situation with Mr. Harris and his associates.

ALTHOUGH bus men had made emphatic claims as to their ability to take care of the fair crowds, officials of the fair, even with assurance of supplemented service of shuttle trains on the Rock Island Railroad, were doubtful of the outcome and fearful that with inadequate transportation facilities attendance at the fair would be seriously curtailed.

In filing their petition with Judge Wade the fair officials agreed to guarantee the Des Moines City Railway against financial loss during the period of the fair. City officials took no part in either the filing of the petition or the hearing upon it.

EMERGENCY SERVICE ONLY

Judge Wade acted solely upon the emergency presented by the fair officials and in making his order for the temporary resumption was specific that it would cover only the period of the fair and that service was to cease on Sept. 2. Officials of the railway were agreeable to the proposition and service was resumed on the afternoon of Aug. 26. The service was restored on exactly the same basis as was being given at the time it stopped on Aug. 3. Fifty-nine cars are in service and owl cars are being run.

Immediately upon the resumption of railway service the buses lengthened their routes to take in the railway loop downtown. When the railway service was stopped buses shortened their routes in the downtown section. No attempt was made by the Des Moines City Railway to give special service to the fair grounds, only six cars being operated on that line. The main desire of the fair officials in securing the return of the cars was to insure Des Moines people being transported from their homes to the downtown section. Buses are handling the bulk of the business to the fair grounds, almost any vehicle that would run being converted into a so-called truck. One transfer company has put several of its motor driven moving vans into service to and from the fair grounds.

Judge Wade's order for the restoration of service during the period of the fair is as follows:

> A strong appeal has been made by officers of the state and the directors of the department of agriculture for the state of Iowa, that an order be made providing for street car service during the state fair. The bondholders have been consulted and in view of the importance of service during the fair, not only to the people of Des Moines but to the people of the state, it is my judgment that the cars should be operated.
>
> Of course if there should be a deficit in such operation it must be paid by some one. I have no power to require the bondholders to pay any deficit and therefore I only have power to authorize service on condition that if there should be a deficit in actual operating expenses it shall be paid by the agricultural association or some others. It is my hope that with the demand for service during the days of the fair enough of money can be collected for fares to pay actual expenses. I am advised that those interested are willing to guarantee any loss in operation.
>
> Although it is impossible to establish more than the minimum service that was in operation at the time of suspension and to avoid any possible misunderstanding the order is made positive that such service shall immediately suspend upon the close of the fair and remain suspended under the order heretofore made pending foreclosure.
>
> It is ordered and adjudged that the receivers shall as soon as practicable restore the service as near as practicable to that which was suspended under order of this court on Aug. 2, 1921, such restored service to continue only until the close of the state fair and not later than Sept. 2, 1921.
>
> This order is conditioned upon a guarantee to be approved by the receivers, by some individual or organization to pay to the receivers any deficit in actual cost of putting the cars in operation and operating the same as herein required.

Des Moines bus operators began a campaign of "education" for the people of Des Moines on Aug. 25 with a meeting at the Grant Club of representatives of improvement leagues, women's clubs, trades unions, Rotary, Kiwanis and Lions' clubs, and all members of the City Council. This meeting was the first of a series which is to be held to sell the bus idea to the people of the city. C. W. Lyon, attorney for the Motor Bus Association, was the speaker at the meeting and advised his hearers that with an assurance from the City Council of a lease of life the bus owners would within ninety days furnish service entirely adequate, and that an organization capitalized at $1,600,000 could be formed to finance operation.

Mr. Lyon explained that the present emergency is an entirely unfair test for the buses and that the people could not expect men with $300,000 invested to provide the financial backing necessary to establish proper service when they had no assurance that they could continue to operate. In answer to a question he claimed that provision had been made which would insure keeping the streets open when snow was on the ground.

The promise of the bus men, in the event they are awarded a franchise grant, was briefly as follows:

> Furnish necessary motor buses within sixty or ninety days from date of signing the contract.
>
> Operate at a 5-cent fare for one continuous ride.
>
> Carry children under twelve years at half fare.
>
> Carry high school children for 2½ cents between hours of 7:30 a.m. and 4:30 p.m.
>
> Carry children under six years free when accompanied by parent.
>
> Carry policemen and firemen free.
>
> Operate hourly owl service at a 10-cent fare.
>
> Comply with insurance and bonding laws.
>
> Operate on light and heavy lines as considered necessary.
>
> Comply with speed regulations.
>
> Pay reasonable street repair taxes.
>
> Standardize buses.
>
> Welcome inspection looking toward proper heating, lighting and sanitation.
>
> Maintain proper garage and repair shops.
>
> Make convenient routing schedules.

Bus operators claim there are now approximately 110 buses in service and that during the time the street cars were out of service the buses were carrying more passengers per day than the Des Moines City Railway did during the month of July.

A number of buses from other cities have been shipped in during the past week, but on the other hand some of the buses which have been in service and which were pronounced the most satisfactory of those running have gone out of service because of the need for repairs.

Negotiations between the Des Moines City Railway and the special committee from the Retail Merchants' Association looking toward a new franchise to end the Des Moines railway difficulties were expected to be resumed early in the week ended Sept. 3.

F. C. Chambers, general manager and operating receiver, who at the request of the merchants' committee returned to Chicago for further conference with A. W. Harris relative to certain features of the franchise, returned to Des Moines on Aug. 26, but did not bring the completed draft of the franchise with him. The draft had not been received on Aug. 27, but was expected by early mail on Aug. 29.

NEW FRANCHISE GRANT APPEARS

After the franchise as submitted by the Harris interests is threshed out with the committee, it will then be presented to the City Council. Mr. Chambers said to a representative of the ELECTRIC RAILWAY JOURNAL on Aug. 27 that the provisions of the franchise would not be made public until after the draft had been presented to the City Council.

The draft which will be under consideration during the week just ended has been changed considerably from the one submitted to the Merchants' Association committee ten days ago.

After being sifted and favorably passed upon by the special committee of the Merchants' Association the draft of the new franchise for the Des Moines City Railway was presented to the City Council on Aug. 31. At the special session of the Council it was ordered referred to the corporation counsel for advice and it is expected to be back in the Council's hands for first reading by Sept. 2.

There must be three readings by the Council and then if favorably acted upon the measure must be upon file for one week before election is called. It must then be advertised for thirty days before being voted upon by the people.

The principal provisions of the franchise are the sliding scale of fares to start at 8 cents straight, to be lowered or raised as the financial condition of the company warrants. Before the fare is reduced from 8 cents, $6,000,000 in accrued interest and debts must be met. It is proposed to amortize this sum over a five-year period. No dividends will be paid on the common stock until fare has been lowered to 7 cents, when 4½ per cent will be paid. If the fare goes below 5 cents 6 per cent will be paid.

Provision is made for reducing fares as earnings warrant, to ten tickets for 75 cents, ten for 65 cents and ten for 55 cents between reductions so as to even the fares mentioned above. Protection from bus competition is provided by a clause which prevents buses from discharging passengers within 1,000 ft. of car track unless passengers have entered the bus at a distance greater than 1,000 ft. from the tracks.

Children's fares during specified hours of school days are to be 2½ cents. Regular children's fares are to be half of the adult fare. The owl car fare is to be 10 cents. One-man cars are to be allowed. The railway will be permitted to operate a supplementary bus system.

All disputes are to be settled by an arbitration board appointed by the Iowa Supreme Court to consist of three district judges chosen from outside Polk County. In the event the franchise is passed the power facilities will be increased and 132 cars will resume service.

Indications are that the franchise will have the united support of the business and commercial organizations.

The City Council on Aug. 31 renewed for a period of one year the bus licenses which expired on Sept. 1 on condition that they may be revoked at the will of the Council.

Railway Contends Commission Has Jurisdiction

That the Michigan Utilities Commission should be the one to judge and not Judge Cross of the Ottawa County Circuit Court is the opinion of the Michigan Railway as expressed in a hearing on Aug. 29 of the injunction proceedings brought by the city of Holland and Park township against the Michigan Railway. The court has reserved decision.

The arguments submitted were on an order to show cause in the case of the city of Holland against the Michigan Railway to prevent the railway from raising its rate of fare from 15 cents to 35 cents between Macatawa and Holland in alleged violation of franchise agreements. Holland City and Park township were represented by City Attorney Charles H. McBride of Holland.

The suit was the result of the Michigan Railway's boost in fares to 3 cents a mile granted by the Michigan Utilities Commission. It is claimed under the franchise held by the Michigan Railway and under an agreement with the city of Holland that the city fares are fixed at 5 cents and rates between Holland and Macatawa at 15 cents for the round trip.

The hearing was to determine whether the Michigan Railway should be permitted for the present to collect a 35-cent fare between Holland and Macatawa.

Saginaw Has Bus Offer

Company from Detroit Makes Proposal, but Wants Practical Assurance Against Possible Loss

Officials from the Wolverine Transit Company, Detroit, have presented to the city of Saginaw, Mich., through the Council and directors of the Board of Commerce a plan whereby Saginaw is to be given high-class motor bus service on streets formerly traversed by cars of the Saginaw-Bay City Railway, which suspended service three weeks ago when the company was placed in bankrupcy through a petition filed in the United States district court for the eastern district of Michigan.

The transit company men offered to invest $90,000 as a down payment for thirty motor buses, the Board of Commerce, city government, or some other organization to take it upon itself to sell 15,000 books of 240 tickets at $10 a book. They also offered universal transfers, indemnity insurance, limited to $10,000 for one person or $30,000 one accident. Before they will make any effort to secure the buses the promoters want the tickets disposed of and the money retained by a trustee to be appointed by the city or the Board of Commerce to be used to make the final payment on the buses. According to the plan, the trustee will be given a mortgage on all the equipment to assure faithful performance of the contract and to assure that they will abide by the necessary rules and regulations to govern schedules, rates of fare, etc.

The Council as usual after hearing the proposition called in the commerce directors and then gracefully slipped out from under. It was a case of good politics with them so the voters would not blame them for any poor service which might result if Saginaw has its usual severe winter. The commissioners believed the Board of Commerce could handle the proposition better than the city's duly elected representatives.

At this time it is known what the commerce body will do in the matter, but if the members can raise the $150,000 advance fares it is expected that the bus company wlil go through with its part of the program. In the event that they fail in giving the necessary service, and decide to quit operations, the trustee can foreclose the mortgage and then the city will have the buses to operate.

The transit officials did not ask to have the jitneys restrained from operating on the streets asserting they could get the business because of the class of their equipment and the service they proposed to give.

Those present at the meeting almost to a man asserted that not in the history of the street railway had service been on such a high plane as during the last year, but at no time did the Council or the Board of Commerce ever make any effort to sell tickets in advance to help the electric road.

Residents have now begun to realize the railway officials were sincere when they said they had to have additional compensation with jitneys eliminated or they would be forced to suspend for good and the friends of the railway are predicting that the electric cars will not operate again until the people get a real taste of what it means not to have street cars.

Municipal Railway Has Competition from Eighty Buses

With every indication that the various jitney interests in the city of Seattle, Wash., intend to carry their legal battle for existence and reinstatement to a finish, city officials are preparing to do everything in their power to terminate as soon as possible the protection to the sixty-five buses owned and operated by members of the Sound Transit Company and those operated by the company itself. All others have been off the city streets for nearly two weeks, with the exception of six, which are being permitted to run as feeders to the Seattle Municipal Railway in the district north of Cowan Park, where there is no railway service.

The Sound Transit Company's buses, however, are permitted to operate without interference of the city until the State Supreme Court decides whether it will grant a rehearing of the McGlothern suit, in which the temporary injunction against the city was obtained, and under protection of which the buses are operating.

Officials are preparing, if possible, to prevent continuance of the McGlothern temporary injunction if the jitney interests should carry their litigation to the Supreme Court of the United States.

The Sound Transit Company is now operating nine jitneys in addition to those owned by the sixty-five protected intervenors in the McGlothern suit, making a total of approximately eighty buses operating in the city.

Pasadena Would Curb Jitneys

The Pasadena Chamber of Commerce is in favor of an ordinance forbidding the operation of jitneys on electric railway routes, the establishment of an auto feeder by the Pacific Electric Railway, the granting of universal transfers and a 5-cent fare throughout the city. These sentiments were voiced recently in a communication to the Board of City Directors embodying the recommendations of the Chamber's committee on transportation. This committee has been at work on Pasadena's transportation problems for some time now. The matter will be considered again at some future date.

$250,000 Terminal to Be Built in Salt Lake City

Decision has been made to build a joint terminal of the Bamberger Electric and the Orem Railroads, and the work of erecting the first and most important unit of this interurban terminal, at the corner of South Temple and West Temple Streets, Salt Lake City, Utah, will begin within a short time. The architects, Young & Hansen, have been directed to proceed at once to the formation of detailed plans and specifications upon which bids can be prepared for contractors.

Tentative plans call for the expenditure of more than $200,000, including the cost of the excavations and cement work already completed. The building will probably be of steel and cement construction, with a frontage on West Temple Street of 192 ft. and a South Temple Street frontage of nearly 100 ft. The building will be three stories in height, and the ground floor will be set apart for stores and station room, while the upper floors will be devoted to offices for the electric roads and for other tenants.

The site of the present temporary terminal will not be needed for the new building and will continue to serve as a station until the work is completed.

Service at Cost Rejected

The City Council of Vancouver, B. C., rejected, on Aug. 22, the proposed service-at-cost franchise covering the railway, light, power and gas services of the British Columbia Electric Railway. The matter was shelved for six months, but there is nothing in the way of opening fresh negotiations.

The company is now at liberty to reinstate its application to the government of Canada for a Dominion charter, bringing it under the jurisdiction of the Board of Railway Commissioners, action which public bodies generally have approved.

The rejection of the franchise can be attributed to criticism by citizens generally and the lack of any feeling that a franchise was necessary. The fares under the present franchise are 5 cents, but the company is allowed by special permission of the city to charge 6 cents until July 1, 1922.

Seattle's Mayor Favors Trolley Bus

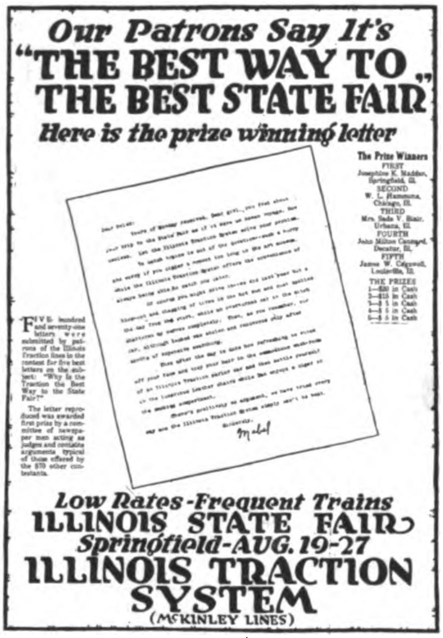
In a letter to the City Council recently, Mayor Hugh M. Caldwell recommended the use of the trackless trolley for First Avenue and First Avenue South, replacing existing street-car tracks, and obviating necessity of large expenditures for new rails in connection with the contemplated paving there. Mayor Caldwell said:

> According to our last street railway report, it is costing us about 28 cents a mile for our street car system. If these figures (18 cents a mile for the trolley bus) are correct, you can see that there would be quite a saving by installing the trackless trolley on First Avenue. The cost of installing the trackless trolley on First Avenue would be much smaller than in the case of a new line or extension, for the reason that the trolley poles and cross wires and one trolley wire each way are already in place.

The estimated cost of renewing trackage on First Avenue from Pine to Atlantic Street is $200,000. That amount has been included in an extension ordinance now pending in the City Council for betterments to the Municipal Street Railway.

Best Way to Fair—Traction

The best way to the best state fair is by electric railway. So think five lucky prize winners of a recent letter-writing contest on "Why is the traction the best way to the best state fair," started by the Illinois Traction System, Peoria, Ill. The champions of the railway had to rhapsodize in not more than 200 words and the winners found it difficult with that limitation to give sufficient praise to the electric carrier. The contest closed on July 31. It attracted great attention. Hundreds of letters from Illinois flooded the contest department, while many were received from states far off. The first prize was won—yes, by a woman, Miss Josephine K. Madden, Springfield, Ill. A woman always knows a good thing—a street railway.


Our Patrons Say It's

"THE BEST WAY TO THE BEST STATE FAIR"

Here is the prize winning letter

The Prize Winners
FIRST
Josephine K. Madden, Springfield, Ill.
SECOND
W. L. Hammons, Chicago, Ill.
THIRD
Mrs. Sada V. Blair, Urbana, Ill.
FOURTH
John Milton Cannard, Decatur, Ill.
FIFTH
James W. Cogswell, Louisville, Ill.

THE PRIZES
1—$20 in Cash
2—$15 in Cash
3—$ 5 in Cash
4—$ 5 in Cash
5—$ 5 in Cash

FIVE hundred and seventy-one letters were submitted by patrons of the Illinois Traction lines in the contest for five best letters on the subject: "Why Is the Traction the Best Way to the State Fair?"

The letter reproduced was awarded first prize by a committee of newspaper men acting as judges and contains arguments typical of those offered by the 570 other contestants.

Low Rates-Frequent Trains

ILLINOIS STATE FAIR

Springfield-AUG. 19-27

ILLINOIS TRACTION SYSTEM

(McKINLEY LINES)

PRIZE-WINNING LETTER ADVERTISEMENT

Reduced Wages in Muskogee.—A 10 per cent wage reduction was put into effect on the lines of the Muskogee (Okla.) Electric Traction Company. As the scale now stands it is the same as it was a year ago. Since last spring traffic on this property has fallen from 350,000 to 240,000 a month. Though the fares were increased to 8 cents last year, Manager Cutlip has announced that the revenues have fallen off about 40 per cent.

James Dalrymple, manager of Glasgow Tramways, and R. J. Howley have been called in as experts to advise the Croydon Town Council as to the future of their municipal tramways.

Wages Adjusted on Seattle Municipal Railway

All wage differences between the trainmen of the Seattle (Wash.) Municipal Railway and the City Council were amicably settled recently when the budget committee changed the classification of motormen and conductors and granted them the same monthly compensation as that paid to policemen and firemen. This action was taken at the request of the trainmen, representatives of whom protested against the proposed 25-cent cut in wages of railway employees previously agreed upon by the Council. The plan adopted will work a reduction in the railway payroll, but not so large a one as the original 25-cent flat decrease would have effected. With the $10 deduction already made in the salary of firemen and policemen, trainmen will now receive the following rates of pay: new men, $135 a month; after one year's service, $145; after two years, $150; and after three years, $155.

Figures compiled by D. W. Henderson, general superintendent of the railway, show that a saving of only $60,254 a year will be effected in payrolls of the railway by placing the trainmen on the same salary basis as firemen and policemen, instead of the daily scale of from $4.75 to $5.25 now in effect. Mr. Henderson's figures show that under the present day wage scale, trainmen receive 59.375 cents an hour on the $4.75 basis, and 65.625 cents an hour on the $5.25 day scale. Under the new schedule they will receive 56.250 cents an hour, at $135 per month, as beginners; 60.417 cents an hour at $145 after one year; 62.5 cents an hour at $150 after two years, and 64.583 cents an hour on the basis of $155 a month after three years.

The actual payroll of the trainmen under the day wage is now $88,905 a month; under the new monthly schedule it would be $86,432 a month, a decrease of $2,476, or 2.785 per cent. The total payroll per year under the present scale is $2,163,449, and on the monthly salary basis it will be $2,103,195, or a decrease of $60,254. The new wage scale becomes effective in January, 1922.

Wheeling Men Accept Wage Cut

The employees of the Wheeling (W. Va.) Traction Company have accepted a wage reduction of 10 per cent, and the company has abandoned its one-man cars, which were placed in operation following the refusal of the men at first to accept the reduction. The reduction in part was accepted at the third vote. Last spring, when the wage agreement expired, the company insisted on a 10 per cent cut. The men flatly refused. The case went to arbitration and the board's finding was in favor of the men. The company, bound by the decision, then asked the men to accept voluntarily the 10 per cent reduction in wages. When the men first refused the company placed one-man cars in operation on the interurban lines.

Bus Service Unreliable After Trolley Quit

The city authorities of Bartlesville and Dewey, Okla., have joined in a petition to the State Corporation Commission asking it to assume jurisdiction over automobiles and jitneys operating on the hard surfaced highway between those two cities, a distance of about 4.5 miles.

Formerly an electric railway operated in Bartlesville and an interurban line to Dewey. Jitneys were permitted to compete with the railway and it was compelled to ask for higher fares. In July, 1918, the commission raised its fare to 7 cents between points in the city and its environs, and 14 cents between Dewey and Bartlesville. The jitneys then cut their fare to 10 cents. Unable to meet this competition the railway, about two years ago, was compelled to suspend operations. Since that the citizens of Bartlesville and Dewey have had to rely on automobiles and jitney service.

The mayors of the two cities, joining in the petition, state that between 250 and 300 people, who live in Bartlesville, work in Dewey and a similar number, who live in Dewey, work in Bartlesville. These people require regular and responsible transportation operated at certain periods. The petitioners state that so many automobiles are engaged in transporting passengers that none can afford to run on schedule and give adequate service and that, on this account, citizens are greatly handicapped and placed at large expense and great inconvenience.

The petition asks the commission to assume regulation of jitneys, to authorize one or more responsible individuals or corporations to operate automobile lines upon regular hourly schedules, to require license fees and place the owners of the lines under bonds for $1,000 and to make them responsible for loss of life or property, and to limit the maximum fare to 25 cents.

The commission, as yet, has never assumed jurisdiction over jitney traffic in Oklahoma. A date for the hearing of the case has not yet been set.

Interborough Employees Buy Homes

Interborough Rapid Transit employees are evidently solving the housing problem in their own way. According to a recent announcement of the United Citizens' Home Committee, members and directors of which are Interborough employees and whose object is to obtain property for the erection of homes for its 14,000 members, forty-five lots on Bronxwood Avenue, between 229th and 231st Streets have been purchased.

According to S. H. Kowitt, secretary of the committee, the lots will be distributed among members of the organization, and, following out the co-operative arrangement, each member interested in the enterprise will pay 25 per cent of the cost of the building and will own his lot outright. Each house will contain five, six or seven rooms. The cost of construction is placed at $800 a room.

The United Citizens' Housing Committee was incorporated under the laws of New York State January last.

Property Owners Assume Cost of Paving

In an order issued on Aug. 25 the Wisconsin Railroad Commission has required the Milwaukee Electric Railway & Light Company to extend its double track on Center Street, Milwaukee, from Sherman Boulevard to Fifty-first Street, a distance of about one-half mile. The commission points out in the order that in reaching this determination it is acting on the inference from the facts presented that the company will not be held to the usual track area paving cost demand, since contracts for the paving of the street have been let and the abutting property owners have already been assessed for the entire cost of the paving exclusive of street intersections.

The commission admits that the immediate prospective revenue from the extension in question would hardly warrant it in ordering the extension, were the company under obligation to meet the usual requirements with respect to paving. The work on the extension is to be completed on Dec. 1, 1921.

The extension was petitioned for by the city of Milwaukee and a hearing in the case was held on July 5. The city then submitted general evidence regarding the growth and development of the neighborhood to be served by the proposed extension and the company submitted, among other data, estimates of the cost of construction and operating the extension. The proposal was made that instead of constructing the track extension requested, the service be supplied by means of trackless trolley.

Estimates showing the comparative cost of constructing and operating the two types of service were submitted by the company. While the commission thought that the trackless trolley has an important field and hoped to see a fair trial of this type of operation in the near future, it was not convinced that the test should be made at this point. It said in this conection:

> We believe the trackless trolley has an important field and hope to see a fair trial of this type of operation in the near future, but we are not convinced that this test should be made at this point. The trackless trolley has not been demonstrated in this vicinity or under conditions similar to those existent on Center Street. If it should not prove satisfactory, the pavement would have been laid and the cost of constructing the tracks and cutting through this pavement would be enormously higher than the cost of constructing them now.
>
> Furthermore, it is expected that the tracks on this part of Center Street will be connected up with the tracks east of the Chicago, Milwaukee & St. Paul Railway after the tracks of the latter have been raised and the Center Street Subway completed. Center Street will then become a long cross-town line and there may be need for its extension yet further west. The construction of the tracks can now be made in advance of the pavement at a minimum of expense to the railway and we feel that under all the circumstances the experiment with the trackless trolley should not be made at this point.

News Notes

Aquatic Sports Provided by Railway.—The Charlottesville & Albemarle Railway, Charlottesville, Va., has built a swimming pool, 300 ft. by 90 ft. adjoining Jefferson Park. The pool cost $20,000 and has added greatly to the traffic which is being handled on the Jefferson Park line.

City Seeks to Recover Damages.—The City of Covington (Ky.) has brought suit against the South Covington & Cincinnati Street Railway Company, to recover $18,950 for the resurfacing of Madison Avenue between the tracks. This is the first step in a legal battle to determine whether the traction company is liable for the cost of this improvement. The city contends that the contract with the traction company requires that they pay for the maintenance of the street between the tracks.

Intensive Campaign for Business Successful.—The Minneapolis, Northfield & Southern Railway, Minneapolis, Minn., made a 202 per cent increase in freight business in July, 1921, over July, 1920. W. R. Stephens, assistant to the president of the road announced. Of this increase, 66 per cent was in new milk business. Passenger business of the railway showed a gain of 39 per cent in the same time. Mr. Stephens said the gain was due to increased service, the organization of a freight department and "going after the business." Since July 17, passenger volume has been benefited by the reduction in the price of the fare to 2½ cents a mile.

Bus Rights Should Be Only Temporary.—The Philadelphia (Pa.) Rapid Transit Company has explained its policy with respect to the building of an extension to the plant of Sears, Roebuck & Company. It wants any rights which may be granted for the operation of buses between the plant and its lines made for only a temporary period. Some months ago the railway applied to the city authorities for a franchise on the boulevard from Ramona avenue to Old York road. While it recognized that transportation service was needed it realized that for many years such service must be rendered at a loss to the operating company. The ordinance introduced in Councils at the suggestion of the company, was so amended by Councils that when passed and signed by the Mayor its terms were impossible of acceptance. While the matter is in this state the company feels that such certificates as are granted by the Commission should be temporary in their nature and subject to cancellation when and as adequate transportation facilities are provided by railway in co-operation with the city.

Financial and Corporate

Appointment of Receiver Asked for I. R. T.

Creditor With Claim of $57,074 Seeks to Keep Lines Intact—Equipment Debt $3,000,000

The American Brake Shoe & Foundry Company has filed an equity suit in the United States District Court at New York asking for the appointment of a receiver for the Interborough Rapid Transit Company. Action was taken shortly after the stock market closed on Aug. 27.

Claiming $57,074 long overdue, the foundry company declares the Interborough has more than $3,000,000 in floating indebtedness besides other huge outstanding obligations. The $3,000,000 debt, including materials, equipment, taxes and supplies, the complainant states, is now overdue and the Interborough unable to pay.

The complainant declares that certain creditors are pressing for payment, that suits threaten, that executions may be levied on the equipment and property of the defendant, and that there is grave danger the Interborough may thereby be deprived of the use of its equipment and rolling stock. It also is alleged that for the benefit of the public and the creditors it is desirable that the operation of the subway and elevated lines be kept intact.

Frank Hedley, president of the Interborough, said the company had not yet agreed to the appointment of a receiver and hoped to avert it by obtaining a one-year extension on obligations which mature on Sept. 1 and by the "further indulgence of its general creditors." For two weeks, according to a representative of the Interborough, it has been trying to obtain renewals of $38.144,000 in 7 per cent notes, which fall due Sept. 1.

These notes were issued in September, 1918, by J. P. Morgan & Company and the War Finance Corporation. Recently the Transit Commission on representations that there was no other way to avoid a receivership approved an extension of the notes for one year at 8 per cent. On Aug. 6 the Interborough sent letters to holders of record urging that the notes be renewed on these terms. It was said at the Interborough offices that a majority of the holders had given their assent, but not all.

President Hedley's statement follows:

> Saturday the American Brake Shoe & Foundry Company filed a creditor's bill in the United States Court for the Southern District of New York on its own behalf and on behalf of all creditors of the Interborough Rapid Transit Company, who may join in the suit, asking that a receiver be appointed in order that all creditors may be treated alike and that there may be no multiplicity of actions brought by creditors and noteholders in different courts.
>
> The Interborough company has appeared in this suit, but it has not yet filed its answer or consented to the appointment of a receiver. It has twenty days in which to answer, and during that time it is hoped that all of its notes maturing on Sept. 1 next will have been extended for a year, and with further indulgence of its general creditors a receivership may yet be averted.
>
> If, however, it shall become necessary ultimately to have a receiver, the filing of the bill this forenoon confers jurisdiction upon the court which is now administering the affairs of several other traction companies. It is believed this course will be of advantage to all interests involved.
>
> The filing of this bill does not change the situation as to the extension of the three-year notes.

The application was heard before Judge Mayer on Sept. 1. Counsel for the railway company admitted that the company was unable to pay its notes and requested an adjournment. The court allowed this request and set Sept. 8 for continuing the hearing in the case.

Exclusive of those operated by the Brooklyn Rapid Transit Company, all of the subway lines in the city of New York are operated by the Interborough, and the lease of the Manhattan Railway covers the Second, Third, Sixth and Ninth Avenue elevated lines. The application states in this connection that altogether the subway system comprises 47 miles of railroad and 146 miles of single track and that the elevated lines cover 37 miles of railroad and 130 miles of single track.

Accidents Increase in 1920

Accident figures in 1920 on the railways in New York City show a decrease of 37 per cent over 1919 in the number of persons struck by cars and a reduction of 11 per cent in the number of persons picked up by car fenders. Still, in the total number of mishaps including delays the 1920 figure of 35.250 is 16 per cent greater than in 1919. The comparison follows:

	1919	1920
Persons struck	1.431	892
Picked up on fenders	171	152
Boarding and alighting	1,101	724
Car collisions	644	531
Vehicle collisions	3,367	2.816
Derailments	3,897	3.623
Equipment troubles	10,861	11,215
Other accidents	2,270	2,101
Other delays	7,036	13,196
Totals	30,278	35,250

$35,859 Profit in Seattle in July

The report of the Seattle (Wash.) Municipal Railway for July shows a profit of $35,859, but without deduction of $70,250 for bond redemption. Mayor Hugh M. Caldwell said:

> While a profit is shown in the report, a notation explains that nothing has been set aside for bond redemption. This amounts to $70.250 a month. At the present rate, we will have to go on a warrant basis again, probably on February 1 and set aside all receipts to meet the $833,000 redemption charge due on March 1 next, the first payment on retirement of the $15,000,000 purchasing bonds. The monthly charge of $56.719 for depreciation, however, has been made in these figures, although that sum has not actually been set aside.

Readjustment of Capitalization Approved

The stockholders of the North American Company, New York, N. Y., on Aug. 26 voted in favor of increasing the authorized capital stock of the company from $30,000,000 to $60,000,000, to consist of 600,000 shares of 6 per cent cumulative preferred stock of a par value of $50 each, and 600,000 shares of common stock of a par value of $50 each, and also voted in favor of the issue of one share of such preferred stock and one share of common stock in exchange for each share of the present outstanding stock of $100 par value.

Following the special meeting of the stockholders, the directors declared quarterly dividend No. 1 of 1½ per cent (75 cents per share) on the new preferred stock, and dividend No. 1 of 1½ per cent (75 cents per share) on the new common stock, both dividends payable on Oct. 1 to holders of record of Sept. 15. Dividends of 1½ per cent each on the new preferred and new common stock are equivalent to an annual rate of 6 per cent as compared with 5 per cent heretofore paid on the present stock of like par value.

The plans for the changes in the capitalization of the company were reviewed at length in the ELECTRIC RAILWAY JOURNAL for July 16, page 110.

Eight per Cent Stock Offering Successful

The customers'-stock-ownership campaign conducted by the Public Service Corporation of New Jersey recently terminated with a record of 20,700 shares of preferred stock sold. The story of the 8 per cent stock offering was told in detail in the ELECTRIC RAILWAY JOURNAL, issue of June 4.

Officials consider the sale a very successful one. They report that most of the stock was bought by the working classes and that initial payments were not withdrawals from savings accounts. It was also learned many shares were sold outside of the state.

I. C. C. Authorizes $2,200,000 Issue by Electric Line

The Interstate Commerce Commission has authorized the Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia., to issue $2,200,000 of general mortgage 7 per cent gold bonds to be pledged with the United States as collateral security for $1,885,600 in loans from the United States; to issue and sell at par for cash $700.000 of common stock; and to issue lease warrants or notes aggregating $132.159 in connection with the fulfillment of equipment. Of this $700,000 of stock proposed to be issued $207,000 is to be issued and sold at par to meet current liabilities. The proceeds of the entire issue are to be used as follows:

1. For funding maturities, $547,126.
2. For paying open accounts, $18,674.
3. For cash payments on new suburban passenger cars, $37,000.
4. For holding in the treasury for capital expenditures, maturing interest, and other proper purposes, $97 200.

Line Formerly Leased Wants Property Distributed

The Eighth Avenue Railroad, New York, N. Y., has brought suit in the New York Supreme Court against the Sixth Avenue Railroad, Job E. Hedges as receiver of the New York Railways, and others. The Eighth Avenue Railroad contends that a lease negotiated more than twenty-one years ago with the Metropolitan Street Railway as operator of the Sixth Avenue Railroad ceased upon the appointment of Job Hedges as receiver of the New York Railways, successor to the Metropolitan Street Railway.

It is alleged that the Eighth Avenue Railroad leased to the Metropolitan Railroad on Nov. 23, 1895, all of its railroad and other property for ninety-nine years, effective Jan. 1, 1896. In accordance with the lease the plaintiff alleges that it is a tenant in common with the defendant in connection with the ownership of such property known as the "Church Farm," bounded by Vesey, Chambers, Greenwich and Dey Streets and West Broadway. It maintains that this is the only property it owns jointly with the defendant.

The plaintiff alleges that it is entitled to possession equivalent to one-half and that the lease consummated for the use of the property involved ceased on Aug. 1, 1919, the day Federal Judge Mayer designated Job Hedges as receiver of the New York Railways, then leasing the Sixth Avenue Railroad.

A judgment for an immediate partition and distribution of the property is petitioned by the claimant.

Valuation Figures Under Fire in Merger

Opposition to the valuation basis proposed by the new Indiana Electric Corporation marked the opening of the Public Service Commission hearing on Aug. 26 on the corporation's petition to acquire seven Indiana utility companies and issue securities. The corporation's figures were based on the seven-year price average of 1914-1920, but counsel for cities participating in the hearing objected that the average was too high because of war prices.

The commission ordered the corporation to make a valuation based on the ten-year price average, without committing itself to the average unit price theory. Counsel for the corporation contended that the seven-year basis was fair because of fundamental economic changes resulting from the war, which would obtain for an indefinite period. The corporation also proceeded with a view to determining value on the reproduction cost new basis, but during the hearing Commissioner Barnard, who presided, indicated that the commission was not bound to accept this theory. After several expert engineers were heard, the hearing went over for a week. Most of the evidence had to do with the Merchants Heat & Light Company of Indianapolis and the Indiana Railways & Light Company of Kokomo.

Companies participating in the proposed merger are: The Merchants Heat & Light Company, Indianapolis; the Indiana Railways & Light Company, Kokomo; the Wabash Valley Electric Company, Clinton; the Putnam Electric Company, Clinton and Cloverdale; the Valparaiso Lighting Company; the Elkhart Gas & Fuel Company and the Cayuga Electric Company. Plans for the merger include the establishment of a large power plant on the Wabash River in Vigo County. The Joseph H. Brewer interests, which acquired the Merchants Heat & Light Company, Indianapolis, in 1914, are backing the merger.

$60,000,000 Terminal and Electrification Plan Disapproved

The application of the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis, and the New York, Chicago & St. Louis Railroad Companies for authority to erect a passenger terminal in Cleveland has been denied by the Interstate Commerce Commission. That body said:

> We are not persuaded by the evidence now before us that the terminal problem has received adequate consideration in the public square plan either from the local or the railroad point of view, that this plan is compatible with the public interest, in its present form, or that we ought, by granting the certificates of public convenience and necessity which are sought, to lend our sanction to the enormous expenditure of capital which the plan involves.

The commission added that it was possible a further presentation of evidence might lead to a different conclusion.

The proposed station was to cost $60,000,000. The tracks were to pass 30 ft. below the street level at the Public Square. All tracks within the terminal limits were to be operated by electricity and the electrification of the steam lines was to extend beyond these limits over the trackage to be provided along the existing right-of-way. It was intended to have a system of station tracks for the interurbans.

Financial News Notes

Fresno Interurban Reports Loss.—The Fresno (Cal.) Interurban Railway after deducting interest charges, rentals and taxes reports a net corporate loss of $7,721 for the year 1920. The accumulated deficit at the end of the year amounted to $59,523.

Discount on Bonds Large.—The Public Service Commission of Indiana has authorized the Interstate Public Service Company to sell $184,000 of 5 per cent first and refunding gold mortgage bonds at 75 per cent of par. The bonds are of a 1913 issue.

Interurban Confers With Commission on Suspensions.—Attorneys for the Ohio Electric Railway, Springfield, Ohio, have discussed with members of the Ohio Public Utilities Commission the necessary steps to be taken to discontinue service on some branch lines, but no applications have been filed yet to vacate the Defiance branch.

Shore Line Tracks Will Be Removed.—The tracks between Old Saybrook and East Lyme, property of the Shore Line Electric Railway, New London, Conn., will be torn up. This removes all hope that traffic might eventually be renewed. West from Saybrook Junction, as far as Guilford, the tracks will remain undisturbed for the present.

$1,500,000 of Notes Placed.—The Havana Electric Railway, Light & Power Company, Havana, Cuba, announces that it has sold to its bankers, Speyer & Company, $1,500,000 of five year 7 per cent gold notes dated Sept. 1, 1921. The issue is secured by deposit of $3,000,000 of the company's general mortgage 5 per cent bonds.

Order Entered for Discharge of Receiver.—The final order in the case of the New York Trust Company against the West Virginia Traction & Electric Company, Wheeling, W. Va., praying for the release of Joseph D. Whittemore as receiver for the utility has been filed with John H. Conrad, deputy clerk of the United States Court for the Northern district of West Virginia. This order was received from Judge W. E. Baker at Elkins, and called for the discharge of Mr. Whittemore as receiver for the company and also for the cancellation of his bond. The case is now closed. It was heard first in this city before Judge Baker on May 5, 1921.

$1,401,000 of Bonds Offered.—Tucker Anthony, New York; Robert Garrett Sons, Baltimore, and Brooke, Stokes & Company, Philadelphia, are heading a syndicate which is offering an issue of $1,401,000 Utah Light & Traction Company 8 per cent first mortgage collateral bonds due 1934 at 99½, to yield slightly more than 8 per cent. The bonds will be guaranteed both as to principal and interest by the Utah Power & Light Company, parent concern of the Utah Light & Traction Company. They are secured by the deposit of an equal principal amount of Utah Light & Railway 5 per cent consolidatd mortgage bonds due 1934.

Would Have Water Works Line Carry Passengers.—Citizens on the line of the mile-and-a-quarter municipally owned trolley line from the Twin City lines to the water filtration plant, which is in Anoka County adjoining Minneapolis, are agitating for passenger service. The line is utilized now for freight service to the plant. A former agitation was quieted when the city's legal department ruled against it because of the liability involved. The residents now want some arrangement made with the Minneapolis Street Railway to operate the line. The company believes the revenue would not pay the cost of operation. This line operates one block over the tracks of the local company in Minneapolis.

Traffic and Transportation

Wheeling Decision Stands

I. C. C. Sees No Reason Why It Should Change Its Finding in This Important Case

The Interstate Commerce Commission, in a decision just made public in the case of William Wylie Beall vs. the Wheeling (W. Va.) Traction Company, has affirmed the findings made in its original report. Irrespective of the terms of incorporation of the railway, the commission is convinced that the company is now rendering an interstate interurban business, the charges for which are within its jurisdiction. The case is considered a fundamental one, so much so that the National Association of Railway & Utility Commissioners was granted leave to intervene. Commissioners Campbell and Eastman dissented.

In its original report, referred to in the ELECTRIC RAILWAY JOURNAL for April 23, page 789, the commission found, among other things, that the interstate passenger fares of the Wheeling Traction Company for the transportation of passengers between Steubenville, Ohio, and Wellsburg, W. Va., and between Steubenville and Weirton, W. Va., were just and reasonable fares, and that the intrastate fares of the company for the transportation of passengers in intrastate commerce between Steubenville and Brilliant, Ohio, were unduly preferential to intrastate passengers, unduly prejudicial to interstate passengers, and unjustly discriminatory against interstate commerce. In consequence it prescribed intrastate fares which would remove such preference and discrimination.

The contention of the petitioners as stated upon reargument was that the traction company renders a strictly street-railway service, over the charges for which the Interstate Commerce Commission had no jurisdiction. They pointed out that defendant had no station buildings along its line, did not do a freight business in the manner in which steam roads do, and had no through routes and joint freight rates. In support of their contention the petitioners cited the decision of the Supreme Court in the Omaha case.

The commission says it has not attempted or asserted the right to regulate the fares of an electric railway for travel within a municipality. As stated previously, the commission found no reason to modify the finding stated in its original report to the effect that

> The interstate passenger fares of the Wheeling Traction Company . . . between Steubenville and Wellsburg, and between Steubenville and Weirton are just and reasonable fares for interstate transportation over defendant's lines between those points; and that the maintenance of intrastate fares . . . between Steubenville and Brilliant lower than the just and reasonable interstate fares has resulted and will result in undue prejudice to persons traveling in interstate commerce over defendant's lines in the state of Ohio and between points in the state of Ohio and the above-mentioned points in the state of West Virginia; in undue preference of and advantage to persons traveling intrastate over defendant's lines between the points here involved in Ohio; and in unjust discrimination against interstate commerce.
>
> We further find that, whether the aforesaid passenger fares pertain to transportation in interstate commerce or to transportation in intrastate commerce, the transportation services are performed by the defendant under substantially similar circumstances and conditions.

Mr. Eastman said that he approached the case with the conviction that the activities of the commission should be confined, so far as the law permitted, to matters of national consequence. According to him the electric railways in the present case did not possess the "characteristics of an interurban line" in any greater degree. He said that no one else except the Wheeling Traction Company mainfested serious concern for the protection of interstate commerce. According to Mr. Eastman the concern of the railway was clearly a matter of revenue. He said in conclusion:

> I am unable to find in the Interstate Commerce Act any intent of Congress that we should have power to raise the intrastate fares of electric railways which happen to be engaged to some extent in interstate commerce, as most of them are, merely because of a belief that such fares are lower than they ought reasonably to be and in the absence of evidence that the free course of interstate commerce is in any substantial way obstructed or hindered. The complaint should be dismissed.

Seven-Cent Fare to Make Municipal Line Self-Sustaining

Announcement was made on Aug. 20 by the Transportation Commission at Toronto, Ont., regarding the new rate of fares that will be in force on the railway when the city takes over the Toronto Railway and merges it with the Toronto Civic Railway. Instead of a straight 5-cent fare the commission has fixed the rate at 7 cents cash for adults, or four tickets for 25 cents and sixteen tickets for $1, or fifty tickets for $3. Under the latter rate the cost of each car ride will be 6 cents. The night rates for all passengers will be 15 cents cash. As for children's fares, infants in arms will be carried free, as now, but for all others irrespective of age, not exceeding 51 in. in height, the rate is 4 cents cash or seven tickets for 25 cents.

In making the announcement the commission pointed out the increases did not provide for the rehabilitation of the system, which would be a gradual process. The commissioners said that, in considering the increases, they had been guided by the terms and conditions of their appointment, which provided that they should fix such tolls and fares as would be sufficient to make all transportation facilities self-sustaining.

Discontinuance Threatened

Lansing May Lose Railway Service Unless Return Is Allowed to the Ten-Cent Fare

At a conference on Aug. 24 between city officials of Lansing, Mich., and representatives of the Michigan United Railway, John F. Collins, vice-president and general manager of the company, declared that unless a fare increase is granted service in Lansing will have to be suspended. Mr. Collins favors a cash fare of 10 cents, with four tickets for 25 cents. The present rate is 6 cents cash, with nine tickets for 50 cents.

The four principal cities in which the company operates are Jackson, Battle Creek, Kalamazoo and Lansing. In June, 1920, the company increased its fares in all of these cities to 10 cents cash, with four tickets for 30 cents, and 5 cents for children. The increased fares were put into effect in Kalamazoo, Lansing and Jackson by order of their City Commissions, and in Battle Creek by order of the City Commission upon recommendation of the State Utilities Commission. Battle Creek authorities asked the State Commission for advice as to what fares Battle Creek people should pay and the State Commission recommended the 10-cent fare with four tickets for 30 cents and 5 cents for children.

In Kalamazoo, after the City Commission had decided on the higher fare, it submitted the case to the State Commission for similar advice, and the State Commission ordered the higher fare for Kalamazoo.

These fares were later reduced to 6 cents cash, nine tickets for 50 cents, 5 cents for children. This reduction was made originally by the City Commission of Lansing. The railway showed the Commission that it was already losing money and that this reduction of fares would increase its losses. The Commission took the view that the reduced fares would increase the volume of traffic and result in larger earnings than had been possible under the 10-cent rate.

Since compelled to adopt these lower fares in Lansing, the railway felt that it would not be just to its patrons in Kalamazoo, Jackson and Battle Creek to ask them to pay a higher fare than the people of another city were paying, so it decided to put in the same reduced fare in all four cities and in good faith await results.

In the meantime the Jackson City Commission engaged five men to investigate the affairs of the company, audit its books and determine the value of the property used in the service of this and other cities. Kalamazoo referred the matter to the State Commission. Lansing, however, insisted upon going it alone.

For the year ended May 31 the company lost in these cities the following:

Lansing	$55,587
Battle Creek	92,131
Kalamazoo	97,744
Jackson	157,643
	$403,105

Indianapolis Takes Warning from Des Moines

President of Council Says Repetition of Folly of Des Moines Would Retard City Ten Years

Indianapolis is another city confronted with the jitney problem. It appears more than likely, however, that Indianapolis will not repeat the folly of Des Moines and Saginaw. It is true that negotiations for a settlement of these problems in Indianapolis have been in a deadlock for several weeks, but at conferences during the week ended Aug. 27 it appeared a contract may be made between the city and the company fixing the regulations over the company to take the place of those provided in the franchise surrendered by the railway in June under the terms of a law enacted by the last Legislature.

AT THE conference Russell Willson, president of the Council and chairman of a Council committee which investigated jitney bus and railway problems in Des Moines, Sioux City and Kansas City, read a list of recommendations concerning the local problem which he made to the Council at the last meeting. The recommendations urged the Council to take steps toward regulating the jitneys, but not until after it has been assured that the railway and the city are to come to an agreement as to the city regulations over the company.

Mr. Willson thought that jitney regulation should include provisions to prohibit jitneys from operation in streets with railway lines, to compel jitney operators to put up indemnifying bonds and pay higher license, and to compel them to follow a specified schedule and route. Proposals were made, it was understood, which can not be agreed to except by the full board of directors of the Indianapolis Street Railway and the City Council. It seemed likely that several conferences will take place at which the various proposals will be thrashed out before a full announcement is made as to the points under consideration.

A definite understanding has been reached to attempt to fix the regulations of the city over the company by a contract between the city and the company, Corporation Counsel Ashby said. At the last conference, held several weeks ago, the company representatives, through their attorney, apparently turned down the city's proposal to fix regulations by a contract, in favor of the alternative—that they be fixed by ordinance. The city favored the contract, Mr. Ashby brought out, because it desired the rights and authority of the city over the company to be fixed permanently and not be left to continual bickering between the company and the city.

Mr. Willson's statement and recommendations to the Council follow in part:

From the committee's investigation, as detailed in the report submitted to the Council, it is my profound personal opinion:

1. We are not concerned primarily with either the welfare of the railway or the jitney bus. If regulatory legislation for the jitney bus is necessary, it should not be viewed in the light of relief for, or aid to, the railway, but purely and solely as a matter of benefit to the public—to the city—and to its individual citizens.

2. The situation existing between the railway and the city is very similar to the condition in Des Moines. The Indianapolis Street Railway has surrenderd its franchise and is operating under an indeterminate permit issued by the State. It has been the city's endeavor for some weeks to reach an understanding with the railway as to the future authority of the city over the company, and to induce the company to continue to perform some of the obligations and conditions of its previous charter.

The company recently stated to the city that it would enter into no contract with the city. The city has insisted that the obligations to be performed by the company under its old charter should be renewed by contract, as the company's contention, at the time the law was passed permitting it to surrender its charter, was that it was concerned only with the valuations, rate of fare, etc., and that it would continue to meet its other charter obligations even if operating under an indeterminate permit. Therefore, the city especially feels that the company should now, by contract, make good these assertions. The city also feels that the rights and authority of the city over the railway should be fixed and determined once and for all by contract, so that there will not be continual bickering and travail from day to day. Even though the city's rights are defined by law, what the city wants is a practical, working agreement between itself and the company without the probability of facing an appeal to the state public service body on any and every order that the city may make.

Therefore, it seems to me that if we are to consider the matter of regulation of jitney traffic, especially if it is to be considered at the railway's request, and as a means of enlarging the company's receipts, the company shall at the same time consider the city's demands: and if jitney traffic is regulated by ordinance in such a way as to offer relief to the railway, this shall be effected at such time as the company agrees, in terms, to contract as to its duties and obligations to the city.

3. It is impossible for a railway in any city to operate in successful competition against unrestricted and unregulated jitney bus traffic. The buses take the short hauls, and leave the long and unprofitable hauls to the company. They operate upon railway streets, often upon pavement paid for exclusively by the railway, and in snowy weather they operate exclusively on the car tracks after they have been swept by the railway. In fact, without regulatory laws their operation, it seems to me, constitutes entirely unfair competition, and assuming that a railway is adequately serving the community the unrestricted operation of jitney buses constitutes a real menace to that community's welfare.

4. This does not mean that a railway should be relieved from meeting fair and legitimate jitney competition. If a car company's service is adequate and it is meeting just obligations toward the city, it is my opinion that while such adequate service continues, and while the company continues to meet its obligations toward the city, the city should see to it that there is no jitney competition on railway lines. In my estimation that is the one regulation that essentially makes for fair competition. The other measures for regulation, such as a bond, schedules, licenses, etc., are for the benefit, convenience and safety of the public generally. The provision restricting jitneys from railway lines is primarily one for the benefit of the company. If parallel with car lines, it is fair competition and the passenger may choose the conveyance he prefers.

5. It is entirely bad for a city to allow unregulated, unrestricted jitney bus traffic; not only from a standpoint of unfair competition with its street car company, but especially from the standpoint of the public, the city and the safety of the individual.

6. If eventually motor transportation is entirely to supplant trolley transportation in the city, the jitney or motor bus has not as yet reached the stage of perfection necessary therefor.

7. Properly to serve the public it is necessary, in my estimation, that the jitney bus be required to file a bond covering liability for personal injuries, to follow a definite schedule and a definite route, to be driven by one who meets certain requirements as to age and ability to drive, to pay an adequate license to the city, and not to be overloaded. In addition to the above, at such time as the city is guaranteed adequate railway service and the company, by contract, agrees to continue to perform those of its former charter obligations which the city sees fit to retain, and the city can be reasonably assured that there will be no increase in rate of fare, I believe that jitney competition, by ordinance, should be immediately removed from streets containing car lines.

Mr. Willson says that both Kansas City and Sioux City having seen Des Moines as a horrible example, have avoided making the same mistakes; Kansas City by regulating its jitney traffic and Sioux City by annihilating its jitneys. He says the committee found that each city had its own peculiar problems, just as has Indianapolis. The chief peculiarity at Indianapolis was that there is now no contract or working agreement, or basis of any kind existing between the company and the city. This, of course, is not true in any of the other cities.

In Mr. Wilson's judgment, the situation in Des Moines is deplorable, and is one of the worst conditions which could befall any American city. In his estimation the visitation upon Indianapolis of such a condition as now exists in Des Moines would be the biggest single disaster that could befall the city—it would retard the city's industrial and physical growth at least ten years, and the attending publicity would cost the city and its citizens millions of dollars, hundreds of industries, and thousands of homes and inhabitants.

City Wants Lower Fares

A reduction in fares to 5 cents is the answer of the city of Little Rock to the Little Rock Railway & Electric Company's suit to restrain the city from prohibiting the collection of an advanced fare. The suit was filed recently in Second Division Pulaski Circuit Court.

In its answer the city alludes to the terms of the franchise under which the company is now operating in which the company bound itself to charge a fare not to exceed 5 cents for a period of fifty years after September, 1901. The city further stated that on petition of the railway in May, 1920, the City Council passed an amendment to the franchise permitting a 6-cent fare for a period of one year, provided at the expiration of that time the charge would automatically return to 5 cents. It holds that a 5-cent fare is just, reasonable and will yield to the plaintiff a just return.

C. E. Smith has been retained by the city to appraise the property. J. H. Perkins, engineer of the American Cities Company, which controls the railway at Little Rock, will represent the traction company. Reference to the proposed valuation was made in the ELECTRIC RAILWAY JOURNAL for Aug. 6.

Jitney Law Upheld

United States Court at New Haven Has Refused Injunction to Prevent Utility Commission Applying Recent Law

The recent act conferring on the Public Utilities Commission of Connecticut authority to grant or to refuse licenses for the operation of jitneys is not unconstitutional as alleged by the jitney men. The decision to this effect was handed down on Aug. 30 by the three judges of the United States District Court for Connecticut who heard the appeal of the jitney men at New Haven on Aug. 16. The court points out that the jitney men have adequate redress in the state courts for any injuries done them.

The court referred to the decision of the Superior Court of the State holding the jitney act constitutional. The court held that the several objections urged as to the constitutionality of the act were not well-founded. These claims were as follows:

> 1. That the act confers arbitrary powers on the Public Utilities Commission and permits the commission to discriminate against the plaintiffs and therefore deny to them the equal protection of the laws.
>
> 2. That the statute constitutes an unlawful delegation of legislative powers to the administrative body.
>
> 3. That it is unconstitutional and violates the due process of law guaranteed by the fourteenth amendment in that it confers an unregulated discretion and arbitrary power upon the Public Utilities Commission to grant or refuse or revoke a license.
>
> 4. That the statute in not requiring the commission to grant a hearing in the issuance, refusal or revocation of a license, denies due process of law.

The court said:

> The streets are the property of the public. (Davis v. Mass. 167 U. S. 43.) They are under the control of the public and therefore subject to the police powers of the State, excepting where the power is delegated by statute upon a municipality or other agency. (Hendrick v. Maryland, 235 U. S. 611; Nolen v. Riechman, 225 Fed. 812). The right to exercise the police power is a continuing one and may be exercised so as to meet the ever changing conditions and necessities of the public.
>
> Those who make investment for this purpose as the plaintiffs, do so and hold their property and the right to use it subject to such other and different burdens as the Legislature may reasonably impose, for the safety, convenience and welfare of the public. The State Legislature may regulate the use, by automobile and motor cars of the highways of the State. (Hendrick v. Maryland, 235 U S. 611). It may also authorize municipalities to regulate the use of streets by vehicles and may exclude vehicular traffic. (Barnes v. Essex Co. Park Comm., 86 N. J. Law, 141.)

The suit was instituted by the jitney men operating in the city of New Haven for an injunction to restrain the prosecuting attorneys of New Haven City County Courts, the chief of police, the city of New Haven and the superintendent of the state police from enforcing the law enacted at the recent session of the Legislature which made it a penal offense for the plaintiffs to carry on their business as jitney bus carriers. The Connecticut Company operating electric railways in the territory affected by transportation through jitney service appeared by intervention and was a party to the suit.

When the Public Utilities' Commission handed down its decisions on the applications for jitney licenses two months ago it suggested that in certain places where licenses were refused to individual operators the Connecticut Company put buses into service. Acting on this suggestion the Connecticut Company now has in operation two buses between East Haven and Branford, four between New Haven and Devon, two in the vicinity of Stamford, two in Brooklyn and one in High Street, Hartford. These bus lines are understood not to be paying, with the possible exception of the Devon line.

Wheeling-Pleasant Valley Buses Have Quit

The Motor Rapid Transit Company, which has operated between Wheeling and Pleasant Valley, W. Va., for several months, withdrew all buses on Aug. 20 and announced its decision to give up the fight with the Wheeling Public Service Corporation. Officials of the company say this decision was caused through the passage of a city ordinance a few weeks ago. It was generally understood that the company was preparing to fight the injunction case instituted by the railway. Classing the legislation as one of the most one-sided pieces of lawmaking ever written by any body of men, Henry Kiel, manager of the bus company, declared that Council had forced him to suspend his line. He charged that the ordinance as it was passed is a railway measure and has left the bus interests without a leg to stand on.

Date Fixed for Rehearing Los Angeles Rate Cases

The California State Railroad Commission has set Sept. 26 and 27 for the rehearing of the rate increases sought by the Los Angeles Railway and Pacific Electric Railway; Sept. 26 being the date for the Los Angeles Railway and Sept. 27 for the Pacific Electric Railway. The hearing will be conducted in Los Angeles.

The former hearing for the Pacific Electric Railway was held during July, 1920, at which time the commission granted emergency increases in freight and passenger rates along the lines as those granted to the steam roads by the Interstate Commerce Commission, while the Railroad Commission reserved the rights upon invitation of the Pacific Electric to investigate its affairs and make a service survey with view of effecting certain economies in the operation of its lines. Since July, 1920, the commission's engineers have been actively engaged in making this survey, the conclusion of which will enter into the rehearing on Sept. 27; also, at this hearing the problem of adjusting the Hollywood rates and service will be extensively dwelt upon.

The Los Angeles Railway case will again go into the subject of the application of the company for an increase in rates on its lines in the city of Los Angeles, the railway having not seen fit to accept the increases granted recently by the commission, as outlined previously in the ELECTRIC RAILWAY JOURNAL.

Commission States Reasons for Fare Authorization

In its recent finding authorizing the Minneapolis (Minn.) Street Railway to put into effect a 7-cent cash fare with four tickets for 25 cents the State Railroad & Warehouse Commission has summarized its reasons for permitting the advanced rate. This finding was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Aug. 27, page 341.

The commission states that the emergency which the Council found existing in 1920 has not been fully relieved by the present fare; the increasing operating expenses and a decreased net revenue have brought about a condition whereby the company has not been able to earn a fair return on the invested capital. Pending the valuation proceedings, which will not be terminated for several months, there is no available data whereby it could fix a valuation upon which to base a permanent rate which would change the authorized rate as fixed by the city of Minneapolis by its ordinance of Aug. 6, 1920, and which rate under chapter 278, laws of Minnesota, for 1921, "shall be and remain the authorized and lawful charge."

The 1920 ordinance was cited in this ruling and the subsequent emergency on account of which the Council authorized a 7-cent cash fare with four tickets for 25 cents, provided that until Dec. 15, 1920, the fares shall not exceed 6 cents. The company did retain the 6-cent fare after Dec. 15, and on June 24 applied to the commission for the same rate of fare which had been authorized by the City Council of Minneapolis in its ordinance of Aug. 6, 1920.

By this decision of the commission the motion of City Attorney Neil M. Cronin for a rejection of the railway's plea was overruled.

Petticoat Lane Loses Cars in Rerouting

Rerouting of cars of the Kansas City Railways under the Beeler plan, is proceeding. The earlier of the new routes established were chiefly connections of lines formerly terminating in the business district, the changes of routing being slight.

One of the most radical changes in the program was put into effect on July 10. Two lines which formerly entered the business district were connected and routed on Twelfth Street, on the south edge of the business section. The results of this routing were considered a test of the ultimate success of the whole program.

Whereas complaints might have been expected from business men and patrons, there was no criticism from either source. The rerouting in this case eliminated from the course of the two lines passage through long stretches of the congested downtown district, where streets are narrow. The route on Twelfth Street is one block from Petticoat Lane, or Eleventh Street, the heart of the women's shopping district.

Motor Buses in West Danbury

The Danbury & Bethel Street Railway, Danbury, Conn., plans a motor bus service to West Danbury. The schedule of the bus will be similar to that of the trolley. Transfers will be issued to all other lines of the city and transfers from trolley lines will be accepted on the bus. The method of payment will be pay as you leave.

Judge J. Moss Ives, receiver for the railway, has recently purchased two other buses. One will be used in Bethel to carry passengers from the railroad station to the end of the line and the other will be kept for emergency purposes.

Bus Petition Rejected

The Council of Cedar Rapids, Ia., has rejected a proposition of S. J. Markin, Minneapolis, to put buses in operation on the streets of Cedar Rapids in competition with the local electric railway.

The Council assumed the attitude that the railway paid heavy taxes and that the city could not afford to antagonize it by cutting down its revenues. Another objection to the buses was that the crowded condition of First Avenue, the principal business street, would not permit of bus traffic. Mr. Markin also sought to run a 15-cent bus line between Cedar Rapids and Marion, a neighboring city. He had obtained permission from the Marion City Council, but failed at Cedar Rapids.

Six-Cent Fare in Duluth—City Fights Ruling

The State Railroad & Warehouse Commission has authorized the Duluth (Minn.) Street Railway to increase its fares from 5 cents to 6 cents. Following this announcement, City Attorney John B. Richards applied to the district court asking for a stay and injunction against operation of the order. The injunction is requested until the court can pass upon the merits of the case. The railway had asked for a 7-cent fare. The city valuation expert is now making a valuation survey of the property. His figures will be offered in evidence by the city in its suit.

Must Not Solicit Passengers

Soliciting from taxicabs for passengers is no longer permitted in Cincinnati, Ohio. The City Council has passed an ordinance which makes it unlawful for drivers of taxicabs to solicit fares while driving. This practice has caused unnecessary congestion and many traffic tie-ups in the downtown district and has hampered the fire department. The ordinance provides fines from $5 to $100 for violations. The chief reasons for drawing up the ordinance were complaints by the fire department officials that it was almost impossible to make a "run" to the center of the city because of the traffic congestion due mostly to taxicabs soliciting passengers.

Transportation News Notes

Grants and Denies Jitney Applications.—The City Council of Seattle has granted three applications for permits to operate jitney buses on "feeder" lines north of Cowen Park, but has denied an application for a jitney route to operate in competition with the Rainier Valley car line.

Decreased Traffic Due to Jitneys.—For the twelve months ended July 31, 1921, the Virginia Railway & Power Company, Richmond, Va., carried 2,324,728 fewer passengers than for the previous year. The railway officials estimate that jitneys are taking about $600 a day from their railway.

Ten Cents Authorized.—The Grays Harbor Railway, Light & Power Company, operating between Montesano, Aberdeen and Hoquiam, Wash., has been permitted to charge a rate of 10 cents a ride on city and interurban cars, or three rides for 25 cents, according to a ruling of the Department of Public Works on July 29. The city officials of Montesano had protested against the recent change in fares, which provided for a 6-cent fare in the city and a 10-cent fare on the interurban, stating that no effort had been made to prevent jitney competition.

Requests Lower Rates.—Following approval of the City Council of Tacoma, Wash., City Attorney J. Charles Dennis has been instructed to prepare a formal petition to the Department of Public Works at Olympia requesting the Tacoma Railway & Power Company to sell thirteen tickets for $1 instead of the present plan of selling twenty-five tickets for $2. The move is the result of a petition filed with the City Council by Lorenzo Dow, who points out that the wages of railway men have been reduced, prices on materials cut, and he felt that it is unjust to require the people now to pay $2 in advance for twenty-five tickets. A letter has been sent to the railway, enclosing Mr. Dow's communication, and stating that the City Council is in sympathy with such a suggestion, and asking the company to consider it favorably. City Councilmen believe that the company would increase its business by a change of policy in its ticket sale.

Buses Comply With Law.—Under the bus regulation ordinance at Toledo, Ohio, thirty-six motor cars have registered and deposited their indemnity bonds with the city authorities. Already there have been charges of racing and combination on the part of buses on the Dorr Street line. Most of them operate in this part of the city. Independent buses came to Toledo to operate and were attacked by the organized busmen there. Offenders are threatened with revoked licenses unless schedules are properly maintained. Residents of Point Place, a lakeside suburb, have voted to remain loyal to the street cars which operate in their portion of the city. A special line was constructed some years ago to serve the community. It is a branch of the Toledo, Ottawa Beach & Northern Railroad and is operated by the Toledo Railways & Light Company. Recently buses have made such inroads that the railway service was threatened. The property owners, however, in a meeting voted 290 to 10 in favor of patronizing the street cars.

New Publications

McGraw Electric Railway Directory for August, 1921

The McGraw Electric Railway Directory is the cumulative result of more than twenty-five years' work. In the current issue more than 1,025 companies furnished new reports, and more than 5,000 changes were made from the preceding edition. The appendix contains a list of electric railways that are operating motor buses, and in the data published in the body of the book statistics are given of the number of motor buses operated.

The Engineer

By John Hays Hammond. Published by Charles Scribner's Sons, New York, 1921. Cloth 4 x 7 in., 194 pages.

To open the eyes of the youth in a quandary as to what career to follow and to aid him in analyzing his fitness for engineering is the purpose of the famous mining engineer in this valuable outline. Setting forth the qualities essential to success in engineering as imagination, integrity of purpose, accuracy of thought, capacity for judgment, ingenuity, curiosity, creative instinct and analytical ability, a standard is set by which one may measure his own fitness. Taking up successively the various main branches of engineering endeavor, the achievements to be expected in each field are vividly portrayed.

Mr. Hammond points with emphasis to the value to the engineer of a fundamental working knowledge of the English language. Finally, he pictures the engineer of the future as a man of ever-increasing importance and value to the community, both in his own profession and as an executive in government affairs, because his own training and preparation have imparted to him those very qualities of precision, honesty, aggressiveness and analytical ability, which are the prerequisites of true statesmanship. An engineering training, he concludes, so enlarges the vision as to enable one so trained to see national problems in their broadest aspects and thus be able to solve them accurately and permanently.

Personal Mention

A Rapid Rise to Manager

But 28 Years Old, L. P. Sweatt, Jr., Is Picked for Division Executive of Alabama Power

When the post of manager of the Eastern Division of the Alabama Power Company was vacated by the promotion of J. M. Barry, there was no doubt in the minds of the officials of that company as to the proper man for the place. L. P. Sweatt, Jr., had shown such a marked aptitude for, and knowledge of, the complex problems to be handled by a division manager, that he was immediately promoted to the position. Since the appointment, he has fully justified this belief and has made good in every way. Mr. Barry has been promoted to assistant chief engineer of the company, in charge of all construction work, with headquarters at Brimingham.

Mr. Sweatt was born in Montgomery, Ala., in 1893, but moved to Birmingham with his parents in 1902, where he attended grammar and high school, graduating from the Central High School in 1910. During the summer vacation period and at odd times during school days, he worked in the shop of the Louisville & Nashville Railroad in Birmingham under the personal supervision of the master mechanic. After graduating from high school, he worked for nearly two years on the construction of the new shop and power plant for the railroad at Boyles, Ala. Upon completion of the power plant at this point, he was transferred to the electric department and served as assistant engineer operating the power plant until 1912, when, realizing a long desired ambition, he entered the Alabama Polytechnic Institute at Auburn, to supplement with theory the practical knowledge gained with the Louisville & Nashville.

This practical power house experience caused him to apply for a position in the power house at school, and he was immediately appointed assistant power plant engineer. His work was very satisfactory and one year later he was made chief engineer for the entire power plant supplying light and power to the college and the city of Auburn. Working and studying at the same time proved such a satisfactory arrangement that Mr. Sweatt completed the full electrical course in three years and graduated in 1915. He immediately entered the services of the Alabama Power Company as a helper on substation maintenance, but was soon made a foreman, and in this capacity built the high-tension substation at Sylacauga and changed the Anniston substation from an indoor to an outdoor type.

In 1917 Mr. Sweatt was transferred to the commercial department, leaving the field for the office, where he assimilated the thorough commercial training that has since proved to be of great value to him as a division executive. In 1919 he returned to the operating department as superintendent of the Western Division, being later invested with the title of division manager, and his work proved so satisfactory that, as before stated, in the early part of this year he was sent to Anniston as manager of the Eastern Division, and is at present proving himself as adaptable there as he had shown himself to be in other positions.

L. P. SWEATT, JR.

Mr. Barry, who was Mr. Sweatt's predecessor, was manager of the Eastern Division for two years, coming to the Alabama Power Company from the Pacific Gas & Electric Company, Cal., where he had held several important positions in the operating, maintenance, and construction department. He is a native of San Francisco and is possessed of a very unusual engineering and executive ability. At present he is principally occupied in the construction of the "Mitchell Dam" 120,000-hp. hydro-electric plant at Duncan's Riffle on the Coosa River.

The Eastern Division of the Alabama Power Company controls the electric railway system in Gadsden and Anniston, comprising a total trackage of 22.2 miles and operating a total of 28 passenger cars. This division of the company controls the sale of electrical energy directly to consumers in local operations of about 15 town and cities. Indirectly, through other public service companies, five others are furnished with energy. In the area served there is an approximate population of 80,000.

F. D. Mahoney, commercial manager of the Alabama Power Company, Birmingham, Ala., was recently elected president of the Alabama Light & Traction Association, an old organization composed of officials of certain public utilities in that state. Mr. Mahoney, who was formerly second vice-president, succeeds H. H. Horner.

E. Don McKibben, for fifteen years an employee of the railway department of the Pennsylvania-Ohio Electric company in the New Castle district, has been appointed superintendent of Cascade Park. He assumed his new duties on July 7 and at once began the work of aiding in making the park season in New Castle a most promising one. Mr. McKibben is widely known all over the Pennsylvania-Ohio system and he carries into his new work the best wishes of his friends.

Frank Gest, for ten years in charge of the garage of the Pacific Northwest Traction Company, Seattle, Wash., and for four years previously foreman of the machine shop at Georgetown, resigned his position in July to accept one as foreman of the machine shop of the Seattle school board and also to have charge of the automobiles of the district. Mr. Gest's many friends in the company organization will regret his departure, while wishing him success in his new place. He has been succeeded in the company garage by S. S. Woodin, who for some time has been an assistant mechanic.

John C. Collins, who has been traveling supervisor of safety for the Los Angeles (Cal.) Railway, has come into charge of the safety bureau with the promotion of Hugo K. Visscher, former supervisor of safety, to the position of assistant superintendent of operation. In his work on the cars Mr. Collins has become well known to trainmen and they realize his extensive effort to help the cause of safety first. He has shown ways of avoiding many accidents that have been overlooked even by men years in service, and as supervisor of safety he aims to be of still greater help. He has been with the Los Angeles Railway for about twenty years and worked up from the train service to his present important position. For several years he was a member of the instruction department.

Obituary

Epes Randolph

Epes Randolph, president of the Arizona Eastern Railroad and the Southern Pacific of Mexico, whose death was announced last week, was one of the pioneer railroad men of the Southwest. He not only was a railroad builder of the Southwest and in Old Mexico, but had an important part in traction development, notably in Cincinnati and in Los Angeles, where he was formerly executive head of the Los Angeles Railway and the Pacific Electric Railway. At the time of his death he was an active director of the Pacific Electric Railway lines. He was also president of the California Development Company and of the East Coast Oil Company.

He began his railroading work in 1876, and from that year to 1885 he had served a half-dozen companies. Among them were the Alabama Great Southern, the Chesapeake, Ohio and Southwestern and the Kentucky Central. He was a civil engineer by profession and in that period he was engaged in location, construction and maintenance work, serving as assistant, locating, resident and division engineer and operating in several eastern states, Texas and Mexico.

Mr. Randolph in 1885 became chief engineer of the Kentucky Central, with headquarters in Covington, Ky. At the same time he served as chief engineer of the Cincinnati Elevated Railway and the Transfer & Bridge Company, for which he built a bridge over the Ohio River, connecting Covington and Cincinnati.

In 1890 he was made chief engineer and superintendent of the Newport News & Mississippi Valley Company, the Ohio & Big Sand Railroad and the Kentucky & South Atlantic Railroad, with headquarters in Lexington. The year 1891 found him in Louisville as chief engineer and general superintendent of the Chesapeake, Ohio & Southwestern and the Ohio Valley Companies. Mr. Randolph resigned in 1894, taking a trip to the West for his health. Although not in active service, he continued as adviser of several railroading and traction projects, notably the bridge over the Ohio River from Louisville to Jeffersonville, Ind.

A year after his resignation he became connected with the Southern Pacific Railroad and the most important period of his career began. For six years he was superintendent of the Arizona and New Mexico Divisions, with headquarters at Tucson, Ariz., where he made his home.

In 1901 Mr. Randolph came to Los Angeles to become vice-president and general manager of the Los Angeles Railway and the Pacific Electric Railway. He remained in Los Angeles three years, locating, building and operating some 700 miles of electric lines in Los Angeles and vicinity. While actively engaged in this work, Mr. Randolph was instrumental in projecting and constructing some of the most extensive lines of the Pacific Electric Railway. He returned to Tucson, Ariz., in 1904 to become president of the Gila Valley, Globe & Northern Railway and of the Maricopa, Phoenix & Salt River Valley Railroad, as well as the Harriman lines in Old Mexico. He became president of the consolidated companies when the Cananea, Yaqui River & Pacific Railroad lines in Mexico were absorbed by the Southern Pacific Company of Mexico and the other roads were merged with the Arizona Eastern Railway.

Mr. Randolph's death occurred very suddenly. Although for many years ill with tuberculosis he had made a valiant fight against the disease, and he had been recently attending actively to duties in connection with his executive positions.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

New Scrap Classification

Division of Purchases and Supplies of American Railway Association Revises Old Material Schedule

The American Railway Association, division 4, purchases and supplies, has prepared a new scrap iron and steel classification which will come up for adoption at that body's next meeting, which will take place in the spring of 1922. The classification is of especial interest to old material dealers because, if adopted, it will be used by all of the railroads and will eliminate the special classifications now in use.

The proposed classification follows the old store-keepers' classification more closely than any of the other various classifications. Thus far the only criticism of it reported by the dealers is that it does not stipulate that No. 1 steel rails is intended to cover rails used for rerolling purposes.

Axles, steel—Car and locomotive, 6 in. diameter and over at center.

Axles, steel—Car and locomotive, under 6 in. diameter at center.

Axles, steel, hollow bored.

Axles, iron—Car and locomotive, all sizes.

Angle bars, splices and fish plates, iron.

Brake beams, uncut.

Builtup bolsters.

Couplers and knuckles, steel and steel knuckle pins, punches, finger pins, bits,

Tools and tool steel—Worn out steel tools, tool steel, files, including old claw bars, pinch bars, spike mauls, track wrenches, picks, axes, adzes, chisels, drills, hammers, knuckle pins, punches, finger pins, bits, draft keys, bar steel weighing under 10 lb. per piece.

Frogs and switches, uncut—Steel and iron frogs and switches that have not been cut apart, exclusive of manganese material.

Malleable—All malleable castings.

Rail, iron, No. 1—Iron tee rail, 3 ft. long and over, tee section 40 lb. per yard and over, free from frog, switch, guard or crooked rail.

Rail, iron, miscellaneous—All iron rail, not otherwise specified, including guard rails, switch points and frogs, when cut apart. Does not include frog fillers or plates.

Rail, steel, No. 1—Standard section steel tee rails, 50 lb. per yard and over, 5 ft. long and over, free from badly bent and twisted rails, frog, switch and guard rails and rails with split heads and broken flanges. Note: All rail suitable for relaying must be classified as relaying rail separate from all scrap rail.

Rail, steel, No. 2—Cropped rail ends under 3 ft. long, 50 lb. and over, standard section.

Rail, steel, No. 3—3 ft. long and over, 50 lb. and over, standard section having split heads or ball of rail worn with wheel flanges, curved and bent rails, free from frog, switch and guard rails.

Rail, steel, No. 4—All sections of rail not coming under specifications of No. 1, 2 or 3 rail, including frogs cut apart, guard rails and switch points. Does not include frog fillers or plates.

Spring steel No. 1—Flat spring steel, including elliptic springs from which bands have been removed.

Spring steel No. 2—All coil springs, made from steel $\frac{3}{16}$ in. and over.

Manganese steel—To include all kinds of manganese rail, frogs and switch points, cut or uncut.

Steel, high speed—High speed steel turnings (butts and ends report separately).

Tires No. 1—All locomotive or car tires 36 in. and over inside diameter, smooth inside, not grooved for retaining rings or lipped.

Tires No. 2—All tires not included in tires No. 1.

Wheels, No. 1—Includes all solid cast iron car and locomotive wheels; no allowance for grease and dirt.

Wheels, No. 2—Includes all kinds of built-up or steel-tired wheels (specify kind in offering).

Wheels, No. 3—Includes all solid rolled, forged or cast steel car and locomotive wheels (specify kind in offering).

Wrought, railroad No. 2—All wrought under 6 in. long, not specified under No. 1 railroad wrought; to include track spikes, bolts, nuts, rivets and lag screws.

No. 3 brass—Journal bearings free from babbitt.

No. 5 brass—Yellow brass castings, to include coach trimmings, light brass, hose couplings, pipe, tubes, etc.

Copper cable, insulated—Specify kind.

Copper, No. 1—Wire free from insulation, flue ferrules, pipe and tubes.

Copper, No. 4—Battery copper.

Lead—Battery.

Lead—Battery mud or sediment (specify wet or dry).

Zinc—Battery or sheet (specify kind).

Drop of 3 Points in Index of Railway Material Prices

The index for street railway material for July, 1921, as computed by Albert S. Richey, electric railway engineer, is 164, as compared with 167 in June of this year. A year ago the index stood at 237, while the peak, which was reached in September, 1920, was 247. Prices as they existed in 1913 are taken as the base, which is 100.

The index of street railway wages has taken a drop of 5 during the last month, the figure for August being 218. This is a drop of but 13 points since August, 1920, at which time the index was 231, but one less than the peak also reached in September, 1920.

The average street railway fare Mr. Richey gives as 7.2 cents for August. This is a drop of .01 cent during the last month and a drop of .04 cent since May, 1921, when the peak was reached. The average as given for 1913 was 4.84 cents.

It can be seen that while street railway material cost 64 per cent more than it did in 1913 and wages are 118 per cent higher, fares are only 49 per cent higher than their 1913 average.

Proposed Subway and Tunnel for Havana, Cuba

Plans for the subway system and tunnel proposed for the city of Havana, says *Commerce Reports*, have been exhibited to a representative of the American consulate general at Havana, Cuba. Indications are that the necessary concessions for the work have been approved by the Cuban Railroad Commission, and that the Cuba North & South Railroad, organized to promote this project, has been completed in accordance with Cuban laws governing the organization of companies for railroad construction. A representative of the firm of engineers in charge (Sr. Serafin Sanchez Govin, No. 62 Villegas Street, Havana), holding a full power of attorney to act for the Cuba North

& South Railroad, declared his intention of going to New York in October or November to arrange for the necessary capital and expressed a desire to receive correspondence from persons in the United States who may be interested in either the structural or the investment possibilities of the project.

Heater Manufacturers Ready

Railways Should Order Heater Repair Parts Now to Insure Prompt Deliveries

Orders for electric railway heaters this season have not been up to the standards of other years, manufacturers report, although there have been several instances where the demand has been but slightly subnormal due to a few deliveries that have followed orders for new rolling stock. The buying of heater repair parts, on the other hand, is very backward in spite of the fact that the season is fast approaching for the railways to be putting their heater equipments in order. Such feeble activity in the repair-part line suggests that the general attitude of buyers seems to be to await actual necessity before placing orders.

Manufacturers and distributers claim that they are in a fairly good position in regard to deliveries; much better than they were at this time last year, when much difficulty existed in securing raw material. Stocks are not large, but are commensurate with the present demand. If railways whose needs are pressing but which are anticipating future requirements should suddenly decide to place their orders considerable delay and congestion will be inevitable.

Prices have seen but slight changes on the whole. One jobber, however, reports a reduction of 10 to 12 per cent on prices existing several months ago. Manufacturers as yet have not seen fit to reduce prices, claiming that costs do not yet warrant any reduction and that heater prices never did soar out of sight.

The subnormal activity in the demand for heater repair parts perhaps may be accounted for by the comparatively mild weather of last winter. However, if the predictions of the seers are to be given credence that we are due for a hard winter this year, the railways had better get busy so that they may not be caught unprepared.

Calcutta Electrification Considered

Advices through the Guaranty Trust Company, New York City, state that the electrification of the suburban railways within 25 miles of Calcutta, India, is considered.

Electric Railway Projected in Piedmont Province, Italy

The Department of Commerce advises that a committee has been formed to draw a plan for the construction of a new electric railway from Mondovi to Cuneo, in northern Italy.

Rolling Stock

Los Angeles (Cal.) Railway is in the midst of an extensive program of rebuilding 98 cars. Reconstruction has passed the half-way mark and 50 new car motors of the latest type have been received and are being installed at a total cost of about $75,000. The cars being rebuilt are to have larger loading platforms, thus increasing their length about 10 ft. The new motors are Westinghouse 526, 50-hp. machines, of the ventilated, box type.

Franchises

Central California Traction Company, San Francisco, Cal., has made application for a franchise for a period of fifty years to construct, maintain and operate a railroad track of standard gauge in Stockton, San Joaquin County.

Portland-Linnton (Ore.) Railway has been granted a franchise to build and operate a street railway from Portland to Linnton using certain trackage of the United Railways. It is believed that work on the line will be started soon and it is estimated that $40,000 will be expended on the new line.

Graham, Va., is offering for sale and advertising for sealed bids by Aug. 20 a franchise to construct, operate and maintain an electric street railway in that town.

Charleston-Dunbar Traction Company, Charleston, W. Va., has applied through its president, Isaac Lowenstein, for a franchise which will give a direct connection between both companies operating in Charleston. The franchise asked for would permit the Charleston-Dunbar cars to use the interurban company's tracks on Charleston Street between Elk River and Edgewood and thus obviate the Charleston-Dunbar long detour through the west side. President Lowenstein explained that the purpose of the application for the franchise was to secure a harmonious working arrangement between the lines of the Charleston-Dunbar Company and the Interurban company as rapidly as possible, and he intimated that the plans now in process of formation may ultimately lead to the operation of the two lines under a joint management that would be to all purposes practically a consolidation.

Track and Roadway

Concepcion-Horqueta Railway may be extended to the Brazilian border in accordance with a project now under consideration by Brazil and Paraguay. The line would be linked up from Bella Vista with the Noroeste at Campo Grande or at Pedro Juan Caballere with the branch of the Sorocabano now being built west from Botucatu. Traffic for this railway would consist principally of cattle and hides.

Ottawa (Ont.) Electric Railway is relaying 1½ miles of track with 80 lb. T-rail and is equipping a new transformer room at a substation.

Dallas-Terrell Interurban Railway will start work about Sept. 1, according to C. W. Hobson, vice-president of the Dallas Railway, which is to build the new line. Mr. Hobson said that the proposed road would cost approximately $1,800,000. Nearly all of the right-of-way has been obtained and orders for materials are being placed. The line is being constructed in compliance with the terms of the franchise under which the Dallas Railway is operating.

Wichita Falls (Tex.) Traction Company is building approximately 4,000 ft. of new track through paved streets. The company expects to build this track with 75-lb. standard T-rail with special trackwork of 120 lb. high T-rail. The contract for all special trackwork has been let to the Lorain Steel Company, Johnstown, Pa., and shipment is expected to be made within the next fifteen days. Dayton mechanical steel ties and joint ties set on 2-ft. centers are to be used for all of this work. The company also expects to build some 2 miles of track in other parts of the town, beginning at the intersection of Broad and Thirteenth Street, and running south on Thirteenth Street, making an intersection with the present line, which is known as the Southland line. This, when completed will save an operation of some sixteen blocks on each round trip. Plans are also being made to build in the near future a line across the Wichita River into the refinery district.

Danville Traction & Power Company, Danville, Va., has been overhauling one of its double tracks on Main Street from the Municipal Building to Mt. Vernon church. The grade of the tracks has been raised three-quarters of an inch.

Power Houses, Shops and Buildings

Lexington (Ky.) Utilities Company is preparing to spend $100,000 for new buildings and new equipment.

The Twin City Rapid Transit Company has begun to replace the chain grates in its steam plant on the Mississippi River in Minneapolis with Westinghouse underfeed stokers. The six boilers already re-equipped have increased their rating from 175 per cent to 300 per cent. The plant altogether has twenty-eight boilers and ultimately all will be equipped with the stokers, the purpose being to keep the steam plant up to the complete quota of demand. This steam plant was first equipped in 1903 with Westinghouse Roney stokers. In 1910 these were changed to chain grates. The capacity of the plant is 50,000 kw.

Salt Lake, Garfield & Western Railroad, Salt Lake City, Utah, suffered a fire on Aug. 8, which almost totally destroyed its carhouses and rolling equipment. The loss, which is estimated at $150,000, is fully covered by insurance. No serious curtailment of traffic has resulted, as plans were immediately put into effect for the hiring of equipment with which to continue service. The carhouses will be rebuilt.

Trade Notes

D. J. Bokes has been appointed manager of the Charleston, W. Va., office of the Automatic Reclosing Circuit Breaker Company, of Columbus, Ohio, with headquarters at 110 Hale Street, Charleston.

R. L. McLellan, formerly of the Chicago office of the Westinghouse Electric & Manufacturing Company, has been appointed assistant to director of heavy traction, with headquarters at the New York office.

The Crane Company, manufacturer of pipe valve fittings, steam fittings, etc., is constructing a new one-story building 100 ft. x 145 ft., adjoining its present works at 490 Cherry Street, New York City. The cost is estimated at $28,000. The new building will be used for assembling purposes and to provide storage space for material being held for export.

The Glidden Company, Chicago, through its president, Adrian D. Joyce, has been successful in making arrangements for the manufacture and distribution of ripolin enamel paint in America. It will be more extensively advertised and merchandised than ever before. It is known in this country largely for its merit as a long life interior and exterior architectural enamel and in European countries has attained its greatest distinction as the best finish for all types of railway rolling and signal equipment. This enamel will be manufactured according to the original formulæ in the various factories comprising the Glidden organization. Quantities of ripolin have been imported to take care of the demand until the American manufacturers can produce it themselves under the supervision of foreign experts, who are now on their way to this country.

New Advertising Literature

Ohmer Fare Register Company, Dayton, Ohio, is now distributing throughout the railway field a booklet on the Ohmer system of fare collection. The influence of a printed record on the conductor is outlined as well as the possibilities of the company in making use of the information on this record.

General Electric Company, has just made available bulletin No. 46041 which fully describes a device known as the type H-2 A-C temperature indicator. This instrument affords the operator an easy and convenient means of determining at the switchboard the hot-spot temperature of the windings of transformers under all operating conditions. The bulletin also contains a complete wiring diagram for this apparatus.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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A West Virginia Railway Power-Plant Pump House on Stilts

SO IMPORTANT in power plants is the provision of ample and reliable supply of condenser circulating water that in many if not in most cases the location of the plant is determined largely with reference thereto. In examining a plant, therefore, among the first questions asked by the observing engineer are those referring to this feature.

In the design and construction of condensing-water systems many items have been standardized and have therefore become commonplace to engineers, but in each worth-while plant there are outstanding novelties that repay careful study. An example is furnished by the improvements recently completed in the power plant at Kenova, W. Va., which furnishes power to the Ohio Valley Electric Railway. These improvements are covered in some detail in an article in this issue. Here the supplying of water in sufficient volume was complicated by the distance of the power house from the natural source, the neighboring Big Sandy River, and the considerable elevation of the station above the river. Worse yet, the river is subject to annual floods, and the bank where the pumping plant would need to be placed, if the river water was to be utilized, is quicksand to a considerable depth. Previously the circulating water was cooled near the plant by means of ponds, but when forced to secure more water and cooler water the engineers "took the bull by the horns" and designed a plant for erection on the bank. They had to do some careful planning to insure satisfactory results.

The first consideration involved in the design was reliability. To get this meant that the machinery used must be simple and rugged. Induction motors of the slip-ring type met these specifications, as did also centrifugal pumps located under low-water level and direct-connected to the pumps. Of course the motors had to be placed above high-water level. The weight-carrying bearings, one to each unit, were incorporated in the motor frames and are thus always accessible. Reliability was further assured by the provision of duplicate units, and by retaining the former cooling ponds for emergency use.

The other main design factor was sufficiency of supply. This was insured by the use of liberal motor and pump capacities and by installing pipe lines of large cross-section.

Referring further to the structural difficulties imposed by flood and quicksand conditions, it will be noted that the structure had not only to be placed on a solid footing but it had also to be made strong to resist the surge of the water. Provision had, in addition, to be made against erosion of the bank on which the foundation was placed. These facts need to be held in mind as the account of the actual construction is read, in order that the real lesson of the story may be appreciated. The unusual form of the structure which is consequent upon these facts then appears to be a logical one.

In the article already referred to, attention was properly focussed upon the pump house. There is, however, a physically inconspicuous structure located part way between the pump and power houses which should not be overlooked. This is the sealing well. It is the terminal of the draft pipe from the condensers, its function being to insure the utilization of as much suction head as possible in the circulating system. Of course, all condensers have draft tubes, which have to be sealed, but the form which this one takes is a little out of the ordinary. The sealing well is of further interest as the possible future source of water for the neighboring towns. That there would be ample water for this purpose can be seen from a simple calculation. Assume an average load of 10,000 kw. on the plant for twenty-four hours per day. Then if each kilowatt-hour requires 16 lb. steam and each pound of steam 40 lb. of condensing water, the total daily weight of water will be 154,000,000 lb. and its volume more than 19,000,000 gal. At 200 gal. per day this would provide water for 95,000 people, which is more than the population which will need to be served for some time to come. However, whether the sealing well ever becomes a source of water supply or not, it is performing an important, albeit simple, function.

The sealing well, the pump house, the pipe line, the spillway over which the waste water slips back into the river, and the auxiliary cooling ponds of the Kenova power plant, taken all together, form an equipment which is playing an important part in the reduction in coal consumption from more than 3 to 2 lb. per kilowatt-hour which has recently been accomplished. They represent money well invested.

Mr. Harkness Discusses New York Transit Situation

AS INDICATED last week, the affairs of the Interborough Rapid Transit Company in New York City were again placed in a critical situation by the application for a receivership. Another factor which enters into this situation and which ultimately will probably have a greater influence than anything else, not only on the solution of the difficulties of the Interborough but on the whole New York City traction situation, is the impending report of the New York Transit Commission. This report is expected about Sept. 15, and while there is no official indication as to the nature of its contents and recommendations, the remarks of one of the members, LeRoy T. Harkness, before the American Bar Association at Cincinnati doubtless is an indication of the attitude of the commission.

Mr. Harkness' statement presents what is probably as broad and impartial an analysis of the New York traction situation as has ever been made. It treats candidly and frankly of a situation filled with complexities, and a long history of financial, engineering, social and political developments. The address is given in substantially complete form elsewhere in this issue, as it is believed that it will prove useful to railway men and men in public life who are interested in the solution of metropolitan transit problems any place in this country.

Mr. Harkness—and this probably means the entire commission—has not dealt lightly with either railway management or politician where he believes them to be at fault. Such candid and fearless studies and analyses of traction problems cannot but eventually result in equitable solutions even though that may entail some discomfiture and some radical measures in the process.

Present Indianapolis Difficulties Not Deep Seated

INDIANA having passed a law permitting utilities to surrender local franchises and place themselves entirely under the jurisdiction of the state public service commission with the authority of an indeterminate state permit, the Indianapolis Street Railway chose to exercise this option. All was well until the company had to ask the city to legislate the jitneys off the streets. Then the city, having no contract with the company, wanted to know what guarantee and what control of service it would have in return for removing this ruinous and acknowledged unfair competition. It wants the company to sign a contract restoring local control, at least as to matters other than valuations and rates of fare. It would thus appear that the plea of the company for elimination of the jitney is being used as an opportunity to force submission to what may be an undesirable contract.

Two thoughts are inspired by this situation. First, it brings out clearly the injustice of having the street cars subject to state regulation while jitneys are subject to city regulation and outside the jurisdiction of the state commission. What is manifestly unfair competition is beyond the power of the commission to remove or correct, and no regulation of the railway, however enlightened, can place it in a position adequately to serve the public and earn a fair return in the face of unregulated, irresponsible and practically tax-free jitney or bus competition.

If the two forms of transportation are desired by the public, they should be under the same regulating body, else there will inevitably be the clashes between company and regulating body added to clashes between regulating bodies, with politics on both sides. This is a situation that must be recognized. For if the unfair competition springing from such divided authority is permitted to continue long, the street railway will have to cease operation. Fortunately, the city council of Indiana's capital city seems to have a much better and fairer conception of the position of the street railway than did the council in Des Moines, and there is also a fuller appreciation of what a complete shut down of car service would mean to the city, so that it seems likely that the jitneys will be properly dealt with before the railway is forced to the extreme action that became necessary in the Iowa capital.

The second suggestion which naturally presents itself is with reference to the needlessness of the contention of the Indianapolis city council that the railway must contract again with the city in order to provide a working agreement that will avert the probability of an appeal to the state commission on every order that the city may make. This seems to be begging a point for an issue, for the city's rights and interests are amply protected without a contract. It always has the right to be heard before the commission, and certainly its arguments will have at least equal weight with those of the company.

Hence it would seem that with so slight a difference between the company and city and with such an apparently good understanding of the real transportation problem of today, the city council should not continue long to decline to relieve the street railway from the present unfair competition. Certain it is that whether the existence of unregulated jitney competition is due to indifference or willful retaliation of the city council or to divided regulation, or to some other reason, both forms of transportation cannot continue to exist in competition with each other in a business which is undeniably best handled as a monopoly. Some answer must be found soon, and this applies in practically all cities as well as in Indianapolis. And if the city officials are truly desirous that the decision made shall be for the best interests of the people of the city, there is no danger of a cessation of street car service.

Good Will the Main Object in Traffic Advertising

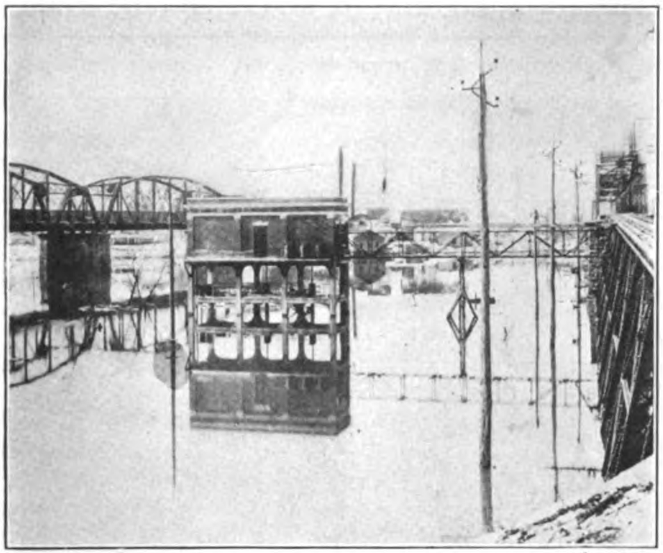
A MAN who is responsible for some of the most elaborate traffic advertising in the world was asked by a representative of this paper whether the expense justified the results. "If you mean whether the extra traffic brought in would pay for this advertising," he replied, "I will say no. But that is not the underlying reason for this publicity. We would keep it up if we didn't have room for another passenger. It is good will we are after in this work. Every person who has the problem of 'Where or how or when to go' settled for him by these advertisements is a better friend of ours than he was before we took an interest in his spare time. Whether a man goes to such and such a place or not or whether he personally needs that time-table data, we want him to feel on reading the poster that we are alive; that we are always thinking of his needs, present or future. We don't take the all-too-common attitude that the patron, whether regular or transient, knows the roadway and train designations as well as our own transportation staff. So we would rather do too much than do too little to guide the 'fare guest,' to use a happy German term for the person on whom our business existence depends."

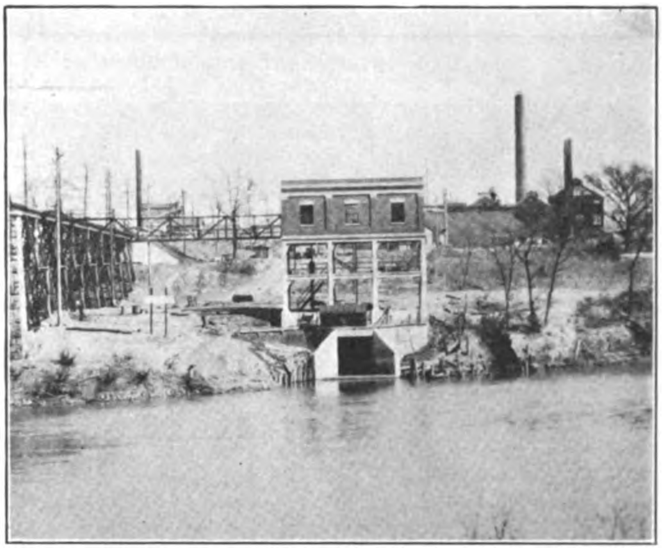
This broad-minded view of traffic advertising is precisely that of the real business man in relation to his own products. He does not try to trace the sale of every pair of shoes to a specific advertisement. It is enough for him if the public acquires the idea that he is awake to the problems of the shoe user. There is good-will value in his advertising tennis shoes in summer and overshoes in winter, even if they sold themselves. So, too, the great mass of passengers who take their two rides a day unvaryingly may not need any time-tables, traffic posters, thorough destination signs or street stops, but every evidence they see of a desire to help the passengers who do need these aids goes down to that good-will account which can prove so helpful when fares are to be adjusted, accidents to be paid for or new contracts to be entered into with the community. Therefore, let not the advertising account be scanned too closely in relation to passenger increase, but rather let it be treated as a good-will account of intangible but undoubtedly high value to the well-being of the concern as a whole.

Novel Condenser Pump House

American Railways Power Plant at Kenova, W. Va., Recently Enlarged in Capacity, Now Derives Circulating Water from New Electrically Driven Centrifugal Pumps, Housed in a Structure Which Is Designed to Be Flood Proof

THE Ohio Valley Electric Railway, the headquarters of which are at Huntington, W. Va., draws its power supply from a plant located at Kenova, operated by the Consolidated Light, Heat & Power Company. Both of these properties are controlled by the American Railways Company, Philadelphia, Pa. Due to the rapidly increasing load on this power plant, which was originally designed by James Fagan, it has been necessary to make successive improvements within the past few years, one of the most notable of which has been the installation of a pumping plant for condenser circulating water on the bank of the Big Sandy River near the plant.


PUMPING PLANT FROM LAND SIDE IN FLOOD SEASON, SHOWING TRANSFORMERS IN POSITION ON BALCONY


PUMPING PLANT ON THE BANK OF THE BIG SANDY RIVER, WITH POWER PLANT IN DISTANCE

The increasing demand on the plant can be realized from the fact that its output is now 70,000,000 kw.-hr. per annum, as compared with 15,000,000 kw.-hr. eight years ago. The overload on the plant, in overtaxing the condensers due to their limited supply of cool condensing water, resulted in a coal consumption of about 3½ lb. per kilowatt-hour.

Due partly to the installation of the new condensing-water circulating equipment, the coal consumption has been cut down to about 2 lb., and it is estimated that the cost of the improvement, $150,000, will have been covered by the saving effected in about ten months of operation. A vacuum of from 28 to 29 in. referred to a 30-in. barometer can now be maintained.

POWER PLANT HAS AN ASSORTED EQUIPMENT

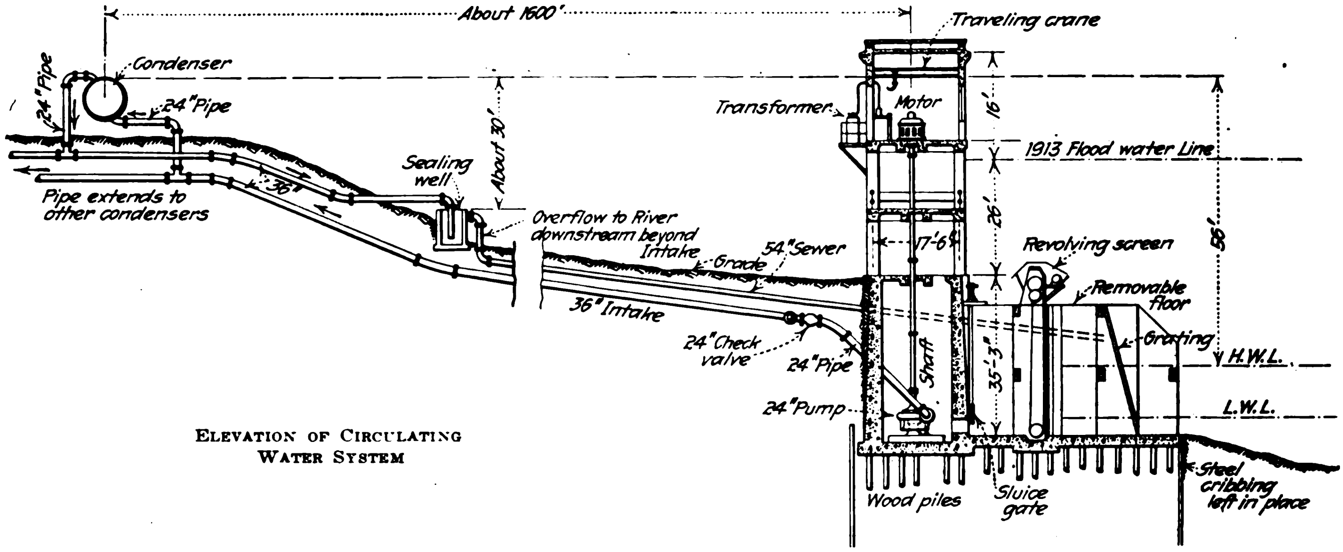
When this plant was taken over by the American Railways in 1910 the generating equipment in the station consisted of three 600-kw. and one 1,200-kw. cross-compound engine-driven generators, and the boiler equipment comprised four 400-hp. Altman-Taylor boilers and three 300-hp. vertical Berry boilers. The plant was operated with jet condensers, the condensing water being cooled in a pond. This was considered the most economical arrangement because when the power plant was originally installed various considerations dictated the wisdom of placing it about 1,600 ft. back from the Big Sandy, on an elevation well above high-water mark in the flood season. The river rises normally about 30 ft. each spring, the flood occurring in March or earlier. The record high water was that of 1913, when the rise was 40 ft. No spraying devices were used in connection with the pond in the original plant.

Shortly after the plant was taken over, two 1,000-kw. Allis-Chalmers turbines were put in, one being a high-pressure and the other a low-pressure machine. A spray system was installed in the pond, and an extension to the boiler house was built to house seven additional B. & W. boilers, three of which were used to replace the old Berry boilers.

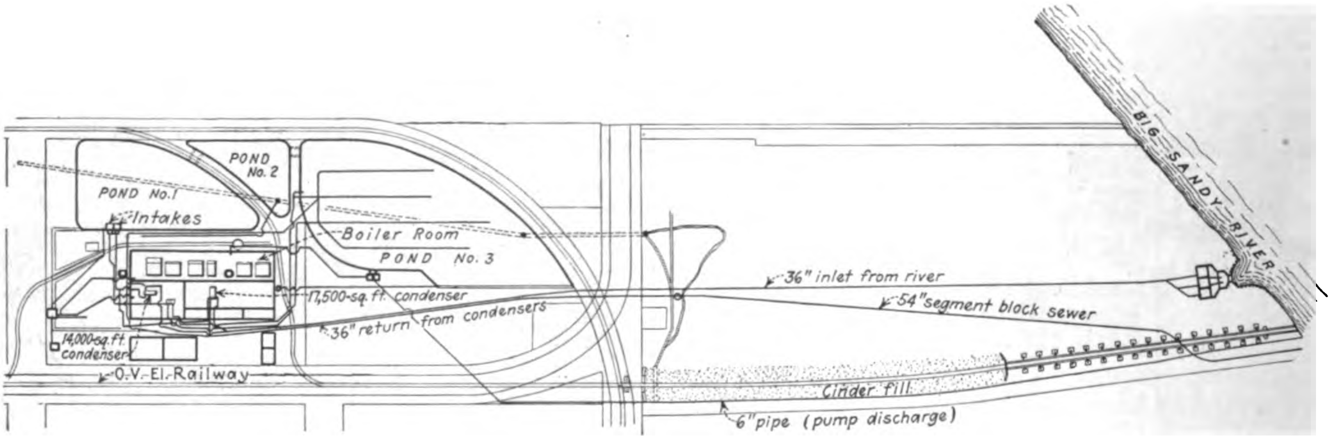
As soon as this equipment was installed the demand on the station increased so rapidly that it was decided to install a 7,500-kw. General Electric turbine with a surface condenser. When this unit was operated in connection with the spray pond, the load continuing rapidly to increase, it was found that the capacity of the pond had been exceeded.

Further, an additional generating unit was found necessary, and a 12,500-kva. (10,000-kw. at 80 per cent power factor) General Electric turbine was installed. This made absolutely necessary the increase in facilities for supplying circulating water and the decision was reached to install an electrically-driven pumping plant that would provide for future as well as immediate needs. The details of this are given in the following paragraphs and the accompanying illustrations.

The new pumping plant displaces the old spray pond as far as the original purpose of the latter is concerned, but the pond is kept in good condition for emergency service, as a reserve against breakdown of the water main connecting the pumping station with

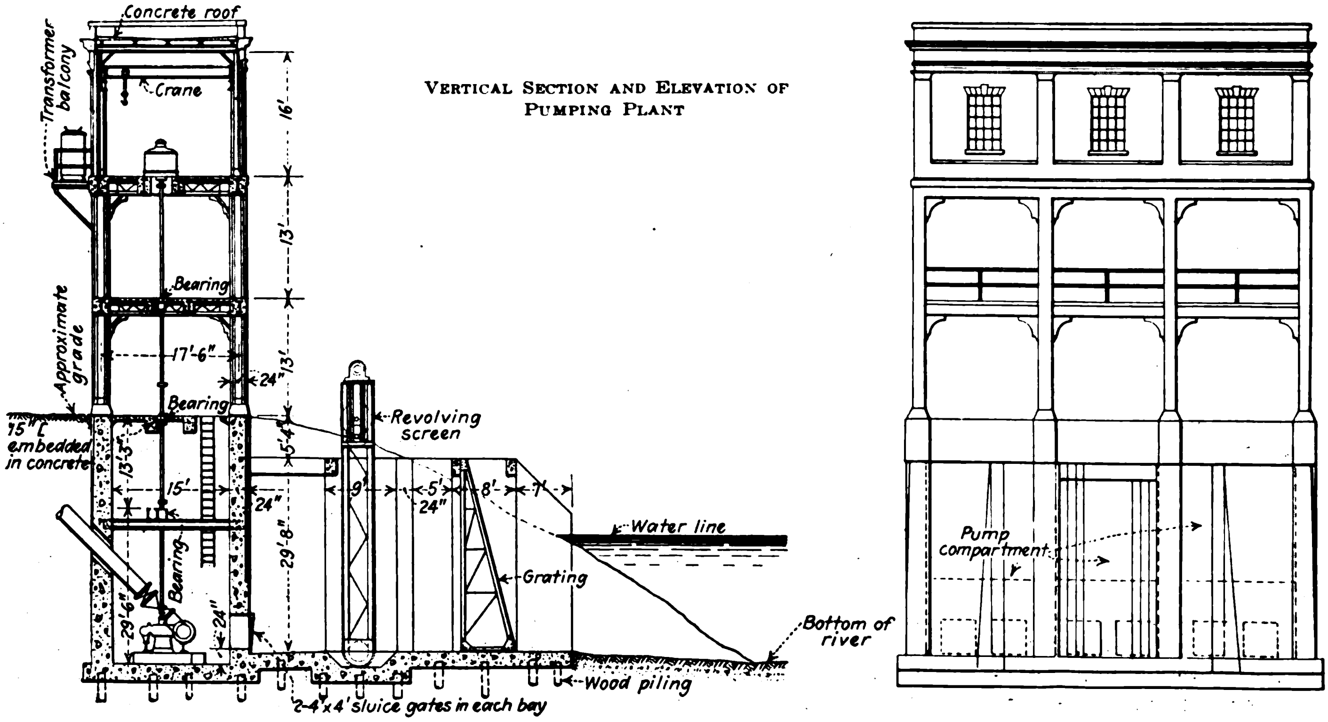

About 1600'
Traveling crane
Condenser
24" Pipe
24" Pipe
Pipe extends to other condensers
36"
Sealing well
About 30'
Overflow to River downstream beyond Intake
Grade
54" Sewer
36" Intake
24" Check valve
24" Pipe
24" Pump
Transformer
Motor
16'
1913 Flood water Line
26'
17'-6"
56'
Revolving screen
Removable floor
Grating
H.W.L.
L.W.L.
Shaft
35'-3"
Wood piles
Sluice gate
Steel cribbing left in place

ELEVATION OF CIRCULATING WATER SYSTEM


POND No. 1
POND No. 2
POND No. 3
Intakes
Boiler Room
17,500-sq. ft. condenser
14,000-sq. ft. condenser
36" return from condensers
O. V. El. Railway
36" inlet from river
54" segment block sewer
BIG SANDY RIVER
Cinder fill
6" pipe (pump discharge)

OUTLINE PLAN OF CIRCULATING WATER SYSTEM

VERTICAL SECTION AND ELEVATION OF PUMPING PLANT


Concrete roof
Transformer balcony
Crane
16'
13'
Bearing
13'
17'-6"
24"
Approximate grade
Bearing
15" L embedded in concrete
13'-3"
5'-4"
15'
24"
29'-8"
Bearing
29'-6"
24"
Revolving screen
9'
5'
24"
8'
7'
Water line
Grating
Bottom of river
2-4'x4' sluice gates in each bay
Wood piling
Pump compartment

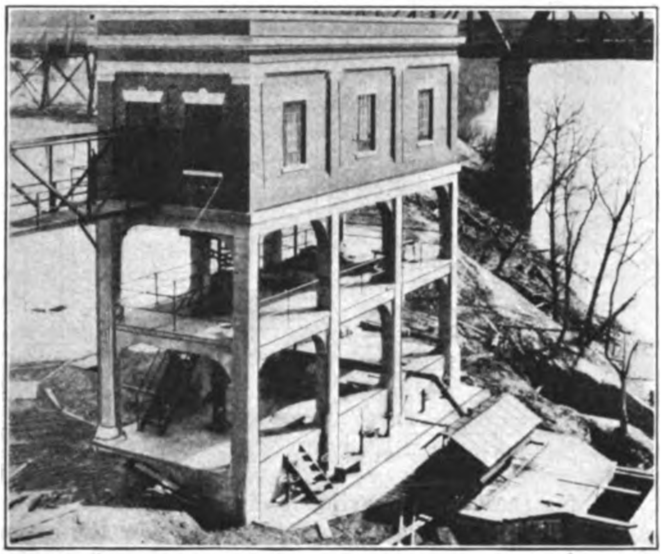
Cross Section

West Elevation

the power plant. It also serves a purpose as a settling pond from which water can be taken for boiler-feed and other plant purposes, a desirable feature in view of the sediment contained in the Big Sandy River water.

In the boiler room two 1,000-hp. B. & W. boilers were installed to furnish the steam required for the increased turbine capacity. These are equipped with B. & W. superheaters and Westinghouse underfeed stokers. These boilers can be operated at 200 per cent above normal rating. Besides these boilers the plant now contains eleven other boilers of 400-hp. rating each, the total rated boiler capacity thus being 6,400.

Summing up the present turbine and engine installation it will be seen that it is somewhat assorted. Inherited from the early days are the 1,200-kw. cross-compound Wetherill-Corliss engine-driven unit and two 600-kw. units with Harrisburg Foundry & Machine Company engines, one of the 600-kw. units having been displaced. These three machines have General Electric generators. There are also the two 1,000-kw. Allis-Chalmers units, the low-pressure machine using exhaust steam. Jet condensers are used with these machines, which are called upon only in emergency. Finally, there are the newer 10,000-kw. and 7,500-kw. turbines with surface condensers.



CONSTRUCTION VIEW OF PUMP HOUSE, RIVER AT LOW LEVEL

FLOOD CONDITIONS A CONTROLLING FACTOR IN NEW PUMPING PLANT

Coming now to the new pumping plant, it may be said in general that it comprises a reinforced concrete structure to house ultimately three vertical, electrically driven pumping units, each of a capacity of 20,000 gal. per minute. Of these only two are installed at present. The pumps are set below low-water level and the motors above high-water level, considering the record rise of 1913. The construction of the plant was begun in October, 1918, and it was completed in the summer of 1919.

The structural steel-concrete structure has the form shown in the accompanying illustration, with the pump chamber floors well below river level, and the motor room high above, supported on substantial columns. The steel for the building is a complete structure in itself, although it is incased in concrete.

The structure rests on a sandy soil, and it was necessary to go down about 40 ft., nearly to bedrock, with the foundations, for the purpose of locating the pumps below low-water level and also to obtain a solid foundation for the whole structure. The foundation space was inclosed with sheet steel piling, which was necessary to keep out the quicksand during construction. After the excavation had been carried down to the depth mentioned, short wood piles were driven and a 27-in. concrete cap was cast over their tops.

In order permanently to prevent spreading of the quicksand, the sheet-steel piling was left in place, but was cut off by means of a gas torch so as to salvage all that was not needed for permanent use.

A MOTOR ROOM ON STILTS

Resting on the foundation are the walls for the three pump chambers and the intake, as well as the concrete-steel columns of the superstructure. The form of the walls is shown in the outline drawing reproduced. It will be noted that the walls of the intake are of irregular form. This was selected to give the maximum resistance to the earth pressure, as well as to accommodate the screens and gates. The pump chambers are roofed with concrete slabs, which also serve as a floor for the superstructure.

MOTOR ROOM, WITH SWITCHBOARD IN BACKGROUND

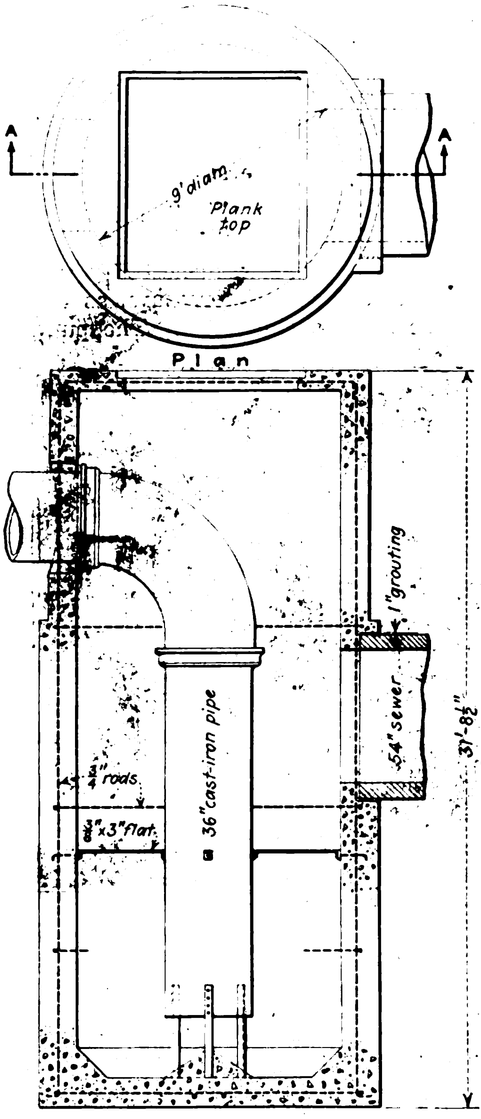
The columns supporting the motor house are of latticed-type section, incased in concrete. Lattice columns and girders were used because when they are incased in concrete the concrete forms a solid mass. This part of the structure was necessarily of open form to present a minimum of resistance to the floods. A floor was installed half way up to give access to the shaft steady bearings and to stiffen the columns.

Design features of this superstructure, in addition to economy in the use of materials, were (1) strength to resist floods, and (2) stiffness to prevent vibration from the motors set high above the foundation.

The motor house, built atop this novel support, is of attractive design, the architectural features having been determined by the fact that one of the railway company's lines passes over a viaduct within a hundred feet of the building. The walls, of brick, were built on a reinforced cap on the columns, with brick pilasters and terra cotta cornices for adornment.

The pumps, located well below low-water level on the floor of the pump pits, are of special design for their particular duty in this plant. Their speed is 600 r.p.m. and they have an "unloading characteristic," that is, the power which they demand is in direct proportion to the head. They are designed for a maximum head of 60 ft., although the usual working head will be about 40 ft., and an efficiency at full load of 82 per cent.

The location of the pumps under water insures water sealing at all times—in other words, they are self-priming. There is thus no danger of loss of water through leakage, an important feature as the pumps are so far from the power plant. Obviously, serious trouble in the condenser system would be caused by the pumps "losing water" or failing to start up the water circulation promptly. The flow of water to each pit is controlled by two 36-in. x 48-in. Newburgh sluice gates. These are watertight and they permit the closing off of a pit, so that the water can be pumped out to permit repairs to the pump. Near the mouth of the main intake is an inclined trash rack and in the intake to each pump pit is a traveling screen made by the Chain Belt Engineering Company. Each screen slides in guides formed of angle irons mounted in the concrete walls of the divided intake. A grab-bucket derrick is installed near the intake for the purpose of clearing it of the débris which at times accumulates in large quantities.



Section A-A
DETAILS OF SEALING WELL

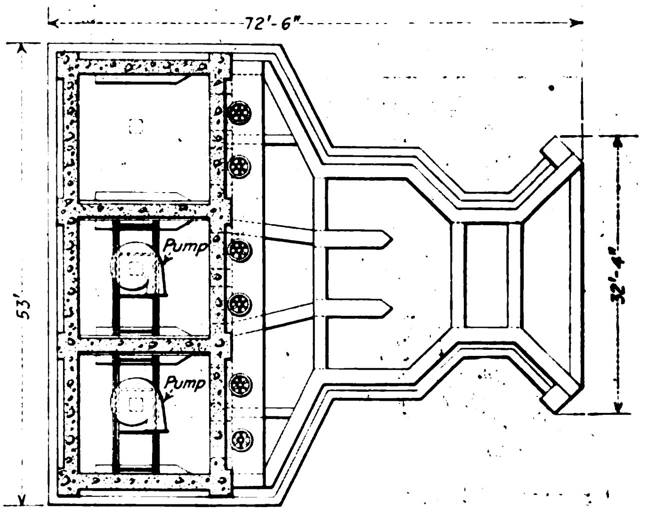
The motors driving the pumps are of the induction type, with slip rings to permit the insertion of starting resistance in the secondary circuit. Their synchronous speed is the rated speed of the pumps, 600 r.p.m., and their capacity 425 hp. each. They are supplied with power through a bank of three 200-kva., self-cooling, oil-cooled transformers, mounted on a bracket-supported balcony behind the motor house. In addition there is a bank of three 150-kva. transformers for emergency use. These lower the voltage of the three-phase current from the power house from 11,000 to 440. The switchboard controlling the motors and power circuits is located in the motor room near the wall next to the transformer balcony.

To facilitate repairs the motor room is equipped with an Alfred Box traveling hand-operated crane.

ROTATING PARTS HANG FROM ONE BEARING

The rotating element of a pump-motor unit, comprising motor armature, shaft and pump impeller, and weighing from 5,000 to 6,000 lb., is supported by one bearing of the "thrust" type, located on the top of the motor frame. This bearing is water-cooled. Steady bearings, as shown in one of the reproduced drawings, are provided for the 5-in. shaft at several levels.

With the present arrangement of motor-pump unit a pump can be put into action in less than one minute. This quick start is possible because all that is necessary is to throw in the motor switch. The pumps are always primed because they are located below low-water level and, as there is a check valve in each discharge pipe line, no manual operation of a valve is necessary.



PLAN OF PUMP PITS AND INTAKE

Oil for the thrust bearing is circulated by means of a small belt-driven rotary pump, hung below the motor frame.

The pumps, motors, transformers and electrical auxiliaries were furnished by the Allis-Chalmers Company. The electrical work and installation of the machinery are to be credited to the local force of the utility company.

INGENIOUS SEALING WELL UTILIZES SUCTION HEAD

The discharge from each pump is through 24-in. cast-iron pipe, the three pipes uniting in a 36-in. main. From this, branches lead to the several condensers.

The main discharge pipe from the condensers is also 36 in. in diameter. It leads down the hill to a sealing well of concrete, of 9 ft. inside diameter and 30 ft. inside depth. This return or draft pipe leads down centrally through the well, nearly to the bottom, from which the end is supported by T-irons "concreted in."

A conical spreader was cast in the well bottom to prevent formation of eddies. The sealing of the draft tube in this well eliminates about 20 ft. of head from the circulating water circuit.

From the sealing well a 54-in. interlocking-tile sewer overflow leads to the driver bank, discharging 1,100 ft. downstream from the pumphouse. The discharge is over a planked spillway in which a drop of more than 20 ft. occurs at low water. This gives a source of water power which may be utilized at some future time. Also the sealing well may at some time be tapped for water supply for the neighboring population, as this water is reasonably free from sediment due to the screening and the opportunity for settling.

This plan, reproduced on page 388, shows a 6-in. cast-iron pipe which carries the overflow from the old spray pond. It leads from a cistern located near the pond wall to a point on the river bank below the pump house. This pipe line is utilized in washing the intake screens of the pump house, as it furnishes a head of 80 ft., which is ample for the purpose.

The general development of this plant is due to the foresight and careful planning of General Manager H. J. Crowley and President Van Horn Ely. A word of credit is due the engineers who are responsible for the construction described, which was of more than ordinary engineering difficulty, due to the nature of the soil on the river bank and to the frequent inundation of this bank. The whole design was made under the direction of A. Kuylentsjerna, mechanical engineer American Railways Company, and the erection was done under the supervision of James Fagan, engineer of the company, located at Huntington. The steel work was furnished and erected by the Pitt Construction Company of Pittsburgh.

Bonded Intersections Recommended

Study by Bureau of Standards Results in Recommendation for Interconnection of Track Crossings of Detroit United Railways and Municipal System

IN A REPORT recently rendered by the Bureau of Standards to the Michigan Public Utilities Commission in the controversy of long standing between the Detroit United Railway and the Street Railway Department of the city of Detroit as to whether the track intersections of the two companies should be insulated or bonded the Bureau of Standards reaches the conclusion that best results would obtain if the two systems were electrically interconnected. In the course of the construction of the Detroit municipal system it became necessary to cross the tracks of the Detroit United Railway at numerous points, and the officials of the municipal system desired to make these crossings of the bonded rather than the insulated type. This form of crossing was objected to by the Detroit United Railway and subsequently, through the action of the State Legislature, the question was placed under the jurisdiction of the Public Utilities Commission. On June 1, 1921, the commission requested the Bureau of Standards to take charge and make an investigation, and report which type of crossing should be used. The bureau was requested to make such investigation as was deemed necessary and received full authority to do so. In co-operation with the two railway companies and an electrical engineer of the commission a study was made of the various factors affecting the problem, including the measurement of roadbed resistance, the magnitude of current drainage under various conditions, etc.

The arguments presented by the city in favor of interconnecting the two systems and in opposition to insulating the crossings were that (1) bonded crossings conform to standard practice; (2) the American Committee on Electrolysis and the Bureau of Standards recommend the bonding of different railway systems at points of intersection; (3) experience of insulating joints in Detroit under conditions practically identical with the present has proved unsatisfactory; (4) effective insulation cannot be maintained, and (5) insulating crossings will result in potential differences between tracks which may endanger the lives of animals, particularly horses.

The arguments presented by the Detroit United Railway in favor of insulated crossings and in opposition to bonded crossings are as follows:

1. Interconnection of the two systems would establish a condition whereby the Detroit United Railway would not be able to control the current originating on its system, and thereby involve it in liabilities for damage caused by stray current over which it would have no control.
2. The city, in employing a type of roadbed construction of lower electrical resistance to earth than the Detroit United Railway roadbeds, creates a low resistance leakage path through which the D. U. R. current will stray to earth and underground structures.
3. Voltage drops on the Detroit United Railway tracks are said to be reasonably low and the resistance of the roadbeds reasonably high, both conditions tending to prevent the escape of stray current from the tracks. This condition would be disturbed by the interconnection of the tracks of the Detroit United Railway and those of the city, by reducing the effective roadbed resistance of the former system. To offset this condition, the D. U. R. contends that it will have to install insulated negative feeders at a considerable expense in order to balance the potentials and prevent the escape of stray current.

Anticipating the report of the American Committee on Electrolysis, the Detroit United Railway contends that the tendency toward electrolysis mitigation is in the direction of the elimination of stray current, and that in asking for the interconnection of the track system the city is requiring something that will sooner or later impose additional expense on the Detroit United Railway in order to conform to prescribed requirements.

It is said that the Bureau of Standards' statements regarding the interconnection of tracks are in general valid, but that they do not contemplate interconnection under such conditions as prevail in Detroit. Furthermore, they apply only from a strictly technical standpoint, and without consideration of the fixing of liabilities or improving the conditions of one part at the expense of the other.

The report then presents a discussion of the fundamental principles involved in the interconnection of tracks and makes the observation that in an extensive and complicated system, such as will exist in Detroit with the completion of the city tracks, about 100 crossings will exist. Without this interconnection of tracks at these intersections each system will be more or less independent of the other and will be called upon to return the current originating on its own lines. This condition, aggravated by the intermittent character of street railway loads and the unbalanced loading on the several lines, will result in high potential differences between the two systems at many points. These potential differences will cause stray currents to concentrate near the points of intersection, and underground structures such as pipes and cable sheaths which are in the path of these stray currents will act as shunts to convey them. Even under the most favorable arrangement of loading and return feeders these potential differences could not entirely be eliminated and would undoubtedly be a constant source of danger to underground structures in the vicinity of the crossings.

If, however, all points of intersection are bonded the two systems will act as a common network and currents will readily flow from one system to the other to equalize the potential differences due to the unequal loading on the various tracks. Long lines, over which relatively high-voltage drops would otherwise exist, will be intersected by tracks of the other system and parallel paths will thereby be provided and the voltage drops reduced.

DISCUSSION OF THE CITY'S ARGUMENTS

The report then takes up a detailed discussion of each of the arguments presented by the city, but finds that none of them is particularly valid except the one stating that effective insulation cannot be maintained. In regard to this point the Bureau of Standards explains that with a large track mileage, a large number of crossings and the close paralleling of many lines of two systems it would be impossible to prevent interchange of current between the two track systems even though all intersections were insulated. In many cases a long length of track on one system will be shunted by parallel track of the other system, and if an attempt is made to insulate them from each other the entire voltage drop on such a section of track may be concentrated across the two insulating joints and result in excessive leakage at those points. A condition similar to this has been found to exist in the vicinity of the Hart Avenue substation where the city now has cars in operation on Charlevoix Street and St. Jean Avenue.

Insulating joints exist between the two tracks at St. Jean and Mack, which the city put in according to the wishes of the Detroit United Railway in order to effect a crossing. In order to take care of the current from the city cars while on this crossing the negative buses of the two systems are connected at the Hart Avenue substation. A current exchange of from 0 to 500 amp. takes place over this bus tie, the direction being from the city bus to the Detroit United Railway bus. The report states that as there are no metallic connections between the two track systems it is evident that this current interchange takes place through the earth between them, and in so doing may traverse pipes and cables with consequent injury to them.

Measurements were made on June 17 at this substation to determine the magnitude of the current drained from pipes under various conditions and also to note the variation in the current interchange between the two negative buses under corresponding conditions. These two quantities were measured over a period of one hour, during which time the crossing at St. Jean and Mack was connected by cables for a short time. Also for a period of four minutes the power supply for the cars on the city system was interrupted in order to determine what effect this would have on the current interchange between the buses and the magnitude of the drainage current from the water pipes. The record shows that no material change occurred in the drainage current from the water pipes for the various conditions imposed. It also shows that there is no material change in the current interchange between the buses whether the crossing at St. Jean and Mack is insulated or connected.

It is pointed out that these measurements indicate that a considerable leakage takes place between the two systems when no metallic connection exists between them, but that the quantitative evidence is relatively of little value because conditions as they now exist are only temporary and will be materially changed with the completion of the track and with the more extensive operation of city cars. However, they do indicate that effective insulation between the two systems cannot be maintained and that considerable leakage between them will take place through the earth.

DISCUSSION OF D. U. R. ARGUMENTS

Of the arguments presented by the Detroit United Railway the disparity in the roadbed resistance of the two companies is the only one considered by the bureau to be valid and the only one which might qualify the advantages of interconnection. From the measurements that were made to determine the relative roadbed resistances it was found that for the city tracks they ranged from 0.0313 to 0.0746 ohms per 1,000 ft. of double track, with locations selected to include all types of construction. Measurements made on four different locations on the Detroit United Railway tracks indicated resistances ranging from 0.0689 to 0.16 ohms per 1,000 ft. of double track. The locations selected included various types of construction, ranging in age from three years to ten years.

The report points out that the reason for the evidently higher average resistance of the D. U. R. roadbeds is a subject of more or less speculation. It states that the early contention of the D. U. R., that cinders employed in the sub-base of some of the early tracks built by the city and the use of steel ties contributed to a low roadbed resistance, is not substantiated by the tests. A short section of track which had been temporarily filled in with cinders was found to have a higher resistance to earth than any other section of the city track on which measurements were made, and the roadbed on Charlevoix Street in which wood ties were employed was one of the lowest resistance roadbeds tested.

It was found that the roadbed resistance of the D. U. R. tracks increased with age, which fact is also supported by tests made by the Bureau of Standards on experimental roadbeds over a period of three years, although the change was small. It is pointed out that while the age of the roadbed may be one factor contributing to the difference in resistances between the two systems, it is believed that the type of construction is a more important factor. In all of the city lines a concrete pavement is employed which makes intimate contact with the web and head of the rail as well as with the base. The D. U. R. employs a type of construction in which the concrete is brought up around the base, but is not in contact with the web and head of the rail, brick or stone blocks laid with dry mixture of cement and sand being laid adjacent to the rail.

A careful inspection of the D. U. R. track and the testimony of the engineers indicates that after a period of years with the continual pounding of car wheels over the tracks, together with the action of frost, the pavement becomes loose and porous about the rails and intimate contact with the concrete is frequently lost. This seems to account for the difference in resistance between the new and old lines of the D. U. R. and also between these and the city lines. The report then states that if the city construction can withstand the disintegrating influences of traffic and frost and the rails maintain an intimate bond with the concrete, the roadbeds will probably not undergo a change in resistance with time as the D. U. R. roadbeds appear to have done.

All of the resistance measurements of the roadbed were made under dry weather conditions and after a period of a number of days without rain. Judging from many measurements made by the bureau on numerous tracks under different weather conditions and over a period of years, it seems altogether probable that when wet the D. U. R. tracks with the porous pavement would have lower resistance, while moisture would have very little effect on the new city tracks with tight pavement.

Concluding the discussion on this subject, the report points out the desirability of considering the problem under ultimate conditions, when the city system will comprise a number of the day-to-day lines of the Detroit United Railway, rather than under the present temporary conditions. With this in mind, the bureau finds that while it is probable that for years to come the average resistance of the city roadbeds will be somewhat lower than the D. U. R. lines, this disparity and the injury to underground structures which might result from it appear to be more than offset by the greater advantages which will result from the interconnection of the two systems.

RETURN CIRCUIT SYSTEM

The contention of the Detroit Railway that the bonded crossings would change the disposition of the leakage currents, and require the installation of an insulated negative feeder system to correct this, does not appear to be well founded, the report continues. While the two systems will probably have common points of power supply in some cases, and while the greatest benefit to be derived from the interconnection of track does not obtain with coincident points of power supply, it is nevertheless not apparent that the D. U. R. will have to install insulated negative feeders to match any system of this kind which may be installed by the city for the return of the current. The condition of noncoincident points of power supply will be approached if the insulated negative feeders of the city system connect to the track network at points remote from the common source of power supply. Current originating on the network near the substation from either railway system will be returned over the D. U. R. feeders which presumably connect to the track close to the supply station, while current originating on the two networks at more remote points can be returned over the insulated negative feeders installed by the city. Each system of feeders, however, will return the amount of current used by its own cars, provided the negative buses of the two systems are not interconnected, and this will be quite independent of the voltage drops which may exist on the various feeders. If the power supply points do not coincide, then still further advantage may result from interconnection of track, for the voltage drops in the two track systems will be neutralized and the potential differences greatly reduced.

The bureau reaches the conclusion that the interconnection of different track systems at all points of intersection undoubtedly conforms to the best modern practice, and the benefits to be derived from such interconnection are so apparent and the arguments are so valid that to depart from this procedure would be considered only where local conditions are of such a peculiar character as to vitiate the well-known principles involved in interconnection. Except for the difference in roadbed resistances of the two systems, the conditions in Detroit are in no way different from those usually existing where two track systems intersect, and in fact the large number of crossings involved in Detroit offer unusual opportunity to utilize the advantages of interconnection. Since the advantages to be derived from interconnection far outweigh the possible disadvantages resulting from a difference in the roadbed resistances of the two systems, the bonding of all crossings is strongly recommended.

Instructions for Police on Railway Duty

FOR the guidance of the police while on duty on the property of the Beaver Valley Traction Company, W. H. Boyce, general manager, has issued to them a copy of a pamphlet called "Instructions for Police." On account of the class of workers in the vicinity of New Brighton, Pa., with whom the conductors formerly had a great deal of trouble, the railway company found it necessary during the past fifteen years to employ one or more police at all times. The chief of police acts as inspector also, being on duty from 4 p.m. to 1 a.m. In addition to this man, who is the only regular policeman, there are other employees of the organization, such as dispatchers and inspectors, who are sworn in as special policemen with a view of keeping down disturbances on the cars and about the property. These men are so empowered by law that there is no question about their being legally authorized to handle such cases as may arise.

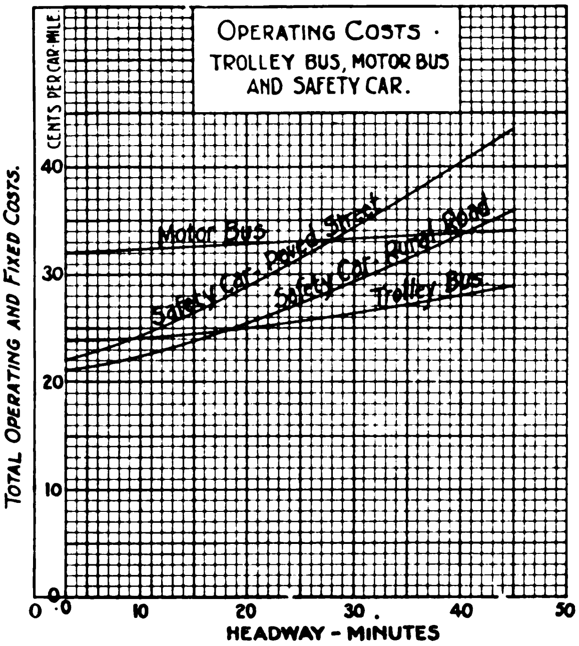
In order to insure harmony of working conditions a few general regulations were thought to be necessary, and with that purpose in view a set of instructions were prepared to increase the co-operation among the various departments. There is reprinted in the pamphlet the act relative to the appointment of police for street passenger railways incorporated under the laws of Pennsylvania. This says that a street railway may apply to the Mayor of the city in which the railway is operated to commission persons to act as private policemen for the railway company. All the general rules and duties of the officers are outlined so that they may know just how far their jurisdiction extends and just what to do in any circumstances. The pamphlet also includes the laws on arrests and warrants, the law on resisting an officer, the law on breach of peace, and an act which deals particularly with preventing fraud against common carriers. With such a guide in their work, it was believed that the police would be better able to perform their duties with dispatch and the least inconvenience to all.

At one time a certain element in that community had an idea that it could, and at times it did, run things to suit itself on some of the cars and in some of the parks of the company. That condition has been done away with, however, but in starting to break up the practice it was necessary at first to have as many as seventeen policemen on duty on days of large traffic. But now it is known that the policy of the company is, "If we don't get them today, we will get them tomorrow, next week, next month, or even next year if it is possible to locate them." Consequently arrests have decreased each year and have been reduced from more than 400 several years ago to thirty-five last year.

The Field of the Trolley Bus

Statistical Analysis Indicates Cost of Trolley Bus Operation Is Less than the Motor Bus or Safety Car on More Than Eighteen-Minute Headway

SOME comparative figures on cost of motor bus, trolley bus and trolley operation have recently been compiled by Karl F. Simmon of the railway department of the Westinghouse Electric & Manufacturing Company. In any consideration of the economical field of the trolley bus, according to Mr. Simmon, there are many elements that enter and some of the more important are the following: (1) Existing transportation available, (2) are rural or paved roads involved, (3) density of passenger traffic, (4) condition of existing roads, (5) yearly tax burdens for buses, (6) labor and material costs, and (7) power equipment available.



The taxicab or "service at call" vehicles, the gas bus, trolley bus, safety car or double-truck car, all have an economical field, and in order to determine roughly what these are for gas bus, trolley bus and safety car some comparative figures have been compiled. In this comparison it is assumed that the motor bus and trolley bus have the same seating capacity, namely, thirty, and that the safety car—which is of the single-end type—seats thirty-five. The comparison is then shown in the accompanying table and curves.

While many assumptions are involved in this calculation and diagram the tendencies are self-evident. An analysis of the curves seems to indicate:

1. That the cost of the gas-driven motor bus does not decrease materially as density of service increases.
2. That if the safety car tracks are laid on a rural or improved road, the safety car ceases to be more economical than the motor bus when the headway is materially increased beyond forty minutes.
3. That the trolley bus or safety car service is fundamentally more economical than the motor bus service for frequent service due to the cost of gasoline and maintenance of gas engine equipment.
4. That railless vehicles show up to advantage, due to practically free use of roads, whereas rail vehicles must maintain both rails and a portion of the street paving surface.
5. That safety car transportation excluding paving expense is more economical for service where the headway is less than seventeen minutes. If paving burdens are imposed on the vehicle running on rails its economical field may be materially reduced.

Only actual trolley bus service will tell the real story as there are many unknowns that cannot be evaluated at present.

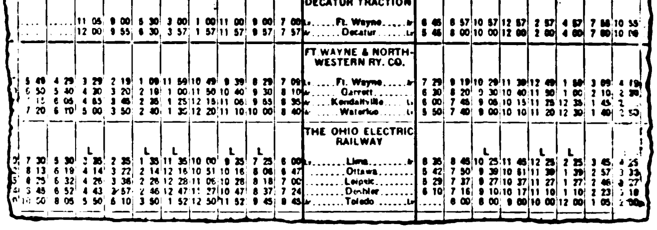
ASSUMPTIONS MADE IN CALCULATIONS AND RELATIVE COSTS

	Motor Bus	Trolley Bus	Single-End Safety Car
Seating capacity	30	30	35
Schedule speed	10	10	10
First cost	$7,000	$8,000	$6,250
Cost of paved city single track, per mile	.....	.....	$50,000
Cost of paved city double track, per mile	.....	.....	$90,000
Cost of rural improved single track, per mile	.....	.....	$30,000
Cost of rural improved double track, per mile	....	.....	$54,000
Cost of 200 ft. siding	.....	....	$3,500
Cost of No. 0000 trolley construction, per mile	.....	$5,000	$3,700
Cost of No. 0000 feeder, per mile	....	$610	$610
Cost of operation (cents per car-mile):			
Conducting transportation	7 3	7 3	7 3
Cost of power	.....	2 5	2 5
Gasoline and oil	6 0	.....	......
General and miscellaneous expenses	4 0	4 0	4.0
Maintenance track and roadway	.....	.....	1.9
Roadway tax	1.0	1 0	......
Other way and structure expense	.....	1 05	0 60
Maintenance of car and vehicle	10 6	5 0	1 50
Depreciation; life in years	5	8	12

Something New in Interurban Time-Tables

THE Fort Wayne, Van Wert & Lima Traction Company, of which S. W. Greenland is general manager for the receiver, has issued a new form of time-table for the convenience of travelers who may desire to know what connections with other electric lines may be made at either end of the line named. This new time-table folder presents in a compact form the main-stop schedules of all other electric lines running out of either Fort Wayne or Lima, the two terminal cities of the Van Wert line. The table occupies one side of the folder, while on the other side is presented the local time-table of the Van Wert line and various other general information about excess cash fares, class of trains, how to stop a car at night, baggage service, mileage books, interline tickets, children's fares, requirements for special cars, etc.

This folder eliminates the difficulty experienced by many people desiring to patronize electric lines in determining the connections that can be made.


See explanation of reference marks at bottom of page
CONNECTIONS
READ DOWN
tral Time Except East of Findlay
READ UP
Central Time Except East

L		L-4		L	L		L	L							L-4		L	
pm	pm	pm	pm	pm	pm	pm		am	am	INDIANA SERVICE CORPORATION	am	am	am	am	am	pm	pm	pm
[illegible]	6 00	5 20	4 15	3 00	1 00	12 15	11 00	9 00	6 45	Lv..... Ft. Wayne ..... Ar	6 32	7 20	8 35	10 45	11 10	2 20	4 00	5 15
52	7 05	6 04	5 20	3 48	1 52	1 18	11 50	9 50	7 40	..... Huntington	5 30	6 13	7 30	9 40	10 28	1 18	3 08	4 15
28	7 46	6 35	6 06	4 28	2 27	2 03	12 27	10 26	8 27	..... Wabash	.....	5 30	6 48	8 56	9 54	12 26	2 27	3 [illegible]
9 35	8 17	7 00	6 40	4 54	2 53	2 40	12 53	10 53	9 00	..... Peru	.....	.....	6 15	8 25	9 30	12 02	2 00	3 00
	11 56	9 30	.....	7 55	5 55	.....	3 55	1 05	11 05	Ar ..... Indianapolis Lv	.....	.....	.....	5 00	7 00	9 00	11 00	.....
10 35	9 05	7 45	7 45	5 43	3 45	.....	1 38	11 46	9 48	..... Logansport	.....	.....	5 30	7 35	8 41	11 16	1 12	.....
12 00	.....	9 20	9 20	7 10	5 20	.....	3 00	1 20	11 10	Ar ..... Lafayette Lv	.....	.....	.....	6 00	7 20	8 40	11 50	.....
L		L		L	L		L		L-4				L		L	L	L	
4 00	3 00	2 00	1 00	12 00	10 00	9 00	8 05	7 00	6 30	Lv..... Ft. Wayne ..... Ar	6 45	.....	7 58	8 57	9 50	11 50	1 50	3 00
55	4 05	2 55	2 05	12 55	10 55	10 00	8 55	8 05	7 10	..... Bluffton Lv	5 25	.....	7 06	7 56	8 55	10 55	12 55	1 55
30	5 55	4 30	3 55	2 30	12 30	.....	10 30	9 55	8 30	..... Muncie Lv		.....	6 00	.....	7 20	9 20	11 20	
7 15	.....	5 15	.....	3 15	1 15	.....	11 15	.....	9 00	..... Anderson Lv	.....	.....	.....	.....	6 35	8 22	10 35	.....
45	.....	6 45	.....	4 45	2 45	.....	12 45	.....	10 20	Ar ..... Indianapolis Lv	.....	.....	.....	.....	4 45	7 00	9 00	..
										FT. WAYNE AND DECATUR TRACTION								
.....	.....	11 05	9 00	5 30	3 00	1 00	11 00	9 00	7 00	Lv..... Ft. Wayne ..... Ar	6 45	8 57	10 57	12 57	2 57	4 57	7 58	10 55
.....	.....	12 00	9 55	6 30	3 57	1 57	11 57	9 57	7 57	Ar ..... Decatur Lv	5 45	8 00	10 00	12 00	2 00	4 00	7 00	10 00
										FT WAYNE & NORTH-WESTERN RY. CO.								
5 49	4 29	3 29	2 19	1 09	11 59	10 49	9 39	8 29	7 09	Lv..... Ft. Wayne ..... Ar	7 29	9 19	10 29	11 39	12 49	1 59	3 09	4 19
6 50	5 40	4 30	3 20	2 10	1 00	11 50	10 40	9 30	8 10	Ar ..... Garrett	6 30	8 20	9 30	10 40	11 50	1 00	2 10	2 [illegible]
15	6 05	4 55	3 45	2 35	1 25	12 15	11 05	9 55	8 35	Ar ..... Kendallville Lv	6 00	7 45	9 05	10 15	11 25	12 35	1 45	2 [illegible]
7 20	6 10	5 00	3 50	2 40	1 30	12 20	11 10	10 00	8 40	Ar ..... Waterloo Lv	5 50	7 40	9 00	10 10	11 20	12 30	1 40	2 50
										THE OHIO ELECTRIC RAILWAY								
		L		L	L		L	L					L		L	L		
7 30	5 30	3 35	2 35	1 35	11 35	10 00	9 25	7 25	6 00	Lv..... Lima ..... Ar	6 35	8 45	10 25	11 45	12 25	2 25	3 45	4 25
8 13	6 19	4 14	3 22	2 14	12 16	10 51	10 16	8 06	6 47	..... Ottawa	5 42	7 50	9 39	10 51	11 39	1 39	2 57	3 33
8 25	6 32	4 26	3 36	2 26	12 28	11 06	10 28	8 18	7 00	..... Leipsic	5 29	7 37	9 27	10 37	11 27	1 27	2 46	3 27
8 45	6 52	4 43	3 57	2 46	12 47	11 27	10 47	8 37	7 24	..... Deshler	5 10	7 16	9 10	10 17	11 10	1 10	2 23	3 10
10 50	8 05	5 50	5 10	3 50	1 52	12 50	11 52	9 45	8 45	Ar ..... Toledo Lv	.....	6 00	8 00	9 00	10 00	12 00	1 05	2 00

CENTRAL PORTION OF TIME-TABLE SHOWING CONNECTIONS WITH OTHER ELECTRIC LINES

Tendency in Train Operation

An Appreciable Rise in Motor Temperature Follows the Attachment of a Trailer to a Motor Car—Operating Expenses Should Be Less with Multiple-Unit Trains Than with Motor Car and Trailer and the Investment Is Often Less When Necessary Track Changes Are Considered

By G. M. Woods
General Engineering Department, Westinghouse Electric & Manufacturing Company

Motor and Trailer Operation in Brooklyn

The tendency in street railway practice is toward train operation for heavy traffic. Several operators who heretofore have consistently favored single-car operation now feel that the time has come when train operation is the only solution to their traffic problems. Undoubtedly a reduction in the number of units reduces the congestion, and a two-car train will cross a street intersection just as quickly as a single unit. The question of the relative merits of multiple-unit trains and motor car and trailer trains is of primary importance.

The relative advantages of the two systems have been discussed at various times, but at present the problem in some respects must be considered in a new light. The street railways have just passed through a period of "starvation." Their equipment and property as a whole have deteriorated in many instances and must be revamped similar to many steam roads. This period has also had favorable aspects, for it has resulted in a better understanding on the part of the public, increased fares, and a thorough appreciation of the commercial side of the street railway business. The rehabilitation of the railways will take place under new conditions and the relative values of the factors entering into the choice of equipment will be changed. The public will be given more thought in the purchase of new equipment, and cars of good riding qualities and pleasing appearance will be bought. The cars must also be of such type that adequate service can be furnished at minimum operating expense during all hours of the day. The public, in return for the increased fare it is paying, expects new equipment and better service. At the same time the standards of economy which have been set up must be maintained.

In the past the purchase of new equipment for train operation has been greatly influenced by the fact that in many cases cars with motors large enough to haul trailers a few hours per day were already owned. The motors were of the non-ventilated type, and while temperatures were frequently higher than desirable, the large copper section of the conductors and the high thermal capacity permitted of overloads for short periods without excessive motor maintenance. The motors of this class now available on most properties will soon be obsolete and will be replaced by ventilated motors with suitable capacity for the all-day service, but not with sufficient capacity to haul a trailer during the most severe traffic conditions of the day. It is obviously incorrect to purchase new trail cars to be hauled by electrical equipment which has only a few more years of useful life and which can be replaced only at excessive first cost.

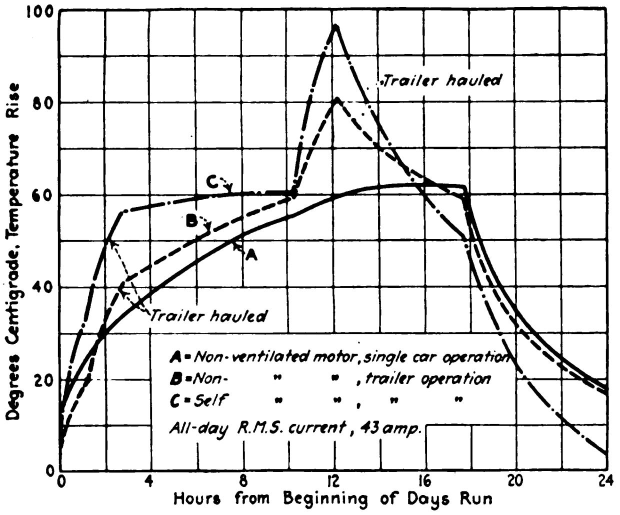
Comparison of Motor Temperatures

The graphs of temperature rise show at *A* the temperature rise of an inclosed motor used in single-car operation. At the start of the day's run the motor temperature was slightly above air temperature on account of its not having cooled completely after the service of the preceding day. The temperature gradually increased until the rise reached 62 deg. C. and remained fairly constant until the car was taken out of service.

Graph *B* shows the temperature rise of the same motor when the car hauled a trailer on another route for one trip of one and one-half hours in the morning and for one and three-quarter hours in the evening.

The only effect of the morning trailer hauling was to cause the motor temperature to rise more rapidly than if the previous load had been continued, but if the trailer had been hauled for two trips, or three hours, the temperature rise would have nearly reached 60 deg. C. When the trailer was added in the afternoon the temperature rise increased to 80 deg. C. Attention is called to the fact that the trailer hauling resulted in a temperature rise 18 deg. C. higher than the operation without trailer, although the all-day service in both cases gave the same root mean square current value. When the trailer was detached the service became much easier and the temperature of the motor decreased rapidly. On the test without trailer operation the service remained at nearly the same severity until the last trip, which was the most severe of the day.

It is obvious that the addition of a trailer greatly increases the loads imposed on a motor in any given service. In the example chosen a route on which single cars were normally operated and another route on which trailers were operated, both having the same all-day route mean square current, were taken so as to illustrate the higher temperatures reached when trailers are hauled. It is believed that the full effect of these short-time overloads is not usually appreciated.



TEMPERATURE CURVE OF VENTILATED AND NON-VENTILATED MOTORS WITH AND WITHOUT TRAILER

Graph *C* shows the performance, with trailer operation, of a ventilated motor of such capacity that if operated in the service without trailer, the maximum temperature rise would be the same as that of the non-ventilated motor. The increase of temperature was more rapid at the beginning of the day than for the non-ventilated motor. When the trailer was added the rate of increase was very nearly the same as that for the non-ventilated motor because the temperature was nearly 15 deg. C. higher and therefore more heat was radiated and the load imposed was not much in excess of the motor's continuous rating. At the end of the trailer operation the ventilated motor was still approximately 15 deg. C. hotter than the non-ventilated motor. After the trailer was detached the temperature of the motor increased slowly until a constant temperature, practically the same as that of the non-ventilated motor, was reached. At the end of the one and three-quarter hours' trailer hauling in the afternoon, the temperature rise was 96 deg. C., which is 34 deg. higher than the temperature rise would have been in the service without trailer, although the average all-day service was of the same severity.

SHORT-TIME LOADS ARE IMPORTANT FACTORS

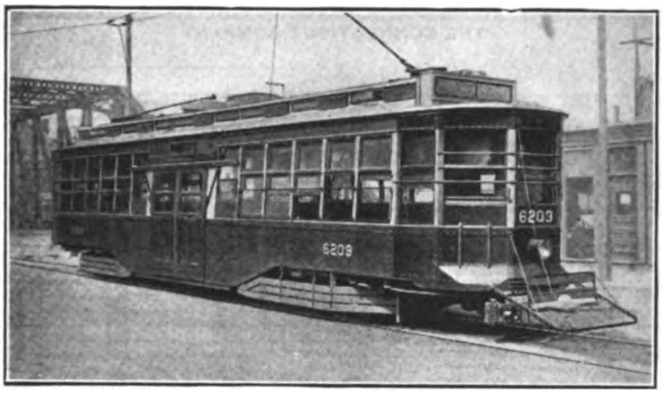
Short-time overloads, such as those caused by running on a grade with cars standing full of passengers, produce temperature rises considerably in excess of those shown on the curve. Hence, it is evident that short-time loads are very important factors in the application of the ventilated motor. Because of the more rapid rise of temperature the addition of a trailer requires a greater increase in motor capacity with the ventilated than with the non-ventilated motor.

After the trailer is detached, the temperature of the ventilated motor decreases rapidly because of the smaller mass of metal and the action of the ventilating fan. The ventilated motor has such marked advantages in weight and cost that its continued use is assured. It is well to keep in mind that trailer operation not only imposes an additional load on the motor when the stops are most frequent and operating conditions most severe, but also, by the reduction in speed it decreases the amount of air which passes through the motor with a resulting decrease in service capacity for this operation.

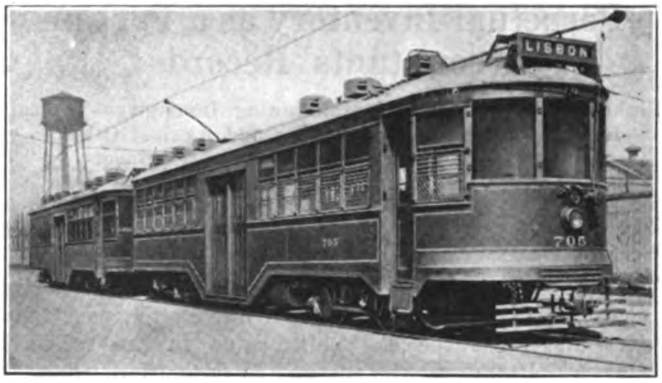
A study of the equipment required to provide service on an important city line recently disclosed the interesting facts that not only were the operating expenses less for multiple-unit cars than for motor cars and trailers, but the initial investment was also less. The chief savings were in power, labor and maintenance. The power saving is due to the use of a lighter car with equipment exactly suited to the service to be performed. When a motor car is to haul a trailer a few hours per day, it is unnecessarily heavy and the motors are of uneconomically high capacity and speed for single-car operation.

When a trailer is coupled to a motor car, even where there are no grades, the rate of acceleration is reduced, due to only part of the weight of the train being on the axles in which motors are mounted. This reduced rate of acceleration takes place at the time when speed and quick "get away" are most important in order to keep moving under congested traffic conditions. The reduction in schedule speed requires more cars to maintain the necessary headway and hence increases the cost of platform labor. On some railway properties where trailers are hauled, the nominal running time is kept the same as for single-car, non-rush operation and a considerable increase in layover time is allowed. This scheme has certain marked advantages, but it should not be permitted to obscure the fact that the car-hours are actually increased.

The maintenance of cars exclusive of electrical equipment should be slightly less for multiple-unit than for trailer operation, because the shocks are less severe. In the particular railway service mentioned, the motor car mileage was 27 per cent greater for the multiple-unit cars, but the motor weight was approximately one-half that for the cars intended for hauling trailers. The maintenance of motors per car-mile for the multiple-unit cars should, therefore, be from 65 to 75 per cent of that for the other cars. The result is that the maintenance of the multiple-unit electrical equipments was approximately 90 per cent of the electrical equipments for trailer hauling.



Boston Car Equipped for Three-Car, Multiple-Unit Train Operation



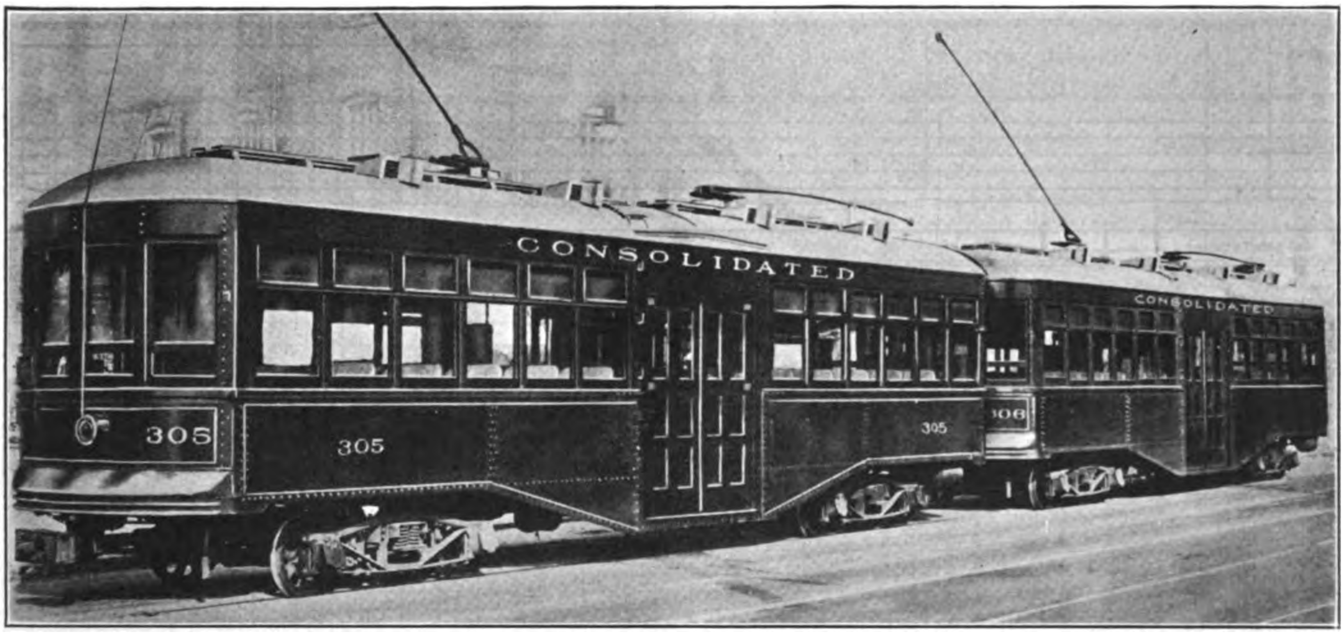
Multiple-Unit Train of the Milwaukee Electric Railway & Light Company

When trouble occurs on a motor car hauling a trailer, both cars are tied up, whereas if trouble occurs on one car of a two-car train, only one is affected. When multiple-unit operation is employed, the individual units can be used interchangeably, and thus there are a number of cars in the barn during non-rush hours. The percentage of multiple-unit motor cars available for minor repairs and inspection is, therefore, greater than the percentage of motor cars available where trailers are hauled. The result is that a less percentage of spares need be provided for multiple-unit operation than for trailer operation, and while the cost of a single motor car and trailer may be less than that of two motor cars suitable for multiple-unit operation, the total investment is frequently greater. Some form of switching equipment is usually required for handling trailers, and even where an old passenger or work car is used its value is properly chargeable to the investment for rolling stock. The switching of trailers also increases the crew expense.

In recent years the general use of low-floor cars with 24-in. and 26-in. wheels makes it difficult to provide sufficient motor capacity to haul trailers under severe traffic conditions and at the same time to have satisfactory gears and clearances under the motor and gear case. Control equipment more suitable for multiple-unit operation and for mounting under low-floor cars or in cabinets in the cars is available for all modern cars.

There are a number of lines on which trailers cannot be used satisfactorily, due to severe grades or snow conditions during the winter months. Most passengers have the feeling that trailers are unsafe and this feeling is enhanced by the occasional running away of trailers on grades. Even on level lines there is more jerking in stopping and starting a trailer than on a motor car and passengers generally prefer the motor car.

In the past there have been a number of electric railway lines on which it was generally agreed that multiple-unit operation was superior in many ways to trailer operation. There has been the impression in some quarters that, where physically possible, trailer operation is more economical than multiple-unit operation and that multiple-unit operation has only a certain inherent flexibility which cannot be obtained with trailers. If the comparison is made on a correct basis at the present time, the cost of multiple-unit operation rarely will be found to exceed that of trailer operation. Railway operators planning the purchase of new equipment for train operation will do well to investigate thoroughly the relative advantages of trailers and multiple-unit trains under their particular conditions before deciding on the type of equipment.



Two-Car Train, Charleston Consolidated Railway. Cars Equipped with HL Control for Multiple-Unit Operation in Navy Yard Service

Perpetual Inventory as a Part of Accountants' Records

Method of Compiling and Maintaining Inventory—Typical Record Forms—Arguments For and Against Other Methods—Co-operative Solutions by Engineering and Accounting Departments

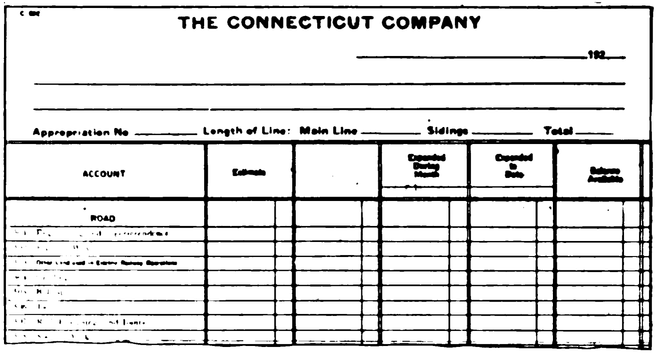
By I. A. May, C.P.A.
Comptroller the Connecticut Company

THE perpetual inventory has been discussed at length by accountants and engineers during the past few years and all agree as to its value in the railway industry. But as to the method to be used in compiling and maintaining the inventory there is no such universal agreement. This is the question that is disturbing and results in bringing out different ideas.

Actually, perpetual inventory is nothing more than a detailed history of the construction of the several parts of the plant. It seems to be a dream to certain engineers, but it is merely an extension of the construction records already found in the accounting department of every street railway company.

If the accounting department is unable to answer such questions as, "What did a certain power house, transmission line or distribution system cost? What is the value of this portion of track or the investment in that type of car?" then the accounting department system is not complete or has not been expanded sufficiently. With a proper system the accounting department should be able to give all such information down to the details of the cost of each unit in a power house from foundation to smokestack.

Adequate cost and construction records are essential to the intelligent operation of any railway system. Not only are they useful and necessary in the company's operation but, if well kept, they may, as was pointed out editorially in the ELECTRIC RAILWAY JOURNAL, June 11, 1921, page 1067, be the means of a decided money saving in the event of civil, regulatory or appraisal cases.



THE CONNECTICUT COMPANY

192

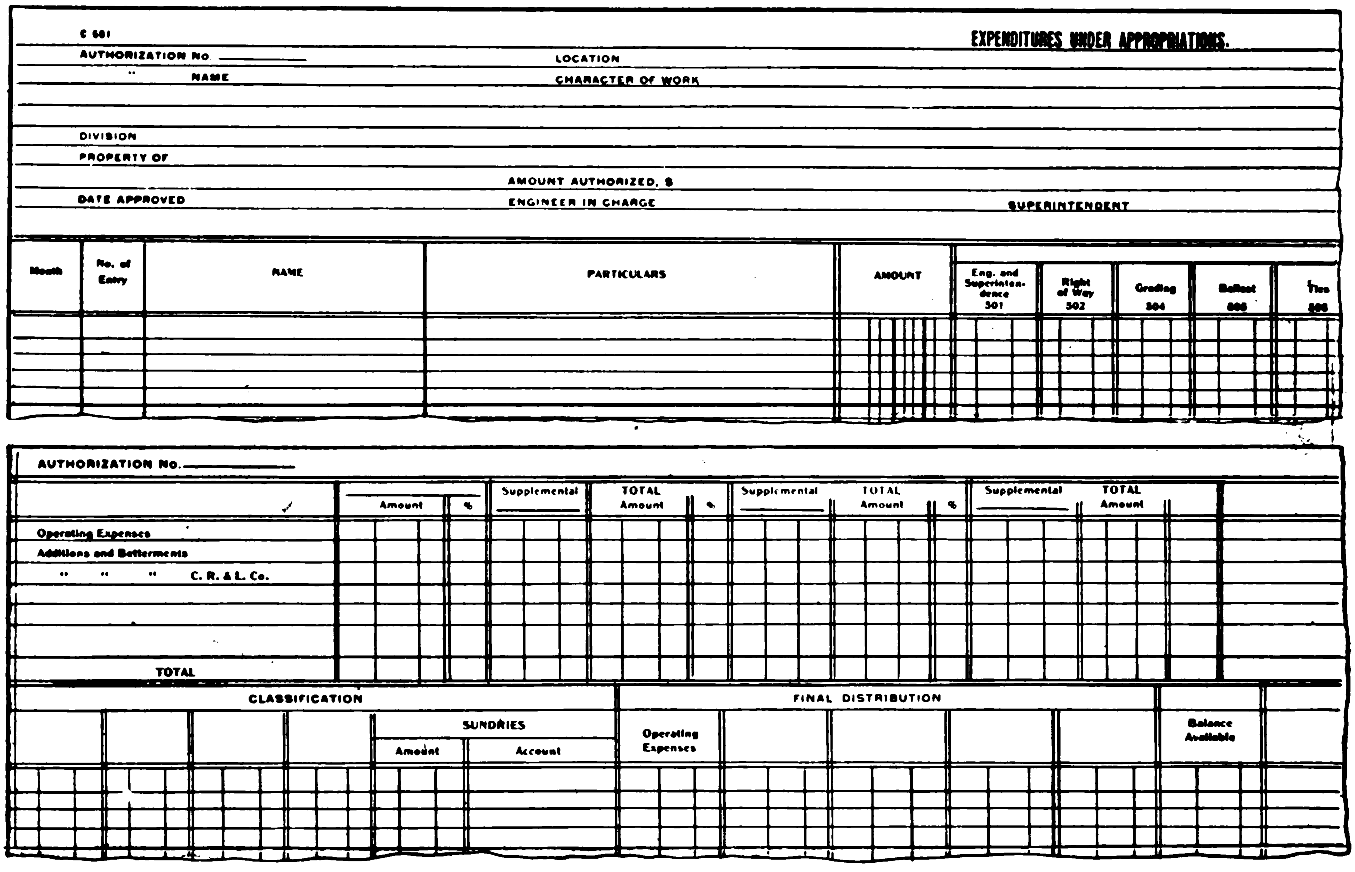
Appropriation No _____ Length of Line: Main Line _____ Sidings _____ Total _____

ACCOUNT	Estimate		Expended During Month	Expended to Date	Balance Available
ROAD					
[illegible]					
[illegible]					
Other Land used in Electric Railway Operations					
[illegible]					
[illegible]					
[illegible]					
[illegible]					
[illegible]					

FORM TO BE FILLED OUT UPON COMPLETION OF WORK

The "Authorization" or the "Authority for Expenditures" systems, if complete, in any accounting department show the actual expenditures on construction work or additions. The accompanying Form C 601, as used by the Connecticut Company, is typical. Also, when any work has been completed a properly designed form can be filled out and forwarded to the engineer under whose direction the work was done. A typical form of this type is shown as Form C 690.

The engineer in charge can then show the correct distribution of costs in the blank columns and return the form to the comptroller's office for final adjustment, and the form when complete reflects the exact cost of the job and can be filed for reference. Unit costs computed from such forms, with due allowance for market and local conditions, afford valuable data for making



C 601

EXPENDITURES UNDER APPROPRIATIONS.

AUTHORIZATION NO _____ LOCATION
" NAME CHARACTER OF WORK
DIVISION
PROPERTY OF
AMOUNT AUTHORIZED, $
DATE APPROVED ENGINEER IN CHARGE SUPERINTENDENT

Month	No. of Entry	NAME	PARTICULARS	AMOUNT	Eng. and Superintendence 501	Right of Way 502	Grading 504	Ballast 505	Ties 506

AUTHORIZATION No. _____

	Amount	%	Supplemental	TOTAL Amount	%	Supplemental	TOTAL Amount	%	Supplemental	TOTAL Amount	
Operating Expenses											
Additions and Betterments											
" " " C. R. & L. Co.											
TOTAL											

CLASSIFICATION						FINAL DISTRIBUTION						
				SUNDRIES								
				Amount	Account	Operating Expenses					Balance Available	

TYPICAL FORM USED TO AUTHORIZE EXPENDITURES. LOWER PORTION SHOWS THE REVERSE OF THE RIGHT HALF OF THE UPPER PORTION estimates on contemplated projects of a similar character.

From such construction forms the material for the perpetual inventory is readily obtained by any of several methods. An extra clerk could be employed to write up what might be called the construction ledger. Another way would be to keep it on a card index basis.

A proper co-operation between the engineering and accounting departments would then obtain a perpetual inventory by a relatively simple extension to existing practice in each of the departments. The engineering office should be in possession of all maps, blueprints, mileage charts, detailed unit costs of construction and the accounting office should be in possession of all ledger figures, construction records and cost books.

In an article by E. A. W. in the ELECTRIC RAILWAY JOURNAL for May 14, 1921, page 893, it is suggested that the engineering office prepare all detailed estimates (without costs) and then forward them to the accounting office to be checked and compared with similar work and that the accounting office then should make up the cost data on the estimates from data in its files. The writer does not agree to this procedure, but thinks that the engineering office should compile the complete estimates and then submit them to the accounting office for checking and suggestions, after which they should be placed in final shape by the engineering office and referred to the executive officers of the company for approval.

A PERPETUAL INVENTORY CAN BE OBTAINED FROM EXISTING DEPARTMENTS

To return to the perpetual inventory, some have suggested that a separate department be created to handle the work. The writer does not agree with such a suggestion for several reasons:

1. Since there are a certain number of fundamental departments inherent in any railway organization and as the engineering and accounting departments are in this category, no special departments should be established whose functions conflict with or overlap those of properly functioning fundamental departments.

2. A separate inventory department would be compelled to call upon the engineering and accounting departments continually for data. It would be compelled to check its figures with the ledger accounts of the accounting department. These conditions would result in duplication, lost motion and inefficiency.

3. The accounting department has the necessary office equipment and clerical staff already in operation and any duplication of investment in such items would not be warranted, particularly as such a department would need to operate only a portion of the time.

4. If the accounting department is functioning properly any question of cost regarding any portion of the plant can be answered.

5. The men in such a department would not be in close touch with actual construction or cost conditions. The engineer and accountant, inherently, are in positions where intimate relations with the job are maintained.

The perpetual inventory can be easily obtained by properly co-ordinating existing departments in a railway organization and, in view of its usefulness, should be a feature of all railway accounting systems. The costs involved in its maintenance are of little magnitude compared to the present and potential economies made possible by having it available.

Signal System for Expediting the Starting of Trains

TO EXPEDITE the starting of trains a new system of communication has just been placed in operation at the Long Island Railroad's Flatbush Avenue Station in Brooklyn.

By the installation of an electrically controlled mechanism provision has been made for prompt communication between the gatemen on both upper and lower levels and train conductors. This is accomplished by means of boxes located on each platform, called "conductor's stations," which are equipped with "communicating buttons" and colored signal lights, connecting with similar apparatus found at train gates and in the signal tower.

The new system operates as follows: Ten minutes before a train is scheduled to leave, or as soon as it is ready for occupancy, the conductor goes to the "conductor's station" nearest the head end of the train, opens the locked box, then presses buttons which flash a white light at the gates on the upper and lower levels of the terminal, thereby notifying gatemen that the train is ready to receive passengers and indicating that the gates may be opened.

One minute before leaving time the gatemen at the upper and lower levels press a button on the gatepost which illuminates red lights at the "conductor's station." The conductor then pulls out the buttons under these red lights, which indicates to the gatemen that their signals had been received, and immediately thereafter the conductor pushes in a button that indicates to the towerman at "F. T." tower (which tower controls all train movements in and out of the Flatbush Avenue Terminal) that the train is ready to proceed. The towerman acknowledges this information by pushing a button which illuminates a green light at the "conductor's station," whereupon the conductor pulls out the button under the green light, closes and locks the "station" and, after ascertaining that all passengers are loaded, gives the motorman the signal to proceed.

In order to take care of the passengers using the gate on the subway level, as well as those using the entrances on the upper and lower levels, three "communicating buttons" have been installed on the south side of Platform No. 1. This "conductor's station" is operated in the same manner as the "stations" on other platforms, with the exception that communication is effected with three gatemen instead of two.

The railroad management expects that this new system will greatly facilitate the handling of passenger trains at the Flatbush Avenue Terminal.

Lighting London Subway Connections

AN INTERESTING development in the lighting of subways is to be seen at the Charing Cross underground station in London, where the great increase in traffic during the last few years has necessitated the addition of several new passages, connecting the underground and the various tube railways. The lighting is effected by small lamps placed in recesses in the side walls.

The border of the recesses carrying the lamps is extended somewhat so as completely to screen the filament from the view of the passengers. The light is well diffused by the surrounding white walls of the passage and the method of screening the filaments seems to have a distinct advantage for this class of work.

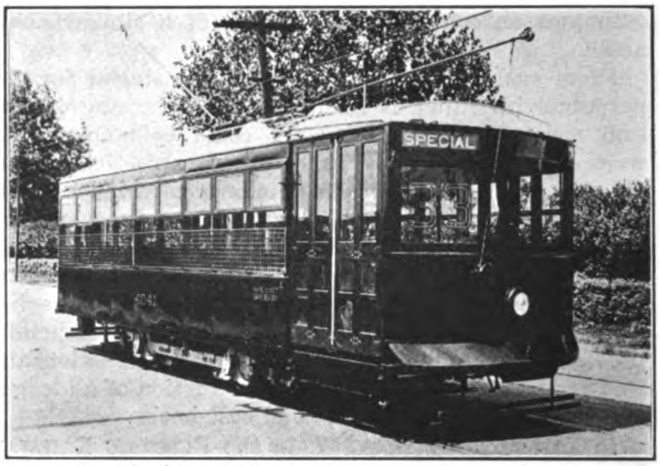
Baltimore's New Type Safety Cars

Wider Door Opening, Special Seating Arrangement and Wider Aisle Than Standard Safety Cars Are Some Features That Give Very Satisfactory Results

By L. H. Palmer
Assistant to President, United Railways & Electric Company, Baltimore, Md.

BRIEF mention was made in the ELECTRIC RAILWAY JOURNAL for May 7, 1921, page 881, of the purchase of ten one-man cars by the United Railways & Electric Company of Baltimore, and the issue for July 31, 1920, described the initial operation of thirty-three so-called standard one-man cars on one of the company's heavy transfer lines. These latter cars have been in service since July 1, 1920. After these cars had been in operation a short time it was found that, due to the heavy riding and particularly to the heavy interchange of passengers (because this line intersects most of the main trunk lines of the system and acts as a belt line), the movement of the cars was delayed because of the single narrow door which permitted only one passenger to alight from or board the car at a time. One of the principal criticisms of the public in connection with the use of these cars was caused by this feature. The fact that passengers tended to congregate around the front door aggravated the situation. This latter was due to the fact that in many cases the passengers were riding only a few blocks, owing to the character of the route traffic.

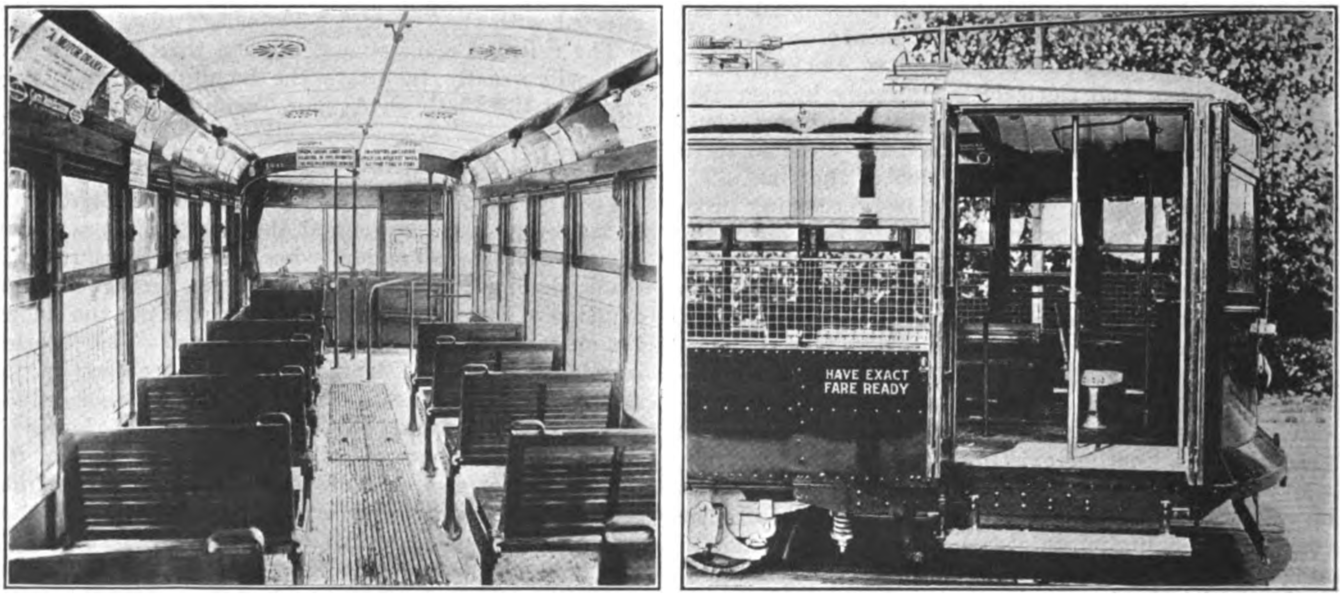
As a result of these conditions and the continued study of the problem by the company's engineers when it was decided to purchase additional equipment for another line, in the early part of 1921, it was determined that we would go to a car having a wider door opening which would permit of separate exit and entrance. Specifications were accordingly drawn up with this idea in view, and the new car embodied these improved passenger interchange facilities. By reference to the floor plan and photographs shown in accompanying illustrations a clearer understanding of the changes in the design of this car from the so-called standard will be obtained.



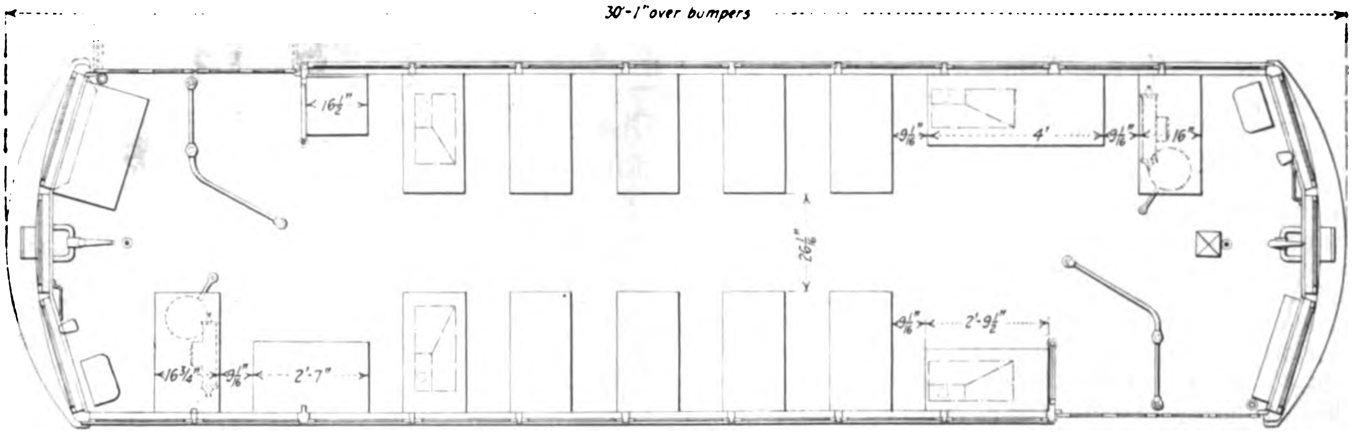
DOUBLE-ENTRANCE SAFETY CAR IN SERVICE

In addition to the wider door opening, a change in the arrangement of seats at each end of the car to give more standing room was worked out. In order that the transverse seats might be kept opposite each other, and in order to obtain the maximum seating capacity, the longitudinal seats at the ends of the car body are not of the same length, but so far it is found that the somewhat shorter well at the No. 2 end of the car works out almost as satisfactorily as the longer one at the No. 1 end. The car is 4 in. wider than the standard car and this additional width has gone into the aisle, which is another feature that has greatly facilitated the better movement of passengers and contributed to their comfort. The present car is 30 ft. 1 in. long, that is 24½-in. longer over bumpers than the older design, and seats thirty-three passengers as compared with thirty-two on the other car.

Appreciating the desirability of maintaining the principle of standardization as much as possible, in practically all respects except those relating to facilities for passenger interchange, the design of the standard safety car has been retained, but the improvements referred to and which are clearly indicated on the floor plan and photographs shown herein have materially increased the efficiency and effectiveness of this type of car, and the results of practically a month's operation have entirely satisfied the company that the present design is an improvement over the old one, and that the arguments which have been advanced in connection with recent discussion and correspondence



AT LEFT, THE WIDE AISLE GIVES FREE MOVEMENT OF PASSENGERS. AT RIGHT, DOOR AND STEP ARRANGEMENT



FLOOR PLAN OF BALTIMORE ONE-MAN CAR

in the technical press on this subject are entirely justified. With the changes outlined, moreover, the increase in weight of the car, as shown on our own scales, is but 450 lb. the new car weighing 17,350 lb. as compared with 16,900 lb. for the older type.

The cars are equipped with Westinghouse DH-16 compressors and S-12 governors, and two Westinghouse 508 motors with K-63 double-end control. Peacock style G hand brakes were used. The brakes on the old cars were not efficient and had to be redesigned, and the experience gained in this regard was used in installing an adequate hand brake on the new cars, with rod connections from the brake staff to the brake beams, instead of cables. The Brill standard safety car trucks 79—E1 with friction bearing were used.

These cars were put in operation on the Fremont Avenue line the first of August, displacing ten of the older type, and are operating in daily service with the remainder of the older cars. Results to date have been exceedingly satisfactory, and have fully justified the decision to redesign and improve the so-called standard car, for service in Baltimore.

During periods of light riding, there is little difference between the operation of the two types of front-entrance one-man cars, but when riding is heavy, particularly during the morning and evening rush periods, the superiority of the newer type with wider door opening over narrow-door design is very evident.

A recent series of observations made with a stop watch, between the two types of cars during the rush hours, at points where heavy loading both on and off the car took place, shows that the new type of car has reduced the average seconds per stop 20 per cent, namely, from twenty-two seconds to seventeen and one-half seconds, and the average seconds stop per passenger 17 per cent from 1.8 second to one and one-half seconds per passenger. We anticipate that still more favorable results will ensue as the public becomes more familiar with the new equipment. There is naturally some lack of most efficient use because more than half of the cars in service are of the older type, and there is some hesitation and confusion on the part of passengers in availing themselves simultaneously of the entrance and exit facilities. This is gradually improving and we feel that were the whole line equipped with the new design, a still better showing would be made. The figures given are for an average of twenty-one stops for each type of car, taken at the same points and during the same rush periods.

No difficulties have arisen in the collection of fares, and our observations indicate that this is controlled as well as on the older type. When the doors are opened, the operator asks passengers to board by the right hand step, and this request is sufficient, so that there has been no increase in missed fares.

Altogether we feel that this new type is a logical development and is eminently satisfactory, and believe that where heavy traffic is to be handled, serious consideration should be given by railway managers to the purchase of front-entrance one-man cars, equipped with separate exit and entrance passageways.

Fare Box That Makes Change

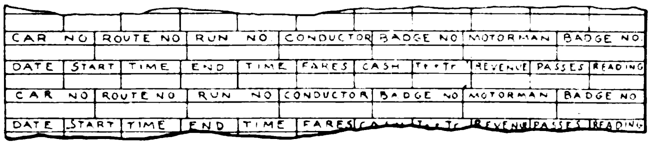
THE Automatic Coin Change & Record Machine Company, New York City, has developed a new type of fare box especially adapted for use on electric roads. This machine automatically collects and retains the stipulated amount required for fares, makes and delivers the correct change to passengers, sorts and stacks the coins received, records the number of persons paying, totals the amount of money received, records transfers received and rings a bell for every transaction. The machine is 15½ in. x 9½ in. x 7 in. in size and weighs 36 lb. It is arranged for convenient mounting on a pedestal, and can be detached so as to be carried from one end of a car to the other as required.

CHANGE ISSUING MACHINE

The top portion of the machine is occupied by a row of coin receptacles, each marked with conspicuous figures to indicate the value of the coin to be received. When a passenger places a coin in its receptacle, a small indicator is raised which shows the amount of change that is to be delivered to the passenger. The inserting of a coin unlocks the machine's mechanism and permits the operator to raise a lever. The initial movement of this lever closes the coin discharge box which is at the bottom of the machine. Further movement of the lever drops the coin received into its proper tube and discharges the coins to be given as change. The release of the lever opens the discharge box so that the passenger can receive his change. If the fare is 7 cents and the passenger inserts a 50-cent piece into the machine, 7 cents is retained by the machine when the conductor raises the lever and 43 cents change is delivered to the passenger directly from the machine. The coins received are sorted and stacked in tubes, thus keeping each denomination by itself. At the same time the number of fares collected is recorded on one register, while the total amount of money collected is recorded on another. Should a passenger find it necessary to tender a bill for his fare, the machine issues change for $1 by the operator pressing a small lever at the side. At the same time one fare is registered and a small indicator is raised showing the amount of change which is to be delivered. The discharge tubes for holding coins to be issued as change are separate from the receiving tubes, but the former can be replenished from the latter or otherwise as desired. The various tubes are arranged with a bottom slide, so that their entire contents can be dropped at one operation. The box is arranged so that it can be locked, making it impossible for any money which has once entered the machine to be handled by unauthorized persons. The machine can be set for any desired fare from 5 cents to 10 cents, by changing the penny slide. If the exact fare is deposited, of course no change is delivered, but the transaction is recorded in the usual manner.

A TRANSFER REGISTER FOR INCOMING PASSENGERS FORMS A PART OF THIS MACHINE

In addition to the fare collection and change-making mechanism, the machine is provided with a transfer register for incoming transfers and a record box which holds a roll of paper printed to cover the different items on which the railway company wishes a report from the conductor. An accompanying illustration shows a section of one of the printed rolls. Of course, the report may be changed to suit any condition as desired by the railway company. In making out his report, the conductor enters the various items as designated, closes the cover and turns the knob and the blank is then ready for the next record. The operating lever of the machine has a removable handle which can be retained by the operator in the event that it is necessary for him to leave the car.



CAR NO | ROUTE NO | RUN NO. | CONDUCTOR | BADGE NO | MOTORMAN | BADGE NO.
DATE | START | TIME | END | TIME | FARES | CASH | Tr + Tr | REVENUE | PASSES | READING
CAR NO | ROUTE NO | RUN NO | CONDUCTOR | BADGE NO | MOTORMAN | BADGE NO
DATE | START | TIME | END | TIME | FARES | CASH | Tr + Tr | REVENUE | PASSES | READING

PRINTED RECORD FOR CONDUCTOR

Some of the advantages claimed for the machine are, that the passenger inserts his own coin, or coins, into the machine and receives his own change from the machine. The conductor does not touch the money in any manner whatsoever. The machine is absolutely locked and cannot be operated unless a fare is collected. As the coins are inserted in the machine, they are sorted and stacked in tubes according to denomination. The stacked coins can be taken directly from the tubes and dropped into coin wrappers ready for deposit in banks if desired.

In addition to being a time saver the fare box machine insures mechanical accuracy in making change and permits the conductor to attend to his other duties in a more efficient manner.

Letter to the Editors

Discussion on Association Reorganization

FOUR COMMUNICATIONS *discussing the recommendations with reference to the reorganization of the American Electric Railway Association and its affiliated associations were published in last week's issue. The communication given below is likewise directed toward this same subject. The columns of the* ELECTRIC RAILWAY JOURNAL *will be open to its readers for the discussion on these points in the other three issues which will precede the convention.*

THE CONNECTICUT COMPANY
NEW HAVEN, CONN., Sept. 6, 1921.

To the Editors:

Answering your request to comment upon the report of the reorganization committee, I am sure I don't know what to say other than what I have said so many times before.

The original group that organized the association provided the most excellent medium for the exchange of information and discussion of policy throughout the electric railway fraternity of the country. The by-laws as originated by that group and amended from time to time have in general been sufficient for the guidance of the activities of the association, but I think all of us who have had anything to do with the workings of the association for the past few years have felt that the affairs of the association and the electric railroad interests of the country have outgrown the prescribed limits of the association and its duties and activities as defined by the by-laws.

Of course, the last few years have very materially changed all the standards as to policy and operating methods of the electric railroads and likewise have brought about the great changes in the work which the association should do to be of great value to the industry. This naturally brought about a real need for an entire revision of the machinery of the association.

It seems to me that the reorganization committee has done an exceptionally good job, and while there may be reasons for not heartily approving this, that or the other proposal as presented, the general result is most excellent and I believe that the final recommendations as coming from the executive committee should receive the hearty approval of all concerned.

Personally I think it would be better if the original recommendation of the committee is adopted relative to the relation of past-presidents to the executive committee. I have heard criticism of the requirement for a fixed date for executive committee meetings, but I think this is one of the most desirable of the features presented as the association needs the constant attention and guidance of those individuals in the industry who are actively engaged in the promotion of the industry itself.

I sincerely trust there will be no material modification from the proposal as presented to the convention.

You see that I can say nothing whatever that will be of any help in the real discussion of the issues, I am so thoroughly convinced of the necessity for making the changes and the desirability of adopting the plan as presented by the committee and approved by the executive committee. L. S. STORRS, President.

Transit Tendencies in New York City*

By LeRoy T. Harkness
Member of the New York Transit Commission

The author first briefly recounts a history of the development of the electric railways in New York City and the conditions which brought about the depressed financial condition of these properties. He then outlines the purpose and powers of the present Transit Commission. In conclusion he says: "In meeting the governmental problems resulting from or brought to a focus by the World War, there is needed proper statesmanship that will not confine itself to measures of repression but will consider it its main and most important duty to search out and to relieve the underlying causes of public dissatisfaction and unrest. The situation of electric traction throughout the country furnishes not only the most immediate but also one of the biggest instances of the opportunity for the exercise of such statemanship."

THE New York City transit situation, with its many, varied and complicated problems, presents, in perhaps the extreme form, the crying need for the adoption and application of public utility policies that are in full accord with changed conditions.

Transit has long been a political football, and that condition will continue while old sores remain and there is continual friction between the traction companies and the public. The attempt is now being made in New York City to develop a comprehensive and thorough-going plan of readjustment that will remove the old sores and causes of friction and permit transit to be viewed in its true light as an economic proposition.

The general features of the New York situation are well known. Systems of transit lines aggregating 1,800 miles in single track mileage, with outstanding securities approximating at par a billion dollars, are either in or on the verge of receiverships. In other parts of the country the financial difficulties of traction companies growing out of the World War have been met partially or completely and in general the situations are not acute. In New York City no relief has been obtained by the transit companies except through a cutting down of the number of free transfer points largely through the separation of lines under receiverships.

In addition to the inflation produced by the World War, the New York conditions are exceptional because of the element of a tremendous suddenly added competition due to carrying out the 1913 program, which involved the more than doubling of the rapid transit lines within a period of five years. Through the abolition of free transfers a large part of the public is paying an increased fare and the congestion is becoming progressively worse. On most of the lines conditions in the rush hours are a physical and moral menace.

The condition of the companies as viewed by the investing public may perhaps most readily be shown by contrasting the market prices of certain securities in 1917 and 1921, which is done in the following table:

BONDS

	1917		January 1921	
	H.	L.	Bid	Asked
N. Y. Railways, Refg. 4's	76¾	54	18	20¾
N. Y. Railways, Adj. 5's	60¼	22⅜	3⅛	3⅜
Third Avenue, Refg. 4's	82⅜	65	40⅞	41⅞
Third Avenue, Adj. 5's	81	38	25	25⅜
I. R. T. Refg. 5's	99⅞	76½	49	49⅜
Bklyn. Union El. 1st 5's	101¼	88½	57½	58
Manhattan Consol. 4's	94½	81¼	53	56¾

STOCKS

	1917		January 1921	
	H.	L.	Bid	Asked
I. R. T. Consol	17½	5⅜	4½	4⅝
I. R. T. Refg	72¼	39½	11¼	11½
Third Avenue	67⅜	17¼	13¼	14
Manhattan El	132	115	48	49
B. R. T	82	36	9⅞	10

The question naturally occurs: If most of the cities in the country have relieved their traction situations by increases in fares, why has not New York City done so? To those who have examined the situation superficially a sufficient answer has been found in the hostility of the city administration. The city administration has been vigorously and bitterly opposing an increased fare. It has done nothing to relieve the situation except in so far as minor and isolated bus operation has served a few thousand people and a few localities. But the city administration would not have persisted in this course, nor would it have been sustained by public opinion, if the differences and difficulties had not gone far deeper than a mere matter of an increased rate of fare. The scandals connected with traction reorganization and speculation have probably been more flagrant in New York than in any other city in the country. The traffic congestion and poor service have been such as to cause real suffering. The past intolerance of public opinion on the part of railroad operators and their interference in politics and legislation have not been forgotten. This is the background of the transit fight in New York City, and because of it a very large part of the community has looked upon the company requests for rate increases with suspicion and considered them as attempts again to exploit the public for speculative and stock-jobbing purposes. It is this very strong feeling that the municipal administration has shrewdly appealed to, and its strength is perhaps indicated by the fact that in the pending municipal campaign the opposition parties are endeavoring to avoid the traction issue by also declaring for a continuance of the 5-cent fare.

The unfortunate part of the entire situation is that with traction in an admittedly deplorable condition and growing progressively more incapable of meeting the public needs, the local authorities have followed a drifting policy, have been guided by expediency and not principle, and have offered no real solution. What has been lost sight of is the fact that, even admitting all the alleged misdeeds of the past, transit in a city like New York is absolutely vital to the well-being of the community. It must be put upon a basis where adequate service can and will be provided. If the difficulty lies in the present character of the relationship of the companies to the public and the city, and in existing organization and financing, necessary changes must be made to put the companies in a position where they can meet the public needs. The policy of mere obstruction in the long run must prove disastrous to the city, to the public and to the investors alike.

It is this critical situation that led to the transit legislation of this year, which will later be considered at some length.

Properly to appreciate the real issues and the special problems to be solved it is necessary to go back and briefly outline the development of transit in New York and note the underlying causes of the present antagonisms.

General Outline of New York Transit History

In the earliest days New York transit companies were directly chartered by special statutes. Some surface lines are still being operated under old steam railroad charters. Other lines are successors in ownership to old-time plank-road companies. In the main, however, the present surface lines grew out of the old horse-car companies that were developed during the period prior to 1890. The old horse car lines were projected during the times when the city was rapidly growing and, therefore, were in the main consistently profitable. Naturally, at that time, their value as an aid in the general development was appreciated and there was little or no objection to their perpetual franchises and the lack of financial returns directly to the city. Unfortunately, in certain instances—notably the so-called "Jake" Sharp franchise for the Broadway line —there was flagrant corruption and bribery and the public has since been led to believe that this condition was far more prevalent than it really was.

From 1865 to 1890 was the main period of elevated railroad development during which the Manhattan Elevated System and the Brooklyn Union and Kings County Elevated Systems were constructed. In the first stage of this development—prior to 1875—the franchises were granted by special acts of the legislature, and afterward by separate commissions appointed under the rapid transit act of 1875. Here too, of course, the lines were privately-owned under perpetual franchises with practically an entire absence of provision for public control.

In 1875 an amendment to the state constitution was adopted which prohibited private or local bills granting railroad rights.

This stopped the evil of special legislative railroad grants. The attaching, by the municipalities, of conditions as to rates of fare in giving their consent has furnished an important element in the situation and presented the question whether the legislature under the reserved police power can over-ride the action of a municipality in attaching a fare limitation in its consent. It is on this question that the fare litigation of the past few years has largely turned. (*Matter of Quinby* vs. *Public Service Commission*, 223 N. Y. 244; *Matter of International Railway Co.* vs. *Public Service Commission*, 226 N. Y. 474; *People ex rel. Garrison as Receiver* vs. *Nixon*, 229 N. Y. 63.) In the Garrison case the Court of Appeals in effect decided that the legislature had the power to alter rates of fare in franchises or consents granted prior to 1875 and subsequent to 1907 (the date of the enactment of the public service commissions law) but left open the question as to the power of the legislature over the fare limitations in municipal consents granted between 1875 and 1907. Recently the Appellate Division of the Supreme Court in the First Department has sustained the validity of the transit legislation of 1921 which expressly gives the commissions power to raise rates despite provisions in local consents (*City of New York* vs. *McAneny*, decided July 1, 1921).

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*Abstract of a paper read before the Public Utilities Section of the American Bar Association, Cincinnati, Ohio, Aug. 30, 1921.

The decade from 1890 to 1900 marked in New York as in other parts of the country the development of electric traction. The prospects for its success were exceedingly bright but unfortunately it was in great part financed on a highly speculative basis and was attended with the then common practice of stock watering.

Looking back over this period we see that it was the time of company exploitation. The grants were all perpetual, in most cases without provision for any payment to the city and without control by the municipality over construction or operation.

The construction of the elevated railroads failed to keep pace with the growth of the city and the construction of additional lines was constantly agitated, finally resulting in the passage of the Rapid Transit Act of 1891. This act provided that the Rapid Transit Board could lay out routes without reference to whether they were connections or extensions of existing lines, and, after obtaining the necessary constitutional consents, should offer the franchise for sale at public auction. Acting under the broad powers conferred upon it by this act the new board promptly adopted a route and general plan for an underground railroad under Broadway with elevated extensions in the northern part of the city, but the franchise when offered for sale at public auction failed to elicit a satisfactory bid.

Then came the then revolutionary proposal that the city should build and own the new roads and lease them for terms of years to operating companies. The Rapid Transit Act was so amended in 1894 and the Rapid Transit Board promptly proceeded to take the necessary steps preliminary to making a contract, but the difficulties to be overcome were so many and so great that it was not until Feb. 21, 1900, that the board was in a position to enter into the first contract. It then contracted on behalf of the city with John B. McDonald (Contract No. 1) to construct, equip and operate the so-called Manhattan-Bronx Rapid Transit Railroad. The construction price was $35,000,000 with certain additions for real estate and terminals. The contractor was obligated to furnish the equipment. The lease was for fifty years with a twenty-five-year renewal. The rental was the minimum permitted by the act—interest on bonds issued by the city for construction plus 1 per cent.

When this work was well under way the Rapid Transit Board also let, in 1902, to interests affiliated with Mr. McDonald, the contract (Contract No. 2) for the construction, equipment and operation of the so-called Brooklyn-Manhattan Rapid Transit Railroad, being an extension of the first subway to Brooklyn. The rental provision in this later contract was substantially the same, but the original lease term was shortened from fifty years to thirty-five years.

Realizing that the construction of the first subways was but a beginning and that extensive additional lines were necessary to keep up with the increase in traffic, the Rapid Transit Board, as soon as the first contracts were placed, proceeded with plans for new subways and continued negotiations for leasing them. As a result, it was finally possible in 1913 to enter into what are know as the Dual Subway Contracts, which involved a joint city and company expenditure estimated at that time at $335,000,000 and which, by reason of increased war costs, has gone well over the $400,000,000 mark.

In these contracts the companies would not agree to rental provisions similar to those in the first contracts. Looking at the situation from their standpoint, however, it must be said that there was justification for their insistence upon having a prior lien on the earnings. The Dual Subway plan involved the more than doubling within a period of five years of rapid transit lines in the city at a cost then estimated at about $335,000,000. This unparalleled expansion was necessary for the well-being of the city and for that reason it was thought that the city could afford to enter upon it even in the face of inevitable deficits during the early years of operation. On the other hand private capital had to look at the matter solely from a hard-headed dollar-and-cents point of view and could hardly be expected to enter upon the project unless its returns were amply safeguarded and it was protected from deficits almost from the start.

Under the new plan the city's returns were subordinated to the companies earning their existing income and 6 per cent upon the new money provided by them. The situation was somewhat akin to the city's taking a second mortgage. The various estimates used in forecasting financial results were all dependent upon certain assumptions as to increase of population, ratios of operating expenses and the like which were bound to be more or less colored by one's point of view. Even the most favorable estimates indicated that the city would have to bear deficits for a number of years to come and therefore be subjected to the experience of raising amounts to pay these operating deficits either from its tax levy or through some refunding operations. The allowance to the companies as part of their preferential payments of their then existing profits,—$3,178,000 a year in the case of the Interborough and $1,500,000 in the case of the B. R. T.,—placed a heavy burden upon these roads, representing as it did the extraordinary profits swollen by the intense traffic congestion of the two years ending June 30, 1911. Naturally, as new lines were placed in operation they would relieve this congestion and thereby cut down, if they did not for a time destroy, these profits, but, unless the right of recapture were exercised, the new lines would have to bear this burden for half a century.

The foregoing very generally outlines the history of the development of transit in New York City. One tendency is very plain: municipal ownership is not a new thing in New York but represents a settled policy long in effect and steadily growing in popular favor and importance since its original adoption in 1894. From it flows two results that are setting in train tendencies that even now point rather definitely to certain conclusions. In the first place, the city in 1894 in effect decided to go into the railroad business and has already put into operation two great transit programs—the subway expansions of 1900-1902 and 1913—with a city investment of over $250,000,000. As a railroad owner the city cannot stand still. It must not only continue to expand its own lines but the logic of events points to its also increasing and already dominant position in the transit field by swallowing private lines. In the second place, the city must take steps to protect its investment under the 1913 contracts and set up a new kind of participation that will insure its receiving a proper return so as to relieve its tax budget and also to provide funds for further subway extensions.

UNDERLYING CAUSES OF ANTAGONISM

Bad service is, of course, a continual irritant. But back of that there is in the mind of the public the remembrance of past transactions. To appreciate the public point of view and the difficulty that always besets any attempt to consider transit problems on their merits it will be helpful to consider a few of the more notable grounds of controversy.

In the early days there was flagrant corruption in obtaining some of the franchises and the "Jake" Sharp manipulation of the Broadway surface line is the example most often referred to. The Metropolitan Street Railway financing, too, has left bitter memories in its wake.

In 1902 when the subway work was well under way the Interborough Rapid Transit Company, to which Mr. McDonald had assigned the operating rights under Contracts 1 and 2, leased in perpetuity the Manhattan Elevated System under a lease which provided that the lessee should pay the interest on approximately $45,000,000 of the lessor's bonds and pay 7 per cent per annum upon the $60,000,000 of the lessor's capital stock, together with taxes which amount to over $2,000,000 annually. This lease has been the subject of severe public criticism, especially during this period of increased costs when the operation of the combined elevated and subway system was burdened with paying what were in effect 7 per cent dividends to the Manhattan stockholders, while the net receipts from operation were so low as to threaten a receivership at almost any time.

The Manhattan Company also carried a heritage of public antagonism because of its past collisions with the public. One of the bitterest of these fights was the one for the reduction of the fare from 10 to 5 cents, which was finally forced by the enactment of Chapter 743 of the Laws of 1894.

Soon after the building of the first subways came the Interborough-Metropolitan combination. The competition between the Interborough Company's subway and elevated systems and the Metropolitan Street Railway's system reached the point where it was possible for certain financial interests to force a combination. There was, therefore, organized a holding company first known as Interborough-Metropolitan Company, which held practically all the stock of the Interborough Rapid Transit Company and of the Metropolitan Street Railway Company. This was most unfortunate for rapid transit, because, aside from the throttling of competition through combination it largely turned the control of the Interborough properties over to those interested in the street surface lines and thereby prevented the city's operator from considering the matter of rapid transit development solely from the standpoint of a rapid transit operator.

This also gave ground for public resentment because, without the city having any say in the matter, the city railroad, upon which approximately $50,000,000 of public money had been spent, was made one of the main points in a financial maneuver that was actuated primarily to throttle competition and raise the market value of the various securities.

During the period from 1890 to 1900 there also took place the consolidation in one form or another of the surface and elevated lines in Brooklyn to form the Brooklyn Rapid Transit System. The scandals connected with the Metropolitan Street Railway combination fortunately were not duplicated, but in some of the companies there undoubtedly was considerable water and the consolidation was attended with a burst of speculation, B. R. T. stock at one time being forced up to around 130.

Another matter, perhaps small in comparison but affecting a class of the community least able to bear a loss—the tort creditors—was the corruption of juries in accident cases. It is greatly to the credit of the present heads of the companies that in this respect they themselves cleaned house and did it with ability and thoroughness.

At the time the Dual Subway contracts were entered into there was, of course, no thought that shortly more than a year later a world war would break out. The prospective burden upon the city in carrying its investment was serious enough under normal conditions, but the effect of increased costs due to the war has completely altered the situation. The city has not yet received interest and amortization charges on its new investment. Even with preferential rights the Contract No. 3 company deficit now amounts to over $25,000,000 and the Contract No. 4 company deficit, to over $10,000,000. The extent of the city's burden is indicated by the fact that in its annual budget it is now including an amount approximating $10,000,000 to meet interest and sinking fund deficits on the rapid transit account. Having in view the large cumulative company deficits (and under Contract No. 3 the deficits are cumulative at compound interest), which must be wiped out before the city receives its fixed charges, it is probable that if the contracts are permitted to continue as at present the city will never receive any return under them. This not only subjects the tax budget to this enormous drain but also operates as a bar to needed further subway expansion because, until it is in receipt of sufficient current funds to carry the annual charges on this investment, the city cannot exempt equivalent amounts from the debt limit and use them for any new work.

The declaration of large dividends by the Interborough Company and its attitude in respect to changes in its contracts with the city had had an important effect in preventing a readjustment. The 1913 estimates indicated a number of lean years, due to putting the new lines in operation and the attendant heavy interest burden. Then came the World War and the consequent certainty of inflation. These factors should have dictated extreme prudence and the husbanding of resources. In spite of this, however, the Interborough Company declared dividends of 20 per cent in 1915, 1916 and 1917, and 17½ per cent in 1918. When it felt the full effect of its interest burdens and war costs it applied to the city authorities for a modification of the subway contracts so as to provide for an increased rate of fare. The company, however, was averse to any other change in the city's interest. This had a most far-reaching effect on the working out of a solution of the transit problem. The public not unnaturally, in view of the fact that the company had so recently been declaring such unusually large dividends, was suspicious of its good faith and antagonized by the attitude of demanding something and conceding nothing.

Before considering possible measures of relief, it will be of assistance briefly to chart the underlying causes of the present unsatisfactory relationship between the companies and the public and the city.

PUBLIC GRIEVANCES

1. Service has been bad and a considerable part of the public has undergone real inconveniences and sometimes actual suffering twice a day for six days a week. Many of the roads are in badly depreciated condition; for example, some still using rolling stock thirty years old.

2. The public believes, in view of the enormous traffic in New York City, that transit is or should be very profitable. (The unduly large dividends paid in recent years by the Interborough Company are taken as strong confirmation of this belief).

3. With this belief the only explanation that accounts to the public satisfaction for the bad service is that the companies are really making large profits but are concealing them through excessive rentals and capitalization and using these excesses again as a reason for cheapened service to pay returns on water.

4. The very unsatisfactory situation of the city's great investment in the subways.

These are grievances and in so far as they are justified in fact constitute, of course, valid objections to increased fares.

Beyond this, and one of the main grounds of public antagonism, is the past interference of public utility interests in politics. The public's idea of the influence now wielded by those interests is exaggerated, but the enmity resulting from past struggles is lasting.

COMPANY GRIEVANCES

On the private side the investors, too, have their grievances. The transit properties, even though impaired, represent investments running into the hundreds of millions and furnish an indispensable service to which we have become so accustomed that we take it largely as a matter of course, and without any adequate realization of the extent to which the well being of the community is founded upon it. The securities of the companies are widely distributed, generally in small holdings, and the public interests, as well as good morals, require the protection of proper bona-fide investment.

For the past few years all the companies have been hard hit by the same trouble that has affected every individual and business in the country—the decreased purchasing power of money. Operating expenses that before 1914 would run around 50 per cent of revenue have jumped to 85 or 90 per cent, or higher. As a result of this decrease in purchasing power, wages have had to be largely increased. The companies have, therefore, been in the position of having to meet the existing economic situation in paying bills, but have been unable (except partially in the case of abolition of or charges for transfers) to have that situation recognized in respect of payment to them for the services they render. With business generally meeting such a situation by raising charges, holders of utility securities are aggrieved by the refusal to let them follow the same economic law even in cases where returns will not pay operating expenses to say nothing of interest on bonds.

There are two other subordinate but nevertheless important grievances of the transit companies: Street paving and maintenance charges and taxation.

The companies are required by law to pave and maintain the paving between the tracks and for a certain distance outside the tracks. They claim that while these charges may have been proper in days gone by when horse car operation did damage the pavement, they are not proper now when the electric-car operation does practically no damage and when the great wear and tear is occasioned by heavy trucking. The paving expenses for the year ending June 30, 1920, were:

B.R.T. Surface Lines	$449,308 35
New York Railways	288,282 46
Third Avenue Railroad	527,691 08
Total	$1,265,281 89

The burden of taxation has been steadily increasing. New York state and city taxes for the year ending June 30, 1920, were:

Interborough Rapid Transit System	$2,529,517 54
Brooklyn Rapid Transit System	2,005,892 33
New York Railways System	1,002,850 58
Third Avenue Railroad System	756,019 43
Total	$6,294,279.88

A large part of this taxation is imposed through the special franchise taxes, the theory of which is that the companies should be required to pay taxes commensurate with the value of the rights granted by the public. However just such a tax may be in principle, the burden on transit operation is exceedingly heavy. Moreover the adoption of the principle of regulation as exemplified in the Public Service Commissions law has worked a change from the situation as it existed at the time the special franchise tax was first enacted. The better view is that the return to the public should be in service and not in taxation and that if the revenues become more than needed for adequate service, the proper remedy is a reduction in rates. At the present time as the subway properties are owned by the city, the Interborough and B. R. T. are substantially free from taxation in connection with the operation of city-owned properties, while the elevated and surface lines bear an increasingly heavy burden.

The public and private attitudes may, therefore, be summarized as follows:

Public : Dislike and distrust founded on

1. Bad service.
2. Belief in existence of excessive returns, rentals and capitalization.
3. Belief that rights and functions exercised by the companies are antagonistic to the public interest.
4. Unsatisfactory situation of the city's transit investment.

Private: Distrust and bitterness founded upon believed injustice

1. In not being allowed the same privilege as business generally of increasing rates to meet increased costs,
2. In unfair street paving and maintenance charges, and
3. In excessive taxation.

In working out any solution of the transit problem, these other elements must be considered.

The companies took franchises and contracts based on 5-cent fares with the expectation of large profits both from dividends and increases in the market value of securities. Most of the stocks were speculative to a high degree. The companies heretofore have insisted on the rigidity of the 5-cent fare—American urban traffic was based upon it, franchises had been granted and contracts let in reliance upon it and, therefore, it could not be disturbed. This, before the war, was the companies' position. They, however, have changed their base and see now, not profit but loss and possible disaster in a fixed rate of fare. In short, they ask that the underlying basis upon which they entered the transit field be changed from risk to protection, their securities from a speculative to a stabilized character. With such a radical change it would seem that they themselves should recognize the entire justice of requiring the readjustment of their engagements with the public as expressed in outstanding franchises and contracts to accord with the new base.

Furthermore, a readjustment necessarily involves the element of consolidation, for otherwise a flexible fare does not seem practicable. Relatively, the surface lines are much worse off than the rapid transit lines and, therefore, more in need of relief. But an increased fare on the surface lines alone would drive the greater part of their traffic to the rapid transit lines and leave them worse off than before. A similar raise of fare on the rapid transit lines would give them more than they need and, therefore, amount to overcharging the public using them.

In the case of the surface lines, and to a much lesser and possibly negligible extent in the case of the elevated lines, the projection of the lines was originally on a competitive basis. There are even now existing a multitude of companies that were engaged in the building of these lines. Gradually the lines were absorbed in large systems, especially during the period of electrification. Despite this absorption and the substitution of virtual monopoly for competition, there was little or no attempt to revamp the lines to accord with the changed conditions. Furthermore, in 1900-1902 and in 1913, the city placed under contract great subway systems that radically altered the transportation map. Again, there was no attempt to revamp the surface lines to meet the changed conditions and this suddenly added great competition. The reason for this, in most cases, of course, is patent. The existing lines were covered by existing and generally blanket mortgages and the franchises and financial structure was too rigid readily to be changed. So that there is also involved the important element of revamping existing lines to meet present needs and conditions.

ELEMENTS OF A SOLUTION

This, then, in general was the situation and the "set-up" when the companies felt the full force of the increased prices growing out of the World War. In December, 1918, important companies of the Brooklyn Rapid Transit System went into the hands of a receiver, to be followed soon after by the New York Railways Company operating most of the surface lines in the Borough of Manhattan. The Interborough Company has only avoided a receivership with extreme difficulty. The efforts of the companies to secure increased rates of fare were bitterly fought in the legislature and the courts. The disintegration of the big B. R. T. and the New York Railways systems began and was continued by sluffing off through the receiverships of important lines. Service became progressively worse and public resentment increasingly bitter. This condition continued for over three years before a real effort was made constructively to meet the situation.

Early in this year's session of the legislature Governor Miller, in a special message, directly faced the issue and recommended the delegation and concentration of all the powers the legislature could grant to a commission to be composed of three members. This precipitated one of the bitterest political fights in years and the legislation was vigorously attacked on the ground that it violated the principles of home rule for municipalities and was a "fare grab." Of course, the bill did not raise any rate of fare but merely empowered the new commission to raise a rate if necessary and the home rule argument largely lost its force because of the utter failure of the local authorities to attempt any constructive measures of relief.

The legislation (Chapter 134 of the Laws of 1921 as amended), however, bears upon its face proof of the endeavor to reach down and remove the underlying difficulties and causes of antagonism. It provides for the commission preparing a plan of readjustment that will accomplish as nearly as may be the following three main purposes:

> 1. The combination, rehabilitation, improvement and extension of existing railroads so that the service thereon may be increased and improved to the fullest extent possible.
> 2. The receipt as soon as practicable by the city of sufficient returns from the operation of the railroads so that the corporate stock or bonds issued by the city for the construction of rapid transit railroads may be exempted in computing the debt incurring power of the city under the constitution of the state, and
> 3. The assuring to the people of the city the continued operation of the railroads at the present or lowest possible fares consistent with the just valuations of the railroads and their safe and economical operation.

To carry out such a plan of readjustment the commission is vested with the broadest powers to vary rates (including the power to vary rates fixed in municipal consents and contracts), to revise existing contracts and to make new ones and to value and acquire railroad properties for and in the name of the city. Provision is made for submitting the plan and contracts to the local Board of Estimate and Apportionment, but if that board finally refuses to approve, the ultimate power to carry the plan into effect is vested in the commission.

An important and interesting feature of the legislation is that respecting valuation. This provision is:

> In connection with the preparation of such plan the commission shall cause a valuation to be made of the property, other than franchise or going value, necessarily used in public service of the railroads it proposes to include therein. Such valuation shall be made with due regard to the estimated prospective earning capacity of the property necessarily used in the public service at the rate or rates of fare that the company prior to the taking effect of this act was entitled to charge in view of the provisions of the contract or franchise under which the property is operated or held or of any lawful order in force fixing or regulating rates of fare and of the competition of other lines and with due regard to all other pertinent facts and conditions; but such valuation shall not in any case exceed the fair reconstruction cost of the property less depreciation. Such valuation shall be in such detail and shall include such elements of cost or values and shall be made in such manner as the commission may prescribe. Such valuation as finally determined by the commission shall be the basis for all allowances to the railroad companies under the plan and for thereafter fixing the return on the property so valued, anything in this chapter to the contrary notwithstanding.

The theory of this provision is that in approaching this subject the point of view would be largely that of a banking house considering the purchase of a transit property. Its natural first question would be: "What will the property normally earn considering any franchise or charter limitations and any other incumbrances?" So, if under the plan it be decided to take over any given road, the normal earnings would first be considered and capitalized. The earnings would, of course, be upon the basis of the present fare engagements—almost universally 5 cents—but the returns would be estimated during a normal period—for example, averaged over the next ten years—for present conditions are abnormal and taking over roads on present earnings would amount to virtual confiscation. Against the figure thus obtained would be checked a figure obtained on some reproduction cost basis. It will be seen that these provisions are very general and much more indefinite than formulas usually applied in rate cases. This is necessarily so, first, because a rigid formula could not be adopted that would be sure to meet the widely varying circumstances and conditions of the many different lines and second because if it were attempted to handle this valuation in the same manner rate case valuations usually are handled years would elapse before the work would be completed.

The practical aspects of making these valuations offer many interesting features. It is not purposed to duplicate the usual "nut and bolt" inventory where everything in the minutest detail has to be examined and counted. In general it should be possible to take the plans and records and compute quantities from them and check conditions by a field inspection. It is believed that in this way substantially the same results would be obtained without the usual large expenditure of time and money.

In a public letter dated Feb. 11, 1921, Governor Miller, in describing the purposes of the legislation recommended by him, outlined a possible plan of readjustment, as follows:

> 1. The value of the physical property used in the public service, without reference to present capitalization, should be determined. The data for such valuation of many of the lines must already be in the possession of the present commission. It should not take long to make a valuation of the others.
> 2. Eliminate all outstanding inter-company leases.
> 3. Retire outstanding securities, except such underlying liens as cannot readily be retired, for which provision looking to eventual payment must be made.
> 4. Vest in the city title to all lines not already owned by the city, free and clear of all incumbrances, except such underlying liens.
> 5. Make a lease to a new company, which shall provide for amortization of the determined valuation and for adequate reserves for depreciation, contingencies, and the like.
> 6. Mortgage such lease to an amount approved by the commission, and issue stocks and bonds not in excess of the valuations determined by the commission, in exchange for the securities retired.
> 7. To promote prompt reorganization and revamping of lines without assessing security holders, defer interest and dividends for one or two years, as might be determined by the commission, and at the end of such period prescribe a rate of fare sufficient to pay all charges provided for in the lease.
> 8. As an incentive to efficient management provision could be made for increased return on capital as fares are decreased, and a reduced return as they are increased.
> 9. Looking to the eventual transfer of general regulatory powers to the single state-wide public service commission, provision could be made for a board of control, on which the city and the company should have proper representation. The alternative to that would be representation by the city on the board of directors of the company. The board of control plan is probably preferable, and that board might well have the powers of the present Transit Construction Commission.
> 10. As all approved charges will adequately be provided for under the plan, the provisions of the dual contracts for preferential payments could be eliminated and such other changes made as will fit these contracts into the plan, and as may appear to be in the public interest.
> 11. Provision for the imperative and immediate needs of the city for further transit facilities should be made promptly.

To many a plan involving these fundamentals would seem extremely radical. The situation in New York City, however, is acute. Palliatives will not do. The case has gone beyond that and calls for surgery. So that the unusual scope and nature of the plan to be adopted must be considered in relation to the most unusual conditions that imperatively call for a remedy. Having set out at considerable length the general history of transit and some of the underlying difficulties and having indicated the fundamentals of a plan of readjustment, it should be helpful if in conclusion the endeavor is made very briefly to attempt to forecast the advantages that might be expected to flow from the adoption of such a plan.

Advantages to the City

Ownership—The city would get the ownership of the transit lines. They would be subject to a lease or leases, but the value of the lines would be amortized by the earnings and at the end of the term the city would own the entire transit system free and clear. Furthermore, as time passes the city through the mounting up of the amortization funds could terminate the leases and acquire possession on increasingly easy terms.

Division of Profits—If it should be decided that the parties in interest should divide any surplus, instead of having it applied either to reduction in rates or improvement in service, the city's present investment would furnish ample consideration for the city insisting on a large—or possibly a predominant—percentage of the profits. On the basis of proper capitalization with preferential profits eliminated and with the main existing obstacles to fare readjustment removed, the transit system should be profitable and on the return of normal conditions, if that course should seem preferable, the city should receive substantial profits from its transit lines.

Receipt of Fixed Charges on Subway Investment—Through the revision of the dual contracts and the elimination of preferential profits, the city would get out of its present unsatisfactory position and would receive presently interest and sinking fund payments on its investment in the new subways. Expressing it in another way: If the city does not take advantage of this opportunity to adjust the situation it would have to continue to pay out of taxes about $10,000,000 a year as interest and sinking fund payments on city bonds. Therefore, by this adjustment the city would insure the receipt of the fixed charges on its bonds.

Exemption of City Bonds—Such an arrangement would put the city bonds issued for transit purposes on a self-sustaining basis and permit of their exemption in computing the debt limit. This would increase the city's debt incurring capacity for transit improvements by more than $200,000,000.

Indirect Advantages—Of perhaps less material return to the city directly, but very material to its citizens, would be the revamping and rehabilitation of the transit lines that is a necessary element of the readjustment. This would permit of the substitution of good service where it is bad and would not only substantially ease, if not eliminate, the existing dissatisfaction, but would be reflected in all the varied business and financial activities and social and living conditions affected by the character and extent of transit service. The results should be especially apparent in the increased value of real estate—the city's main source of revenue.

Advantage to the Private Investors

While the profit making and speculative elements would be eliminated the real values in the transit properties should be protected and securities stabilized by the official valuation findings and a proper provision for secured returns. The big profit making and speculative days have gone in transit in New York City and most investors realize that fact. A reasonable, assured return on a fair valuation seems to be the only basis on which the consolidated systems can permanently be financed.

Although it may be felt that with the transit companies under the present circumstances it is a case of "any port in a storm," nevertheless, considering such a readjustment from their standpoint broadly and fairly, it would not only give them a very good port but one in the long run better for their security holders than the pre-war one.

Nor are the immediate or proximate financial results of operation the only factors to be considered. Transit conditions on many of the lines are nothing short of disgraceful because of depreciation in structure and equipment and of cutting down of service, both to save expense. The roads and their equipment must be rehabilitated and adequate service must be restored. To do this new money in substantial amounts will be needed and more and better service must be given with consequently increased operating costs. Under the present circumstances the companies cannot meet these requirements. A continuance of present conditions, therefore, means a continuance of impaired service. That the public cannot be expected to submit to, especially if the companies are offered and refuse a fair plan of adjustment. The result would be that the companies would engage in intensified differences with the public, in which they would be bound to lose in the long run. Instead of this, under the plan proposed the main causes of friction would be removed; the companies would be assured of a fair return on actual values and their securities would be stabilized.

ADVANTAGES TO THE PUBLIC

It remains to consider such a readjustment from the standpoint of the third party in interest—the public as distinguished from the municipality. Taking up the public grievances as already listed:

1. *Bad Service*—The rehabilitation of lines and the modernization of equipment would physically fit the lines for giving proper and adequate service. The question of how intensively those facilities are operated would thus become a matter of the traffic available and the cost of operation with the determination of how much service is to be rendered in public control.

2. *Excessive Returns*—This fear on the part of the public should be disposed of by the determination of the real values of the transit properties and the elimination of "water" of every description.

3. *Antagonistic Rights*—A part of the community will probably never be satisfied with anything less than complete municipal operation. Generally, however, the elimination of perpetual franchises and other private rights and the restricting of the companies to the roles of lessees or operators should satisfy any reasonable objection to present conditions.

4. The unsatisfactory situation with respect to the present city's transit investment would be remedied.

The transit situation, and especially the present public resentment, should be considered from a far broader viewpoint than that of merely a settlement of an increased fare question of local nature. The dissatisfaction and unrest caused by the present ownership and operation of public utilities is acute. The effect politically is apparent and political success often goes, not to the deserving, but to the one who can damn railroad interests the loudest. In meeting the governmental problems resulting from, or brought to a focus by, the World War, there is needed proper statesmanship that will not confine itself to measures of repression but will consider it its main and most important duty to search out and to relieve the underlying causes of public dissatisfaction and unrest. The situation of electric traction throughout the country furnishes not only the most immediate but also one of the biggest instances of the opportunity for the exercise of such statesmanship. On the one hand is involved the proper protection of an investment running into the billions in one of the country's major industries and, through protecting that industry by readjusting it to meet modern conditions and policies, to reduce or eliminate one of the most prolific and important causes of public dissatisfaction and unrest.

Railway Accountants Discuss Commercial Power Customers

Delegates Enjoy Toledo Beach—Discuss Power Accounts and Methods for Computing Costs at Points of Delivery

THE forty-first meeting of the Central Electric Accountants' Association was held in Toledo, Ohio, Aug. 26 and 27, 1921. This meeting was one of unusual interest, there being an attendance of forty-eight, representing practically the entire railway membership of the association. Luncheon was served Friday, Aug. 26, at the Toledo Yacht Club, and all sessions were held at this club. The two papers were given by J. N. Hagan and F. E. Eaton, entitled "Power Costs and Method of Arriving at the Same at Point of Delivery" and "Handling of Light and Power Consumer Accounts" respectively.

In his paper Mr. Eaton, who is head bookkeeper of the Toledo Railways & Light Company, discussed briefly the method used for handling commercial customers by his company.

The operations essential to the handling of customers' accounts are classed in three divisions: (a) Origin of information, (b) record of information, (3) recapitulation. The customer's account is started on the books when he signs an application or contract for service. This contract is now the authority for the issuance of work orders to the proper departments to give the customer his connection to the lines. The executed order is returned to the contract department, where complete information is transferred to the original application and is then turned over to the house card clerk, who records the necessary information.

The bookkeeper then takes the order and from it makes up the customer's ledger sheet, on which is recorded such information as name, address, meter number reading, etc. Also, the meter reader slip is sent to the meter reading department. These slips are bound together in covers provided for them and are routed according to districts in which the territory served is divided. These books contain an average of from 200 to 300 slips, covering streets and numbers running consecutively north and south or east and west. Following this the meters are read and the meter books are returned to the bookkeeping department to have the indexes recorded and bills made out.

At the completion of the billing for each period, which may be monthly, bimonthly or tri-monthly, based on the number of consumers served, a recapitulation of the month's earnings or revenue is made on a form of stationery which shows classification of kind of current used, whether used for domestic or commercial purposes, and further classified as to whether the current is charged for at regular meter rates, contract or flat rate, readiness to serve, or minimum charges for services rendered. This recapitulation is added from the ledger or listing machines and the results checked and verified by comptometer, the totals of the distribution columns verifying the grand total. The recapitulation of the month's revenue from all divisions is then combined and reported to the auditing department and charged by them against the bookkeeping department.

Ledgers are bound bi-monthly, at the close of the billing period and at the close of the discount period. This divides the labor in finding balances and does not burden the bookkeeper unnecessarily, particularly during the billing period, as the balance taken at close of same is merely applying the cash received against arrears unpaid at the close of discount period.

In entering cash and charges on the merchandise ledgers, which are set up in the same rotation as the electric and gas consumers' ledgers, the flag system is used. After the sales and cash for each day are entered, a recapitulation is made of the previous balance, new entry and present balance at close of each day's business; in this manner taking daily balances of each clerk's work is a great help in preventing errors, which would be hard to locate in a balance of a month's business.

For taking care of complaints forms are provided on which requests for investigations and inspections are made. In order that errors in recording work orders be reduced to a minimum, a system is installed whereby all work orders that have been entered on ledgers are checked by a competent employee, particularly to see that the meter constants and rates are recorded correctly. Consumers and extension deposits are kept in separate ledgers and are handled by one of the older employees in length of experience and service and are balanced monthly with the control as shown on the general ledgers of the auditing department. A card system and loose-leaf ledger sheets are used.

These operations and methods as outlined have given abundant satisfaction in accuracy and efficiency and any time are open to personal inspection, and any inquiries in regard to the same will be given prompt attention.

The paper by Mr. Hogan on power costs is abstracted elsewhere in this issue of the ELECTRIC RAILWAY JOURNAL.

The report of the Committee on Freight and Express Accounts was adopted on the basis of the steam railroad practice in the settlement of differences on monthly accounts, the minimum amount of settlement being 25 cents.

The Astray Freight Waybill authorized at the January meeting was reported by the committee as ready for the printer, and it will be put into operation at once. The committee was authorized to complete the form for an Interline Unit Waybill to be used by member lines.

It was decided that the next meeting of the association would be held at Indianapolis, Ind., on Jan. 27 and 28, 1922. One of the special features of this meeting was the attendance of the wives and families of the members. On Saturday some of the accountants and their families availed themselves of the invitation of the Community Traction Company and spent the day at Toledo Beach, where all had an enjoyable time and good things to eat.

The following were elected to membership in the association: J. F. Keller, auditor of freight and ticket accounts, Dayton & Troy Electric Railway, Tippecanoe City, Ohio; F. M. Kemp, assistant treasurer, Gary & Valparaiso Railway, Gary, Ind., and D. A. Moore, secretary and treasurer, Community Traction Company, Toledo, Ohio.

Power Costs at the Point of Delivery on Interurban Electric Railways[*]

Power Costs Must Be Segregated When Commercial Consumers Are Supplied—Demand, Energy and Customer Costs Explained—Intelligent Rate Schedule Must Be Based on Accurate Power Cost Data

WHEN the majority of interurban electric railways were built but little consideration was given to the possibility of supplying commercial loads from the railway transmission systems. In most instances excess capacity was installed to permit of future expansion of the railway. Fixed charges and a large part of operating expenses, relating to the existing power system, were not increased by the addition of small commercial loads. In many cases the railway managements considered that the only increased expense would be in the coal bill, which at that time was a relatively small item. Based on this hypothesis, very low rates were made to attract as much commercial business as possible.

At this time a majority of interurban railways are carrying commercial power and lighting loads amounting to between 10 per cent and 30 per cent of the entire output. Due to increase in both railway and commercial loads, many power plants have been enlarged. The increasing importance of accurately determining the cost of power at the point of delivery is obvious.

The cost of supplying electric energy to consumers is made up of three elements, namely: (1) That portion of the total expenses fixed by the maximum demand on the system, which is often termed "Demand Cost"; (2) that portion of the total expenses which is proportional to the energy used, called the "Energy Cost," and (3) that portion of the total expense which is nearly proportional to the number of customers served, which may be called the "Customer Cost." It is evident, therefore, that there is no single unit of measurement which will accurately define power costs, as we think of the cost of an ordinary commodity. Obviously, since there are two cost factors in addition to that proportional to the actual energy used by any customer, the time-worn phrase, "Cost per kilowatt-hour," does not express the cost of supplying a particular consumer, but rather it expresses the average cost of supplying a kilowatt-hour to the average consumer on the entire system. If the load curves of all consumers were exactly similar, with peak loads occurring at the same time of day and year, then "Cost per kilowatt-hour" would be a true measure of the cost of supplying power. However, fortunately for all concerned, the peak loads of all consumers do not occur at the same time. Further, the ratio of maximum demand to average demand or load factor is different for the several consumers or classes of consumers.

NECESSARY TO SEPARATE COSTS

In the problem of the interurban railway it is necessary first to arrive at the division of demand, energy and consumers' costs for that portion of the installation used jointly by railway and commercial loads. This includes the costs incident to the power plant and main transmission system, but not including the railway and commercial power substations. To obtain an exact division of the costs, each railway substation and transformer substation on the main transmission line should be considered as a separate load.

Inasmuch as the demand cost is fixed by the peak load on the system, it is necessary to determine the degree to which each substation is responsible for the peak load, or, in other words, the capacity of the power system. Offhand, it would appear that the portion of the demand cost chargeable to each substation would be in the ratio of the load on that station to the total peak load on the system at the time of the system peak load. It will be seen that this is not the correct viewpoint, when it is pointed out that at the time of the peak load in a given year a large number of consumers may not be using any power. While it is true that certain consumers probably will have their peaks coincident with the system peak load each year, it is also true that a portion of the peak load will be made up of different consumers in succeeding years. If it were possible to obtain continuous load curves of every substation and of the power plant over a long period, the portion of the demand cost which each substation theoretically should bear could be calculated. Practically, this is not feasible.

The load curves of interurban power stations have characteristics different from those of the ordinary central station. During the hours of operation of the railway, the railway load is fairly constant. On ordinary weekdays a slight peak occurs during the morning and evening rush hours. However, on holidays, or when some local attraction results in passenger traffic above normal, the power plant may be called upon to supply a practically constant railway load, considerably higher than the weekday peak. The interurban railway peak load, therefore, may occur at any time during the day or evening and probably will vary in time in different years. It is apparent that a commercial load which occurs during any hour of the day or evening may coincide with the railway peak.

The peak load on a power plant or on any part of a system is always less than the sum of the peak loads of the constituent parts, due to a time difference between the peaks of the individual loads. This introduces a diversity factor which may be defined as the ratio of the sum of the consumers' demands to the peak demand on the system measured at the point of supply. Coming back to the question of determination of the division of demand cost between substations, it is reasonable to assume that the demand cost chargeable to each substation is proportional to the maximum demand of that substation, taking into account the diversity factor between the various loads. As an example, suppose that there are but two substations, "A" and "B." Suppose the maximum demand of substation "A" is 8,000 kw., that of "B" 6,000 kw., and that the maximum demand on the power station is 10,000 kw. The diversity factor of the substation loads is then

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[*] Abstract of article by J. S. Hagan, Westinghouse Electric & Manufacturing Company, before Central Electric Railway Accountants' Association, Toledo, Ohio, Aug. 26, 1921.

$$\frac{8,000 + 6,000}{10,000} = 1.4$$

Substation "A" should be charged with the demand cost of $\frac{8,000}{1.4} = 5,710$ kw. and substation "B" $\frac{6,000}{14} = 4,290$ kw.

In calculating this division of the central station demand cost, the maximum demand of each railway and commercial substation should include power plant, transformer and line losses, which can be calculated approximately. Neglecting power factor, line losses of a transmission system at any instant are not proportional to the power delivered, but to the square of the power delivered. In practice it is impossible to determine with exactness the line loss properly chargeable to each consumer. In so far as the main transmission line, used jointly by railway and commercial power, is concerned, it is usually sufficient to assume that the total line loss is divided in proportion to the energy consumption of the various substations.

The power demand of each substation can be obtained by the use of maximum demand meters. The demand of large commercial power substations serving a diversity of loads is difficult to estimate and always should be obtained either by the use of maximum demand meters or recording wattmeters. In this manner the total demand costs of power plant and transmission lines may be divided between railway and commercial power loads.

Each commercial substation with its distributing system must be considered separately, and the total costs incident to that particular distribution system should be divided in the manner previously described. The demand costs which consumers receiving power from a given substation should bear consist of the part of the main power system demand costs determined above plus all of the demand costs of the substation distribution system. The division of this total demand cost of a particular substation could be made between every consumer receiving power from that system. It is apparent that this calculation of the division of demand costs could be carried down to the individual consumer, but for practical purposes it is sufficient to determine the division between only a few classes of similar load characteristics.

The determination of energy costs for each consumer requires but little comment. The total energy cost of the central station and the energy cost per kilowatt-hour at the power plant busbars can be determined, as outlined before, from data easily obtained. It is again pointed out that losses in the distribution system should be added to the energy delivered, to obtain the total energy consumption charged to any consumer or class of consumers. Because of the difficulty in accurately separating losses in power station step-up transformers and main transmission line, this energy loss may be divided on a kilowatt-hour basis, where energy is metered at the substations.

The third part of the cost of power, namely, the customer cost, takes care of capital charges on customers' account and expenses incidental to billing and inspecting.

It should be borne in mind that this discussion is upon the determination of power costs, and not upon rates to consumers. While the fixing of rate schedules should be preceded by a thorough study of the costs, upon which any logical system of rates is based, there are many other factors involved.

Rate schemes are in use which take proper account of the division of power costs and yet are very simple. Even though it may be necessary to deviate somewhat from the theoretical costs of service for different classes of consumers, it is folly to attempt the determination of equitable rates without first knowing with a fair degree of accuracy the cost for each class of consumer.

Dinner to Returning Engineers

A DINNER will be tendered at the Engineers' Club on Oct. 10 by the national engineering societies to the returning members of the deputation which represented the John Fritz Medal Board in Europe. The guests will include representatives of the British and French societies by which this delegation was received. Invitations have also been extended to many men prominent in public life, including Secretary Hoover, Viscount Bryce and Secretary Hughes.

Ambrose Swasey of Cleveland is chairman of the John Fritz deputation, and the foreign organizations which will be represented include both British and continental engineering societies. A committee of arrangements has been appointed consisting of the secretaries of the A. S. M. E., A. I. M. & M. E., A. S. C. E., A. I. E. E. and United Engineering Society.

Iowa Association Meeting

THE mid-year conference of the Iowa Electric Railway Association has been definitely scheduled to take place on Sept. 15 and 16 at the Russell-Lamson Hotel, Waterloo, Iowa. The first session of the meeting will be at 9:30 Thursday morning, while an inspection trip and a banquet and entertainment have been arranged for Thursday afternoon and evening. The third and final session will begin at 9 o'clock Friday morning. Supplementing the information as to program printed in last week's issue of the ELECTRIC RAILWAY JOURNAL, the following information is available: F. V. Skelley, Davenport; F. B. Hudson, Omaha; J. E. Kuntz, Cedar Rapids, and D. D. Bentzinger, Burlington, will discuss the paper on "Transportation" by Maurice A. Welsh. The paper by H. J. Connell on the relation of the claim department to the other departments of a railway is to be discussed by W. P. Thomas, Omaha; J. E. Marcussen, Davenport, and Dan Finch, Des Moines. R. J. Smith's paper on "Laying and Maintaining Track" will be discussed by R. H. Findley, Omaha; T. E. Rust, Waterloo, and W. L. Wilson, Des Moines. The paper by Frank R. Grant on "Dipping and Baking Armatures" will be discussed by Tom Wood, Omaha; W. G. Lamb, Waterloo; C. M. Feist, Sioux City, and John Sutherland, Davenport. A discussion on the relative cost of maintaining one-man and two-man cars will be led off by John Sutherland, C. M. Feist, W. G. Lamb and Tom Wood. John Sutherland, Davenport, will act as chairman of the meeting.

Pacific Railway Club Active

THE Pacific Railway Club held its fifth annual electric railway night Thursday evening, Aug. 11. George H. Harris, assistant to the vice-president and general manager, San Francisco-Oakland Terminal Railways, who is the club's president, presided. There were over three hundred steam and electric road officials and employees present.

The following papers were read: "The Electric Suburban Railway," by E. E. Thornton, San Francisco-Oakland Terminal Railways; "The Possible Field for Trackless Trolleys," by A. V. Thompson, General Electric Company; "History and Comments on the Third Rail System," by C. E. Hatch, Northwestern Pacific Railroad.

Following the reading of these papers, the meeting adjourned to the Market Street Railway's new downtown substation, where an address was made by J. E. Woodbridge, resident engineer for Ford, Bacon & Davis, by whom the station was designed. Mr. Woodbridge explained the details of design and construction and also the method of operation. The station was placed in operation to illustrate this talk.

American Association News

Modification in Program

THE title of the paper to be presented by H. C. Hopson at the Tuesday morning meeting of the Accountants' Association has been changed from that given in the issue of Aug. 27 to "Adaptation of Routine Accounting Results to Particular Uses."

Leaflet on Des Moines

THE advertising department of the American Electric Railway Association has prepared a leaflet giving some facts with regard to the Des Moines situation, extracts from papers commenting on the bus service in that city, etc.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City Takes Toronto Railway

Operation Assumed by New Transportation Commission, But Purchase Details Remain to Be Adjusted

Toronto has taken over the property of the Toronto Railway. The lines are being operated by the city in conjunction with the lines of the Toronto Civic Railway. The statement made previously in the ELECTRIC RAILWAY JOURNAL to the effect that the details of the negotiations would not be completed by Sept. 1 was correct, but it was decided to go ahead with the transfer of the road to the city at this time. It is anticipated that all the negotiations in connection with the purchase will be completed by Jan. 1 next and that the Toronto Railway will be liquidated before that time.

In view of the fact that the financial arrangements have not all been perfected, it was announced that payment of the principal on the balance of the outstanding 4½ per cent first mortgage bonds of the Toronto Railway, which fell due on Sept. 1, would have to be deferred until the company was in receipt of funds arising from the sale of its assets to the city and of its subsidiaries to the city and province. As a concession to the bondholders concerned, the directors announced that interest on the bonds would be paid as usual and that from the date of maturity until the date of payment of the principal of the bonds, the interest rate would be voluntarily increased from 4½ to 6 per cent. The bond issue was originally for $4,550,000. It was dated Sept. 1, 1892. Of the original sum $2,275,000 has been retired by the sinking fund, leaving a balance of the same amount. The statement to the bondholders said:

> The arbitration proceedings will of necessity occupy some weeks, and until the award is made, the company will not be entitled to payment for its property. It is, therefore, unable to provide the necessary funds for the redemption of its bonds on Aug. 31. The interest due on that date will be paid as usual.
>
> The bonds are of first charge on the undertaking of the company until taken over by the city and, therefore, upon the money payable by the city as compensation. The directors counsel the bondholders not to sacrifice their bonds, as they are amply secured and will be paid at their full face value.

H. H. Couzens, general manager of the Toronto Transportation Commission, has assumed the management of the properties taken over. One of the first acts of the city was to cancel after midnight on Aug. 31 all bus service licenses granted for use in the city by the Board of Police Commissioners. When bus owners operating services in the city were granted their licenses, they were notified that the right to operate would not be good after Sept. 1.

According to the Toronto *Globe* Sir William Mackenzie, president of the Toronto Railway, is credited with the statement that the stockholders of the railway were badly used. In commenting on this, the *Globe* said that there will be very general agreement with that statement, but there will be as general a dissent from Sir William's suggestion that the action of the city in any way prejudiced the interests of the shareholders. The *Globe* said in part:

> He, himself (Sir William), is chiefly responsible for the grievous losses that have fallen upon the investors who bought the Toronto Railway shares in boom years of 1911 and 1912 at prices ranging from $130 to $160 a share and who are now confronted with a stock market valuation around $70 for the same shares.
>
> If Sir William, looking back over thirty years of street railway direction and control in Toronto, can feel that he did the best he could, either for the citizens or the shareholders of the Toronto Railway, he must hold himself to a far less strict standard of conduct than he would exact from any of his subordinates. When he tells of how badly the shareholders have been treated, the answer of the citizens must be: "Thou art the man."

The *Globe* is further of the opinion that the citizens of Toronto "who enabled the company to pay dividends on $6,000,000 of watered stock as well as the charges on the borrowed capital invested in the enterprise, were compelled to use obsolete rolling stock dragged over worn-out rails." The *Globe* says that the extensions to which the people of Toronto believed themselves entitled under the franchise to the Toronto Railway were refused and that a system of civic railways had to be built by the city on the outskirts and operated at a loss, while the Toronto Railway fed fat on the highly profitable traffic of the central district.

While the city does not of course acquire title to the road until the award of the arbitrator has been received and the papers to the negotiations finally signed, the commission in charge of the property has gone ahead on the assumption that the road must be made to pay from the very start. As the result of its consideration of the whole problem, it was, therefore, decided that instead of the straight 5-cent fare the cash for adults should be 7 cents or four tickets for 25 cents and sixteen tickets for a dollar, or fifty tickets for $3. Night rates for all passengers will be 15 cents. As for children's fares, infants in arms are carried free, but for all others, irrespective of age, not exceeding 51 in. in height, the rate is 4 cents cash or seven tickets for 25 cents.

It is reported that the Mayor declared that he would not sign the documents necessary to the transfer of the property because of the 7-cent fare decision and issued instructions for the railway to be temporarily operated by the municipal officials at the old rate of fare, which averaged about 3½ cents, compared with the higher fare required by the commission to pay expenses.

Situation in Des Moines

No Agreement on Offer of Employees—City Files Answer to Foreclosure Proceedings

City officials and the railway failed to agree on union employees' proposal for resumption of service in Des Moines. Company officials declare that the men's plan does not give adequate financial guarantee, particularly to cover possible damages. W. E. King of Toltz, King & Bay, Minneapolis, was called into conference with Corporation Counsel Miller on Sept. 7 and it is reported that he will be employed by the city during the franchise negotiations.

Electric railway service in Des Moines was shut down again on Friday night, Sept. 2, after eight days' service during the period of the Iowa State Fair. Operation of cars during the period of the state fair showed sufficient receipts to cover operating expenses with no provision for interest and depreciation.

After a mass meeting of the railway men's union on Friday application was made to Judge Martin J. Wade, on behalf of the union, to order a resumption of service for a period of thirty days while the franchise negotiations are under way.

In their offer the union employees agree to guarantee expenses to the Des Moines City Railway during the trial period under an arrangement similar to that made by the State Fair Association.

This offer is that the revenue during the thirty-day period will be used to pay all expenses except those for labor, any balance of revenues to be prorated among them, but no allowance to be made for the payment of taxes, bond interest or depreciation charges during the period of thirty days. This arrangement is similar to the conditions laid down in the agreement with the State Fair officials for the resumption of street car service temporarily.

The text of the men's offer in part follows:

> Whereas, we, the employees of the Des Moines City Railway, members of Division No. 441, believe it to be to the best interests of the citizens of Des Moines to be provided with the best street car service possible, pending a final settlement of the differences between the city and company; and,
>
> Whereas, we have been informed that the company will discontinue service at midnight today unless it is guaranteed against loss; therefore, be it
>
> Resolved, that we, the members of Division 441, employees of the company, instruct our officers to notify the City Council and all others concerned that we will operate the cars for a period of thirty days and will agree to accept as wages, divided pro rata per hour, such amount as may be after paying actual operating expenses. Provided, however, that interest, taxes and depreciation shall not be considered as operating expenses during this period.

Corporation Counsel Miller announced on Sept. 3 that he would also make application to Judge Wade for a restoration of service on the offer made by the men. Judge Miller's statement came after a conference with F. C. Chambers, general manager of the Des Moines City Railway.

Saturday brought another development with the filing of the city's reply in federal court to the foreclosure complaint. The city maintains that the franchise under which the Des Moines City Railway has been operating is still in force and that the franchise is the only authority for the company to occupy the streets. Claim is made that suspension of service is a direct violation of the franchise and that occupation of the streets without operation of service constitutes an obstruction of the streets, and that if it continues "the city will deem it necessary to tear up the tracks, poles and wire and clear the city streets."

In the event that a sale of the property is made the city asks that it be made as soon as possible, and "that the property so sold be treated as a unit and subject to the ordinances preserving to the city the franchise intact." The city also points out that the purchaser at any sale takes the properties subject to the lien and franchise of the city. The reply is the first definite declaration of policy by the city during the controversy.

The franchise prepared by the Harris interests had not yet been returned on Sept. 31 to the City Council by Corporation Counsel Miller.

Upon complaint of the superintendent of schools that buses were failing to meet the situation and were keeping children from school, operators agreed to reduce the fares to 2½ cents for school children and to provide extra buses for certain schools.

P. R. T. Wage Cut Hinted

A wage cut affecting the employees of the Philadelphia (Pa.) Rapid Transit Company looms up as a possibility. Thomas E. Mitten, president of the company, said recently that the wage scale must continue to follow the average scale of Chicago, Cleveland, Detroit and Buffalo even if reductions result. Mr. Mitten's remarks were made at a picnic and dinner tendered to 500 officials and departmental heads of the Co-operative Welfare Association of the company. The affair was held at the Willow Grove Casino.

Mr. Mitten reviewed the important developments in the history of the company during the last eleven years, and said that Philadelphia had been transformed "from the worst-served city in 1910 to a service which compares favorably with that of any other city." Touching on keeping up with the four-city average Mr. Mitten said:

> No matter how much our inclination may run in the direction of retaining the present 65-cent wage as we had hoped, we must now, in fairness to the car rider and to the P. R. T. stockholders, be as exact in making reductions in accordance with the four-city average as we were in grabbing off the increase when the four-city average made that a fair thing for us to do.

Seattle Jitneys Must Go

The State Supreme Court on Sept. 2 denied the petition for a rehearing of a group of Seattle jitney drivers. This petition was recently filed by the H. P. McGlothern group of jitney drivers and a second group of drivers later intervened in the suit.

This decision upheld the order of the Superior Court and means the jitneys must leave the streets of Seattle. Their only recourse is to appeal to the United States Supreme Court where the chances for obtaining a review of the jitneurs' litigation against the city of Seattle is very remote, according to those familiar with the situation.

Milwaukee Company Inaugurates Limited Interurban Service

The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has announced a limited service from Milwaukee to Watertown, located about 50 miles away from Milwaukee, at the terminus of one of the company's interurban lines. The service will consist of two trains each way daily, except Sundays and holidays. In view of the lower fare on the electric railway as compared with the steam road rate for the same trip it is hoped materially to increase the company's interurban business on this particular line. At the same time announcement has been made of changes in the leaving time of interurban trains operating on some of the other interurban lines of the company to aid connections and to increase through traffic on the interurbans.

Beginning June 1, the company placed on sale new twenty-five-ride commutation tickets between Milwaukee and the more important stations on the interurban system at very attractive rates. These will be limited to the use of the purchaser and will be good for six months. There will also be on sale 500-mile mileage books at about 2½ cents per mile plus 90 cents war tax, or at a total of $12.15. The mileage book will be transferable, good for one year from date of purchase and will permit of its being used by any number of persons at one time. On Sept. 1 the company will begin selling forty-four-ride commutation ticket books for the individual use of the school children.

The company's announcements of proposed changes in service and in ticket rates have been made through advertisements in the various local papers and through a small, attractive leaflet which will be distributed on the cars and at the various terminals. The leaflet contains a form for making suggestions for the betterment of the interurban service. The interurban rates of the company are 3 cents per mile cash, 2.75 cents per mile if single tickets are bought, 2.25 cents per mile when 500-mile mileage books are bought, 2 cents per mile with twenty-five-ride books and as low as 1½ cents per mile if fifty-two-ride non-transferable one-month books are bought. In connection with the inauguration of limited service, the company will also undertake to transport free of charge a certain amount of baggage.

New Orleans Council Approves Maloney Plan

The trolley troubles of New Orleans which have dragged settlement for these many months appear to have reached an end, in a plan of action proposed by Commissioner Paul Maloney of the Department of Public Utilities, at a special meeting of the Commission Council on Sept. 3.

The Maloney scheme, it may be stated, has received the indorsement of the civic, commercial and financial bodies of New Orleans and was approved at the meeting of the council by a vote of 4 to 1, Mayor McShane alone standing out against settling the controversy on a basis of $44,700,000, for making the rate of return, though not opposed to the Maloney estimate of $44,700,000, as the value of the property.

Neither Judge Foster of the Federal District Court, who will of necessity be required later on to pass upon the recommendations of Commissioner Maloney and the Commission Council, when the matter is brought to his attention officially, nor Receiver J. D. O'Keefe of the Public Utilities Company would comment upon the new plan of settlement. It is planned, however, to ask Special Master Chaffee of the Federal Court to postpone the hearing which was to have started on Sept. 6 for a period of three weeks, in order to give the security holders of the company time to assimilate the plan.

C. C. Chappelle, representing the New York Security Holders Committee, was the only voice raised in a criticism of the Maloney plan. He thought the restrictions and conditions imposed under the Maloney plan were unique in public utility financing and regulations, and that this departure from approved standards and principles might have the effect of preventing investors from financing the reorganization. He intends to return to New York immediately.

The city's ultimatum is as follows, briefly speaking:

Valuation, $44,766,000; rate of return, 7½ per cent. Immediately on reorganization and discharge of receivership, the rates and charges to be as follows, for a test period of six months:

Car fare, 7 cents with universal transfers; gas rate, $1.30 per 1,000 cubic feet; electric rates unchanged; the city to have a perpetual option on the following utilities of the company as of Dec. 31, 1920:

Gas plant, $8,652,000; Electric Light & Power Co., $10,048,000; Street Railway, $20,000,000. The company to be reorganized within a period of six months, the Commission Council to have one-third of the Board of Directors on the directory of the new organization, who shall be neither state nor city officials.

Interurbans Run in Albany

Amalgamated Requires Schenectady Railway Employees to Operate in Strike Zone

There is no change in the Albany-Troy-Rensselaer strike situation and the endurance contest between the United Traction Company and its former employees will apparently continue for some time yet, although it is generally conceded that the strike, as such, is over.

Interurban cars from Schenectady were run into the strike zone in Albany and Troy on September 1 for the first time since the strike was started in January, the cars so operating carrying no local passengers within the city.

The operation of interurban cars into the strike zone of Albany and Troy is the result of the order of the executive committee of the Amalgamated Association given out in Detroit on Aug. 31 to obey the request of the Schenectady Railway and the Hudson Valley Railway to run into the strike zone.

Politics, both big and small, is being played with the traction situation. In Schenectady George R. Lunn expects to win for mayor on the Democratic ticket this fall and next fall become the logical Democratic candidate for Governor on the strength of having averted a strike of railway men in Schenectady and the cities west of Albany. In Albany Patrick E. McCabe, former Tammany boss of Albany County, is running on an independent platform for Mayor, declaring for a 5-cent fare and the eternal damnation of the United Traction Company.

JITNEY SITUATION IN COURTS

The attitude of the United Traction Company is that the strike is over. The officers of the company expect that the fall and winter months will bring a return of most of the former patrons, who are now walking or jitney riding.

The entire jitney situation is now in the Supreme Court before Justice Harold L. Hinman. It is generally conceded that the New York State statutes and constitution afford a wider protection to interests holding transportation franchises as against competitive transportation systems than do the statutes of some other states, and that in all probability the proceedings now pending before Judge Hinman will result in a set-back to all jitney operations in the State, unless the Legislature should by chance intervene, a proceeding which appears very unlikely.

After reciting circumstances and conditions in the three cities, the decision of the Amalgamated read in part:

> The feeling of your general executive board is that the order is put up to the association for the purpose of placing us in an embarrassing position with no alternative except to violate the principles of collective contract.
>
> Now, therefore, your board lays down to you as the establishing of a decision upon the question, a rule to be followed: That you live up to your contract and operate your cars into the terminals of Albany and Troy, with the direct understanding that you are to carry the regular passengers of your own roads in and out of those cities in a manner that, in fully conserving your agreement relations, you will do nothing detrimental to your fellow workers that are waging a struggle for the right of organization in those cities. You are hereby instructed to carry out this rule.
>
> Every means available within this association will be used to assist the men of Albany and Troy now engaged in fighting the lockout, and at least $7,000 a week will be placed behind these men until the convention of the association can act upon the matter.
>
> In addition to this, officers of the international asociation will be sent to our various local divisions, to explain to them that the rumors that are being spread that the lockout is lost and that the amalgamated is not behind the Albany and Troy members of this association, are absolutely untrue, and to appeal to the membership of those local divisions, that each of these locals pledge, through their membership, financial aid and assistance in addition to what the convention may do for them.
>
> We will place this situation before the representatives of the various political parties of the state of New York and lodge with state, city and county officials an appeal that they give their assistance and exercise their good offices to bring about an honorable settlement of the lockout situation in Albany and Troy, on the ground that the company is operating under concession and solely by the right of franchise of the people, and that the people's rights should and must be respected and served by them.

Birmingham Files Injunction

Following Appeal From Decision of Commission the City Files Injunction Proceedings

Injunction proceedings have been filed by the city of Birmingham against Lee C. Bradley, as receiver, and the Birmingham Railway, Light & Power Company, in the Chancery Division of the Circuit Court, attacking the constitutionality of the Alabama public utilities act. The city, by these proceedings, seeks to restrain the receiver and the Birmingham Railway, Light & Power Company from collecting the 8-cent fares and the 2-cent transfer charge put into effect weeks ago by the Public Service Commission.

The court is asked in the proceedings to declare the franchises of the company forfeited for alleged violations of the contracts between the city and the company, and to enjoin the collection of any fare in excess of the sum of 5 cents, which is provided in the old contract between the city and the company.

Vigorous attack on the constitutionality of the public utilities bill, which gives the Alabama Public Service Commission exclusive right to regulate the rates charged by public utilities in the State, is made in the suit. It is charged that the Birmingham Railway, Light & Power Company was largely responsible for the adoption of the bill.

The case has not yet been set for hearing. Under the law the receiver and the company have thirty days in which to answer the proceedings. When the answers have been filed the case will be set down for hearing.

The time for appeal from the decision of the Alabama Public Service Commission granting the 8-cent fare has not yet been announced. This appeal was filed in the Circuit Court of Montgomery County. Under the provisions of the public utilities act, an appeal from one of the decisions of the Public Service Commission can only be filed in the Circuit Court.

Toledo Prospect Better

First Year's Operation at Service-at-Cost May See Deficit Wiped Out and System Stabilized

There will be no electric railway extensions in Toledo, Ohio, for at least a year. This announcement has been made by Street Railway Commissioner Wilfred E. Cann. It is believed, however, that the completion of the first year's operation under the service-at-cost plan will see the deficit largely wiped away and the system in a fair way to reduce fares and greatly better operation.

During the present summer 40 per cent more repair work and track improvement have been undertaken than in the last three years. Many downtown intersections have been repaired and replacements have been made in some long stretches of track. Commissioner Cann said:

> While car riding continues to fall off—there were 55,000 fewer passengers carried in the first twenty-five days of August than in the same number of days in July—we have been able to stem the deficit.
>
> I thought 10 cents a car-mile for maintenance would be none too much when I came here. That ratio has been turning in $58,000 to $60,000 a month to the maintenance fund. That figure has been cut down because we weren't spending the money that fast.
>
> We have been able to economize through the elimination of the Huron line, speeding up service, cutting out surplus employees, doing away with dead car mileage, and splitting lines in the downtown district. I believe that by Oct. 1 we will have cash in all the funds up to their limit and then we can start putting money back into the stabilizing fund.

AUGUST STATEMENT AWAITED WITH INTEREST

The stabilizing fund now stands at $140,000. It must come up to $500,000 before the reduction of fares is possible.

It is believed the statement of operations for August, to be presented to the board of control at its meeting on Sept. 12, will be the best yet brought out by the commissioner. Fare raises have changed the complexion of operations.

The Toledo Railways & Light Company has made arrangements for the lifting of the $12,000,000 mortgage against its properties. This indenture also binds the holdings of the Community Traction Company. It was agreed at the time of the transfer of the property that a large cash forfeit would be made by the Doherty companies if the mortgage was not lifted by December.

Morton Seeley, attorney for the Toledo Railways and Light Company has been in New York, arranging for the new financing of the local properties.

Third Wage Cut in Effect

Trainmen of the McKeesport branch West Penn Railways, Pittsburgh, Pa., have been notified of a wage reduction amounting to 5 cents an hour. Motormen and conductors will now receive 48 cents an hour for the first three months of service, 53 cents for the next nine months, and 55 cents for all time after a year's service. This is the third reduction in effect since May.

Suburban Men Cut 15 per Cent

A wage cut of 15 per cent, retroactive to July 1, has been announced by the arbitration board in the case of the Middlesex & Boston Street Railway, Newtonville, Mass. This award will make the wages of blue-uniform men for the ensuing year as follows: First three months, 42½ cents; next nine months, 47 cents; thereafter, 51 cents an hour. This compares with 50 cents, 55 cents and 60 cents an hour under the heretofore existing scale. The award was accepted by the union.

Owing to the retroactive feature of the award, the employees will be obliged to refund to the company the excess wages received under the old scale since July 1. Negotiations were commenced prior to that time, but were not completed until recently, so the company continued to pay the old scale with the understanding that the employees would refund any difference which might exist when the arbitrators finally settled the new rate.

The arbitration board consisted of Colonel Charles R. Gow, Pitt Drew and James H. Vahey. Messrs. Gow and Drew formulated the majority report, which fixed the new scale. Mr. Vahey presented a minority report dissenting from the award.

The majority members accepted the company's contention that the existing high wage scales were the result of a series of upward boosts in rates which were in every case intended to enable the employees to meet the increased cost of living. This cost has now receded materially, according to the report, and therefore a downward revision of wages is justified.

In his dissenting opinion, Mr. Vahey maintained that the rates fixed are entirely inadequate, and claims that the majority finding was based on the law of supply and demand for labor, that is, on the ability of the company to employ men at lower wages because of the present widespread conditions of unemployment. Mr. Vahey said:

> When employees agree not to strike, when they surrender this industrial weapon, and when they agree with the employers to submit their question of wage rates to a board of arbitration, both sides are thereby precluded from invoking the law of supply and demand.
>
> And yet the majority of the board allows the wage rates to be fixed by the hunger of unfortunates who are at present out of a job.

Trolley Crashes Into Hotel

An electric train consisting of three freight cars en route from Worcester to Springfield, Mass., on Aug. 31 jumped the track on the incline of State Street, Springfield, and crashed into a stone and brick building occupied principally by the Victoria Hotel. The impact tore away the supporting pillars and the falling walls exposed the sleeping rooms on the upper floors.

The express messenger in one of the cars was the only person who received serious injuries. The motorman was only slightly hurt, but a hotel guest was severely cut. The damage to the building is estimated at $50,000. Two of the express cars were destroyed and the other is almost a total loss. Manager Flanders of the Springfield Street Railway began an investigation at once. He himself is of the opinion that slippery rails was the cause of the accident.

Railway Doing Its Best

Company at Portland, Ore., Is Putting Money Back Steadily Into Its Properties

In a petition to the Public Service Commission of Oregon the City Council of Portland, through City Attorney Grant, urges that the Portland Railway, Light & Power Company be required to perform certain maintenance and construction work on railway lines in Portland or reduce the fares on such lines.

The city, in its petition, maintains that the company has failed entirely to do extra maintenance work, and has also failed to do a large part of reconstruction work, all of which was set up by the company as one of the reasons necessary for an increased fare granted on June 20, 1920, by the Public Service Commission.

Franklin T. Griffith, president of the company, denies the allegations of the City Council, asserting that not only has the company carried out its obligations, but in addition it is the only employer of large numbers of men in the State of Oregon that has a greater force at work than is shown in the records one year ago.

In its petition to the Public Service Commission, the city contends that when the railway requested an increase from a 6-cent to an 8-cent fare, representation was made that the additional revenue was required to perform reconstruction work estimated to cost $656,900; also that for a period of twelve months following the allowance for increased fare, it would be necessary to spend $10,000 a month for maintenance work which had been deferred because of lack of funds. The city alleges that the company has failed to perform the extra maintenance work, and has also failed, neglected and refused to do a large part of the reconstruction work.

President Griffith stated that during the period from July 1, 1920, to July 31, 1921, the company actually expended on maintenance and reconstruction of its railway system a total of $869.389, and that the number of reconstruction jobs under way will require an additional $193,782 to complete. This is exclusive of the increased maintenance program. Mr. Griffith said:

> It is true that prior to the inauguration of the 8-cent fare, the railway was unable to expend the sums of money necessary for proper and complete maintenance. The 8-cent fare materially helped the situation, but the 8-cent fare was calculated to provide a sufficient revenue for normal maintenance and operation, and was not intended to and has not provided any surplus revenues to care for deferred maintenance or reconstruction.
>
> As a matter of fact under present reduced railway earnings, the 8-cent fare is insufficient to provide for normal maintenance and operation, and a reasonable return upon the value of the property. This condition is due to the widespread unemployment in Portland, which is reflected in a reduction of railway patronage, which will doubtless continue until there is a general improvement in business conditions.

Wages Reduced on Market Street Railway, San Francisco

The wages of all platform men in the employ of the Market Street Railway, San Francisco, Cal., were reduced 4 cents an hour beginning Sept. 4, and a new wage scale was put into effect for all men employed after that date.

During the period of rising prices from 1917 to 1920 the company advanced the wages of its platform men from a maximum of 33 cents an hour and a minimum of 25 cents to a maximum of 56 cents an hour and a minimum of 50 cents. The average wage in 1917 was 30 cents an hour; in 1920 and today the average is 54 cents.

William von Phul, president and general manager of the company, in addressing the men, said:

> Based on the reports of the United States Department of Labor prepared for the San Francisco and Oakland Districts, the cost of living reached its maximum in June, 1920. Since that time and up to June, 1921, the Department of Labor reports a decrease in all items of expenditure constituting the average budget of 20.14 per cent. The department similarly reports a decrease of 13.10 per cent in all items of expenditure for June, 1921, as compared with December, 1919.
>
> During the period preceding the reorganization of the United Railroads, San Francisco, the property was operated not only without any return to its owners, but interest on the $23.500,000 of 4 per cent sinking fund gold bonds of the then operating company was not paid and no dividends have been paid on the stocks of the new Company.
>
> For the last few months the earnings of the company have fallen off on account of the reduction in receipts and it is necessary that expenses be reduced.
>
> For these reasons, effective on Sept. 4, 1921, there will be a reduction of 4 cents an hour in the wages of all platform men now in the service of the company. The 2-cent-an-hour increase effective after each six months of the first year of employment and a final increase of 2 cents up to a maximum of 52 cents an hour after a further period of one year will still apply to all platform men in the service on Aug. 30, 1921.
>
> In addition to the above modification of the wages of present employees, a new scale will become effective, applying only to men employed on and after Aug. 31, 1921, providing an additional period of six months, which does not apply to present employees. The new scale in cents per hour will be as follows:

First Six Months	42c.
Second Six Months	46c.
Third Six Months	48c.
Next Twelve Months	50c.
Thereafter	52c.

> The management realizes the service rendered by the platform men and has been reluctant to make any change in the wage scale, but does so with the knowledge that the employees of the company realize the situation and will continue to render the same co-operation which they have in the past.

Wage Hearing Set

The arbitration board is now ready to settle the dispute between the employees and officials of the Schenectady (N. Y.) Railway. J. Teller Schoolcraft was recently selected third member of the board, the two others being Talmadge C. Cherry, representing the company, and Lawrence E. Gerrity, representing the union.

All meetings will be held in the county court house. They will be started at once. Prior to June 1 the men were receiving 60 cents an hour. The wages on that day were cut 25 per cent. If the board awards anything over 45 cents, that amount will be retroactive from June 1.

Financial and Corporate

Interborough Optimistic

Security Holders Renew Notes in Order to Prevent Appointment of Receiver

It was announced on Sept. 6 at the offices of J. P. Morgan & Co., financial agents for the Interborough Rapid Transit Company, that the renewals on the $38,144,400 worth of three-year 7 per cent gold bonds to next Sept. 1 had reached $33,000,000. This leaves about $5,144,400 in renewals to come in before the hearing on Sept. 9.

It was pointed out that the total of $33,000,000 represented only the actual amount of notes already deposited for renewal, and that notifications of intention to renew had been received from holders of several hundred thousand dollars of additional notes. Many of the holders have been on their vacations and were able to send only notices, and hundreds of the Interborough's letters requesting renewals have been returned because of changes of address and other postal difficulties. The holders are scattered through forty-six States and seventeen foreign countries.

On their success in obtaining renewals on these notes at 8 per cent, so that the principal of $38,144,400 would not have to be paid until next year, the officials of the Interborough base their hope of averting the receivership, because they are able to meet their current bills or obtain the "indulgence of creditors." The large total of renewals has increased the hope that the Interborough counsel on Friday will be able to tell Judge Mayer that the company will fight the application of President Clarence H. Venner of the Continental Securities Company for the appointment of a receiver.

COURT OPPOSES RECEIVERSHIPS FOR CORPORATIONS

As indicated briefly in the account of the Interborough receivership proceedings which appeared in the ELECTRIC RAILWAY JOURNAL for Sept. 3, page 376, Judge Mayer left the matter open, at least until Sept. 9. The court clearly intimated that he was opposed to any more receiverships, especially of large corporations, if there was any way of avoiding them. In setting the day for further argument Judge Mayer said:

> Both in public interest, and in the interest of security holders, there should be no receivership for this company if it can possibly be prevented. These are tender times, and many complications might arise in case of the receivership for this corporation, which would have a drastic effect upon the convenience and the comfort of a large community. I realize that the arguments this morning, are upon the matter of adjourning the appointment of a receiver. As to the actual merits of the original motion, to appoint a receiver on the bill of complaint, the court will take up that matter on its merits later. I shall adjourn this motion until Friday of next week, or September 9, upon express condition that counsel get together and see if some arrangement cannot be made by which this proceeding can be obviated.
>
> If, however, this cannot be done, counsel may feel free to come to me any time on proper notice to the court and other counsel for such action as may be deemed fit. I take this stand in view of the fact that the company has but $1,365,000 of current bills which have been running for only three or four months, and also in view of the overwhelming majority of the noteholders who have consented to an extension of time for the three-year 7 per cent notes.

At the hearing before the court on Sept. 1 James L. Quackenbush, counsel for the railway, asked the court to dismiss the application for receivership. This Judge Mayer refused to grant, stating that the case was ready for argument and it must go ahead. In his argument against the appointment, Mr. Quackenbush told the court that the Interborough had in round figures $35,000,000 in stock, $160,000,000 first mortgage 5 per cent bonds and $40,000,000 of 7 per cent notes, the proceeds of the bonds and notes having been sold for the construction of subways for public service. It was only the credit of the Interborough heretofore, he said, that made possible the construction of the subway system in New York. It has grown to be indispensable to the public. He reminded the court that the total claims against the Interborough, including current obligations, amounted to only $1,365,000, or less than ten days' receipts. The tort claims against the company he said amounted to less than $100,000. Mr. Quackenbush said:

> We have never defaulted on a single obligation we ever contracted for. It is true that we have been slow paying for the past two years, but in spite of adverse conditions we had to meet we have paid, and I would remind those who are assailing our credit that we are still the largest taxpayers in New York City. I admit the charge made against the company that it exhausted its credit three years ago, through circumstances that it could not control, and was obliged to issue these notes which do not become due until the end of this day.
>
> We have at this moment more than 76 per cent or over $29,000,000 of the outstanding notes deposited, and it is my firm belief before the day is over we will have most of the 24 per cent still outstanding. If a receivership should be precipitated at this moment, I do not know when the Interborough may ever again be able to go before the public for the purpose of procuring the necessary means to give them the conveniences in the way of transportation that they need.
>
> In so far as this action is concerned, or in the alleged claims which it asserts the Interborough is not able to pay, I can only point to its financial solvency by the way of statements open to the public. However, the time may come when I may have to come before this court and either consent to such an application as has been made or to ask myself that a receiver be appointed.

In view of the opinion of the court and the hearty response of the security holders to the request of the Interborough that they renew their notes, the officials of the company feel hopeful that a receivership can be avoided. It is hoped to have all the notes renewed before the hearing on Sept. 9 and that arrangements can be made for satisfying current claims against the company.

$10,000,000 Increase in Ohio Valuations

Tax valuations of Ohio street, suburban and interurban railroads have been boosted $10,119,330 over the 1920 valuations, according to the 1921 figures announced on Aug. 26 by the State Tax Commission.

The total valuations of properties of eighty-two companies are placed at $197,874,300. The 1920 total was $187,754,970.

The valuations of sixteen companies were decreased this year, twenty-three were left the same as last year, and increases were made in forty-three instances.

Included in the new valuations were the following:

Ohio Electric Railway, $10,622,980; last year, $11,672,440; decrease, $1,049,460.

Toledo Railways & Light Company, $14,137,460; last year, $13,718,360; increase, $419,100.

Cleveland Railways, $32,696,760; last year, $29,243,960; increase, $3,352,800.

Cleveland, Southwestern & Columbus Railway, $4,651,260; last year, $4,734,980.

Cleveland, Painesville & Eastern Railway, $2,181,950; last year, $1,916,540.

Cincinnati Street Railway, $21,194,960; last year, $20,716,930; increase, $478,030.

Cincinnati & Dayton Traction Co., $1,736,380; last year, $1,637,720.

Northern Ohio Traction & Light Company, $24,777,930; last year, $22,642,470; increase, $2,133,460.

Ohio Traction Company, operating Cincinnati & Hamilton Traction, $2,457,600; last year, $838,270; increase, $1,619,330.

Scioto Valley Traction Company, $2,301,470; last year, $2,362,170.

Lake Shore Electric Railroad, $5,114,390; last year, $4,988,240.

Columbus Railway, Power & Light Company, $17,825,190; last year, $17,097,520.

Cities Oppose Indiana Utility Merger

The petition of the Indiana Electric Corporation to issue securities for the purchase of seven Indiana utilities, which has been the subject of an extended hearing before the Public Service Commission, was discussed on Sept. 2 at a conference attended by Governor McCray and members of the commission. Governor McCray, following the conference, said the matter is entirely in the hands of the commission and that he has complete confidence in its ability to reach a fair decision.

In answer to the charge that the corporation would not be able to meet its fixed charges, counsel for the corporation filed a memorandum with the commission showing an estimated annual increase of surplus after payment of all charges, including depreciation. "Any computations of earnings based on conditions now existing and likely to prevail in the future," said the memorandum, "and with proper deduction for depreciation and other charges will show net earnings ample to meet all proposed fixed charges of the petitioner."

Harry O. Garman, engineer for the commission, has testified that the value of properties which the corporation proposed to acquire and merge is $10,284,361, or slightly more than half of the value ascribed to the properties by attorneys for the corporation. Mr. Garman was called as a witness at the request of attorneys for cities and interests opposing the issuance of $21,000,000 of securities, which, they say, is in excess of the value of the property.

Witnesses for the corporation contend that the value of the property is approximately $19,000,000, and its attorneys are asking the commission to allow them to issue securities to the amount of $21,000,000, the margin being intended to cover the loss entailed by selling the securities at a discount. Mr. Garman placed the reproduction cost of the companies at $12,180,443. He said that the difference between the present value and the reproduction figures is due to depreciation.

Start of Akron Appraisal Delayed

The plan of bringing A. S. Richey of the Worcester Polytechnic Institute at Worcester, Mass., to Akron by the city for the purpose of making a valuation of the Akron city lines of the Northern Ohio Traction & Light Company has been delayed for the reason that there is an insufficient sum in the city's public utility fund to pay Mr. Richey for his services. The city's legal department has held that the ordinance hiring Mr. Richey could not become effective until the necessary funds are in the treasury.

Mayor Carl Beck announces, however, that an effort is now under way to devise a plan to have a valuation of the property taken before Jan. 1, 1922. It is expected this plan will come before the Council at an early meeting. Mayor Beck announces that the appraisal should be taken with as little delay as possible for the reason that such action will tend to hasten the solution of the local traction problem. The Mayor points out that railway service in the city cannot be materially improved and developed until the proposed new franchise becomes effective. He adds that by delaying the taking of the appraisal until after the first of the year the passage of the franchise would be delayed about four months.

Negotiations between the city and the company looking toward a satisfactory solution of a method whereby the valuation may be taken immediately, despite the fact that there are no funds in the treasury for this purpose, are progressing satisfactorily and it is probable that an adjustment will be reached at an early date.

Electric Railway Service Suspended

Manistee, Mich., is without electric railway service as the result of the action of the Consumers Power Company, owner of the lines, in putting the cars in the carhouses at midnight on Sept. 1. Since that time this city has been without electric railway service.

Jitneys have been pressed into service to serve the outlying factories and the suburbs of Filer City, Oak Hill and Maxwelltown. The motor buses which have been in service this summer between this city and the summer resorts at Orchard Beach will be brought into the city and used on the streets formerly used by the car lines.

Manager C. S. Kressler of the Manistee Railway gave the following explanation of the situation:

> We haven't any money to operate cars longer, and as there is no prospect of obtaining relief we had no alternative but to suspend service.
>
> I had hopes that enough factory managers would be present at the commission meeting to bring pressure to bear that would have saved the service. But the little interest shown convinced me that they did not care what course we took.
>
> I still have hopes that street car service can be resumed in the near future. If we are permitted to lie idle, in the meantime, this will be possible, but if an attempt is made to force operation it will be necessary for the company to go into the hands of receivers, and probably complete bankruptcy, which means that the rolling equipment will be disposed of and the tracks torn up.

Small Surplus Earned by Sacramento Northern Railroad

According to the annual report of the Sacramento Northern Railroad of California for 1920, the company earned about $30,000 in excess of the interest on its bonded debt, although the accompanying statements show a deficit. This is due to the fact that a deduction of $50,241 is included under the item "Deductions" for "amortization of discount on funded debt."

Altogether, the company did not make a very bad showing, operating as it did under handicaps and in a year when many roads found it difficult to make both ends meet. Railway operating expenses increased about $240,000 over the previous year. The item of bond interest also increased due to the fact that interest on the "B" issue did not become a fixed charge until July 1, 1919.

The income account for the year 1920 compared with 1919 is shown in the appended statement.

INCOME ACCOUNT — SACRAMENTO NORTHERN RAILROAD

	1920			
	Actual	Per Cent of Operating Revenue	1919	Per Cent Change Over 1919
Operating revenue	$1,648,017	100.00	$1,506,734	9.3
Operating expenses	1,266,463	76.80	....	....
Depreciation	184,219	11.28	....	....
Total operating expenses	$1,450,682	88.08	$1,210,767	19.8
Net revenue—Railway operations	197,335	11.95	295,967	**33.3**
Auxiliary operations, net	14,681	0.89	12,244	20.0
Net operating revenue	$212,016	12.84	$308,211	**31.3**
Taxes—Railway operation	73,571	4.47	61,531	19.6
Operating income	$138,445	8.37	$246,680	**43.8**
Non-operating income	32,414	1.96	29,980	8.1
Gross income	$170,859	10.33	$276,660	**38.4**
Interest on funded debt	140,126	8.51	117,610	19.0
Interest on unfunded debt	1,612	.09		
Amortization of discount on funded debt	50,241	3.04	52,218	1.2
Miscellaneous debits	1,047	.06		
Total deductions	$193,026	11.70	$169,828	14.8
Net corporate income	( ) **22,167**	**1.37**	106,832	**110.5**
Road and equipment account	$9,932,572	......	$9,651,320	2.92
Miscellaneous physical property	203,167	......	154,904	13.1
Total	$10,135,739	......	$9,805,224	3.0
Capital stock	$4,480,598	......	4,469,023	.....
Funded debt	5,222,866	......	5,225,360	.....
Total securities outstanding	$9,703,464	......	$9,694,383	.....

(a) This was offset by the current profit and loss balance, leaving a net profit balance of $2,334, which amount was applied to amortize a like amount of the balance of $39,715 reorganization expenses.

Figures in boldface indicate decrease.

B. R. T. Assures Employees Against Loss of Thrift Accounts

Considerable concern has been caused to many employees in the metropolitan district through the recent taking over of the affairs of the National Thrift Bond Corporation, New York City, by the banking department of the State of New York. Among the employees who invested with the company were a considerable number of men and women in the service of the Brooklyn Rapid Transit Company, but the total of their subscriptions is understood not to have been large. Lindley M. Garrison, receiver of the railway, with the approval of the court, has determined to protect against loss employees who have subscribed to the bonds. As soon as the details have been worked out the management will arrange to take over the thrift receipts, etc., so the employees will receive the money which they invested.

The plan under which the Thrift Corporation worked was sound in theory, but the depreciation in security values proved its undoing. The company invested in Liberty Bonds and the securities of political subdivisions, depositing its purchases with the Equitable Trust Company as trustee and issuing its own participating certificates in $10 denominations against the bonds pledged as collateral. It is confidently expected that the company will eventually pay dollar for dollar, but it is of course very uncertain how long it may be before the company can dispose of the collateral without suffering a loss.

By the very liberal offer of that company the employees of the Brooklyn Rapid Transit Company are assured of the return at an early date of all of their money.

Zurich Abandons Zones

Commutation Tickets Popular When Short Ride Fares Are Withdrawn —Deficit at End of Year

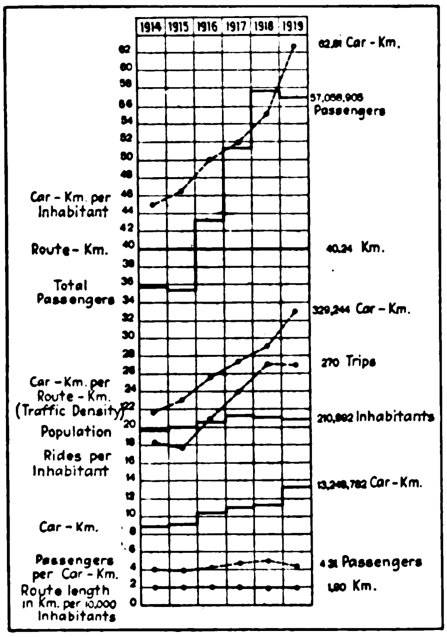
The report of the Zurich Municipal Street Railways for the calendar year 1919 indicates that the transport system serving the chief industrial city of Switzerland has been hampered by war and post-war conditions from enjoying extensions that, in at least one instance, were approved as early as 1913. Seven other extensions were approved but funds were voted only for one during 1919. This left the total number of route miles at 23.7 (38.3 km.) or 1.1 miles (1.8 km.) per 10,000 inhabitants. The total number of single-track miles was 53.1 (85.6 km.).

Rails were renewed on several routes and rehabilitated on one. The addition of an electric track switch raised the number of these automatic devices to thirty-five. In carhouse rehabilitation, for the first time in the history of the undertaking wooden instead of metal rolling doors were used. The rolling stock was increased from 224 to 231 motor cars and from 63 to 82 trailers. Energy consumption averaged 1.49 kw.-hours per car-mile, a car-mile in this case being figured with motor-car miles as unity and trailer-car miles as one-half the energy consumption.

The total number of car-miles operated was 8,214,245 (13,248,782 car-km.) of which 1,846,336 car-miles (2,977,962 car-km.) were trailer miles. One route is always operated with trailers. The increase in service was 13.51 per cent, despite which the number of passengers fell 1.2 per cent (from 57,753,813 to 57,058,905) and the density from 7.8 to 6.7 passengers per car-mile. Rides per inhabitant per annum dropped from 272 to 270. Because of a 100 per cent increase in fare to the most numerous riders, as hereinafter detailed, the revenue per passenger rose from 11.74 rappen to 17.96 rappen. The earnings per car-mile increased 33.11 per cent or from 58.1 to 77.3 rappen per car-km. At the pre-war rate of exchange (100 rappen = 1 franc = 19.3 cents) the gross receipts per car-mile work out as 17.9 cents in 1918 and 23.9 cents in 1919. The total revenue increased from 6,781,355 francs to 10,246,629 francs ($1,308,793 to $1,977,599) or 50.69 per cent while operating expenses jumped 50.44 per cent to 10,186,867 francs or $1,966,065.

The net result for the year 1919, making allowance for renewals, reserves and 4½ per cent return on investment was a deficit of 1,259.111 francs or $243,008 while the total deficit including losses in 1914 and 1915 was 2,842,256 francs or $548,555.

An analysis of the accompanying table of fares paid shows that 55.3 per cent of the trips were made on the 20 rappen (say 4 cents nominally) fare whereas in the preceding year, when the zone system was used, 23.9 per cent of the one-ride passengers had enjoyed a 10-rappen and 12 per cent of the one-ride passengers a 15-rappen fare. The rest of the rides were divided among a variety of subscribers, including 14.8 per cent of any-hour riders, 10.2 per cent of mid-day and evening riders and 4.4 per cent of early morning riders. The abolition of 10 and 15-rappen fares led to a great increase in the sale of workmen's early hour and of off-peak (noon and night) tickets. The workmen's ticket which may be presented by anybody up to 7:45 p.m., is sold on a thirty-one-ride basis and costs but 10 rappen per ride if every trip is used. The off-peak ticket cover twenty-one rides and averages 14.2 rappen per trip if completely used. It is therefore possible for the thrifty Switzer to get his early morning ride for 10 rappen and his luncheon round trip and return home at night for 14.2 rappen per ride. The practical effect of these rates is to favor the regular short ride customer as long riders naturally have less time to ride home for lunch.



GRAPHS OF CITY TRAFFIC

STATISTICS OF ZURICH TRAMWAYS FOR 1918 AND 1919

Character of Fare			Number of Trips				Per Cent of (Income)	
			1918 Total	1919 Total	1918 Per Cent	1919 Per Cent	1918	1919
Single ride tickets....	1918	1919						
at................	10 Rp.	......	13,972,820	....	23.91	......	20.45	......
at................	15 Rp.	......	7,029,053	....	12.03	......	15.43	......
at................	20 Rp.	20 Rp.	4,519,609	31,692,299	7.73	55.34	13.23	61.80
			25,521,482	31,692,299	43.67	55.34	49.12	61.80
Commutation tickets:	Number of Tickets 1918	1919						
General............	901,928	528,545	17,951,228	8,456,720	30.73	14.77	33.16	15.46
Suburban...........	125,669	......	3,141,725	....	5.37	......	4.14	......
Off peak...........	7,365	277,690	154,665	5,831,490	0.26	10.19	0.33	8.12
Early a.m..........	41,235	84,234	2,004,070	2,527,020	3.43	4.41	1.82	2.46
Three months.......	18,133	......	6,527,880	....	11.18	......	7.95	......
To röngg..........	......	33,815	....	4,064,160	......	7.11	......	6.02
Six months.........	3,457	4,443	2,489,040	3,198,960	4.26	5.59	3.03	4.55
One year...........	......	534	....	768,960	......	1.35	......	1.07
School tickets........	911	1,015	130,326	156,772	0.22	0.27	0.05	0.06
Interline A..........	138	283	2,760	5,660	......	......	......	......
Interline B..........	248	415	4,960	8,300	0.01	0.01	0.01	0.01
Telegraph, telephone and mail employees.	......	......	508,550	555,521	0.87	0.96	0.39	0.45
Total gross..........			58,436,686	57,265,862	100.00	100.00	100.00	100.00
Refund for unused tickets..........			682,873	206,957	......	......	......	......
Total net..........			57,753,813	57,058,905				

$2,900,636 Net Reported by Municipal Railway

Comparative receipts of the San Francisco (Cal.) Municipal Railway for the fiscal year 1919-1920 and 1920-1921 were reported in the San Francisco *Municipal Record* for July 28. The statement follows:

Line	1919-1920 Receipts	1920-1921 Receipts	Increase or Decrease of 1920-1921 Over 1919-1920
A (Park)........	$308,237	$321,825	$13,580
B (Beach).......	397,585	422,418	24,834
C (California St.)	333,639	352,001	18,362
D (Presidio).....	308,981	303,722	*5,259
E (Union St.)...	243,261	241,002	*2,261
F (Stockton St.).	168,306	181,923	13,618
H (Van Ness Ave.)	209,708	223,190	13,481
J (Church St.)..	359,819	393,948	34,129
K (Tunnel)......	321,089	368,928	47,838
L (Taraval St.)..	8,897	10,056	1,159
Bus No. 1.......	14,982	16,380	1,397
Bus No. 2.......	7,693	9,433	1,739
Total 5c. fares..	$2,682,197	$2,844,825	$162,627
School tickets....	17,699	19,763	2,063
Q. M. tickets....	3,928	3,551	*376
Special cars......	241	337	96
Cond. shorts.....	525	493	*30
U. R.R. transfers.	4,708	....	*4,708
Miscellaneous....	40,353	31,667	*8,686
Total receipts..	$2,749,651	$2,900,636	$150,985
Deduct U. R.R. transfers issued	6,235	....	....
Deduct insurance on auto busses..	14,400	....	....
Net receipts.	$2,729,015	$2,900,636	$171,620

* Denotes decrease.

Montreal Tramways Does Better

The Montreal Tramways Commission has issued the annual statement of the year's operation of the Montreal Tramways to June 30 last. It shows gross receipts for the year amounting to $11,773,005, as compared with $10,782,470 in the preceding year.

Operating expenses were higher in the year, being up about $500,000 to $6,327,841. This left operating profit at $47,442, up from $46,606 the previous year. Maintenance and renewals are up some $400,000, to $2,529,055. Surplus balance is given at $378,708, against $243,124 the previous year, after taking into consideration allowances due the company.

City rental of $500,000 and contingent reserve, both payable when earned, reduce the showing, making a deficit on the year of $239,022, against $364,700 the previous year.

Trade Body Committee Opposed to Reorganization Plan

Reorganization of the Pittsburgh (Pa.) Railways with "one owner, one franchise, one debt and one operator" is urged in a report submitted by the joint committee on better street car service of the Allied Boards of Trade and adopted by the boards' executive committee. The report contains nineteen objections to the reorganization plan already proposed and submitted to Council for approval. The report will be submitted to constituent bodies of the Allied Boards of Trade for their individual action before being formally taken before Council.

The report contends that, in the reorganization, all leases of underlying companies should be surrendered for cancellation on the grounds that they have previously been the largest factor in preventing successful operation of the company. It holds that the valuation of $62,500,000 is excessive and that this figure was reached by the Public Service Commission, using wartime prices as a basis of calculation.

One clause of the report urges that an agreement for an indefinite franchise be reached and that the city refrain from tying its hands on the terms of the proposed franchise agreement. It also urges that the city reserve the right to purchase the entire system at any time at a price not to exceed the Public Service Commission's valuation. It holds the agreement should stipulate for no collection of increased fare until the proposed increase is approved by the Public Service Commission and the Appellate Courts.

The report maintains there should be provision for through routing of cars in the contract. It also takes up certain specific points of the proposed agreement and attempts to show wherein their acceptance would prove either foolhardy or burdensome.

Canadian Roads Show Deficits

Of the 66 electric railways operating in Canada during the year 1920 only 13 declared dividends. A further 12 companies made a surplus, and the remaining 41 showed deficits. The average fare collected per passenger was 5.37 cents, as against 5.01 cents for the preceding year.

According to a bulletin just issued by the Dominion Bureau of Statistics, the total capitalization of these 66 electric railways was $170,826,404, made up of $91,321,955 of stocks and $79,504,449 of funded debt. As a whole, these railways showed a net operating revenue of $9,804,762, as against $9,312,884 for the year 1919. Total operating revenues increased from $40,698,586 in 1919 to $47,047,246, and expenses increased from $31,385,702 to $37,342,483. After paying taxes, interest, etc., there was a net corporate income of $954,818, as against $3,704,066 for 1919 and after making deductions for dividends there was a total deficit of $2,421,286.

There was an increase of 7.4 per cent in the number of passengers carried, and an increase of 15.3 per cent in passenger receipts. The number of employees was 17,341, an increase of 401, while the total payroll amounted to $24,435,932, an increase of 19.4 over the previous year.

Michigan Commission Charges Bad Faith

The Michigan State Public Utilities Commission has refused the Detroit United Railway the right to issue a stock dividend amounting to $385,000. The opinion, written by William W. Potter, says in part:

> The approval of the issuance of a stock dividend is a matter of discretion. This commission ought not to exercise its discretion in favor of a company which violates the law of the State and flouts its pledged word. The issuance of a stock dividend means only that the surplus earnings are transferred to capital and certificates of stock issued against them.
>
> If the company has earned, as it claims, a fair return, an addition to its surplus, capitalizing the contributions of the public to the company's stockholders, results in the public being compelled to contribute a fair return on a surplus accumulated from what, in excess of a fair return, the company has taken from the public.
>
> The Detroit United Railway already has so many bonds and so much capital stock outstanding that its shares are worth considerably less than par in the open market.
>
> To say the least, the actual value of the company's lines where franchises have expired, or will expire, is uncertain, speculative and conjectural and forms an altogether unsatisfactory basis for a stock dividend. The company's immediate prospective losses appear to demand the most skillful husbanding of its surplus, rather than the creation of a liability in perpetuity.

The reference to the company floating its pledged word is believed to refer to the railway's refusal to file its fare rates according to the Glaspie Act.

Business Splendid, Report of Motor Bus Company

Accomplishments of Detroit Motor Bus Company, Detroit, Mich., for first full year of operations exceeded expectations. First line was opened June 11, 1920, with six buses covering a four-mile route on Jefferson Avenue. Gross earnings now are averaging $3,500 daily, compared with $500 the first day.

During six months and twenty days of 1920, gross earnings were $250,000. For six months ended June 30, 1920, gross was $324,830 and for July $108,160. The following table shows how service has been expanded and monthly gross earnngs increased:

1921	Buses Operated	Miles Covered	Gross Earnings
July	59	259,434	$108,160
June	47	205,600	80,524
May	37	172,432	66,845
April	29	133,408	53,521
March	28	132,337	46,982
February	27	112,393	35,956
January	27	125,685	41,000

August figures show 68 buses in operation over 19 miles of route. Gross earnings for the month are expected to be about $110,000. After reserves for depreciation, the company shows a surplus of $62,000 from its operations.

Paid-in capital is $453,040 out of $1,500,000 authorized. The first dividend of 1½ per cent was paid July 1, 1921. Capital purchases are being made out of surplus and it is understood little additional stock will be offered.

Toledo Railway & Light Changes Name

The Toledo Railway & Light Company, Toledo, Ohio, controlled by Henry L. Doherty & Company, has called a special stockholders' meeting for Oct. 6, to vote on a plan to change the name of the company, increase its capital stock from $15,000,000 to $25,000,000, and merge it with the Acme Power Company, another Doherty property.

As the company's railway properties have been transferred to the Community Traction Company, a municipal project, the company proposes to change its name to the Toledo Edison Company. It is planned to issue $4,000,000 preferred stock at this time, to provide for developments and as a part of the plan for permanent financing of the company.

If the plan is approved, it means the cleaning up of practically all of Toledo Railway & Light bonds, and freeing the Community Traction Company of obligations. The $1,900,000 mortgage on the latter company, which was extended some time ago, will be taken up.

Financial News Notes

Line Abandoned. — Permission has been granted the Los Angeles (Cal.) Railway to abandon the line from the junction of La Salle and Washington Street south. The territory is served by the Washington line, which largely duplicated transportation. For this reason the city regulatory authorities permitted the track removal.

Receivership Terminated.—By a decree entered in the Superior Court on Sept. 6 by Justice Tanner, the receivership of the Rhode Island Company, Providence, R. I., has been terminated. The decree directs the receivers to deliver about $1,070,000 in cash and all their books and accounts to the United Electric Railways Company. The Rhode Island Company, organized to take over the largest part of the trolley lines in this state, went into a receivership on January 30, 1919.

More Franchises Surrendered.—Notice of the surrender of eight franchises from counties and municipalities has been filed with the Indiana Public Service Commission by the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis & Northwestern Traction Company. The surrenders were made under the provisions of an act of the last Legislature. The companies will operate under an indeterminate permit from the commission. The franchises were from the following cities and counties: Frankfort, Zionville, Boone County, Clinton County, Crawfordsville, Montgomery County, Englewood and Lebanon.

Traffic and Transportation

"Club-Plan" Buses Busy

Police Officials at Bridgeport Restrained From Interfering With These Vehicles

Another complication has been added to the bus situation in Connecticut. Judge John J. Walsh, of the Court of Common Pleas signed an injunction restraining Superintendent of Police Flanagan and Assistant Prosecuting Attorney Vincent L. Keating from restraining the Bridgeport Bus Association from operating their 150 buses under the "club plan."

The bill of complaint was drawn up by DeForest & Klein, and Attorney Kilpatrick is named as the complainant. Immediately upon his return to Bridgeport with the signed injunction Attorney Kilpatrick delivered it to Attorney Klein, and the latter communicated with City Sheriff Dan D'Elia, who was given copies of the order for immediate service upon the superintendent of police and the assistant prosecutor.

BUSES TO BE OPERATED AT ONCE

President Kilpatrick stated that the buses of the association, which were stopped from operating on Sept. 1, would be operated on their regular schedule at once.

The injunction, which is returnable on Oct. 4, follows in part:

> Now therefore, you, the said Patrick J. Flanagan, superintendent of police of the said city of Bridgeport, and Vincent L. Keating, the assistant prosecuting attorney of the said city court, your servants, agents and attorneys under a penalty of $5,000 are hereby sternly commanded and enjoined that you do from henceforth wholly and absolutely resist from in any manner interfering with the use by the plaintiffs of the said conveyances for their own transportation over and along said highway until the first Tuesday in October, 1921, or until further order of the court or the undersigned in the premises.

On Sept. 1 the buses were stopped from operating by Superintendent Flanagan, after Jacob Sherwindt had been fined $5 and the costs for a violation of the jitney law. There followed two days of conferences between President Kilpatrick and Attorney Klein. On Sept. 3 the bill of complaint asking for the injunction was drawn up, setting forth the following claim:

BILL OF COMPLAINT

> 1. The plaintiffs are and for some time previous have been organized and associated as a partnership under the said name for the purpose of promoting and protecting their mutual rights and interests in transporting and conveying themselves over and along the public highways of the said city of Bridgeport and the adjoining territory.
>
> 2. For said purpose, they have at large expense procured for themselves conveyances known as motor buses and have been and are now desirous of lawfully operating same over said highways for the convenience of themselves.
>
> 3. The defendants claiming to act by virtue of their authority as public executive officers in the said city of Bridgeport have assumed to prohibit and interfere with these by the plaintiffs of said conveyances for their own transportation over the said highways and have threatened and are lawfully threatening to use force and violence to restrain and interfere with the exercise by plaintiffs with said right in using said highways for said purposes.
>
> 4. By reason of the said unlawful acts of the defendants the plaintiffs have been, and are prevented, from exercising said rights to use their said privileges for the purpose aforesaid and are therefore and have been put to great inconvenience, loss and expense, and will continue to be so interfered with and deprived of said rights and to suffer great inconvenience, loss and expense unless said unlawful acts of the defendants shall be restrained and prevented by injunction.
>
> 5. The plaintiffs have no adequate remedy for their loss. The plaintiffs claim:
>
> (a) $10,000 damages.
>
> (b) By way of equitable relief an injunction restraining the defendants, each and every one of their servants, agents, and attorneys from further interfering with restraining or preventing by force, threats, or otherwise the plaintiffs from operating their said conveyances over said highways for said purpose.
>
> William F. D. Kilpatrick of Bridgeport is recognized in $50 to prosecute. Of this writ with your doings thereon make due service and return.

Five-Cent Fare Privilege Extended

Additional 5-cent local fares were established by the Boston (Mass.) Elevated Railway on Aug. 13. The lines affected are those in Cambridge, Dorchester, Roxbury and Charlestown terminating at Sullivan Square or Harvard Square.

In Charlestown new rates of fare and method of operation will be put into effect on Main Street and Bunker Hill Street lines, running between Sullivan Square station and Brattle Street station subway, providing 5 cent local fare without free transfer, or a dime with free transfer.

Two lines will be run between Sullivan Square station and Brattle Street subway station, one via Main Street, the other via Bunker Hill Street, using the tracks in the subway now used by cars of the Eastern Massachusetts Street Railway Company. Prepayment cars will be used on both routes.

The 5-cent fare privilege will be further extended on Sept. 24 to eight additional local lines radiating from Dudley, Egleston Square and Forest Hills. The story of the new payment system on the lines of the Boston Elevated Railway was given in detail in the ELECTRIC RAILWAY JOURNAL, issue of July 9.

Would Furnish Complete Service

Long Beach (Cal.) residents can be assured of a complete transportation system if the city will enter into an agreement with the Pacific Electric Railway to arrange a fare schedule that will net a fair return. This opinion was recently expressed by Paul Shoup, president of the Pacific Electric property, during a visit to Long Beach.

Mr. Shoup explained how the plan worked in Fresno, where the city guaranteed the company an 8 per cent return. He said that temporarily bus feeders would have to be used, but that later an entire street-car system would be in operation.

Jitneys Ordered to Stop

Chief Executive of Kansas City to Compel Compliance With City Ordinance

The Mayor of Kansas City, Mo., on Aug. 29 ordered the suspension of jitney service on a northeast jitney route because of non-compliance with the regulatory ordinance. As a matter of fact, however, jitneys are still operating on many routes, though spasmodically.

The ordinance requires that operators of jitneys shall secure petitions containing names of the owners of a majority of the front feet of property on proposed routes. Jitneys were permitted to operate while petitions were being circulated, but in no case has an operator been able to obtain the "majority petition." In several instances petitions presented were found upon examination to lack the necessary majority, and jitneys which had continued on the assumption that the petitions were satisfactory were ordered to suspend.

Jitneys covering routes to the southeastern part of the city continued running several days after they were ordered to quit. They displayed signs offering rides free. Patrons usually gave the drivers tips. The practice was prohibited. Some jitneys are operating under signs indicating interstate traffic, as "Intercity Bus," or with names of cities in Kansas, adjoining Kansas City, Mo., displayed. Some buses merely extended their routes a few blocks in order to secure a terminal in the adjacent state.

A restraining order has been asked by the jitney association to enable the jitneys to operate without "consents" required by petitions. Up to Sept. 1 no such order had been issued.

An earlier ordinance ruled jitneys off of streets having street railway tracks. The park board has prohibited jitneys from operating on boulevards.

Perfect Safety Score Made by Pacific Electric in June

In a movement of 4,110,000 motor miles, equivalent to encircling the globe 164 times, the Pacific electric lines running out of Los Angeles to points throughout Southern California went through the entire month of June, 1921, without a single mishap in the way of a casualty accident in the operation of its cars and trains over its 1,100 miles of lines. The record is the more remarkable in the light of the fact that many of the casualties on railway lines are attributable to recklessness for which the carrier, its agents or employees are in no way responsible and against which no effective precaution can be taken.

Boston's "No Accident Week"

Drive Will Begin Sept. 25, Coincident with the National Safety Council Convention

A state-wide "No-Accident" Week, Sept. 25 to Oct. 1, is to be held in Massachusetts coincident with the annual session of the National Safety Council, which is scheduled to take place this year in Boston. An elaborate program of safety activities has been worked out in great detail. The plans for this "No-Accident" Week include a large amount of co-operation from the electric railways.

A special electric railway committee on safety matters has been functioning in Massachusetts for nearly a year in connection with the Massachusetts Safety Council, which is in reality a union of the local units of the National Safety Council. H. B. Potter, assistant general manager of the Boston Elevated Railway, is chairman of the electric railway committee, which numbers among its members representatives of the Worcester Consolidated, Boston & Worcester, Eastern Massachusetts, Union, and other large Massachusetts electric railways. Generous contributions have been made by the various electric railways toward defraying the expenses of the convention and the "No-Accident" campaign.

During the progress of the campaign special electric railway cars bearing appropriate banners advertising the safety work will be operated through all the cities and towns reached by electric railway tracks and will make themselves conspicuous by blowing whistles at frequent intervals. They are scheduled to run every day throughout the week. Dasher signs bearing the motto "Don't Get Hurt" are to be furnished to companies and carried on all cars during the whole seven days. Larger display posters are to be furnished for subway and elevated stations, terminals and waiting rooms.

Although the street railway end is only one detail of the main program, which is to include no-accident propaganda in shops, factories, stores, schools and on the highways, it is expected that very considerable benefits will result to the railway companies. A special drive is to be conducted to secure better co-operation from automobilists and motor-truck drivers in preventing collisions with street cars.

Governor Channing H. Cox is greatly interested in the coming events. He has volunteered the use of the State House Auditorium for the convention sessions of the National Safety Council. The Governor will address one of the meetings.

Establishes Freight Business

Freight earnings on the West Penn Railways, Pittsburgh, Pa., increased during the business depression as the passenger earnings decreased. Wholesale houses finding business falling rapidly diverted deliveries to its freight service, discontinuing use of trucks. The company is now negotiating with the Pittsburgh (Pa.) Railways for the Pittsburgh Terminal service with fair prospects of a favorable arrangement. Officials of the railway hope that having established this business it will continue when conditions return to normal.

Be "On Your Toes"

The significance of safe operation and courteous treatment of passengers is told by W. E. Dunn, vice-president of the Los Angeles (Cal.) Railway in the Aug. 29 issue of *Two Bells*, the official publication of the company. Mr. Dunn's remarks were occasioned by a statement in a previous issue of *Two Bells* to the effect that the complaint department would pretty soon be out of a job. He said that he remembered and had been inspired by the lively rivalry that had existed among the divisions for first place in the safety contest. He praised the men for their splendid record, and said that he felt proud to be associated with a property which was attracting the attention of operators of great systems in other cities. Mr. Dunn emphasized the exacting attitude of the public and the need for employees to be "up on their toes" at all times.

> **"I don't know which is more important, safety in operation or courtesy in operation. If a car is smashed in a collision, that car can be repaired and put back into service; but if the public is hurt by a collision of ideas or a collision between the mind of the trainmen and the public mind, there ensues a damage that cannot be easily remedied.**
>
> **"Public favor is sometimes a very hard thing to gain, and once gained it should be treated as a priceless jewel."**

Another Successful Five-Cent Line

Ft. Madison, Ia., now occupies the unique distinction of being the only city in Iowa to retain 5-cent fares. The Mississippi Valley Electric Company, which operates there, has been able to hold down to the traditional fare only because there is an unusual condition in Ft. Madison. In the first place, the city has a population of 12,000 people, and there are only 4 miles of track. Power obtained from the Keokuk dam, only 25 miles away, is cheap. Contracts for this power were made before the war. Another feature in keeping expenses down has been the operation of one-man cars. Still another factor has been the absence of buses or jitneys. The Mississippi Valley Electric Company bought the plant six years ago from the Ft. Madison Street Railway when it was a losing proposition. In spite of improving service, the new company has been able to put the line on a paying basis.

Interurban Fare Ruling Reargued

The State Supreme Court recently heard the appeal of the Georgia Railway & Power Company, Atlanta, Ga., from the decision of the lower courts in the matter of 7-cent fares on its interurban lines to College Park and Decatur.

The Railroad Commission, in granting the 7-cent fare in the city of Atlanta, held that it had no authority to regulate the fares to College Park and Decatur, because of existing contracts between these municipalities and the power company. Thereafter the power company sought to institute 7-cent fares of its own accord, and the municipalities instituted injunction proceedings in the superior court, where each of them was successful. The courts granted the injunction restraining the power company from charging 7-cent fares on the lines between College Park and Decatur.

The power company appealed to the supreme court, and the case was argued last winter. Since this argument, it appears that Associate Justices Hill and Atkinson have been disqualified through the fact that they are related to persons who own stock in the power company. In their places were Justices Meldium of Savannah and Wright of Rome. No decision has been handed down.

Jitneys Will Be Barred

As the result of action taken by City Manager Locke and the city commissioners of Grand Rapids, Mich., jitney buses will undoubtedly be barred from those streets on which the railway operates lines. The Grand Rapids Railway recently protested against jitney competition and the matter was referred to the city manager and a special committee of commissioners for investigation. The company presented figures which showed large losses due to jitney competition.

City Manager Locke in explaining the proposed action said that it was not the intention to abolish the jitney in the city, but that the lowest possible electric railway fare was desired. Further, he said that the jitneys should not be permitted to operate on streets occupied by car lines.

This ruling will be put into effect as present licenses expire. A reduction in car fares, made effective recently, makes the cash fare in Grand Rapids 10 cents, with four tickets for 25 cents.

Lower Fares Increase Traffic.—Since fares have been reduced a half a cent to 8 cents and the "pay-as-you-enter" system re-established on the lines of the Cincinnati (Ohio) Traction Company, there has been a noticeable increase in the number of passengers. William Jerome Kuertz, Director of Street Railways, said that on Aug. 1, when the reduction went into effect, the number of fares increased 6,000. The fares collected were 295,517 on Aug. 1, as compared with 289,176 on the previous Monday.

Increased Rates Refused—Service Cut

The South Carolina Railroad Commission has refused the petition of the Augusta-Aiken Railway & Electric Corporation for an increase in zone fares from 5 cents to 9 cents a zone. At the same time the railway was authorized to reduce its service 50 per cent.

Several months ago the company requested an increased zone rate between Augusta and Aiken. A hearing was held on March 16 and much testimony was submitted. In its findings the commission states that conditions in the communities served by the railway were far from normal and that a solution to the problem was needed which would retain the traffic and at the same time reduce operating expenses.

It was a question of reducing service or increasing rates. The commission was of the opinion that in view of the present conditions the people could better put up with a reduced service than with higher fares. The order went into effect on Aug. 28.

Inspiring Employees to Merchandise Transportation Service

Upon taking up his new position as general manager of the Tri-City Railway of Iowa, Davenport, recently, R. J. Smith sent out a letter to each employee at his home which was intended to inspire a better idea of the merchandising aspects of his job. The letter was very well received, and is considered worth reproducing. The part of the letter dealing with this aspect follows:

> We are manufacturers and sellers of transportation, and as such we shall require a good property throughout and the brain and heart of each individual of us—brain to plan, and heart to keep at it and enjoy it. Of these three requisites only the property is at all lacking. In some respects, as for example certain trackage, we shall have to bend our every effort to improve the property. Many of us forget the selling end of the business. It's of no use to make a commodity that you don't dispose of. Empty car seats are transportation unsold. The manufacturer must sell his product. Let's sell ours. How?
>
> By doing as other merchants do—furnish a good article; charge a fair price; advertise; and be friends with the customer.
>
> What have you and I to sell? More than just a ride. For 8 cents we are now selling not only a ride from 500 ft. to 50,000 ft. in length, but also cool breezes in summer, snug warmth in winter, safety, reliability, cleanliness, decency, good light for reading, room for carrying bulky articles, a lost-and-found service, general information, watchfulness over children and the infirm, and finally an insurance policy covering person and property. A splendid package for 8 cents! Surely a good article at a fair price. We salesmen, then, can take pride in handling such a line of goods.
>
> Therefore advertise this excellent buy. Talk and act its virtues every chance you get. Study to improve the quality and then advertise the improvement.
>
> And let's make every customer feel that we are glad to have him with us and want him to come again. Pleasure in our work of serving him, courtesy and good appearance will help us immeasurably in making him feel how really interested we are in giving him the most for his money.
>
> Our principal salesmen are those among you who operate the cars. You are the business getters, for you come in direct contact with the customers, and it is your personal responsibility to attract every possible rider. Your acquaintance is enormous, and to all these people you operators are the representatives of the company—you are the company. They judge it by you. See to it that their judgment is favorable. The personal contact with the customer is invaluable. Use it to serve and to sell.
>
> For, that is the heart of the problem—to sell. If we can sell all we can make, we shall do our job well.
>
> You have heard that the street car is passing on—is a dead one. The ablest students of transportation state that for dependability, speed, safety and cheapness, nothing has yet been devised to equal the electrically driven car on rails. We shall have such cars for some considerable time.
>
> And we must remember this. It is not the Pierce-Arrow nor the Ford which we have most to fear. Our greatest competitor is shoe leather. We must sell the services of the Tri-City Railway of Iowa until no one will think of refusing to pay our small fee and receive the great benefits we are so ready to give.
>
> Efficiency in operation, integrity in collection, and courtesy with our patrons will put this company upon its feet and make better jobs for us all. Our boss is the Public. Let's please it.

Transportation News Notes

Cash Fare Advanced.—Permission has been granted to the Frankford, Tacony & Holmesburg Street Railway, Philadelphia, Pa., to charge an 8-cent cash fare with eight tickets for 50 cents, zone limits at Blakiston and Decatur Streets and a monthly book of tickets for $4.50. The new rates will continue in effect for a year.

Increased Fare Allowed.—The Athens Railway & Electric Company, Athens, Ga., was recently authorized by the State Railroad Commission to increase its fares from 6 cents to 7 cents. The order became effective on Sept. 1.

Fare Rise Granted.—The State Railroad Commission of Georgia recently issued an order authorizing the Valdosta Street Railway to increase its carfare from 6 cents to 7 cents. The Chamber of Commerce of the city wrote the commission that it approved of the increase.

Popularizing Parcel Post.—Letter mail boxes have been placed on the Lake Minntonka cars of the Twin City Rapid Transit Company, marked: "Minneapolis to Tonka parcel post service. Deposit request for pickup in this box and carrier will call at your door for package. Trucks will arrive at this point at — a.m. E. A. Purdy, postmaster." This is designed to expedite and make popular the new parcel post delivery by automobile truck.

Will Appeal Ten-Cent Fare.—Following the decision of the Public Service Commission authorizing the Buffalo & Lackawanna Traction Company, Buffalo, N. Y., to charge a 10-cent fare without transfer, the councilmen have directed Corporation Counsel Rann to appeal the ruling. The railway will first apply for a rehearing. If this is denied a certiorari proceeding to review the commission's decision will be started.

Arrangements Made for Classifying Freight.—The Northwestern Ohio Railway & Power Company has arranged with the Detroit (Mich.) United Railway for the issuance of class rates on freight from all points in Michigan served by the Detroit United to points on the Northwestern Ohio system. The Detroit United serves practically all of Southeastern Michigan and it is believed that large business will be the result under class rates.

Railway Co-operates With Auto Club.—The Public Service Railway, Newark, N. J., has notified the New Jersey Automobile & Motor Club that it will co-operate in the campaign to rid the streets of broken glass and bottles. N. W. Bolen, general superintendent of the railway, says that all the motormen and conductors will be instructed to remove broken glass from the streets or report it to the proper authorities when they discover it along the tracks. The order will also apply to glass scattered along the streets following collisions.

Applies For Ten-Cent Fare.—The New York State Railways applied to the Public Service Commission on Aug. 6 for a 10-cent fare in Oneida and between the zone of Wampsville and Kenwood. The fare at present is 5 cents. B. E. Tilton, vice-president of the company, said he thought the decreased patronage was due more to business depression than to jitney competition. J. E. Duffy, general superintendent at Oneida, stated that although there was no bus competition in the city of Oneida there was considerable in outlying districts, especially between Oneida, Sherrill and Kenwood.

Jitney Dispute Before High Court.—Claiming that a half dozen jitney buses have been operating between Pennsgrove and Carney's Point, N. J., without approval of the Public Utility Commission, the Salem & Pennsgrove Traction Company on July 28 carried the dispute to the New Jersey Supreme Court. The railway charges that licenses were granted to the jitney men by Upper Penns Neck Township since March 15, the date when the 1921 law placed the jitneys under the regulation of the Commission. Supreme Court Justice Katzenbach has directed the jitney operators to show cause in Camden, N. J., why the jitneys should not desist from operating, pending approval of their municipal licenses by the Commission.

Bus Permits Granted.—Nine applications for the privilege of operating bus lines within New Jersey were granted on Aug. 23 by the Board of Public Utility Commissioners. Nineteen other applications were denied on the ground that existing electric railways with which the proposed bus lines would compete now furnish adequate service. Eight of the applications granted were for routes in Camden County, between Camden and Brooklawn, Camden and Gibbstown, Camden and Blackwood, Swedesboro and Camden, Williamstown and Camden and Camden and Highland Park. Franchise was also granted for operation of buses between Butler and Newark. Provision was made in each case that local traffic within the areas served by electric railway systems would not be carried.

Personal Mention

Mr. Hukill Traffic Manager

New York Central Man Joins F. H. Wilson, a Former Associate, on Cleveland Southwestern

Edmund L. Hukill is the new traffic manager of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, succeeding C. C. Collins, who resigned on July 15. Mr. Collins, who had been traffic manager of the interurban line for more than four years, has not announced his plans for the future.

Mr. Hukill is new to the electric railway industry, having been associated with steam railroads prior to assuming duties as traffic director of the Ohio interurban line. When he accepted the position with the Cleveland, Southwestern & Columbus Railway, Mr. Hukill was special representative of the assistant general manager of the New York Central Railroad, D. R. MacBain, Cleveland.

Mr. Hukill's experience as a railroad man began in 1907 when he started work in the freight offices of the Lake Shore Railroad in Chicago. He was there two years when he was transferred to Sandusky, Ohio, where he remained four years. In 1915 he was transferred to Toledo, where he was chief clerk in the office of the terminal yardmaster and later in the traffic department of the New York Central.

In 1918 Mr. Hukill became associated with F. H. Wilson, who was then general superintendent of the New York Central and who is now president and general manager of the Cleveland Southwestern. Mr. Hukill was in the office of Mr. Wilson until the latter went with the Cleveland Southwestern in March of this year. Since March, Mr. Hukill had been in the office of Mr. MacBain.

Mr. Collins has been traffic manager of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, since 1917. His career as a railway man was begun in 1890 and has been largely concerned with traffic problems. In that year he became chief clerk in the traffic department of the Columbus & Eastern Railroad. This road was later merged with the Columbus, Sandusky & Hocking Railway upon its completion and Mr. Collins was made division freight agent at Toledo. When the road was sold to the Pennsylvania Lines in 1898, Mr. Collins engaged in business in Porto Rico.

Upon his return to Ohio and following a short connection with the Detroit, Toledo & Ironton Railroad he was appointed general express and passenger agent of the Columbus, London & Springfield Railway, Springfield, Ohio, the position he held until 1907. At that time he entered the service of the Western Ohio Railroad, Lima, Ohio, and a year later was made traffic manager of the system. He resigned this position in 1911 to take a similar one with the Lehigh Valley Transit Company, Allentown, Pa. Mr. Collins was one of the organizers of the Central Electric Railway Association, and has displayed an active interest in its affairs.

Bion J. Arnold the Subject of a Magazine Sketch

Bion J. Arnold, engineer, and a pioneer in electric railroad projects, is the subject of an interview by Neil M. Clark in the *American Magazine* for August. More than forty years ago, in the small town of Ashland, Neb., Mr. Arnold's greatest sport was watching repair work in progress on the bridge of the Burlington Railroad over Salt Creek near the Platte River. He was fascinated by the locomotive and hoped for a day when he could "make engines go." His genius for invention found expression in an engine he himself built at the age of fourteen. This engine is now in his office in Chicago. Despite opposition to his ambition, lack of facilities and a none too strong physique, he went ahead. His technical training was obtained at Hillsdale College. His early position as a draftsman in Milwaukee and another building a 300-hp. cross-compound engine for a Dubuque company, started Mr. Arnold on the road to success. The various achievements in the years that followed are well known to engineers everywhere. "To want something so hard that it hurts if you can't get it" gives some idea of Mr. Arnold, the man. He says that nothing can stop a man who has that desire and that, in his own particular case, obstacles became stepping-stones to his objective.

F. H. Harris Leaves Charleston Consolidated

F. H. Harris, superintendent of equipment of the Charleston Consolidated Railway & Lighting Company, Charleston, S. C., recently resigned to accept an appointment as master mechanic of the Charleston (W. Va.) Interurban Railroad. Before his departure for Charleston, W. Va., to take up his new duties on Sept. 1 the shop employees presented him with a silver tea set and all expressed their best wishes for his success in his new position. His thirteen years' association with the employees of the Charleston Consolidated had made many ties that were hard to break. The position made vacant by Mr. Harris has been filled by Ernest C. Barker, formerly in charge of the electrical department of the railway shops of the Charleston Consolidated Railway & Lighting Company.

Mr. Barker was born in Barking, Essex, England. He was educated in English schools and came to the United States while a young man, in 1906. He went into the shipping department of the Western Electric Company, New York, testing telephone switchboards for shipping. About a year later he tested and installed meters for the Public Service Electric Company in Hackensack, N. J., while in 1908 he had charge of wireless operation on one of the ocean liners of the American Steamship Line. In the latter part of 1908 he went into the repair shops of the New Jersey & Hudson River Railroad & Ferry Company, and remained on the property when it became the Bergen division of the Public Service Railway.

Mr. Barker went to the New York Subways to wire the new cars for 10-car train operation, and was there about a year. He then returned to the Bergen division of the Public Service Railway, entering the repair shops at Edgewater as electric repairman and became foreman of the shops in 1917, In February, 1919, he accepted a position in the Charleston Consolidated Railway & Lighting Company shops at Charleston, S. C., as electrical foreman, and was appointed master mechanic Aug. 16, 1921.

Thomas G. Hill now occupies the position as chief claim adjuster of the Capital Traction Company, Washington, D. C.

F. C. Eckmann, general manager and purchasing agent, has become vice-president of the Joliet & Eastern Traction Company, Joliet, Ill., following the resignation of Robert Kelly.

A. E. Robertson, formerly vice-president of the Coal Belt Electric Railway, Marion, Ill., has been appointed president of the company to succeed J. G. Drew of St. Louis. Also O. E. Coyne is the successor of H. H. Berry as superintendent of the property.

Kazutada Sakurai, equipment engineer of the Municipal Street Railway lines in Tokio, Japan, has recently arrived in New York, where he expects to make his headquarters for the next year or two in his study of American electric railway car shops, carhouses, and car buildings. Mr. Sakurai has spent about seven months in Chicago making similar studies. He may be reached in care of the Japanese Consul-General, 165 Broadway.

C. M. Bange, whose appointment as master mechanic of the Interstate Public Service Company, with headquarters at Scottsburg, Ind., was announced in these columns on Aug. 27, was for three years master mechanic of the Detroit, Rochester & Romeo Railway. For five years he served as master mechanic of the Detroit-Ypsilanti-Ann Arbor & Jackson Railway. Both of these companies now form a part of the Detroit United Railways. He served as superintendent of power and equipment of the southern division of the Northern Ohio Traction & Light Company for two years and for eleven years was superintendent of equipment and overhead, Elmira Water, Light & Railroad Company, Elmira, N. Y.

Frederick I. Cox, of New Jersey, was nominated on July 22 to be a member of the Interstate Commerce Commission in place of Edgar E. Clark, chairman, who has resigned. It was said that Judge Clark felt that he had reached a time in his life when he could no longer afford to serve the public at the comparatively small compensation, and will go into private business. Mr. Cox was selected by President Harding as a representative of the great body of commercial traveling men. The President has set a policy of appointing to the board men characteristic of various elements of the national life affected by the railroads. Mr. Cox was born in Dover, O., in 1849.

Obituary

Martin J. White, chief supervisor of the city buses of the New York Department of Plant and Structures, died Sept. 1 at the age of forty-four. Mr. White took charge of the bus system a year ago. He graduated from Manhattan College in 1897.

William H. Guyton, superintendent of transportation East St. Louis & Suburban Railway, died recently. Mr. Guyton began his street railway career as a conductor in Kansas City and later in St. Louis and was a conductor with the Old Day Line Company, one of the predecessors of the East St. Louis & Suburban Railway. He later became superintendent of this company when it was consolidated with the East St. Louis & Suburban Railway and subsequently became superintendent of the entire system.

George C. Killeen, superintendent of the Southern New York Power & Railway Corporation, Cooperstown, N. Y., died on Aug. 31. Mr. Killeen was a native of Elizabeth, N. J. His age was 46 years. After attending the public schools of Middletown, N. Y., where most of his early life was passed, he entered the employ of the Middletown Traction Company, with which he remained four years. Later he removed to Staten Island, where he was engaged with the Staten Island Railway, remaining there for two years and going afterward to Brooklyn, where he held for ten years a responsible position as master mechanic and where he did some excellent work directing new installations and development plans. Five years ago he came to the Southern New York company as master mechanic and later was made superintendent both of the shops and of the company's power plants and trolley lines. In the latter position he was proving most capable and efficient and his loss will be felt not only by the officials but by all employees of the company as well.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Lower Prices on Some Poles and Cross-Arms

Reductions were reported last week in certain poles and cross-arms. Chicago, St. Louis and New York territories report that Northern white-cedar poles in lengths from 25 ft. with 4-in. top to 35 ft. with 7-in. top were reduced about Aug. 19 in varying amounts from 15 to 25 per cent, depending on size, grade and classification. Utilities around St. Louis showed a tendency to hold off buying until the fall demands make it necessary, and the reduced prices are stimulating pole sales. Present inquiries indicate a rather healthy business for the next few months. Stocks are in good shape.

Around Chicago the demand has been slow and uneven, and pole movement has not reacted as yet to the price cost. Buying around New York, too, is rather quiet.

Yellow-pine cross-arms have come down about 10 per cent in the past ten days. No change has been reported in fir arms. Railways and utilities in the Southwest are providing a fairly good call for these yellow-pine arms.

Coal Output Has Found a Level

Production of soft coal, says the weekly report of the United States Geological Survey, appears to have found a level for the time being at about 7,750,000 tons a week. The total output during the week ended Aug. 27 is estimated at 7,755,000 net tons, as against 7,771,000 and 7,713,000 tons in the weeks of Aug. 13 and 20, respectively. Preliminary reports indicate no great change during the week Aug. 29 to Sept. 3. Stationary production at this season of the year is exceptional. The normal trend is upward fairly steadily from April to November.

High-Voltage Transmission Equipment for Midi Railway

The order for electrical equipment for the Midi Railway in France, as announced in the ELECTRIC RAILWAY JOURNAL for July 20, will be used on the transmission system being built by the Midi Company for supplying power to operate the railways and also industrial concerns. The Westinghouse Company will use its Essington works, near Philadelphia, for the manufacture of a large part of this machinery and equipment, the order for which totals between $1,200,000 and $1,500,000.

The equipment includes only apparatus for the construction and operation of this power line at 154,000 volts. Eleven 6,660-kva. single-phase, 50-cycle outdoor-type transformers with a voltage ratio of 60,000 to 89,000 will be connected in star on the high-voltage side to give the transmission voltage of 154,000. For step-down service 14 6,600-kva. 86,700 to 34,600-volt transformers will be required. These will be connected in groups of three for 3-phase operation and connected in star on the high-tension side for 150,000 volts. Also they will be designed with a tertiary winding for 6,600 volts delta connected for supplying power to synchronous condensers. For line regulation 2 15,000-kva. and 4 2,000-kva. self-starting synchronous condensers are to be installed. They are 6,600-volt 3-phase 50-cycle machines, operating at 600 r.p.m. Lightning protection will be afforded by 13 154,000-volt 3-pole electrolytic arresters.

Crocker-Wheeler Company Sells Canadian Plant

The plant and business of the Canadian Crocker-Wheeler Company, Ltd., St. Catharine's, Ont., have been purchased by the newly incorporated English Electric Company of Canada, which is a subsidiary of the English Electric Company of London, England. Gordon F. Perry, president of the National Iron Corporation, Ltd., Toronto, is chairman of the board of directors of the English Electric Company of Canada, Ltd., and the Canadian concern will have on its board of directors a number of other men prominent in industrial and financial circles in Canada.

It is understood that this company has obtained a large order from the Hydro-Electric Power Commission of Ontario and several weeks ago the company was awarded a large contract by the Toronto Transportation Commission. The Canadian company holds the exclusive manufacturing rights for Canada in perpetuity for all lines manufactured by the English Electric Company, Ltd., and will also act as selling agent for the latter company. The Canadian company has the right to sell its own products in the United States as well as in Canada, and is to have the use of all patent designs and processes of the British company.

Special attention will be paid by the company to the manufacture of electrical equipment and rolling stock for railways and tramways, and of switch gear and control apparatus of all kinds.

The parent company in England is said to be the largest manufacturer of electrical supplies and allied machinery and equipment in the British Empire, and the directorate includes some of the most prominent men in Great Britain. The company maintains eight branches in the United

Kingdom and ten abroad. The parent company is now undergoing a worldwide development and is putting up several new plants, particularly in France near Lyons, and in Belgium near Liege. A new plant has been erected at Tarbes and the works in Ghent will also be extended shortly.

Electrification Postponed

The Delaware, Lackawanna & Western Railroad recently rejected all bids received for electrical equipment for the electrification of a section of its line in the anthracite region of Pennsylvania. It is expected to advertise for new bids at an early date. Gibbs & Hill, New York, are consulting engineers.

The Delaware, Lackawanna & Western is the only road at present actually in the market for electrical equipment. While the plans of that company are pretty definite, they have not been announced beyond the statement of President Truesdale in the last annual report that a mountainous section of the company's line in Pennsylvania would probably be electrified soon, although the recent advertisements for bids gave no clue to probable time that will elapse before work is begun.

Wire Makers Considering Monthly Survey

Manufacturers of insulated wire now have the opportunity to have their product included in the survey now being made for twenty other industries, the reports of which are published by the Department of Commerce in the monthly *Survey of Current Business*, first issued under the date of July 1, 1921. Herbert Hoover, Secretary of Commerce, has appointed W. M. Steuart, who is director of the *Survey of Current Business*, as his representative to meet in New York City on Sept. 13 the manufacturers of insulated wire, represented by four groups—bare wire, rubber-covered wire, weatherproof wire and magnet wire. It is his intention to have Mr. Steuart discuss with them the best methods to adopt for obtaining from each group monthly reports on production, current stock and distribution in their respective industries.

If insulated wire manufacturers succeed in having their products included in this survey, they will have before them current comparative information never before available which should enable them to better forecast the volume and conserve the stability of their industry.

Westinghouse Order from Japan

The Westinghouse Electric International Company has received an order for two electric freight locomotives from the Japanese Government to be used in service near Tokio. These locomotives, which will weigh 62 tons and have a capacity of 1,000 horsepower each, will operate on the 1,500-volt direct-current system.

Rolling Stock

Preston Car & Coach Company, Ltd., Preston, Ont., has entered into an arrangement with car manufacturers in the United States, who, it is understood, have orders from the Toronto Transportation Commission and from other Canadian sources, whereby the manufacturing for the Canadian trade will be done by the Preston Co. It is understood that shareholders will give their approval to the arrangement when details are placed before them at the meeting which has been called for the purpose.

Bamberger Electric Railroad, Salt Lake City, Utah, has included in its program this fall the purchase of twenty box cars of the latest type. They are constructed with steel underframes and equipped with the latest improvements. The first one of these cars has just arrived, and two others are expected shortly. The remainder of the cars will be received later in the fall. The new cars were ordered to replace some of the older equipment, and to provide better and more service for Salt Lake and Ogden merchandise. The company is constructing its own passenger cars, and is keeping an adequate supply on hand to meet the demands of the passenger business.

Track and Roadway

Detroit (Mich.) Municipal Railway has commenced operation on the Charlevoix-Buchanan crosstown line.

Midland Pennsylvania Railway, Pottsville, Pa., will be built shortly according to the new owners who recently bought the right-of-way for $33 000. Tracks had never been laid by the original owners.

Petaluma & Santa Rosa Railroad, Petaluma, Cal., has asked the city to build a new bridge over to D Street which will be wide enough for the electric trains to cross. If this is done the railway will share the expense with the city.

Pacific Electric Railway, Los Angeles, Cal., has asked the trustees of the city of Whittier for permission to remove its tracks on Greenleaf Avenue. The tracks extend about two blocks from Philadelphia south on Greenleaf.

Meridian Light & Railway Company, Meridian, Miss., must level its track on the Twenty-fourth Avenue car line or else remove it. The city has reached this point in this paving program and will proceed to pave over the tracks unless the company takes immediate action.

Cincinnati (Ohio) Traction Company will build an extension to one of its lines from Price Hill to Covedale. The North American Railway Construction Company, Chicago, has been awarded a contract for this improvement, which will cost approximately $20,000.

Grand Rapids (Mich.) Railway may eliminate interurban traffic from its tracks in the city. Engineers of interurban railroads have been inspecting all the property along Front Avenue between Bridge and Shawmut Streets with a view of acquiring it for a union station, the necessary yards and sidewalks.

Northern Ohio Traction & Light Company, Akron, Ohio, is making extensive repairs to its track in Akron, Canton and Massillon. In Akron repairs are being made to tracks in Main Street from Federal Street to Thornton. The East Akron carhouse and tracks layout are being finished at an approximate cost of $30,000. In Canton double track on South Main Street from Sixth Street S. W. to Navarre is being renewed. Single track on East Tuscarawas is being replaced by double track at an approximate cost of $136,000. In Massillon about 500 ft. of track has been renewed at the City Hospital.

Power Houses, Shops and Buildings

The Hydro-Electric Railway will install additional rotary converters at Windsor and Amherstburg, Ont., with an automatic sub-station at the latter point.

Bamberger Electric Railroad, Salt Lake City, Utah, and the Orem Railroads will have a joint terminal at the corner of South Temple and West Temple Streets, Salt Lake City. The cost is estimated at more than $200,000.

Tacoma, Wash., has purchased a transformer weighing 80,000 lb. to be installed in its new substation at North Twenty-first Street. This shortest street railway line, which went into operation recently, will be used in transferring the transformer to its concrete platform built for it between Washington and Adams Streets on Twenty-first Street. The line will be taken up as soon as this transformer has been removed.

Trade Notes

The Green Engineering Company, East Chicago, Ind., has placed on the market its Green sidewall waterboxes for furnace settings.

Industrial Products Company, Philadelphia, Pa., has recently placed on the market a first aid dressing for serious burns and scalds. It consists of a solution of bicarbonate of soda and mineral placed in a patented container.

Automatic Sliding Trolley Company has been organized at Frankfort, Ind., and incorporated under Indiana laws with a capital stock of $10,000. The company will manufacture automatic sliding trolleys and other devices for street railways. Organizers of the company are William Robinson, E. C. Spray and J. A. Lucas.

Westinghouse Electric International Company has opened an office in Shanghai, owing to the growth of business in China. This office will have eventually several branches throughout the country in order to adequately handle inquiries and negotiations for electrical equipment. J. D. Birrell, who has long been engaged in business in the Far East, is the manager of the new office.

Edward A. Craig, manager of the export department of the Westinghouse Air Brake Company, Wilmerding, Pa., died on Aug. 28. He was first taken ill while he was making preparations for his transfer to the West, where he was to reorganize the Westinghouse Pacific Coast Brake Company and the Pacific Coast district. Mr. Craig's position in the air brake organization was in many respects unique. His connection with the company began in 1888, when he became a messenger at the age of fifteen. His first promotion was to secretary of the general superintendent of the works. This led to his appointment as assistant auditor and then as auditor and assistant secretary. In 1906 the air brake company established the Southeastern District and in the selection of a manager for that office, the choice fell upon Mr. Craig, who conducted its affairs with marked success until 1920. In January of that year the company organized the export department and, in the consideration of an executive head for that department, the management once more showed its faith in Mr. Craig's ability by giving him the appointment. Mr. Craig grew up with the organization and never forgot his former associates in the shops even after taking up executive work.

New Advertising Literature

Demand Meter. — The Esterline-Angus Company, Indianapolis, Ind., has recently developed a graphic kilowatt-ampere demand meter.

Panels.—The Automatic Electrical Devices Company, 120 West Third Street, Cincinnati, is distributing bulletin 624, describing its new "Unipanel" refinements.

Electric Welder.—The Automatic Electrical Devices Company, 120 West Third Street, Cincinnati, has issued bulletin 623, describing its automatic arc welder.

Temperature Regulation. — The Gold Car Heating & Lighting Company, Bush Terminal, 220 Thirty-sixth Street, Brooklyn, is distributing a new catalog on its electric thermostat temperature regulating systems.

Portable Compressors, "Portable Air Service" is the title of a four-page leaflet distributed by the Ingersoll-Rand Drill Company, 11 Broadway, New York City, describing the different types of "Ingersoll-Rand" portable compressors.

Texas Company, New York, is issuing a booklet called "Lubrication of Steam Turbines." It describes various lubricating methods and oiling systems besides discussing the effects of heat, water, deposits, cleaning, starting and oil coolers on the effectiveness of lubrication.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative
L. W. W. MORROW, Special Editorial Representative

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Jim Burleson an Example

DANIEL in the lion's den had an easy job compared to that of Jim Burleson, as narrated by H. A. Lemmon in this issue. It is a little epic of how a street car conductor, through the power of his personality, tamed the Mexicans at the apex of their anti-gringo feeling, merely as a part of his day's job. "Human nature" is probably the only reason to assign for the fact that only death and the funeral procession brought recognition of his work.

Unheralded and unsung, it is the Jim Burlesons that really can solve the question of "public relations" in the railway industry and cause the expression to be forgotten as a problem. In no other public utility is there so much contact between employees and the public, but this powerful agency is but little used by railway managements. Publicity with personality is a necessity and the educated crew is the agency to obtain it. Let us have more recognition and use for the Jim Burlesons as transportation salesmen.

The Silver Tongue and the Transportation Superintendent

IN ADDITION to the other qualities which are necessary or desirable in a superintendent of transportation, that of being able to deliver a lucid public address should not be overlooked. A "good talker" is especially needed in this position because he has to solve the problem of inspiring the platform men and supervisors with the real spirit of service and salesmanship. He needs to discuss with the men, sometimes in large numbers, the delicate question of wages and working conditions. He is the intermediary between the management and the largest group of employees. And quite frequently he has an opportunity to address organizations of citizens, which he should be prepared and eager to do. The superintendent has a wonderful opportunity. If his men and the public are convinced of his sincerity and know that his words do not outrun his deeds, he will always be a welcome speaker at gatherings of employees and others. If he is not, something is wrong.

A good talker is not necessarily one who comes within the class of "spellbinder," but is rather the speaker who is in sympathy with his audience, has a real message which this audience wants or needs, has a reasonable command of the English language and is willing to forget himself. The electric railway business does not offer many opportunities for the display of elocutionary or oratorical talent. However, here as in all other fields of human endeavor, the man who can think on his feet and express himself clearly has the advantage over the diffident man, everything else being equal. It must be granted that everything else is not always equal, because the reserved man is apt to be one who thinks more deeply than another who is more loquacious. This does not vitiate the statement, however, that the clear thinker who expresses himself forcibly and trenchantly has the advantage in getting his ideas over. Young men who are training for ultimate superintendencies ought not to neglect this side of their education.

Your Problems Are Not Unique— Come and Discuss Them with Others

IF THERE was ever a time in the history of the American Electric Railway Association when intimate counsel and discussion between the various electric railway men was necessary and valuable it is at present. Engrossed perhaps in the detailed problems of his individual property, each railway man is apt to regard his own problems as unique, but fundamentally they are the same as those faced by other railway men, and there is no one but can both give and gain something valuable at the convention which is to be held at Atlantic City.

Some have indicated that the absence of exhibits would detract so much from the convention that their attendance was doubtful. But while that particular feature of the convention will be missing, it will give both cause and opportunity for every one to devote himself more assiduously to gaining benefit from the sessions of the parent and its affiliated associations.

The industry today is on the mend. But this fact does not remove the other fact that it is still in a critical condition and needs and deserves the leadership which can develop and grow as a result of constructive discussion of its problems.

There are at least four major problems today. One of these is that of the trackless transportation, and there can be no definite conclusion reached at this early stage either on the attitude of the public or on the technical or economic factors themselves, as compared with railway transportation. Another problem is the public's attitude with reference to municipal ownership or to partnership with railways. This emphasizes today the question of public relations and franchises. Another problem is the financial one, by which is meant that of adjusting the financial structure to meet both the best business practice and best public policy of today. This point has already been emphasized by the Federal Electric Railways Commission and later by President Gadsden in the suggestion of making the nominal capitalization equal the valuation. A fourth and equally important subject is the labor situation, not only as it has presented itself in the past from the standpoint of wages, agreements, and dickering with unions, but the more constructive question of how best to place railway labor on the plane of skilled labor, so that trainmen at least will have more of the transportation business or sales attitude.

Certainly with problems such as these confronting the industry there is plenty to talk about at Atlantic City. The program as arranged touches most of these subjects as well as others and provides ample time for discussion. In addition, the mechanism of the association is being better fitted to the times and the advice and counsel of every man active in the business are needed in this work. The best constitution and association organization should result.

What is needed is a rousing attendance of enthusiastic railway men at Atlantic City from Oct. 3 to Oct. 6. If you have not already done so, make your plans to come.

Seats per Passenger as a Traffic Unit

THE point was made in an editorial in the issue of Sept. 3 that the expressions "Revenue passengers per car-mile," "total passengers per car-mile" and "seats per passenger carried," if used as indexes of traffic density, are apt to be misleading when applied to properties operating under different conditions. Examples were given to prove this contention, particularly how well-filled cars during the off-peak hours would have the same effect on increasing the ratio between passengers and car-miles as if these added passengers came during the rush hours. Since the publication of that editorial a correspondent has expressed the belief that some estimates made in the editorial for the average value of the unit "seats per passenger" are too low. The figure given was from one and one-half to two seats per passenger, when taken on an all-day operating basis, and 0.75 seats per passenger during the rush hours.

Unfortunately, statistics in regard to this ratio, if it is obtained by dividing the seat-miles by the passenger-miles, are very meager. The practice of keeping a record of the seat-miles operated, though comparatively new, is now followed by some electric railway properties, but it is obvious that the passenger-miles on a property having a flat-fare system can be obtained only by a special traffic count, which of course is expensive and applies only to the period of observation. Some figures from traffic counts indicate that the ratio mentioned above has been observed, but others, including some quoted by the correspondent, give a ratio between seat-miles and passenger-miles of from 2 to 2½ for an all-day average, and these are probably in the majority.

Fortunately, so far as the practical application of this index to a single property is concerned, a manager does not have to depend on "passenger-miles," a figure useful but difficult to obtain. Instead of the ratio between "seat-miles" and "passenger-miles" he can use the ratio between "seat-trips" and "passenger-trips," the former being easily calculated on any property where "seat-miles" are kept and the latter being simply the passengers carried. The ratio thus obtained will help a manager to determine whether a company is becoming more economical in seat operation from time to time. Obviously where "trips" are used instead of miles, the comparison is upset if there is any material change in the length of the average trip. For this reason a comparison on this basis between two properties is of no value, because the runs may be much longer on one property than on the other. But on individual properties, where the runs are of the same length or approximately so from one year to another, this difference cancels itself. The aim of the manager should be to reduce the ratio of seats per passenger without crowding the cars.

Welding the Scrap Pile

"WE DON'T have a scrap pile any more, we are too poor to buy anything, so we weld and continue to weld and use everything so long as it will be good for anything." The foregoing is a typical remark by shop foremen and it reflects a creditable condition if it results in real saving, but——

Too frequently the welds break next day or next week, too frequently damage to a welded scrap pile occurs due to small jars, too frequently service tie-ups occur which result in bad schedule mix-ups and irritated passengers, too frequently the labor and material cost involved in repairing junk apparatus for a few days' service results in spending instead of saving.

Only an adequate cost-accounting system in street railway shops and adequate service records will determine when to add to or take from the scrap pile. Guesswork is out of place in the railway business and repair operations should be carefully weighed on an economic basis. Of course the workmen take a kind of pride in doing a repair job that is difficult and in keeping an old cripple still in service, but the item of cost must not be neglected or the result will be false economy. Accurate cost analyses and a good cost-accounting system are the reliable methods to obtain real savings. Another element in the business is the effect on merchandising. It does not seem good business to take chances in service or to leave decrepit equipment operating on the streets. There is more to the railway business than merely economizing in production costs. It pays to advertise and to take no chances with public sentiment.

Machines Save Money in the Shops

SHOP labor used to be cheap—it isn't now. Shop machines used to be designed for low-speed carbon tools—they aren't now. "It is the war" as usual that caused the changes, but the question is, how many shops have taken advantage of new knowledge, machines and tools to save money? Every job takes labor, time and money, and the use of modern high-speed tool steels in modern machines equipped with new devices such as self-centering or magnetic chucks will save all three elements.

The old machines in the shop will not stand the stresses resulting from the use of high-speed tool steels and fast-cutting speeds. The old machines and tools formed the basis for railway shop speed and practice, and it may be that even the war, with its reaction on shop work in other industries, never caused a quiver in many railway shops.

It might pay shop foremen to look around in some reorganized industrial shops and investigate modern practice and machinery to see if the junking of some of the old equipment, tools and methods in their shops in favor of the new would not result in saving money, time and labor on every shop job. It is up to the foremen to show the railway executives how to save money in the shops by taking advantage of present knowledge and equipment, because the executives, too frequently, can see only the requisition for the expenditure of the initial money for the machinery. Some remarkable economies can be obtained by the use of modern equipment and railway foremen should keep posted.

Testing Railway Motor Detail Parts

All Operations of Manufacture Must Be Carefully Worked Out and Every Detail Must Be Followed Closely to Insure that All May Perform Correctly When They Are Assembled in the Completed Motor

By John S. Dean
Railway Motor Engineering Department, Westinghouse Electric & Manufacturing Company

IN THREE preceding articles which appeared in the ELECTRIC RAILWAY JOURNAL, under the titles "Testing Metals and Alloys" (Aug. 16, 1919) and "Testing of Insulating Materials" (May 21 and July 16, 1921), the author described the methods used in selecting and testing various raw materials that enter into the make-up of the detail parts of a railway motor. In the building of these detail parts it is not only essential to have approved materials which measure up to the test requirements, but in addition it is of vital importance that the various operations during the process of manufacturing be carefully worked out and followed in every detail to insure that each part will measure up to its requirements and correctly perform its function when assembled in the completed motor.

TO AID the shop in its work and to provide against failure of motor detail parts, process specifications are prepared covering the most important manufacturing operations and these approved methods are carefully followed throughout the factory. These specifications are the result of experimental and research work, field investigation and study, and a number of years of experience.

In the manufacture of a railway motor all detail parts that enter into its construction are built up complete in the various feeder sections of the shop, and are sent to the assembling department to be put together. This method of manufacturing under conditions of high specialization has a number of advantages, such as: (1) Experienced supervision; (2) skilled and trained labor; (3) specially designed tools, jigs and fixtures; (4) maximum production; (5) minimum costs; (6) large output; (7) improved product.

On the other hand, this method of manufacturing demands that all of these detail parts be very accurately made and carefully checked and tested in order that they can be readily assembled into a completed motor with the least possible expenditure of time and labor. For this reason all of these parts before being sent out from the various feeder sections in which they are made receive a very thorough inspection and test to insure that they measure up to a certain predetermined fixed standard both mechanically and electrically.

The most important tests, which will be described in detail later on, are given in the table on page 430, which shows to what extent all possible precautions are taken to eliminate defects and to insure reliable detail parts in the production of a rugged and dependable railway motor.

Experience has shown that the armature fans, which are made of malleable iron or cast steel and are of comparatively large diameter, are quite frequently out of balance. This is due to certain of the unmachined sections being cast heavier in various parts of the fan. To correct this trouble, which would cause the finished armature to be out of balance, all fans after final machining are pressed on an arbor and given a static balance test. This balancing is done either by chipping away the heavy sections or by welding additional metal to the light sections of the fan.

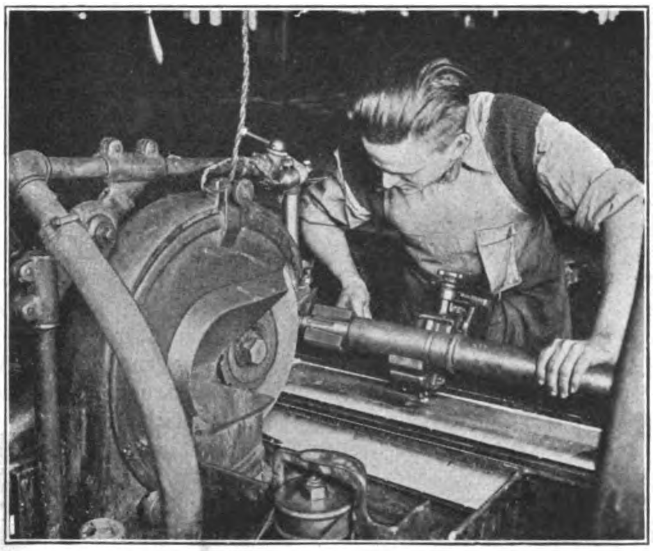
All shafts have the fits for bearings, spiders or laminations, and for the pinion, ground to exact size on a Norton motor-driven grinding machine. The straight fits for bearings, spider, etc., are gaged, using a micrometer, while the taper fit for the pinion is checked by means of a special tapered gage so designed that it can be used without removing the shaft from the centers of the grinding machine. This operation is shown in one of the accompanying illustrations. This method of machining and testing these fits produces a shaft with very accurate and reliable fitting surfaces.

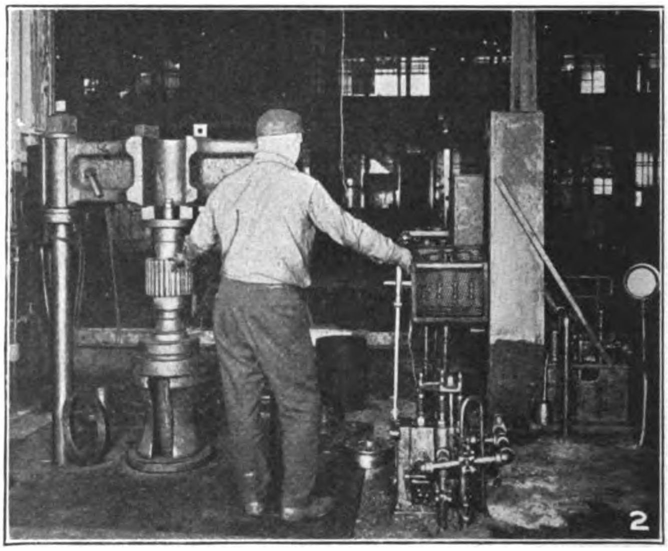
LAMINATIONS MADE TO DRIVING FIT

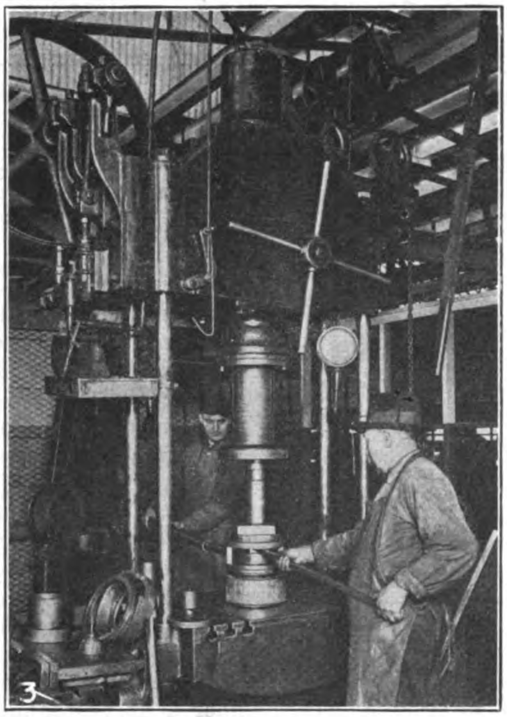
The armature laminations are either built up directly on the shaft or assembled on a spider. In either case the spider or shaft is machined from 0.002 in. to 0.004 in. oversize to secure a tight driving fit of the laminations, thus holding them securely and preventing loose iron in service. These laminations are put in place by hand and forced down by means of a special hydraulic ram. After the end plate has been driven on, the core is pressed and securely locked under a heavy tonnage. The tonnage used for this operation varies with the size of the machine. For a 25-hp. motor, pressures used are from approximately 30 to 40 tons. This operation insures a core which is tight and free from vibration in service.

In the case of an armature where the laminations are built up on a spider, the shaft is pressed in the core after these laminations are assembled, pressed and clamped on the spider as a unit. This operation is done on a 150-ton horizontal type hydraulic press. When a key is used, the pressure required on a 40-hp. motor is from 40 to 50 tons. On motors of larger size, and where the key is omitted from the shaft, they are put in using pressures ranging from 60 to 90 tons.

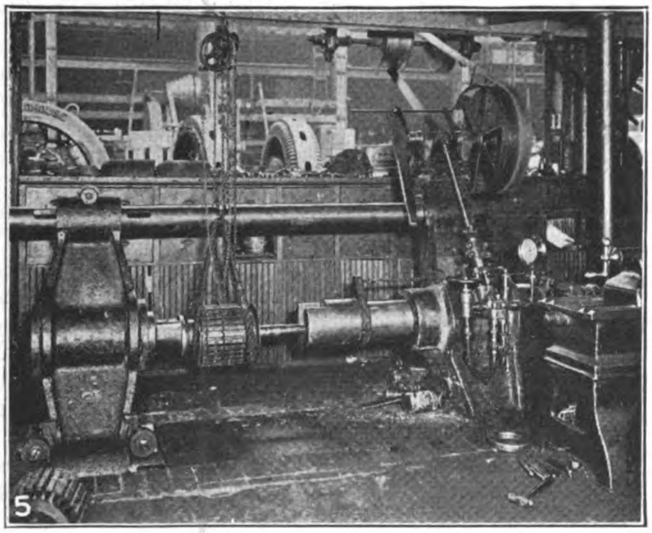
The core when completed, with shaft pressed in, and before the commutator and the windings are put in place, is given a static balance by placing it on two hardened steel parallel bars. The balancing is done by pouring hot metal in the balancing pockets which are opened up on the light side of the core. These pockets, which are distributed around under the surface of the commutator end coil support, are opened up for use by drilling holes into them. This test is necessary to

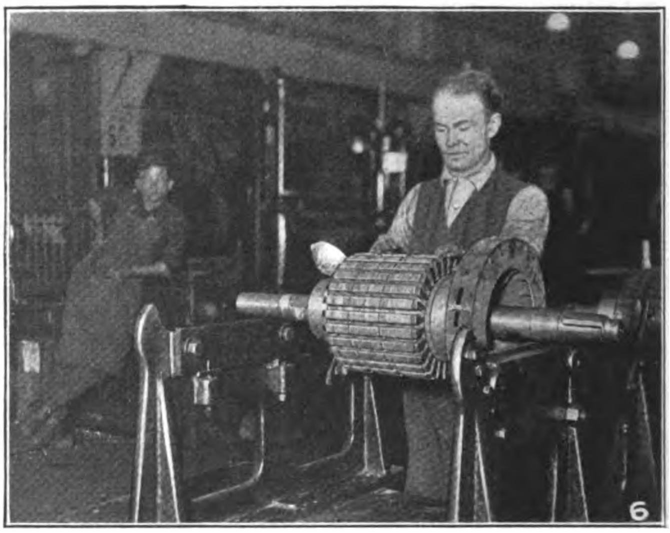






Accurate Machining and Testing of Detail Motor Parts Are Necessary to Insure Efficient Service to the User





No. 1—Grinding and Gaging Pinion Fits on Armature Shafts.

No. 2—Pressing Assembled Laminations on Cores, Using 100-Ton Hydraulic Press.

No. 3—Pressing and Tightening Commutators, Using 100-Ton Hydraulic Press.

No. 4—Short-Circuit Test on Commutators.

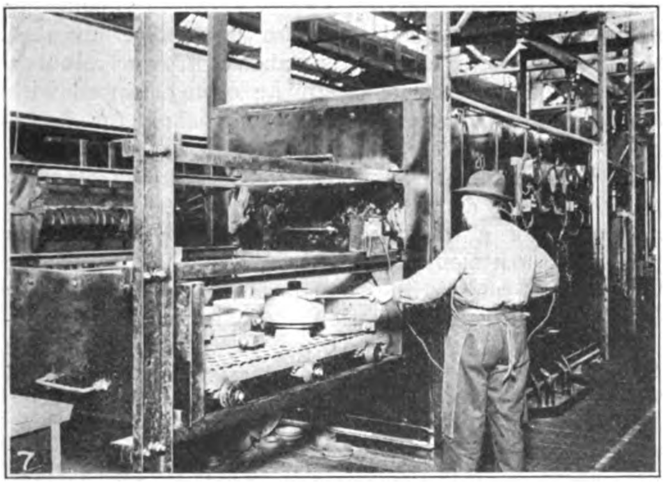
No. 5—Pressing Shafts in Armature Cores, Using 150-Ton Hydraulic Press.

No. 6—Static Balancing of Assembled Armature Cores Prevents Failures in Service.

secure a well-balanced armature and to prevent pounding and vibration of the armature which rapidly deteriorates the bearings of a motor.

COMMUTATOR BUILDING TESTS ARE VERY IMPORTANT

In the construction of the commutator, great care is taken to select clean-cut segments free from sharp edges and fins. These segments after being bright dipped are assembled in special clamps and the V's are machined, after which they are given a 500-volt test between bars for short circuits. In all machining operations it is essential to use tools which are correctly ground to prevent the dragging over of the copper and the short circuiting of adjacent segments. The built-up segments are assembled on the bushing, and during this operation it is very important to keep all parts clean and free from moisture in order to prevent bars from short circuiting. To check for defects that may develop during the building process the commutator again receives a short circuit test of 500 volts alternating current momentarily between all adjacent individual bars. After this test a ground test of 5,000 volts is applied momentarily.



No. 7—TEMPERATURE TEST ON COMMUTATORS BEFORE PRESSING AND TIGHTENING

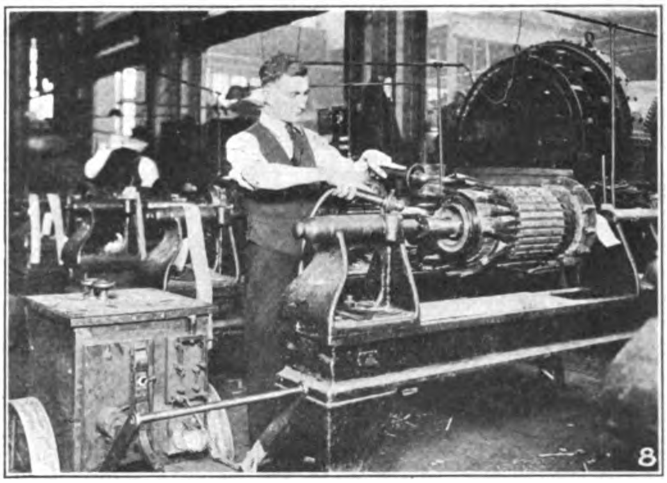
If the commutator passes the above tests satisfactorily, it is put in an oven and baked for several hours at a maximum temperature of 150 deg. C. The outfit used for this purpose consists of an electrically heated oven with automatic thermostatic control so adjusted as not to exceed the required maximum temperature. The commutators when removed from this oven prior to being pressed are checked by means of a pyrometer to make sure that all parts are at the correct temperature for pressing. It is then placed in a 100-ton press and while under pressure (ranging from 20 to 25 tons for a 40-hp. motor) the clamping ring is drawn up tight. This procedure makes the built-up mica flexible and permits of all metal parts being drawn up in place securely, thus producing a compact commutator that will not allow shifting of the segments in service. After pressing, the completed commutator receives a final test of 300 volts alternating current between bars and a final ground test of 5,000 volts.

MOUNTING COMMUTATORS ON SHAFT

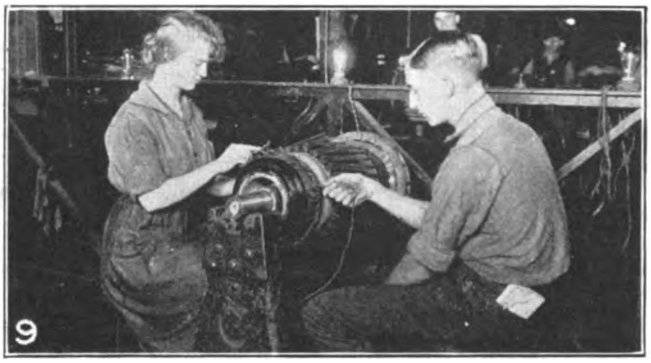
When the commutators are received in the winding department they have the sharp corners of the slots in the necks carefully rounded so as to eliminate all sharp edges that might tend to start breaks in the armature windings directly back of the commutator neck. The mica at the front "V" is protected with insulating material which receives a special treatment of varnish before baking. The commutators are then placed on the assembled core which is mounted in a 60-ton hydraulic press and forced in place, using a pressure of from 10 to 12 tons in the case of a 40-hp. motor.

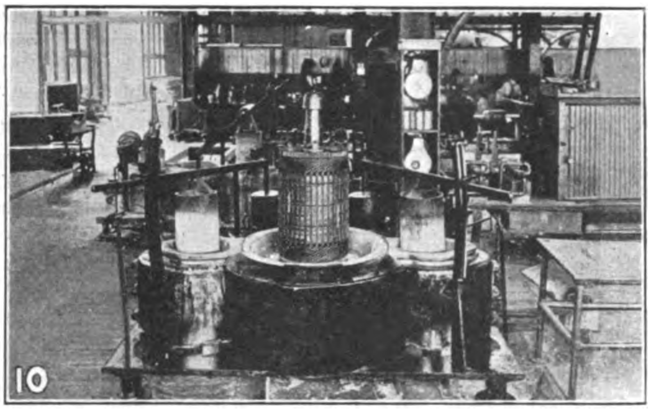
After being wound in metal-reinforced molds and partly insulated the armature coils are heated in an oven and while hot pressed to a definite size. They are then taped, dipped in a high-grade insulating varnish and baked. The dipping and baking are repeated, after which insulating cells are placed on the straight parts of the coil and taped. The complete insulated coils are then dipped and baked twice. The finished coils are checked and tested between individual conductors for short circuits at 600 volts alternating current momentarily, using a bench type testing box.

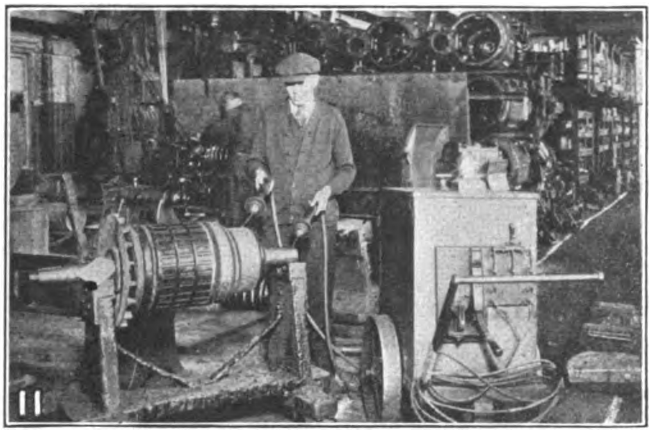
The assembled core of the armature, after being insulated at the front and rear coil supports and before starting to wind, has its commutator tested for grounds using 4,800 volts alternating current. The core is then laid off by the demonstrator and the location of the starting coil in the slots and the location of the starting leads on the commutator are carefully marked for the winder's information. The coils are then placed in the slots and the bottom leads are connected to the commutator, after which the windings and commutator are again tested for grounds at 4,800 volts alternating current using a portable testing box. If the armature passes the above test it is turned over to the connecting department where the windings are carefully lighted out, using a 110-volt lighting out line. All leads are checked and the unconnected top leads are arranged in logical order for connecting. When this test is completed the top leads are connected in the commutator in the order as arranged during the lighting out test, which should give the correct winding connections. As a final check on these connections the completely wound and connected armature is tested for short circuits, open circuits and cross connections, using a portable armature testing yoke such as shown in one of the illustrations. The armature is then given a ground test at 4,400 volts alternating current, after which it is ready to be soldered in the machine which is shown on page 430.

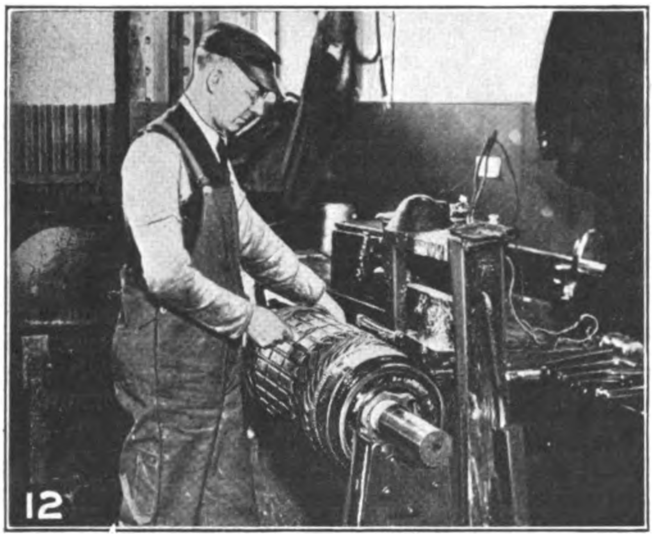


No. 8—TESTING PARTLY-WOUND ARMATURES FOR GROUNDS WITH PORTABLE TESTING BOX









ARMATURE CONNECTIONS AND COMMUTATORS RECEIVE ATTENTION

No. 9—Lighting Out Armature Connections.
No. 10—Machine for Soldering Armatures—Test Soldering Pot Equipped with Automatic Temperature Control.
No. 11—Using a Portable Testing Box to Test a Complete Armature for Grounds.
No. 12—Testing a Complete Armature for Short Circuits.

After the armature has been wound and all leads driven into the commutator neck, these connections are brushed with a non-acid flux made from alcohol and rosin and the armature is placed in a vertical position commutator end down in the soldering pot, and the hot metal is forced to flow around these connections by forcing two plungers down into the auxiliary pots containing the molten solder. It requires about two minutes' contact to make a good soldered job of all connections, after which the plungers are raised and the solder flows back into the pots. This method of soldering makes a thorough job and prevents any excess solder getting back of the commutator neck, which would very likely cause a short circuit in the windings. During this operation the temperature of the solder in the pots is kept at 450 deg. C. by means of an automatic temperature controlling device attached to the soldering pots.

All newly-wound armatures, after being soldered and temporarily banded, are heated in an oven for twelve hours at a temperature ranging from 95 to 105 deg. C. thoroughly to dry out and drive off all moisture. While hot they are dipped in a high grade of baking insulating varnish—"Amber Insulator"—for about five minutes, then allowed to drain for about fifteen minutes, after which they are placed in an oven equipped with automatic temperature control and baked for forty-eight hours at a temperature ranging from 95 to 105 deg. C. The time of drying out and baking varies with the size of the armature; the above values apply to an armature for a 40-hp. motor. Experience has shown that this treatment greatly increases the life of the winding and adds to the ruggedness of the armature as it (1) seals up any insulation cracked during the winding, (2) keeps out the moisture, (3) tightens the coils in the slot, and (4) insures that all winding material has been treated.

TESTS ON RAILWAY MOTOR DETAIL PARTS

Armature Details	Fans	After final machining		Static balance
	Shafts	Grinding		Gaging fits
	Core	Clamping laminations		Tonnage
		Pressing in shaft		Tonnage
		Assembled core		Static balance
	Commutator	Assembly	Building tests	Short circuit Ground
			Baking and clamping	Temperature Tonnage
		Final test		Short circuit Ground
	Coils	Final test		Short circuit
	Assembly	Mounting commutator on shaft or spider		Tonnage
		Winding and connections	Commutator test	Short circuit Grounds
			Winding and commutator	Ground
			Connections	Lighting out
			Winding and commutator	Short circuit Open circuit Ground
		Soldering-pot, soldering		Temperature
		Dipping and baking		Temperature
		Banding		Tension
	*Final testing of complete armatures			Short circuit Open circuit Grounds Bar to bar
Frame Details	Brushholder			Gage carbon box Spring tension Ground
	Brushholder support			Pulling test Ground
	Bearings	Babbitting		Temperature
		Pressing in housing		Tonnage
	Housings and axle cap			Leaks in oil wells
	Field coils			Short circuit Open circuit
	Dipping and baking assembled frame			*Temperature
	Final testing of completed frame			Polarity test* Ground

* These operations and tests are not made commercially on all machin

Armatures after being dipped and baked are heated in an oven to a temperature of 90 deg. C. and while hot are banded in a specially-designed motor-driven banding lathe fitted with an adjustable tension device to regulate the pull on the wire while banding. Armatures for 40-hp. motors are banded with a high-grade tinned steel piano wire No. 14 B & S gage put on at a tension of 200 lb.

FINAL TEST OF COMPLETE ARMATURE

When permanently banded, the completed armature is turned over to an inspector who carefully checks all important dimensions and further tests the windings for short circuits, open circuits, cross connections, etc., by means of the portable testing yoke. If it passes this test it is given a high-voltage insulation test of 4,000 volts to ground using a portable testing box. The commutator is then undercut and the windings are given a heavy coat of a good grade of protecting and insulating varnish applied by means of an air spray paint pot, after which the armature is sent to the assembling floor to be placed in the motor frame.

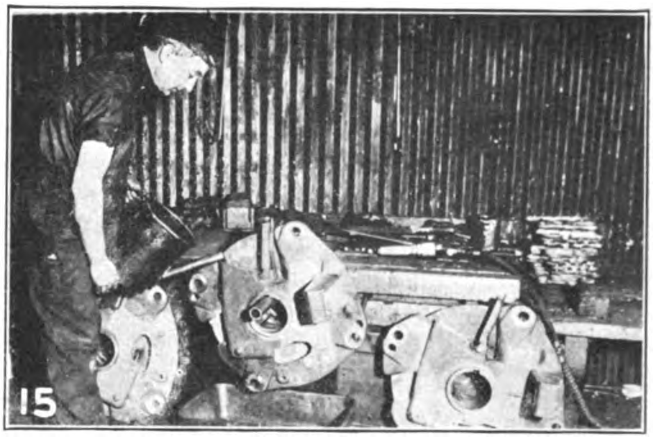
In the case of the armatures that are shipped out as spares where it is not possible to give them a running commercial test, there being no frames available, a bar to bar test is made. This test measures the voltage drop between adjacent commutator bars and is made to check any possible defects in the windings and soldering that ordinarily are detected during the running commercial test.

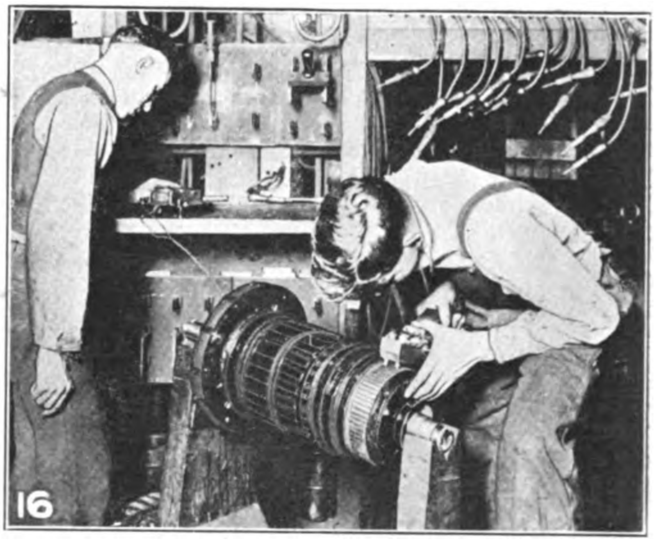
BRUSHHOLDERS ARE GAGED CAREFULLY

After the carbon boxes of the brushholders are machined they are hand fitted and carefully gaged with allowable working limit of exact size plus 0.002 in. to exact size plus 0.004 in., which insures a good snug fit of the carbon in the finished brushholder. This is very important to insure carbons that will not chatter and break and that will not develop rapid side wear in service. The pressure fingers after being assembled in place and adjusted are measured for tension by means of a spring balance and are finally set at a pressure ranging from 5 to 7 lb. per carbon. After being insulated and finally completed the brushholders are delivered to the inspection table, where they are again carefully gaged and checked in special clamping blocks to see that the distance from the center line of the supporting pin to the center line of the box is accurate, thus insuring correct neutral setting when the brushholder is clamped in the motor frame. The final test consists of a 5,000-volt ground test.

Separate brushholder supports with insulated studs are used in connection with the brushholder constructions of certain larger type motors. When assembled these are given a pulling test of 3 tons. This is essential to eliminate all defective and poor-fitting insulating tubes. This test is made on a specially designed machine fitted with a set of high multiplying power compound levers. The test insures the use of mechanically strong supports that will withstand the severe vibration and shocks to which they are subjected in service. After these supports have passed the mechanical test they are given a high voltage ground test of 5,000 volts similar to that applied to the complete brushholder.

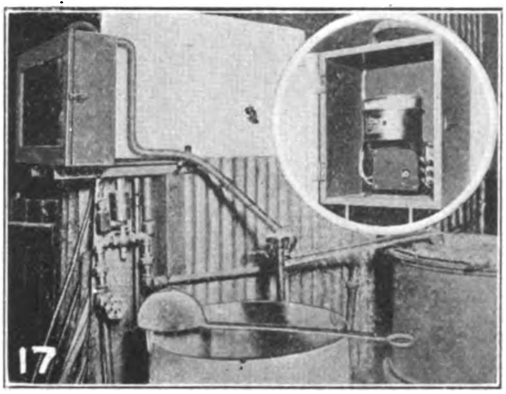
The armature and axle bearings are made either of malleable iron or a high grade of bronze alloy, depending upon the type of motor and size of axles. They are

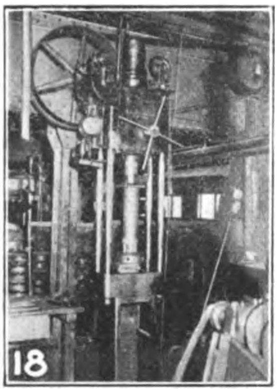




TESTING BRUSHHOLDERS AND ELIMINATING LEAKY HOUSINGS

No. 13—Portable Testing Box Used for High-Voltage Insulation Test on Brushholders.
No. 14—Pulling Test on Insulated Brushholder Supports.
No. 15—Testing Oil Wells of Housings for Leaks and Casting Defects.
No. 16—Bar to Bar Test on a Complete Armature.





No. 17—Pyrometer and Automatic Temperature Control for Babbitting Parts. No. 18—Pressing Bearings in Housings, Using 50-Ton Hydraulic Press. No. 19—Testing Field Coils for Short Circuits

accurately machined and carefully gaged to secure interchangeability of all parts. The babbitting or tinning of all bearings is done by expert workmen who have been carefully trained and are skilled in this kind of work. The bearing metal used is a carefully-selected high-grade babbitt prepared in the alloy department under the direct supervision of the metallurgist of the research department, which guarantees a uniform reliable bearing metal. During the process of babbitting the alloy is heated in pots that are fitted with automatic temperature control which holds the temperature of the molten metal within certain predetermined limits of 462 deg. to 480 deg. C. This has been found to give the most satisfactory results in connection with this work. After babbitting, some of the common sizes of armature bearings are broached, which gives a compact and smooth bearing surface.

All castings for housings are given a test to eliminate leaky oil wells. Each individual casting has carbon oil poured into its oil well and this is allowed to stand for five minutes to test for cracks and defects in the casting. All castings that show signs of leaking oil are discarded. This test is important and guarantees the use of castings that will not allow the oil to leak out through the casting instead of lubricating the bearings. This precaution reduces one of the possibilities of hot bearings due to insufficient oil. After this test the castings are boiled in a concentrated solution of lye in order to clean off all the core and molding sand. This operation is found necessary in order to get rid of all the sand and grit which might otherwise be carried by the oil to the journals and damage the bearings. As a further precaution against loose particles of sand, the inside of the oil wells of all other motor castings is painted while hot with a special grade of air-drying gray enamel.

The field coils after being wound are insulated and impregnated in order to improve their moisture repelling, heat resisting and insulating properties. They are carefully gaged and checked to keep them within predetermined maximum limiting dimensions so they will have a snug fit on the poles and can be readily assembled in the motor frame with sufficient clearance to allow for proper ventilation. All coils are given a short circuit test which eliminates all coils that have had the insulation damaged during the process of manufacture. They are also tested for open circuits, on the same test set used in making the short circuit test, by short circuiting the leads or terminals of the individual coils.

To meet certain requirements of operation under severe weather conditions, some types of motor frames, after coils are assembled in place with connections made, have the entire frame dipped in a good grade of insulating varnish and are then baked. This treatment is similar to the method outlined in connection with the dipping and baking of armatures.

Under certain conditions some assembled frames of railway motors are connected up to a testing circuit and direct current is passed through all of the field coils and their polarity checked by means of a compass needle or a polarity indicator made up from a small piece of steel banding wire magnetized and suspended at its center by a thin thread. This test is made to check the assembly of coils on the poles and the wiring around frame connections to insure against reversed coil windings.

The field coils and wiring around fields are given a high-voltage insulation test at 4,000 volts, alternating current to ground, momentarily. This test is made by using a portable testing box. The frame is then sent to the motor building floor, where the armature and bearing housing are assembled in place, after which the completed motor is sent to the testing department for its commercial or engineering tests.

Train Stop Part of Signaling System

THE train stop on the Metropolitan Railway of London is a part of the signaling apparatus which in the event of the signal being passed when at danger puts on the brakes and shuts off the power to bring the train to a stop. The brakes are applied by a vertical lever, known as the trigger and fixed on the right side of the leading locomotive coming in contact with the train stop arm, which mechanically opens a valve in the train pipe. The opening of this valve allows the air for holding off the brakes to escape, the brakes throughout the train being immediately applied, the power cut off and the train stopped. After this application and before the brakes can be released the motorman must get down on the line and reset the trigger on the train to the vertical position.

The train stop arm, 4 in. wide where it engages the trigger, is fixed on the right side of the line opposite the signal, and when in the "stop" position is 3 in. above the rail level, the center of the arm being 8 in. from the running edge of the rail. On a train leaving a block section the signal in the rear comes to the "off" position and the train stop arm, operated by a motor fixed in a cast iron box and bolted to the ties, moves to its off position, the arm then being below the top of the rail, unable to engage the trigger on the train when passing.

Control Trailers Used in Washington

In Order to Use Its Two-Car Train Service on Stub-End Lines the Washington Railway & Electric Company Has Equipped Some of the Remodeled Trailers with Control Equipment and Necessary Switches

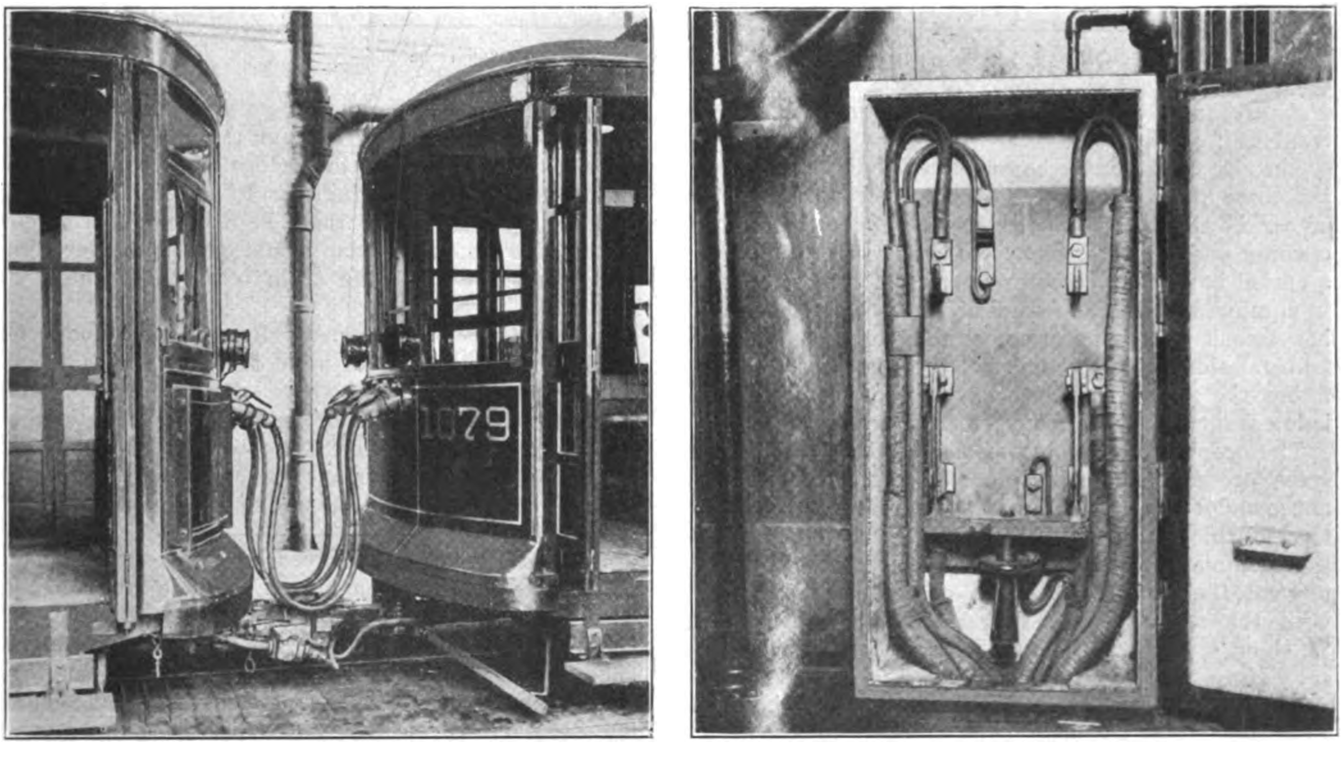
SINCE the publication of the article in the ELECTRIC RAILWAY JOURNAL for January 22, 1921, describing the trailers remodeled from open Narragansett cars by the Washington Railway & Electric Company two of these trailers have been equipped with control equipment, using straight "K" type control. Further details regarding the mounting of door engines and door and step control are now available. The provisions made for operating the two-car trains from the trailers were found necessary in order to adapt the two-car train operation to stub-end lines where it was necessary to operate from either end of the train. This was accomplished by using the remote control reverser and line switches on the motor car and by equipping the trailer with a separate resistance and one type K-66 controller with additional necessary circuits. Two additional jumpers, making four in all, are used between the cars. These are connected from receptacles mounted on the dash. Two are used with the control, door signal lights, buzzer and motorman's bell signal wire and two with the main motor wires and negative bus lines. The positive bus lines are carried one on each side of the coupler. The coupler is of the Tomlinson air-connecting type. On account of the electric switches used it is necessary to carry a current-collecting plow on both cars and always to operate from the plow on the leading car.

The leads from each plow are brought to a double-pole, double-throw changeover switch mounted in the vestibule of the motor car, and from this switch the current is fed into the two bus lines. An accompanying illustration shows this switch. The use of this switch was necessary to prevent the possibility of two plows being connected so as to short circuit the line. To make sure that the plow on the leading car will be used the ratchet switch wires from each controller are brought to two contacts on this switch. The connection between these wires is made when the switch is thrown in either direction, thus interlocking the controller on the leading car with the plow on that car. In order to eliminate a "push-in" if one plow is disabled, the controller on the end of the motor car adjacent to the trailer is arranged to operate from either plow. An accompanying illustration shows the arrangement of the jumper leads, together with the couplers and connections between cars.

SOME DETAILS OF DOOR AND STEP CONTROL

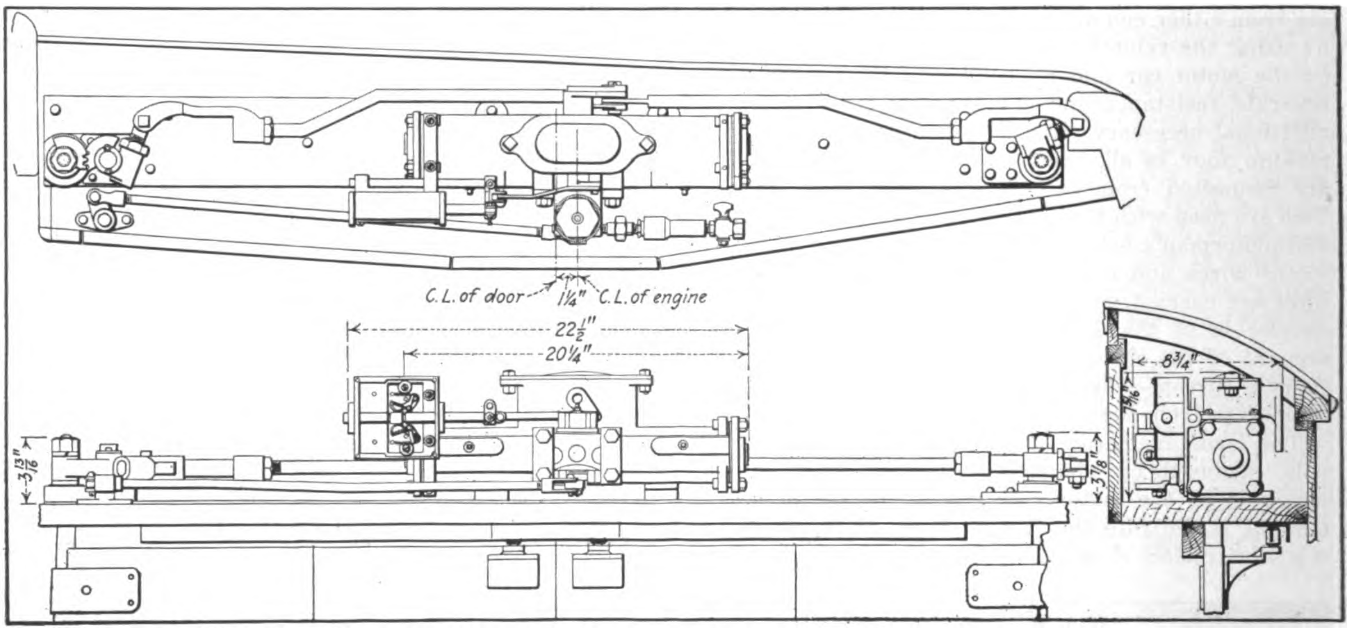
As stated in the previous article regarding these cars, they are equipped with pneumatic folding doors and folding steps, which are of an improved type furnished by the National Pneumatic Company. The doors and steps are operated by a G.M. 2⅝-in. x 4½-in. door engine placed in a pocket over the door. The valve for operating the engine to open or close the doors and steps is located directly on the engine, which insures a minimum consumption of air. As the conductor is stationed in the center of the bulkhead opening on the car floor proper above the platform level a pedestal control stand is used. The operation of the valve on the door engine is effected by a small handle at the conductor's station through a series of shafts, levers and rods.

By placing the door engine in the pocket above the



AT LEFT, VIEW OF ARRANGEMENT OF JUMPERS AND BUS LINES BETWEEN MOTOR AND TRAIL CARS; AT RIGHT, DOUBLE-POLE CHANGEOVER SWITCH USED FOR CONNECTING LEADS FROM PLOW doors on a ⅛-in. x 5-in. steel plate which continues to both door shafts a more substantial construction is obtained. The door shafts pass through this plate with their bearings riveted to it. The seats of the engines in turn are bolted through the plate and door header. The door shafts are operated from the engine by connecting rods through adjustable levers on the top of the door shafts in the pocket. The steps are operated from the bottom of the door shafts through a slide bar type connection.

The great advantage of this construction is that the engine and the door shafts are tied together as one mechanical unit. A diagram of this construction is shown in an accompanying illustration. Other advantages are the accessibility of the engine and connections for inspection, adjustment and oiling, the fact that these parts are practically inclosed in a dirt and dust proof inclosure and the high drainage point which eliminates moisture from the engine valve and prevents freezing trouble in winter.



Door Engine Installation in Header Over Door

The air supply for the engine is taken directly from the train line at regular service pressure. The consumption of air is about $\frac{1}{36}$ of a cubic foot for each complete opening and closing cycle. The air is strained through a curled hair strainer before reaching the engine valve to eliminate particles of sand or pipe scale. The engine has splash feed lubrication, similar to the automobile transmission principle, and will run two years with one filling, the grease which works out with the exhaust air being returned to the gear for further service.

The opening and closing movements of the doors and steps are checked or cushioned, thus preventing the abuse and deterioration due to "slamming." The regulation of this "cushioning" feature is accessible only to the shop men by means of proper tools. This is done to prevent the train crews from changing or tampering with the speed of the doors and thus altering the "cushion." The speed of the doors is predetermined and set before the cars go into service, which eliminates abusive use by the train crews and saves adjustment, wear and tear on door panels, glass breakage and reduces maintenance cost on all parts of the doors, steps and rigging. The door shafts are the National Pneumatic Company's standard type with combination ball bearings and thrust collar construction, which take both the side and end thrust wear.

The steps are of the three-arm type, ball bearing, with adjustable balance spring to insure even, smooth operation both opening and closing. The arms are mounted on the shaft by which the step is operated by an adjustable lever and connections through the slide bar to the door shaft. By using the same ball-bearing and thrust-collar construction as on the door shafts a self-aligning step is obtained. Further, the steps may be struck by obstructions on the street and the hangers thrown out of line to a decided degree before the step would fail to operate because of the thrust-collar construction.

The cars are equipped with the National Pneumatic Company's motorman's signal light system, which gives the motorman a light in his cab when all doors in the train are closed and constitutes the starting signal. The door-switch contact for passing the signal light to the motorman is mounted directly on and mechanically connected to the engine to reduce the possibility of mechanical or electrical failure. In addition to this it is so arranged that should there be a mechanical or electrical failure the motorman would get the danger signal and would not start the train until the trouble was located.

In adopting the pneumatically operated doors and steps the railway had in mind the advantages from a fare collection standpoint, there being no physical effort necessary on the conductor's part, so that he is more physically and mentally alert to attend to his work. This is an especially important factor when trains are operated between single-car units on the same track.

Standards recently approved by the American Engineering Standards Committee include four copper specifications submitted by the American Society for Testing Materials as "tentative American standard." They are as follows: Soft or annealed copper wire; Lake copper wire, bars, cakes, slabs, billets, ingots, and ingot bars; electrolytic copper wire bars, cakes, slabs, billets, ingots, and ingot bars; and battery assay of copper.

Atlanta Making Electrical Survey

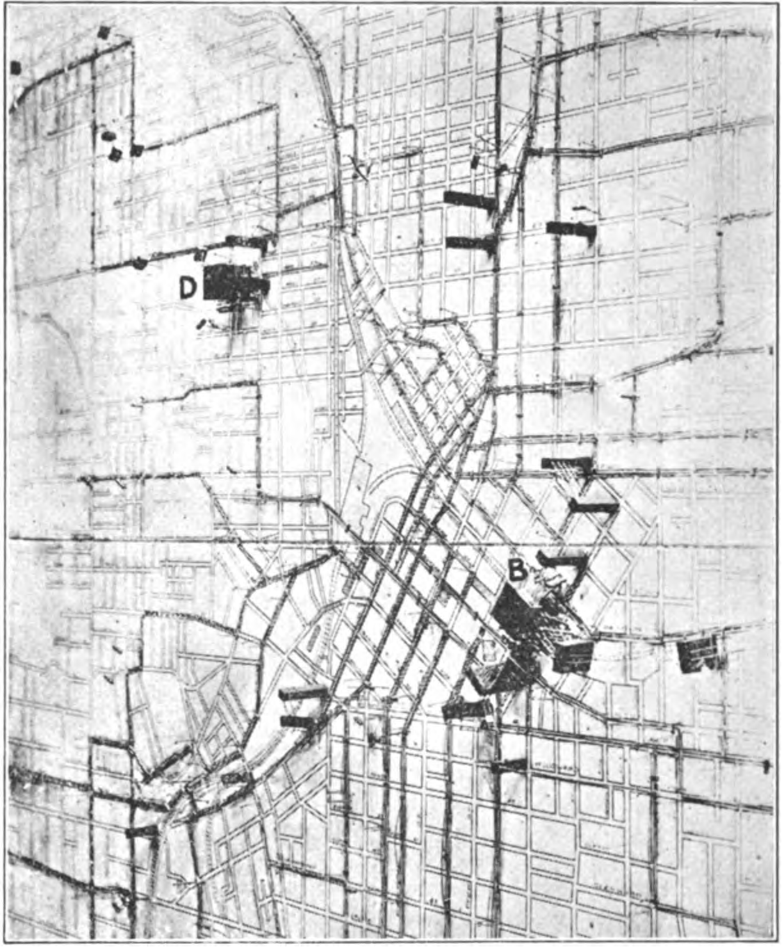
A Complete Miniature Equivalent of the Electrical Distribution, Overhead and Track Circuits Aids Electrical Department of Georgia Railway & Power Company in Its Study to Revamp Its Distribution System and Relocate Substations

IN ORDER to get a real test of various proposed schemes for revamping its distribution and overhead system and for relocating its entire group of substations, the Georgia Railway & Power Company, Atlanta, Ga., has constructed a complete miniature of the electrical system of the Atlanta railway property. The two accompanying illustrations show, first, a complete view of the entire miniature layout and, second, a close-up view of the central portion of the city, which will indicate some of the details of construction of this miniature system.

The present arrangement in Atlanta is, as noted, that there are two main stations located rather close to the center of the city, which is, of course, the main or practical load center of the railway system. These two stations are fed with energy from incoming high-tension transmission lines from the company's state-wide distribution system connected with its water power and steam generating stations. As Atlanta has grown during the past few years, it has necessitated sending more and more of this electrical energy, after transformation into direct current, to the outlying portions of the city to take care of the rapidly increasing railway load. It appeared to the electrical department that probably it would be most economical, with existing apparatus and information available, to locate the substations nearer the outer edge of the city, so that the electrical energy would not have to be transmitted clear to the center as alternating current and redistributed, practically back over the same course, to the outlying portions.

It appeared that possibly a belt, or 600-volt bus, with a radius of a mile or more, perhaps, should be installed with substations located at strategic points along this circular bus. Energy could be delivered to these substations and after transformation distributed both in and out from this circular bus, thus making probably the most efficient combined transmission and distribution system. Another advantage of a scheme such as this would be that almost the best possible type of network would be created so that if any one substation, or even two substations, went out of commission, the rest could carry the load most effectively.

The above conclusions were reached merely as a result of a preliminary investigation, and it was thought that the quickest way to determine the real answer to the most economical location of substations and the most economical use of copper in the distribution and overhead system would be to make actual experiments on the system. This would have involved an impossible cost and so the idea was adopted of building a complete miniature.



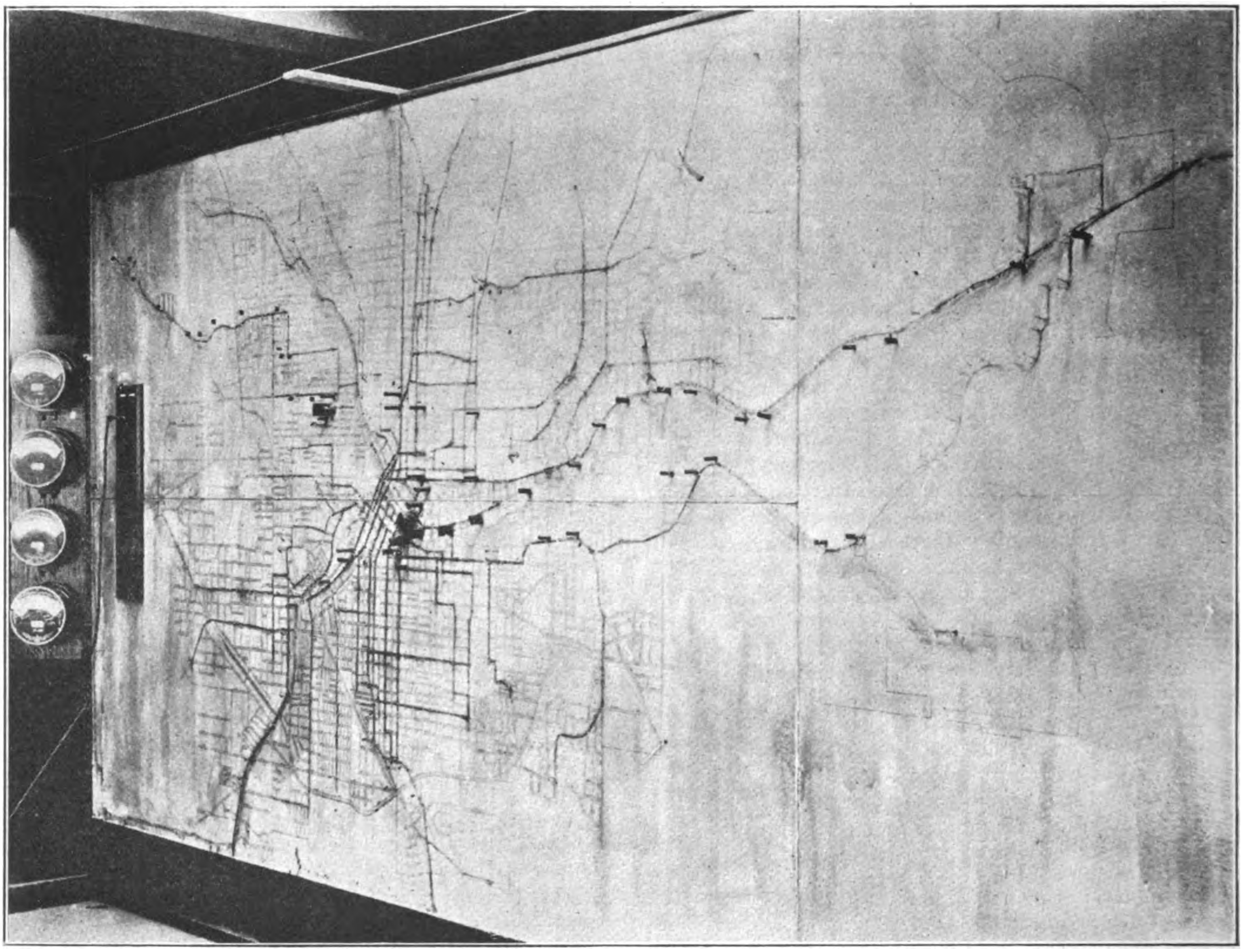
CENTRAL PORTION OF ATLANTA MINIATURE SYSTEM

A map of Atlanta was laid out on a vertical board some 8 ft. or 9 ft. high and 12 ft. or 14 ft. long or wide. On this map the system was constructed as follows: For every single track, that is, every pair of rails, a wire was laid which had exactly the same resistance per unit of track as represented on the map as did the actual track between the same two points on the system, so far as could be determined, taking into consideration the earth resistance also. Thus, single-tracked streets carry one wire and double-tracked streets two wires. The overhead was constructed on small poles or pins representing poles, and each overhead contact trolley is represented in the miniature by a small wire of exactly the same resistance between any two points on the map as between the two corresponding points on the real system. Likewise, the feeder system is reproduced on the poles, all taps being reproduced exactly as they exist on the actual property. Substations are represented by large blocks, as indicated in the accompanying illustration. To represent the loads, for each of the various types of cars in use at Atlanta a small resistance unit has been made up, so that when placed by clips between the trolley wire and track, its resistance is such that it will draw 1/100 of full-load current when 6 volts is applied across the trolley and track.

A large storage battery constitutes the power plant for providing energy. This is a 6-volt battery, 1/100 of the voltage used in service in Atlanta. By means of the plug board at the left of the miniature map, this 6-volt battery can be connected to any one or any number of various points which may be chosen as distribution centers or locations of possible future stations. From this plug board there are semi-permanent connections to the various possible places on the system that are being considered as substation sites. Voltmeters and ammeters and millivoltmeters are available with accurately calibrated leads, to measure the line voltage at various points, the current in various feeders, and the line drops between various points on the system respectively.

A large blueprint hanging on an adjacent wall has plotted on it the several distributions of cars which it is desired to study. For instance, there is on this blueprint, in symbols, the location of each car on the system at the maximum peak of the system. Other distributions of cars may also be indicated on this blueprint. When it is desired to study any particular load on the miniature, the various resistances representing street car loads are placed on this miniature map in the position indicated on the blueprint of the system and there is reproduced then the instantaneous load representing some certain average time.

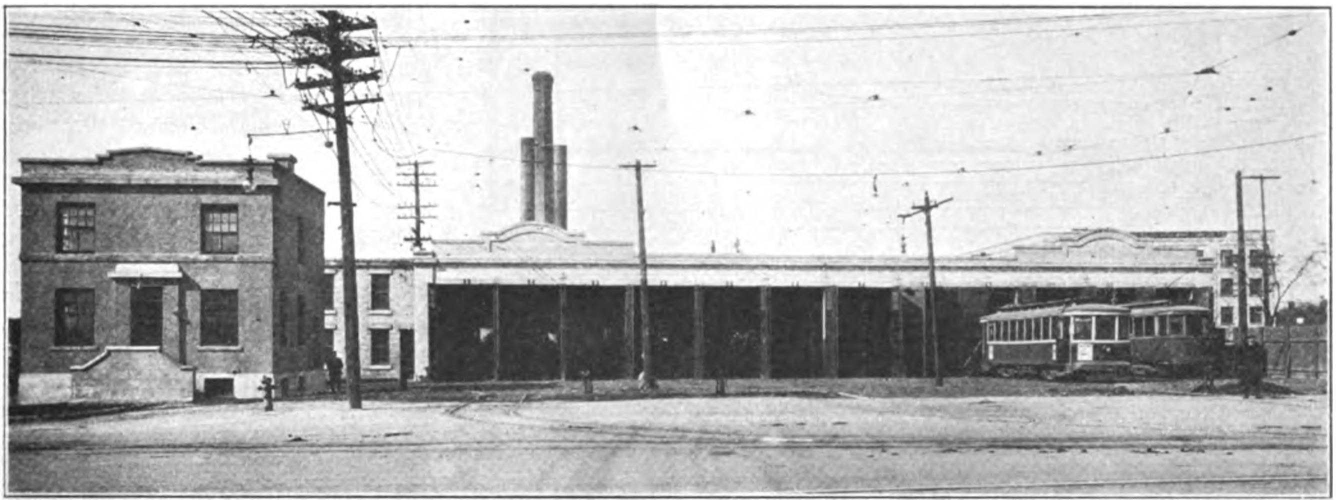
And so studies are being made. Different points are chosen as possible substation sites, energy applied there with the resulting distribution characteristics noted. Other substation sites are chosen, ring buses at 600 volts can be installed, the distribution system entirely revamped in the miniature and the result accurately noted. The load drawn from various substations at various assumed positions is also studied, so that it will be possible to determine whether one-unit or two-unit or three-unit substations are needed at certain points. Anticipating results somewhat, the electrical department feels that the survey may show the economical advantage of applying automatic substations at several points on such a ring bus as being the most economical substation scheme for the system. This, of course, is only a prediction.



COMPLETE ATLANTA RAILWAY SYSTEM CONSTRUCTED IN MINIATURE FOR TEST PURPOSES

The map is made up on a scale of 200 ft. to the inch. Voltage and current values are 1/100 of actual values, as indicated. The peak load on the miniature is something over 600 volt-amperes, corresponding to a 6,000-kw. peak load on the system in reality.

This whole installation has been designed and constructed under the direction of H. L. Wills, the electrical engineer of the Georgia Railway & Power Company. The results of the actual study are not available as yet, as the study has not been completed, but they will doubtless prove interesting when they are available as indicating the value of such a laboratory scheme of making surveys of this sort.



RECONSTRUCTED CAR SHOPS IN WINNIPEG

Repair Shops Rebuilt in Winnipeg

A Disastrous Fire Last Year Destroyed the Shops and Carhouses of the Winnipeg (Canada) Electric Railway—These Have Been Rebuilt and Greatly Improved

BY W. N. SMITH

Consulting Engineer Winnipeg Electric Railway

THE carhouses of the Winnipeg (Canada) Electric Railway, at Main Street and Assiniboine Avenue, in Winnipeg, were destroyed by fire on April 7, 1920. They had been constructed in 1901 with brick walls and roof of 3-in. T. & G. boards on steel beams, with tar and gravel roofing and flat glass skylights over the two center bays. There was a 21-in. fire wall between the carhouse and machine shops in the rear with three through repair tracks, two of which had pits underneath. The openings in the fire wall were protected by Underwriters' tin-clad fire doors and these were closed by the men on duty before the fire reached the west end of the carhouses. These fire doors, although so badly charred that they had to be renewed, prevented the fire breaking through to the machine shop.

The fire wall and the brick wall on the south side between the carhouse and storerooms were severely tested by the intense heat of the fire and the brick "spalled" on the face, but these walls and the repair pit walls were found to be sufficiently strong to be used again in the reconstruction. The walls on the Main Street and Assiniboine Avenue elevations were, however, pulled down.

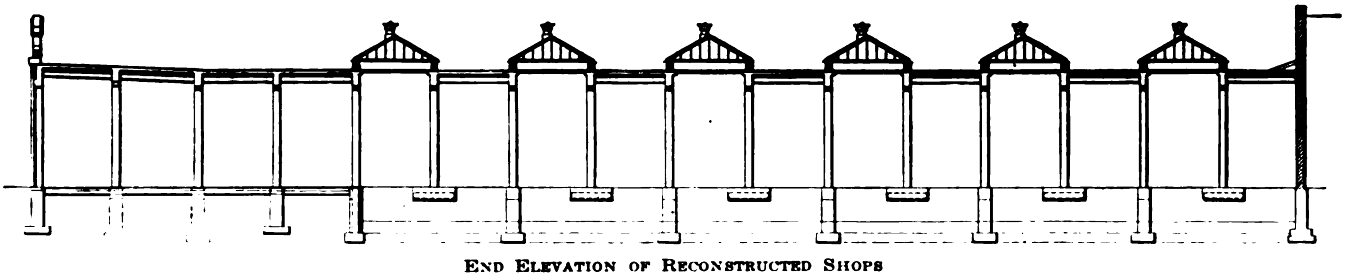
It was decided to use reinforced concrete with brick walls for the reconstruction. On the Assiniboine Avenue side 8-in. brick walls with "HB" reinforcement and 13-in. pilasters every 12 ft. were used to lighten the dead load and save underpinning the old foundations, which would otherwise have been necessary due to the increased dead load from the concrete roof slab. In the spandrels between the pilasters "Fenestra" steel sash were installed, double-glazed with cast-wired glass on the outside and 16-oz. sheet on the inside to reduce the heat losses in winter. This double glazing saves approximately 40 per cent of the heat units ordinarily lost through a single-glazed window.

The track doors on the Main Street front are of wood hung on heavy strap hinges and have wired glass panels in the upper portion. There are twelve pairs of these doors. The building is 132 ft. wide, divided into four 33-ft. bays with 12-in. x 12-in. concrete columns. Where the columns occur the hinges were built into the concrete, and intermediate columns of channel iron were used to support the remaining doors.

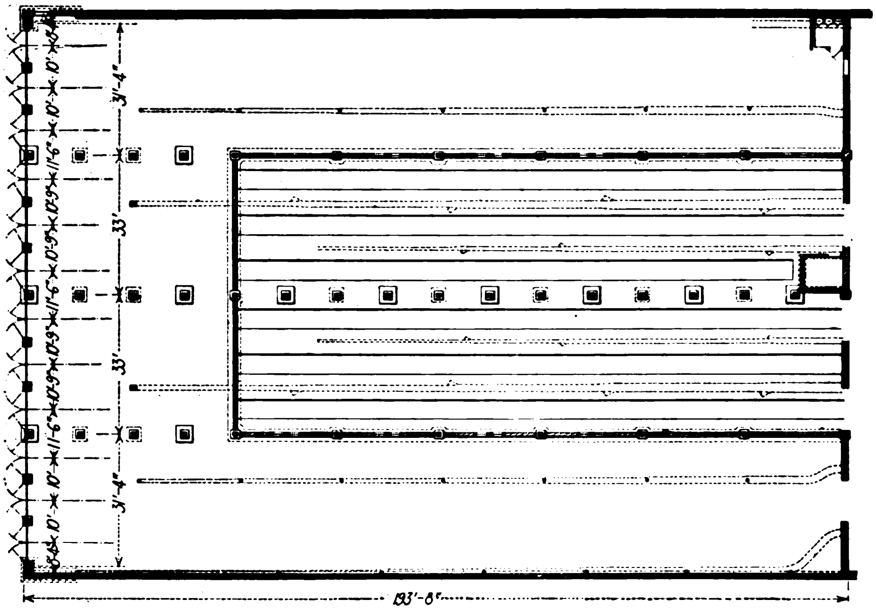
SKYLIGHT CONSTRUCTION OVERCOMES TROUBLE FROM CONDENSATION

Considerable trouble had been experienced in the old carhouse from condensation on the skylights and roof. To overcome this the skylights were constructed of cast-wired glass on galvanized iron frames and a flat ceiling light with 16-oz. glass was built in below the skylight curb walls at the ceiling line. Ventilators with regulating dampers were carried through these ceiling lights to carry off the moisture and smoke from the car heaters. The concrete roof slab was insulated as follows: "Insulite" (a compound wood pulp product of high insulating value) was cemented with hot asphalt directly on top of the slab and on the Insulite a Barrett specification felt and gravel roof was built up. This, together with the double glazing of the skylights, has proved quite satisfactory during the past winter.

The lighting consists of eleven rows of lights, placed above the runways between tracks, the outlets being at 24-ft. centers and equipped with 150-watt distributing-type porcelain enameled reflectors. Four 300-watt "nitro" lamps with weatherproof angle reflectors are placed above the entrance doors to light the tracks outside, together with an arc lamp at the street



END ELEVATION OF RECONSTRUCTED SHOPS



Section of New Shop Building

line. The repair pits are lighted with angle reflectors, throwing the light out horizontally from the side walls and column bases in the pit. All the above lights are controlled from a panelboard located beside the office of the carhouse foreman. In addition to the above there are twenty-one plug receptacles on the columns in the repair pit and above the track level for extension-cord lamps. All wiring is run in conduit using 110 volts alternating current.

The trolley wires are supported on brackets fastened to a wooden trough which is supported by the concrete roof beams. The trough was painted on all sides before erection to preserve the timber. Pieces of 2-in. x 12-in. plank 4 ft. long were fastened to the concrete roof beams by expansion bolts. These pieces project 18 in. on each side of the beams and the trolley trough is bolted to these pieces 6 in. from the ends, so that there is no possibility of a metallic contact with the reinforcing rods in the beams should a trolley pole jump the wire when a car is being moved inside the barn.

A fan and steam coils located in the machine shop supply heat for both shop and carhouse. Four galvanized-iron ducts are carried overhead with outlets every 24 ft. looking downward at 45 deg. Two of these are carried under the roof beams on each side bay. The two center bays are heated by four ducts in the repair pit slung under the wooden sidewalks that run between the tracks. Regulating dampers are placed on all the main ducts. From 3.5 to 5 lb. of steam pressure is carried on the steam coils. The condensation is returned to the boilers by "Cole" tilting return traps.

The concrete roof slab is 4½ in. on 12-ft. spans with ⅜-in. round bars. The beams have a span of 33 ft. and are supported by concrete columns 12 in. x 14 in. Where available, the old footings were used, and where new footings were necessary these are of reinforced concrete. The roof beams and slab were pitched so as to shed rain water to six hoppers in the roof. Pratt & Ross, architects and engineers, were responsible for the design and construction.

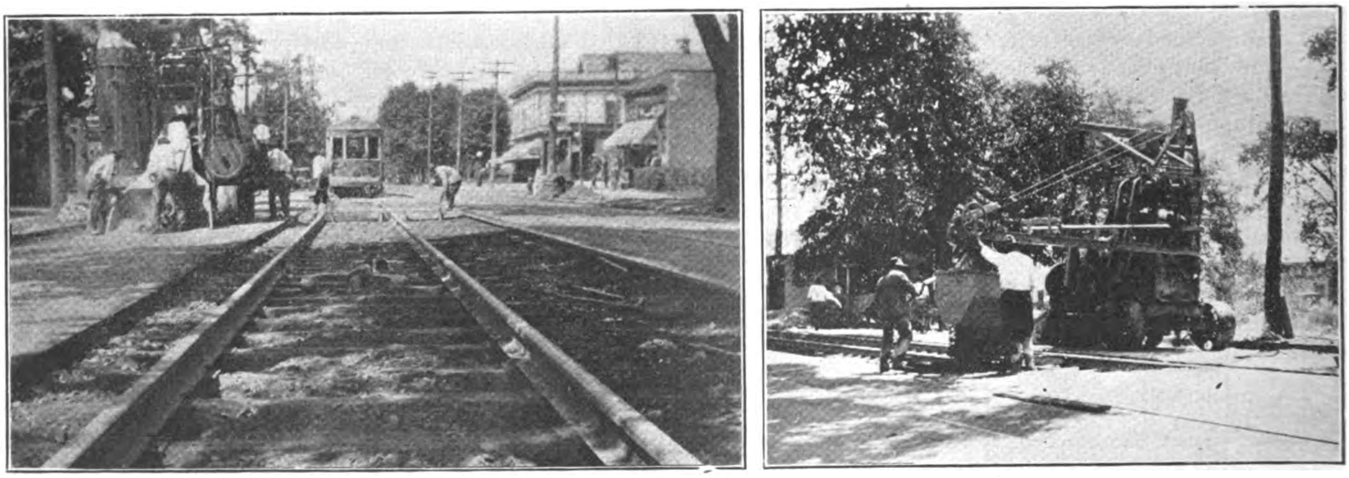
The company also built a small brick and stucco office building facing Main Street immediately in front of the stores. This provides accommodation for the supervisors and cashier on the ground floor and for the construction department on the second floor. Ample toilet accommodation for motormen and conductors is provided for in the basement.

Track Labor Costs

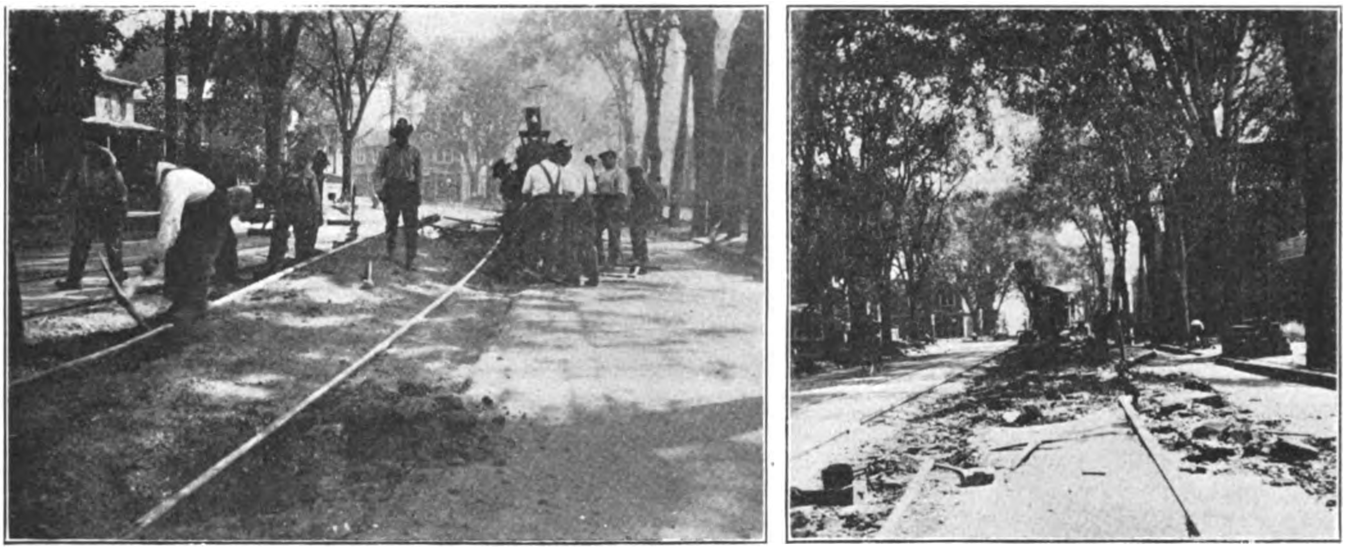
Relaying Operations Reduced in Connecticut by the More Extended Use of Machinery, Better Organization, Smaller Gangs and Other Improved Methods —Interesting Statistics Given

By P. Ney Wilson
Formerly Roadmaster the Connecticut Company, New Haven, Conn.; Now Assistant to the Engineer of Surface Roadway, Brooklyn (N. Y.) Rapid Transit Company

The Connecticut Company has obtained some interesting results by comparing the labor cost per foot of single track relaid in 1914 to the same unit as determined during relaying operations in 1920. Before this analysis was made it was expected that the unit costs would rise in proportion to the increase in the rate of pay per hour for labor. In fact, we thought our costs



The First View Shows the Completed Track Ready for Concrete Pavement—The Concrete Mixer in Operation Is Shown in the Second View



JACKING OLD TRACK OUT OF THE STREET—WHEN JACKED OUT THE STEAM SHOVEL LOADS THE SURPLUS MATERIAL ONTO TRUCKS

would be even higher than this due to the inefficiency of labor during the war period. While it was perfectly evident that the men in the trench were not producing as much work per day in 1920 as they were in 1914, we were somewhat surprised to find that the use of labor-saving machinery, smaller gangs, better organization and other improved methods more than offset the indifference of the man with the pick and shovel.

In 1914 no special track machinery was used, all trackwork being done by hand. The rate per hour for labor was 15 cents. In 1920 we used a power shovel, tamping machines, arc welders, etc., paying labor 50 cents per hour. For obvious reasons small gangs were used and we were in closer contact with them. We believe that a first-class track foreman can handle only twenty men efficiently, and this belief was borne out by the results obtained.

The psychological effect of being close to the men in the gangs should be considered, as surprising results may be gained when there is a correct mental attitude in the men in the trench. This was only possible occasionally during the war period, as the demand for labor was so great that indifferent workmen were the rule. One exception to this rule was called to our attention. The same gang rebuilt a certain piece of track, laying half of it in the fall and completing it in the spring.

The cost for labor for the first half of the work was $1.73 per foot of single track, whereas the cost of the same unit for the second half of the work was only $1 34. In the second instance the men were facing the end of the job and were induced to try to finish it as soon as possible, whereas under the first condition they were just beginning the work and were making wartime motions and receiving a day's pay. The following figures give the cost of labor per foot of single track in various relaying jobs during 1914 and 1920:

COST OF LABOR IN VARIOUS JOBS PER FOOT OF SINGLE TRACK

Case No.	1914	1920	Per Cent Increase 1920 Over 1914
1	$1.19	$1.65	....
2	1.07	2.06	....
3	1.09	1.61	....
4	1.08	1.75	....
5	.90	....	....
6	1.09	....	....
7	.79	....	....
Average...........	$1.03	$1.77	72
Rate per hour......	.15	.50	233

NOTE.—Unit costs per foot in this table do not include paving charges, maintenance of machines, overhead, etc., but include labor charges only.

The question naturally arises whether the 1920 work was fairly comparable with that in 1914. Most of the operations consisted of relaying 7-in. 70-lb. plain girder (high T) rail in macadam streets and was carried on by the same foremen who held, throughout the period covered, the same nucleus of a track-laying organization. An intimate study of the conditions involved shows the comparison to be as fair as any comparison can be. Slightly different conditions were encountered on each street as compared with other streets, but we consider that the averages take care of these inequalities.

The results are surprising and may be a coincidence. However, the economies effected are certainly encouraging.

Valtellina Locomotive Rheostat

THE new type of locomotive furnished by the Westinghouse company for the Valtellina electrification, which is three-phase, has a model arrangement for the liquid resistances used to control the induction motors. The rheostat consists of a metal tank with conic ribs and plate electrodes, between which the electrolyte—a soda solution—closes the circuit when the solution is raised by compressed air. The valve controlling the air is operated manually by a lever in the engineer's cabin, but is also controlled by a spring which is actuated by the moving element of a wattmeter. The current coil of the wattmeter is in the grounded phase and the potential coil is between the two overhead lines. At starting, the driver places the lever in a certain position, thereby admitting air to the liquid rheostat, which causes it to start. If the input increases beyond the value corresponding to the lever position the deflection on the wattmeter is increased accordingly, and, by means of the spring, partly closes the air valve and so reduces the input to the proper amount.

In this way the locomotive automatically takes a constant input when starting, this input being determined by the position of the lever. Pulsations in the supply pressure are also compensated for in this manner.

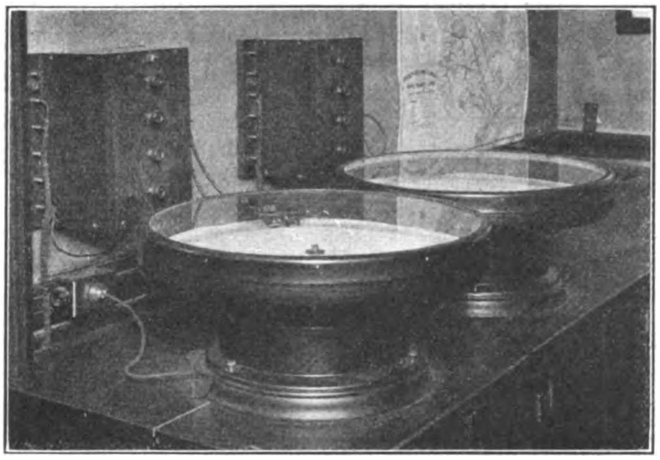
When a slow speed is attained the liquid starter is automatically short-circuited. The volume of the soda solution is about 900 liters and the liquid is actively circulated to assist cooling and so to provide more uniform resistance and less evaporation.

Automatic Train Registering

The Brooklyn Rapid Transit Company Has Installed Two Registering Instruments in the Chief Dispatcher's Office to Show Time Trains Pass Various Points and Stations

By A. A. Roberts
Assistant Signal Engineer Brooklyn (N. Y.) Rapid Transit Company

A NOVEL and interesting system for registering the passage of trains has recently been installed by the signal department of the Brooklyn Rapid Transit Company that provides the central dispatching office with a continuous, graphic time record of train movements at certain critical locations. Two registering instruments known as "Hedwaygraphs" are used. These devices are manufactured by the Cleveland Electrical Instrument Company, which adapted for the purpose one of its standard types of recording pyrometers. An accompanying illustration shows the two Hedwaygraphs mounted directly behind the chief dispatcher's desk on the top of a cabinet, the interior of which contains the controlling relays and most of the local wiring.


Two Hedwaygraphs Are Located in the Chief Dispatcher's Office

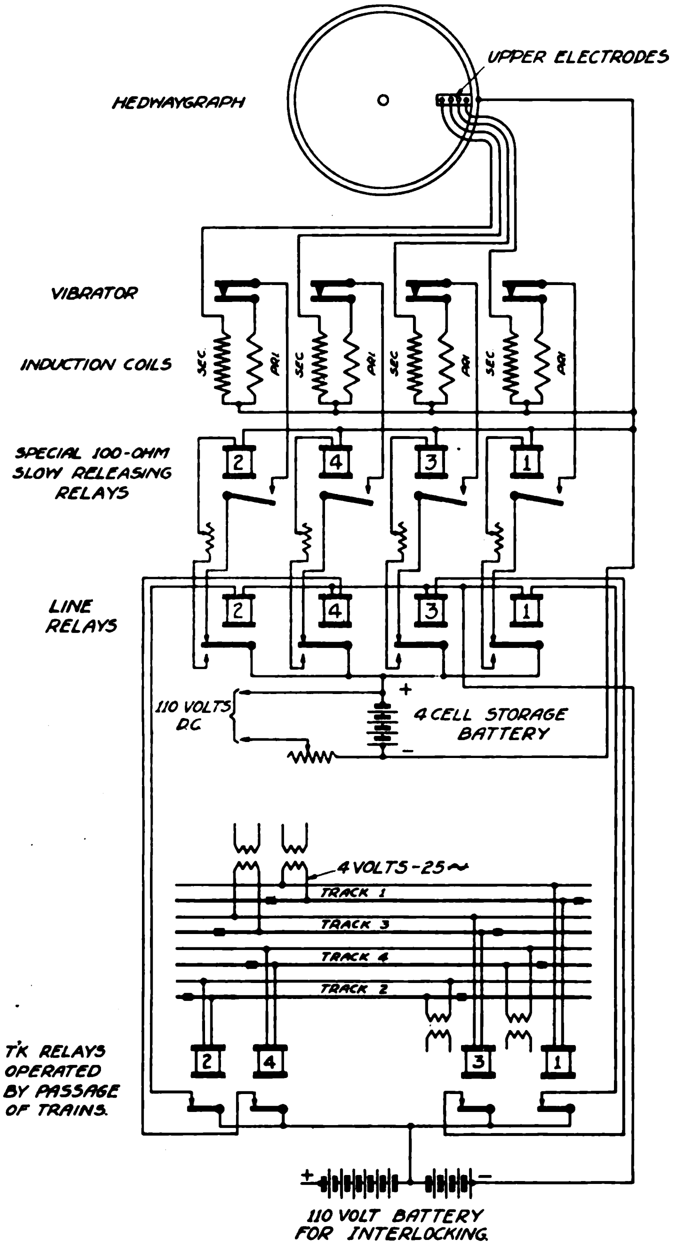
One of the two instruments, each of which is equipped for making four independent records, is employed to register the time of trains passing on each of the four tracks of the Broadway subway at the Thirty-fourth street station in Manhattan. The other instrument makes a similar record for the two tracks over the Williamsburg Bridge near the Essex Street station and also for the two tracks of the Montague Street tunnel near the Court Street station.

Each Hedwaygraph consists essentially of a 24-in. dial of paper rotated by a self-winding clock mechanism and inclosed in a circular case of spun sheet metal. A glass-paneled cover permits ready inspection of the chart at all times. The chart is virtually a twenty-four hour clock dial divided by radial lines into hours with subdivisions of ten minutes each. Circular bands near the margin of the dial serve mainly to obtain a suitable color contrast, so that blue printed copies of the record may be made without difficulty. The automatic record of the passing of trains is obtained by the discharge of a spark from suitable electrodes which puncture the charts. A view of the four adjustable spark electrodes mounted in an insulating plate of Bakelite is shown in one of the illustrations. The discharge passes through the paper dial to a common electrode located under the chart and directly beneath the four upper spark points.

The time interval between trains under conditions of maximum traffic is seldom less than ninety seconds, corresponding to a linear distance of approximately 0.06 in. on the circumference of the inner band of the dial, which is 18¾ in. in diameter. Since successive punctures are readily distinguished even when spaced at distances considerably smaller than 0.06 in., little difficulty is encountered from indistinct traces.

Method of Control Used

The method of control employed and the sequence of the various operations that take place in producing a record on the chart may be easily understood by referring to the typical wiring scheme shown. The four tracks indicated in the lower portion of the diagram represent the location at which a check on the uniformity of train movements is desired. The track circuits and track relays are those employed for the block signal system. These track relays are located adjacent to the track circuits and control energy taken from local storage batteries through the company's telephone cables to the line relays, which are located in the cabinet in the dispatcher's office and serve to repeat the opera-



Wiring Diagram for Control of Hedwaygraphs tion of the track relays and thus to confine locally most of the special wiring. These relays are of the simple and inexpensive type commonly made use of in telegraph systems.

Special 100-ohm relays were furnished for this installation by the Chicago Railway Signal & Supply Company. These are of the familiar type used in direct-current block signal work, but having certain modifications designed to secure a retardation of approximately one-quarter second in the time required for the contacts to open after the relays become de-energized. The degree of time delay in contact opening necessary to produce a spark discharge of the proper duration was determined experimentally previous to the selection of the type of control apparatus to be used. Adjustable resistances inserted in the coil circuit of the special relays furnish a simple means of varying the retardation sufficiently to meet all requirements.

A train entering upon the governing track circuit, for instance on track No. 1, starts the sequence of events by shunting open the track relay, which in turn opens the corresponding line relay No. 1. A back contact on the line relay then completes the circuit from the four-cell local battery that energizes the special relay and closes the contact thereon. This condition holds until the track and line relays are again energized due to the train leaving the track circuit. At this instant a circuit is completed from the local battery through the primary of the induction coil and front contacts of the line and special relays that energizes the coil and causes the discharge of the secondary to puncture the chart.

This system has now been in successful operation for about eight months and the instruments and control apparatus require very little attention. Maintenance consists mainly in the occasional cleaning of the electrodes and their replacement at infrequent intervals.

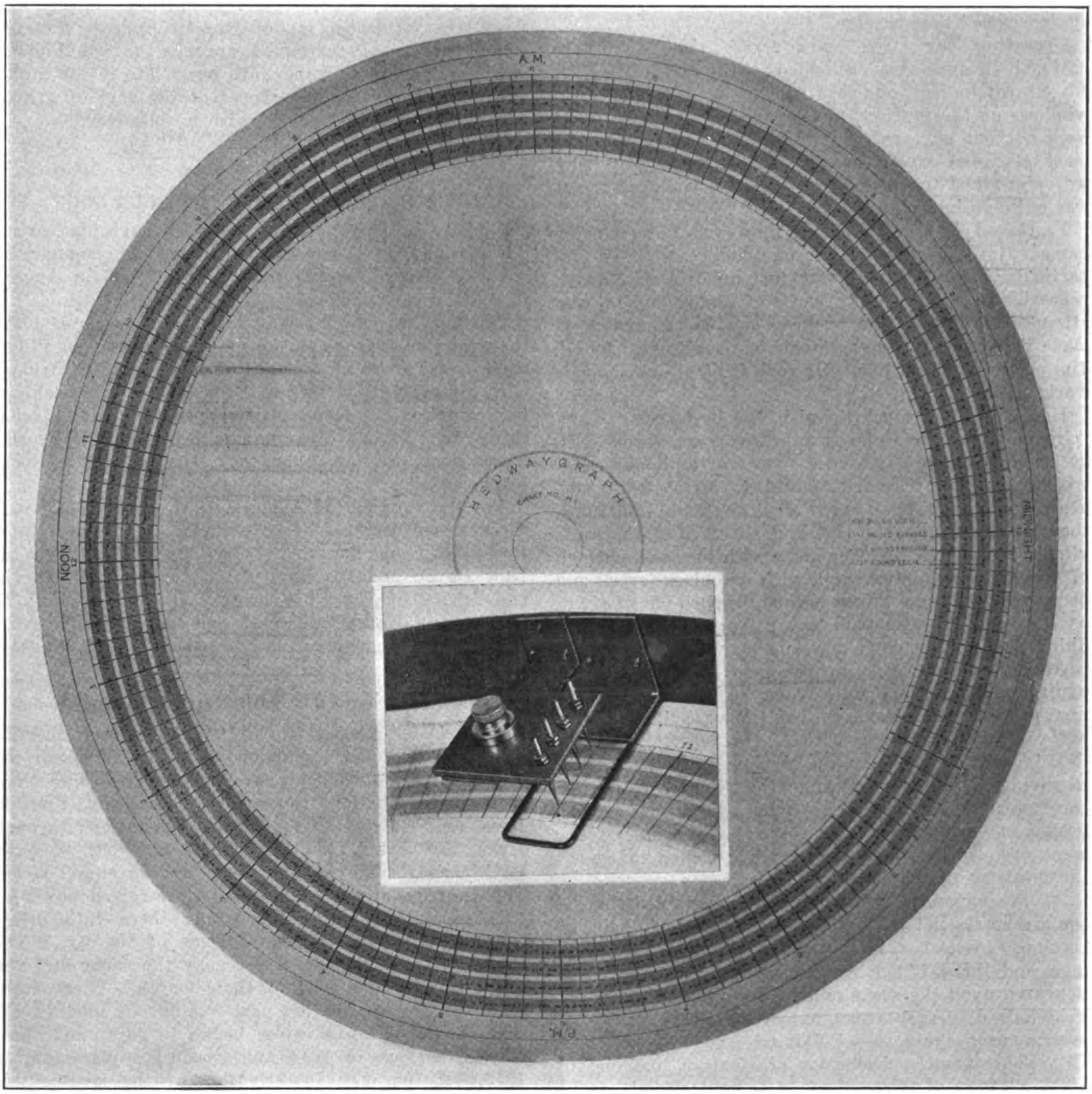


CHART SHOWING ACTUAL RECORD FOR TWENTY-FOUR HOURS—INSERT SHOWS MOUNTING OF FOUR ADJUSTABLE SPARK ELECTRODES

What Is Service?*

By H. A. Lemmon

PERFECT service is electric energy always available without interruption at a constant standard voltage. From El Paso we operate a street car line into Juarez, a little city just across the Rio Grande in Mexico. About ten years ago relations between the two countries were somewhat strained. Our army had dropped a few shells into the Mexican city, and if there were any Mexicans who were lying awake nights consumed with love for their American cousins, they very effectually concealed that passion.

Operating our street cars across the two international bridges was attended with difficulty—with adventure; in fact, our cars had a way of losing their windows on the journey, and our conductors of coming back without any cash, but plenty of torn clothes and black eyes and explanations. There were reasons why we determined to keep going, and selecting car crews was quite an important task.

Employed on the El Paso lines was a conductor named Jim Burleson. Burleson hadn't attracted any particular attention. He was just an ordinary, quiet, peaceable chap, with a dry sense of kindly humor, who attended strictly to the business of the company and made it his own business. Some one suggested placing Jim on the Mexican line. He took it as all-in-the-day's work.

He didn't know much Spanish, but he learned to say "Gracias Señor" and picked up a few more words, until he could exchange a sentence or two of amiable banter with every frowsy señorita and dirty Mexican kid who ventured to get on his car. Mexicans and Americans, they all looked alike to Jim, and all received the same kindly treatment. He came home with the cash, with all of his windows intact and with no black eyes, and because he did these things he just dropped out of sight, as it were. No one paid any attention to him. He didn't figure in the day's news one way or the other.

And then one day Jim Burleson contracted pneumonia. Forty-eight hours later he was dead. The newspapers of El Paso recorded Jim's passing away in a four-line conventional notice. He had lived and he died in a little shack near the carhouse and was without surviving relatives to arrange the details of the last ceremonies. A group of his fellow employees got together and appointed themselves pallbearers. They went even further and engaged a carriage to convey the minister to the cemetery.

At the appointed hour the funeral started, but in some respects not quite according to the original conception. Instead of merely a few of his fellow workmen and the carriage containing the minister, there appeared upon the scene and in the procession the old, gray-haired, gray-bearded Mayor of Juarez, who had sworn never again to set foot on American soil; his City Councilmen, a delegation of Mexican customs officials, a group of other Mexican federal officials, and a little escort of Mexican soldiers (in civilian clothes because of the strained relations and because of the international law). And there also was the Mayor of El Paso and his fellow members of the City Council, representatives of the United States Customs Service, an unofficial representation of officers and soldiers from Fort Bliss, and carriage after carriage filled with the substantial citizenry of the bustling Texas city. And even this was not all. There were over a half mile of Mexican people on foot and in rented, broken-down, dilapidated carriages, who, for the time being, had set aside their hatred of the gringo. Among them were the school teachers and mothers of Mexican children, and, perhaps, greatest tribute of all, three huge wagonloads of dirty, ragged, unkempt Mexican school children themselves.

Every school in Juarez was closed the entire day of Jim Burleson's funeral; every business house was closed that afternoon, and in the little old church for which Juarez is far-famed throngs of worshippers crowded in from morning until away late in the night, offering prayers for the repose of the soul of a man who didn't measure service with a voltmeter.

What is service?

Changes in Retail Prices of Food

THE U. S. Department of Labor, through the Bureau of Labor Statistics, has completed the compilations showing changes in the retail cost of food in August in fourteen principal cities of the United States.

During the month from July 15 to Aug. 15, 1921, there was an increase in all of these cities. In Philadelphia there was an increase of 6 per cent; in Bridgeport, Chicago, New Haven, Providence, and Washington, 5 per cent; in Kansas City, 4 per cent; in St. Louis, Springfield, Ill., and Birmingham, 3 per cent; in Peoria, 2 per cent; in Salt Lake City, Denver, Little Rock, 1 per cent.

For the year period Aug. 15, 1920, to Aug. 15, 1921, there was a decrease of 28 per cent in Denver, Little Rock, St. Louis and Salt Lake City; 27 per cent in New Haven and Birmingham; 26 per cent in Peoria and Springfield, Ill.; 25 per cent in Philadelphia; 24 per cent in Kansas City; 23 per cent in Bridgeport, Chicago and Providence; and 21 per cent in Washington.

Corrosion of Cables in St. Louis*

THE latter part of June, 1913, the Union Electric Light & Power Company of St. Louis began the operation of a substation at which power was received from the Mississippi River Power Company, Keokuk, Iowa, and distributed to its city substations through seven 13,200-volt, 25-cycle, and 13,000-volt, 60-cycle, three-phase, cambric insulated, underground cables. The United Railways Company also received power at this substation and converted it there into direct current for the operation of some of its cars. The cables of the two companies occupy the same duct run for a considerable part of their length. Part of the duct was tile and another part was fibrous conduit.

Burnouts on these cables began to occur and these became serious in 1914 and reached a maximum in 1916. A thorough investigation of the trouble was begun by engineers of the two companies with the co-operation of the Bureau of Standards.

When all the data were collected and analyzed there appeared to be five causes for the burnouts, which in the order of their importance are as follows: (1) Electrolysis due chiefly to lack of drainage at the time the cables were installed; (2) overheating due to

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*From a paper, "Public Relations," read at the convention of managers of New England companies, New London, Conn., by Mr. Lemmon, as printed in Stone & Webster *Journal*, August, 1921.

*Abstract of paper by K. H. Logan, United States Bureau of Standards.

deterioration of the insulation, caused possibly by mechanical injury to the lead sheaths, possibly by nearness of the ducts to the street surface and possibly by the restriction of circulating air because the duct was too small; (3) chemical corrosion during periods in which the street railway substations were inoperative due to the collection of alkali about the sheaths as the current flowed to them through the earth; (4) surges set up by switching and burnouts; (5) mechanical injuries, etc.

Letters to the Editors

Need of Definition for "Heavy Electric Traction" Suggested

NEW YORK, Sept. 8, 1921.

To the Editors:

The editorial in the issue of your magazine of Aug. 27 on "Wanted, Specific Data on Electric Locomotives" is very well taken, and no doubt will have a very direct bearing in future committee work pertaining to heavy traction matters in general.

With the thought in mind referred to in your editorial, would it not be consistent at this time to undertake some definition or limitation regarding heavy traction electrical engineering? I have in mind matters pertaining to electric locomotives in general. By way of illustration, each month the ELECTRIC RAILWAY JOURNAL will usually have some reference to an electric locomotive either being built or put into service by some steam, electric railroad or traction company. The apparatus may be either a 5-ton, 250-volt mine engine or a 250-ton, 11,000-volt equipment for a steam railroad such as the Pennsylvania or New Haven might use.

Obviously such steam railroads as are interested in freight transportation over long distances and with train tonnages well over 2,000 tons are not interested in the 5-ton, 250-volt equipment. No disparagement is intended of the engineering talent used in the development of the smaller equipment, but it must be admitted that there is a wide difference in the engineering procedure responsible for the two classes of engines. Extending the comparison even further, is it not a fact that in general the railroads of the United States, with the enormous tonnages handled annually and the large units in which this tonnage is moved, have very little, if anything, to learn from European practice in this particular field of electric motive power? For light passenger service and terminal electrification the difference is somewhat less.

If electrification is to bring about the results as referred to in your editorial by "decreasing the operating ratio," it is evident that the size or tonnage of trains must be increased or the running time between terminals must be reduced, or both must be accomplished to bring about an adequate saving as a return in the investment. In either case a larger horsepower or tractive effort must be available at the head of the train. It is self-evident that, if we are to take the present tonnage handled by our larger steam locomotives as a bench mark, we must necessarily design an electric locomotive of considerably larger horsepower than the steam engine which it will replace.

Is it not consistent then at this time to assume a premise for any discussion of "Heavy Electric Traction" based on the above principle? Could it not be consistently shown that an electric locomotive weighing less than 100 tons, or some other similar weight, should not be classed as a heavy traction unit? Likewise, locomotives with axle loads less than a minimum value should not be considered. An overhead system for heavy traction should operate above a minimum prescribed voltage. These suggestions are not intended as a reflection on the engineering deductions which brought about the adoption of any particular system (such as the 600-volt third rail), but more as a basis for classification. As an example, it would hardly be expected that the Pennsylvania Railroad would extend its third-rail system between New York and Philadelphia. It has been conclusively shown that for general use of the electric motive power for freight transportation services over long distances, a much higher voltage and much larger sizes of units must necessarily come into use than those in use fifteen years ago.

If the engineering efforts of the many committees working on heavy traction are to be favorably received by the managers and directors of steam railroads it will be chiefly through the channel of development along the lines of

(a) Larger and heavier freight train units.

(b) Faster freight train schedules between terminals.

If you can, in some manner, start something along the lines above suggested, I am confident that the "heavy traction" subject will be more interesting to the average steam railroad official than it has been in the past. "ENGINEER, HEAVY ELECTRIC TRACTION."

Making Valuations Under Special Circumstances

NEW YORK CITY, Aug. 22, 1921.

To the Editors:

We have read the recent articles on the subject of valuation, which were written by A. E. Knowlton and published in the ELECTRIC RAILWAY JOURNAL,* with a good deal of interest. Valuation is one of the vital elements in almost every rate determination and our constant contact with proceedings of that character causes us to scrutinize all literature on the subject very carefully.

Mr. Knowlton's point of view is decidedly interesting and the results accomplished were undoubtedly effective. We feel, nevertheless, that the following comment is pertinent.

The study used and required in this case was of a highly organized company managed by exceptionally competent people and having an unusually good record system. It is obvious from Mr. Knowlton's articles that a good deal of the speed and success which were obtained was due to the condition of the records. This is highly creditable to the Connecticut Company and is an example which might be followed to general advantage. It is an unfortunate fact, however, that there are not many, even of the larger companies, which have such well-organized record systems as this company. Another helpful feature in connection with the work was that Mr. Knowlton and his associates were not only familiar with the property but were known to be familiar with it and competent to pass upon the facts. In other words, from the standpoint of expert witnesses, the presumption was in their favor rather than against them.

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*See issue of May 21, 1921, page 947; issue of May 28, 1921, page 985.

Mr. Knowlton and his associates were in the employ of a public service commission which could in a large measure direct the manner in which the facts should be assembled. Its decision was presumably to rest upon those facts, and it probably realized that if the results obtained were even reasonably satisfactory there would be no appeal. The commission was not in the position of a litigant—certainly not in the situation of a litigant meeting opposition of the harassing type which is sometimes met in rate cases. The ordinary company could not rest a case upon general proof such as the commission could employ—in fact, we doubt whether a valuation of this sort would be admissible as evidence at all under ordinary circumstances.

There is no doubt but that the view taken of this problem by the Connecticut Commission was a broad, practical one and decidedly in the interest of securing a generally satisfactory result in a minimum of time. We think, however, that the ELECTRIC RAILWAY JOURNAL has as a duty the necessity of advising its company subscribers against adopting valuation methods of this sort in rate proceedings in which they are litigants. We are fearful that, despite the precedent established in Connecticut, a company which might have a good deal at stake but which attempted to adopt this method of valuation might put itself in a situation where its evidence would not be entertained and that its case would fall.

We do not intend this letter to be a condemnation or even a criticism of the method employed but merely desire to point out that the plan adopted worked in this instance because of special circumstances. The letter is prompted by our constant interest in the electric railway industry and our desire to have those similarly interested avoid any of the pitfalls which we might see. H. C. HOPSON.

Competitive Merchandising Necessary

MILWAUKEE, WIS., Sept. 9, 1921.

To the Editors:

Neither court injunctions nor municipal ordinances nor state laws can or should crush the competitors of the street railway, or prevent the introduction of the jitney, the motor bus, the trackless trolley or other swift and mobile vehicles where public necessity *or public preference* calls for them.

The street railway industry, whimpering in courts, councils and legislatures for protection against the results of its own slothfulness, its own lazy failure to provide the new line of goods demanded by the public, is ridiculous.

Instead of asking to be protected against competition, the industry must get busy and do some intelligent competing on its own account. It can if it will install and operate the new services, supplementing and in part profitably replacing its existing service, more cheaply, efficiently and safely than its shoestring competitors. This is the way and the only way that the street railway industry can be relieved and saved from destructive competition, with the public approval. If it won't adopt this way it will and should go broke and pass out of the hands of its present owners into the hands of city hall politicians. I may add right here that several years of constant knocking of their own business as a business by owners and operators of American street railways has not only damned its credit with investors but has also made city hall politicians shy about asking the public to buy it; even the politicians begin to regard the street railway industry as a white elephant.

As a matter of fact, aggressive merchandising management applied to the street railway business can again make it what it used to be—as dependable a producer of net income as any other utility. FRANK PUTNAM.

More Discussion on Association Reorganization

Shall Other Forms of Transportation Be Admitted?

F. R. Coates, president the Community Traction Company, Toledo, Ohio, has addressed the following letter to a large number of the members of the association, touching upon a very important point. This letter is here reproduced, with Mr. Coates' consent.

THE COMMUNITY TRACTION COMPANY

TOLEDO, OHIO, Sept. 6, 1921.

DEAR SIR: You have received the special report of the executive committee to the American Electric Railway Association covering proposed revision of the constitution and by-laws. If you will refer to the first paragraph on page 8 of the report you will learn that it is proposed, under certain restrictions, to let down the bars of membership to other forms of urban and interurban transportation than that form indicated by the name of our association. Such a movement at this time is prejudicial to our interests and is entirely unnecessary and uncalled for.

We are an electric railway organization and should stand our ground on the foundation we have built. Our method of transportation is not dead or dying, although it has been rather ill the past several years. Why should it not have been, with the kicks and cuffs it has received, and from the unfair competition which has sprung up in many quarters? And are we not ourselves greatly responsible for past conditions? Have we always come out frankly and openly and presented our problems to the public? Has the public always been treated in a manner calculated to make friends?

There are millions of dollars invested in electric railways in this country. Shall we protect this investment, or are we complacently going to watch its dissipation? It is a foregone conclusion that we will protect our interests with all the force and ability at our command. So let us wake up! Instead of affording strength to the other methods of transportation by giving them the opportunity to become members of our organization, let us direct our efforts toward the removal of all unfair competition by having enacted ordinances and legislation which will regulate "other than electric transportation units or companies" similarly as we are regulated. Let us devote our energies toward placing our service, our public relations and our investment on the highest possible plane.

We must face this issue fairly and squarely.

Please give serious thought to the question of admission into our organization of forms of transportation other than our own. Go to the Atlantic City convention and cast your vote so as to insure a continuance of the electrical transportation industry. F. R. COATES.

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Air Compressor Piston Clearances

Small Clearance Between the End of the Compressor Piston and the Cylinder Head Is Very Important if Efficient Operation Is to Be Maintained

By F. J. Foote
Superintendent of Power, Ohio Electric Railway

The writer has found that many repairmen, including some very good mechanics, do not understand the importance of keeping the clearance between the end of compressor pistons and the cylinder heads down to the smallest practical amount. One case came to the writer's attention where the clearance by accident was about ⅜ in., and the workman on the job could not understand why the compressor would only pump up to about one-half the normal pressure at full speed.

The reason for keeping this clearance small is to prevent the air left in the clearance space at the end of a stroke from expanding and occupying so large a percentage of the cylinder volume on the return or intake stroke as to reduce the free air taken in. The air left in the clearance space must expand down to a pressure slightly below the atmosphere before any free air will be drawn into the cylinder, and the larger the clearance space the less free air will be compressed per stroke.

The natural law which governs this problem is that for any given quantity of air at a constant temperature, the volume will be inversely as the pressure, or stated in another way: Pressure* × Volume = A constant. For example, if the pressure is doubled the volume will be only one-half, or again if the volume should be doubled the pressure would then be only one-half and so on.

To illustrate this, take the case of a single-acting air compressor with cylinder 5½-in. diameter and 4¼-in. stroke. The piston will have an area of practically 24 sq.in. and will create a piston displacement of 102 cu.in. per stroke.

Let us assume that the actual clearance between the piston and the cylinder head is ⅛ in. and that the space in the parts between the valves and cylinder is also equivalent to this. We will then have a clearance space equal to ¼ in. for the 5½-in. cylinder, or 6 cu.in. Let us assume that the compressor is pumping against 100 lb. gage pressure (114.7 lb. absolute), then the air left in the clearance space will be at 114.7 lb. absolute pressure at the end of the stroke. We will assume that this air must expand down to 14.6 lb. absolute (1/10 lb. below atmosphere) before any outside air will enter the cylinder.

With the above facts in mind let us consider what happens to the small quantity of air confined in the clearance space at the end of the stroke. It has been shown that the volume of this air is 6 cu.in. and that it is under 114.7 lb. absolute pressure. Now applying our law (Pressure × Volume = A constant) we get,

$$114.7 \times 6 = 688.2$$

This 688.2 is then the "constant" for this small quantity of air, and no matter how much the pressure is reduced, by the backward stroke of the piston the pressure multiplied by the volume at any point will equal 688.2. Therefore when the pressure is reduced to 14.6 lb. as above, the volume will be 688.2 ÷ 14.6 = 47.14 cu.in., which is 46.3 per cent of the total displacement, from which we see that little more than one-half of the effective volume of the cylinder is filled with outside or free air per stroke.

If the clearance between the piston and the cylinder head is reduced to 1/32 in., which would be about the proper amount, the clearance in the ports will be the same as before so that we would have a clearance equivalent to ⅛ in. plus 1/32 in. or 5/32 in. Computing the actual volume of the clearance we get 3.75 cu.in. Applying our law to this,

$$114.7 \times 3.75 = 430.1$$

430.1 is then our constant for the quantity of air in this smaller clearance space, and when this air is expended down to a pressure of 14.6 lb. per sq.in. the volume will be, according to our law,

$$430.1 \div 14.6 = 29.6 \text{ cu.in.}$$

which is 29 per cent of the total piston displacement as against 46.2 per cent in the case of the larger clearance. The capacity of the compressor would therefore be increased in the ratio of 17.2 to 53.8, or 32 per cent, by reducing the clearance between piston and cylinder head from ⅛ in. to 1/32 in.

The foregoing proves conclusively the very great advantage of keeping the clearance down to the smallest practicable working limit. Having shown the importance of small clearance, let us go a step further and point out a few of the causes of clearance being too large and the cure for same.

Causes and Cures for Large Clearance

Cylinder head gaskets may be too thick. The writer has seen rubber gaskets ⅛ in. and 3/16 in. thick used. The obvious thing is to use paper gaskets or something similar to this and get them about as thin as permissible. Rainbow or any other rubber compound is not suitable for cylinder-head gaskets as the oil attacks the rubber and soon ruins it.

Worn bearings and especially worn connecting-rod ends should be avoided. It is the practice in some shops to continue taking up these connecting-rod bearings till the babbitt is practically worn out. When this is done the effective rod length constantly grows shorter as most of the wear comes on the side next to the piston, with a consequent increase in the clearance between piston and cylinder head. A suitable jig for re-babbitting these rods should be provided, and the rods should be re-babbitted whenever the rod bearings show appreciable wear.

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*Pressure here means absolute pressure, which is 14.7 lb. per square inch greater than gage pressure for ordinary altitudes.

A jig for this purpose devised by the writer and used for several years by the Ohio Electric Railway was published in the ELECTRIC RAILWAY JOURNAL for Aug. 20, 1921. This jig is made so as to give the babbitt rod bearings the proper size to fit the crank pin without any machine work and also to make the rod the correct length, thus preventing any mistake being made in the rod length after re-babbitting.

There are some other things that may affect the clearance slightly, but the two mentioned are the most usual causes.

It is very desirable that some kind of test be made on compressors each time they are overhauled to determine if they will pump up to the required pressure in a reasonable length of time. There are various methods, more or less elaborate, for doing this, but where the power conditions are reasonably steady and all compressors the same size, a very simple and fairly satisfactory test is to connect a small reservoir of 15 or 20 cu.ft. capacity to the compressor and note the time it takes to pump up to 100 lb. If this is done on all compressors and a record kept of same, a standard time that should not be exceeded will soon be found.

A more exact and scientific method is to count the number of revolutions of the crankshaft required to pump up the pressure on a given reservoir from 70 lb. to 100 lb. This is particularly advisable in locations where the power used in operating the compressor is variable. I am informed that one compressor maker contemplates the use of a cork gasket, which will probably make it necessary to let the piston extend slightly beyond the end of cylinder at the end of a stroke so that the clearance will be less than $\frac{1}{32}$ in., which is considered to be entirely practical.

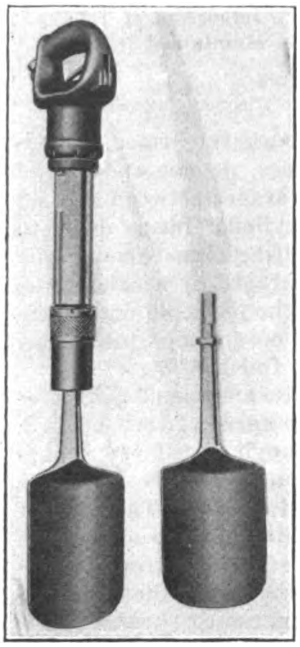
A Crawling Tractor Crane

A CRAWLING tractor crane, manufactured by the Industrial Works, Bay City, Mich., has been developed to meet the use for a full-revolving tractor crane which can be operated independently of rails. The crane is built in two types—the type BC, with a capacity of 20,000 lb. at 12-ft. radius, is equipped with continuous-crawling tractor belts; and the type BT, with a capacity of 18,000 lb. at 10-ft. radius, is equipped with four broad-gage tractor wheels. Having exceptionally large capacities in ordinary lifting, they prove a valuable adjunct in those many erection jobs which are inaccessible to the railroad crane. They can be equipped to handle a hook and block, grab bucket, drag scraper bucket, wood grapple, electric lifting magnet, shovel dipper and piledriver leads with drop hammer. Operation is by means of an internal-combustion engine. When not in operation no fuel is consumed and it is not necessary, as often with a steam-operated machine, to have a licensed engineer as operator.

The steering of the crawling tractor crane while propelling is controlled by the operator, from his position in the revolving upper works, by manipulation of the friction clutches and brakes controlling the motion of each tractor belt. By means of these clutches and brakes either tractor belt can be readily and instantly disconnected from the motor while the other belt continues traveling at the normal rate of speed. The disconnected tractor belt can be held stationary by applying the brake, can be allowed to coast with the brake and clutch both disengaged, or the clutch can be allowed to slip, thus allowing the operator to turn as sharp or as wide a corner as he may select. All the clutches, brakes and lever mechanism for steering are located in the revolving upper works, where they are much more accessible than when a portion or all of this mechanism is located on the car body.

New Pneumatic Scoop

EXCAVATION work in stiff clay, hard pan and fine gravel is ordinarily laborious and expensive where the large steam shovel or trenching machines cannot be used and the material must be loosened for removal by means of the hand pick. An air-driven spade pick has recently been placed on the market by the Ingersoll-Rand Company, New York, to handle this sort of work. It is known as the No. 56-H "Little David" hammer and scoop. The tool consists of a long stroke hammer fitted with special handle and provided with a scoop held in place by a safety retainer. In operation the blows of the hammer drive the scoop into the ground, prying loose the material for removal. The air hammer is of the same rugged type as has proved successful in other work of a similar character, such as picking coal, tearing out light concrete, etc.



AIR-DRIVEN SPADE PICK

On contract jobs covering both tunnel and trench excavation in clay, these tools have been found to be important labor savers, increasing the rate of earth removal per man from 100 to 150 per cent or more. In one sewer tunnel job in Detroit where the bore is about 9 ft. 6 in. in diameter they are averaging 17 lin.ft. of sewer per day of eight hours with four miners or about 11 cu.yd. per man per day. The material on that job is a medium hard blue clay, fairly stiff, no bracing or timbering being needed to hold the roof.

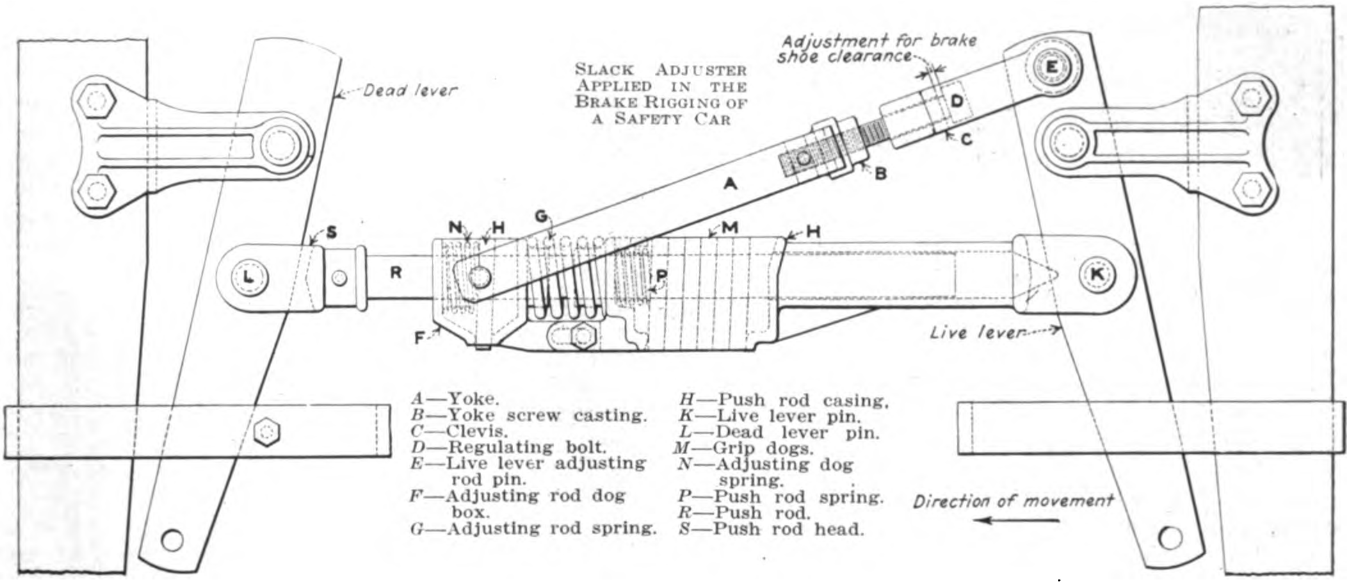
Mix Thermit Thoroughly Before Using

OCCASIONALLY thermit welders find that they are unable to produce the requisite amount of steel from the thermit which they are using. This is entirely due to the fact that the ingredients (iron oxide and aluminum) have become unmixed. The importance of mixing thermit thoroughly before using cannot be too strongly emphasized, whether a whole bag or part of a bag is to be used. It is logical also, as the iron oxide is in the form of a flake and the aluminum is in the form of a little round ball, that as they are so different in specific gravity, they will segregate in the vibration caused by transit. The bag, therefore, should be dumped and the material thoroughly mixed by hand before putting it into the crucible. In a recent case the Metal & Thermit Corporation, New York, N. Y., investigated the variations in the speed with which thermit reactions took place; this variation was found to be due to segregation of materials and was entirely eliminated by remixing.

Improved Slack Adjuster Construction

In Order to Provide a Simpler Type of Construction and Thus Reduce Maintenance, a Type of Automatic Brake Slack Adjuster Has Been Improved to Meet the Exacting Conditions of Railway Service

IN THE May 25, 1918, issue of the ELECTRIC RAILWAY JOURNAL, page 1019, a description was given of the Gould type slack adjusters as they had been developed for installation on cars of the Brooklyn Rapid Transit System. Since that time W. H. Sauvage, designing engineer for the Gould Coupler Company, has made further essential improvements in this type of adjuster, and the accompanying illustration shows the latest improved type as applied to the brake rigging of a safety car. This type of construction has been developed in an effort to simplify the construction and to reduce the number of parts, and at the same time to provide a heavy, rugged construction which can be applied to any of the members of the brake rigging of an electric car and provide for automatically taking up any wear which may occur in the brake rigging, brakeshoes, or wheels, and which would otherwise require frequent adjustments to be made in the shops.



SLACK ADJUSTER APPLIED IN THE BRAKE RIGGING OF A SAFETY CAR

A—Yoke.
B—Yoke screw casting.
C—Clevis.
D—Regulating bolt.
E—Live lever adjusting rod pin.
F—Adjusting rod dog box.
G—Adjusting rod spring.
H—Push rod casing.
K—Live lever pin.
L—Dead lever pin.
M—Grip dogs.
N—Adjusting dog spring.
P—Push rod spring.
R—Push rod.
S—Push rod head.

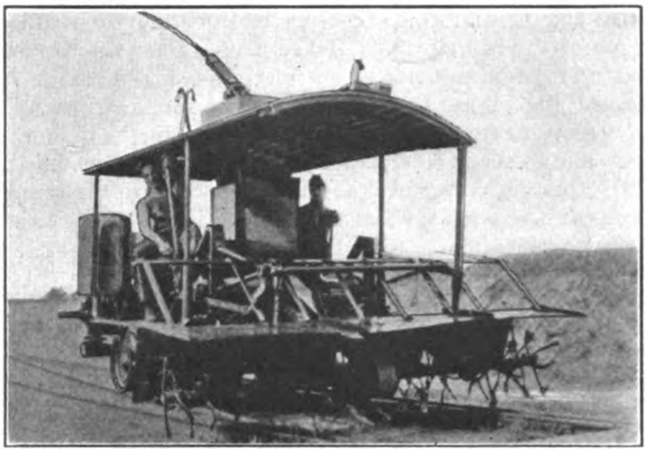
The principal changes in the type of construction which have been made are in the adjusting rod and its method of action. At the same time advantage has been taken in this redesign to use a special steel for the push rod which is acted upon by the grip dogs. In the accompanying illustration, showing this adjuster applied to the brake rigging of a safety car, the adjusting rod details are shown at *A*, *B*, *C* and *D*. With the brakes properly adjusted, an application moves the top of the live lever to the right and the distance between the head of the regulating bolt *D* and the adjusting clevis *C* provided for brakeshoe clearance is taken up, so that the head of the bolt comes into firm contact with the clevis. With all parts in proper adjustment the slack adjuster acts as a turnbuckle between the live and dead levers. When wear occurs at the brakeshoes, wheels, or in any of the brake rigging parts, the head of the adjusting bolt *D* seats on the clevis *C* before the brakes are fully applied. The further movement of the live lever causes the adjusting yoke *A* to move to the right. This causes the adjusting rod spring *G* to be compressed to the exact extent of the excess travel through the movement of the adjusting rod dog box *F* to the right. The adjusting rod grip dog is shown at *H* and this permits movement of the adjusting rod dog box to the right, but grips the push rod firmly and prevents any movement toward the left. As soon as the brakes are released the pressure exerted by the spring *G* due to its being compressed causes the push rod casing *H* to move to the right, thus increasing the distance between the points of attachment to the live and dead levers at *K* and *L*, and the excessive motion due to wear is taken up. Six grip dogs *M* are used on the main push rod. These permit movement of the push rod casing *H* toward the right, but grip the push rod and prevent any movement toward the left. The springs shown at *N* and *P* keep the dogs locked and prevent movement.

In applying the slack adjuster to the brake rigging of a car the distance between the adjusting bolt head and the clevis is adjusted so as to give the desired brakeshoe clearance with a predetermined piston travel. If it is desired to operate with a different piston travel or brakeshoe clearance adjustment can be made by removing the pin at *E* and turning the clevis *C* and the adjusting bolt *D* to lengthen or shorten the distance between the head and the clevis as desired.

The fundamental characteristic of Gould Universal slack adjusters as designed by Mr. Sauvage is the use of grip dogs in place of ratchets or screws to hold the parts in locked position. The improved type as just described operates on the same general lines as adjusters in successful operation on many steam and electric roads for the past fourteen years. Adjusters that require the body and truck brake levers to go into full release position before they operate need powerful release springs for releasing the brakes and operating the adjuster. If these get weak or fail, the adjuster does not operate successfully. The improved Gould adjuster is designed for operation in both tension and compression members and does not rely on release springs for proper operation. The regulating force is applied directly to the adjuster whenever the brakes are applied and all excess piston travel is compensated for immediately after each brake application. The adjustment made is therefore independent of release springs or wear in holes, pins, wheels or brake shoes.

A Gas-Propelled Weed Cutting Machine

THE picture reproduced herewith shows a weed and grass-cutting machine built at the shops of the Texas Electric Railway for use on its interurban lines. The machine is designed to remove grass and weeds growing between the rails and for a distance of 2 ft. 10 in. on each side. This is accomplished by rotating at 1,100 r.p.m. a 3-in. shaft which is attached to a four-wheeled car. The weeds and grass are torn and cut by a series of stiff wire cables spaced 3 in. apart on the shaft and secured with set screws. The motive power for operating the shaft is a 15-hp., 1,200-volt, d.c. motor belted to it. The shaft can be raised or lowered by a series of levers to clear cattle guards and other obstructions.



A WEED CUTTER FROM TEXAS

The car itself is propelled by a six-cylinder gasoline motor taken from a damaged automobile. Located over and parallel to one set of wheels is the motor which drives them through a chain passing over a sprocket on the end of the axle. The car can be run at a speed varying from 4 to 40 m.p.h., but 4 m.p.h. is the average speed when cutting through heavy grass and weeds. Two men are required to operate the apparatus, while the average cost per car-mile is 70.2 cents. This cost includes labor, repairs to machinery, oil, gasoline, etc. The same work performed by hand would cost several times this amount. One of these machines will easily take care of 300 miles of track.

How to Machine Aluminum

THE use of aluminum to an increasing extent in the railway industry to secure lightness of parts has introduced questions regarding proper methods for machining. Some very good practical advice on this subject is given in a handbook published by the British Aluminum Company.

For turning, drilling or milling, a high speed is best and the tool should have acute cutting edges, preferably finished on an oil stone. For the clearance angle of a lathe tool 15 deg. to 20 deg. is advised and with a smaller angle a 5 deg. top rake is given. This top rake should be modified according to the rigidity of the work, as with light work there is a tendency for the tool to dig into the metal. Cutting speeds of about 600 ft. per minute are permissible and a heavier and faster speed may be used than can be used with brass.

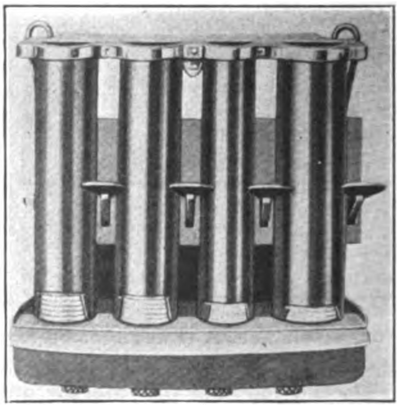
For screwing purposes the British Aluminum Company supplies a special alloy and recommends the use of paraffin as a lubricant instead of turpentine, which tends to leave a resinous deposit and may cause the screw to bind.

In milling the best results are said to be obtained by the use of a built-up tool, the cutters being ground with sharp corners. The cutters should only cut at the extreme points and not have a scraping action as with brass. Cutter speeds of 500 to 600 ft. per minute are used. For grinding aluminum the wheel of any type such as emery, corundum or carborundum should first have a piece of paraffin wax held against it to fill up the pores. The company states that crystolon grinding wheels give best results.

It is advised that filing be done with a single cut file, as other files are plugged easily and require frequent cleaning with a brush. A quick method of cleaning is to immerse the file in a strong solution of caustic soda which dissolves aluminum, but the file so treated must afterward be washed in water and dried in sawdust as it will rust quickly. For finished filing the file should be kept wet with paraffin or even with water.

Adjustable Change Carrier

A NEW change carrier which is to be manufactured by A. F. Nelson, Harrisburg, Pa., and distributed by the Cleveland Fare Box Company, has the particular feature that it can be adjusted to eject from one to five coins of any denomination by simply turning a thumb screw at the base of each barrel. It is a lever-operated changer, utilizing a flat spring made of special non-corrosive metal and bent to the proper form without tempering, instead of the usual steel spring, a feature which it is claimed will eliminate breakage. The carrier is made entirely of liberty silver to avoid rust or tarnish and rather generously proportioned to give a capacity which is said to be 33 per cent greater than any other change carrier on the market. When made up with four barrels it weighs 12 ounces and measures 5 in. wide by 5¾ in. high over all. The barrels are 4 in. long. The top of the device is hinged so that it may be raised more readily to insert coins or for the purpose of emptying all of the coins out of the changer, upon making the turn-in.



NEW ADJUSTABLE-EJECTOR CHANGE CARRIER

The usual location of the barrels has been reversed so that those containing the smaller, more frequently used coins are on the right-hand side. This is claimed to save the conductor from the necessity of reaching across the carrier to the left-hand side many times, lessening his work and quickening change making.

The ready adjustment of the ejector is said to be particularly advantageous when a conductor changes from hand collection to fare box collection in taking out different cars, for it is only a matter of a few seconds to readjust the ejector to fit the case. The device is called the "Rapid Ready-Lever Change Carrier."

Programs of Meetings

National Association of Railway & Utilities Commissioners

THE thirty-third annual convention of the National Association of Railway & Utilities Commissioners will be held in Atlanta, Ga., Oct. 11 to 14 inclusive. The headquarters and place of meeting will be the Ansley Hotel.

The following program is announced:

TUESDAY, OCT. 11

Morning Session: Address of welcome—Thomas W. Hardwick, Governor of Georgia; annual address of the president of the association—James A. Perry of Georgia. *Afternoon Session:* Report by John E. Benton, general solicitor of the association.

WEDNESDAY, OCT. 12

Morning Session: Consideration of reports of standing committees; annual election of officers. *Afternoon Session:* Address by Hon. Joseph B. Eastman, member Interstate Commerce Commission; round-table discussion, topic: "After-the-War Phases of Regulation," chairman, Hon. E. I. Lewis, member Interstate Commerce Commission, formerly State Commissioner of Indiana.

THURSDAY, OCT. 13

Morning Session: Reports of three committees—valuation, litigation and state and federal legislation. *Afternoon Session:* Round-table discussion, topic: "Automobile Transportation—Omnibus and Jitney," chairman, Hon. George McAneny, chairman New York Transit Commission; automobile drive about the city of Atlanta as guests of the Presidents Club of Atlanta. *Thursday Evening:* Annual dinner at Piedmont Driving Club as guests of Presidents Club of Atlanta.

FRIDAY OCT. 14

Morning and Afternoon Sessions: Devoted to reports of committees and discussions; some time during this day the convention will be addressed by M. H. Aylesworth, executive-manager of the National Electric Light Association.

National Safety Council

AT THE Tenth Annual Congress of the National Safety Council to be held at the State House, Boston, Sept. 26 to Sept. 30, there will be meetings of the Automotive Section, Chemical, Construction, Education, Electric Railway, Engineering, Mining and many others.

The first session of the Electric Railway Section, to be held on Sept. 27, will include an address by F. R. Coates, president and general manager of the Toledo Railway & Light Company, entitled "Reflections of the Executives on Safety," and "Rejecting the Grundys from Safety First," a discussion by Miss Laura Roadifer of the Philadelphia (Pa.) Rapid Transit Company. At the second session an address will be delivered by John E. Cullen, United Railways & Electric Company, Baltimore, Md., entitled "The Attitude of the Public Toward the Railway's Participation in No-Accident Week Campaigns." A discussion will follow on "Nationalizing and Standardizing Railroad Crossing and Grade Signs," by R. S. Messenger, claim agent of the Rochester & Syracuse Railroad, Syracuse, N. Y.

Pacific Claim Agents Meet

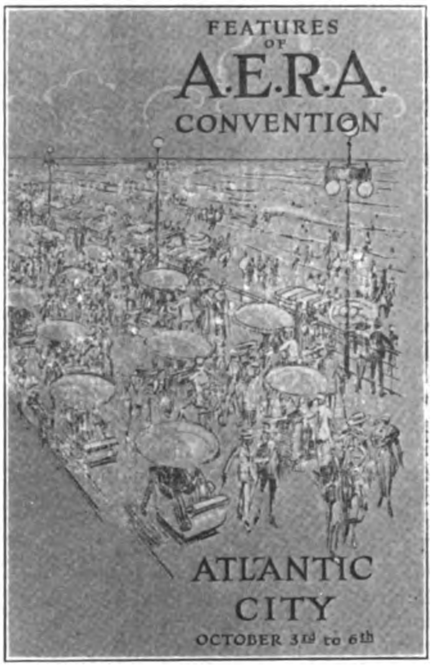
THE Pacific Claim Agents Association held its annual meeting in Butte, Mont., on Aug. 25, 26 and 27, with representatives of most of the leading Pacific coast electric railway companies in attendance. A series of eight papers were presented at the meeting, all covering live questions in the claims department.

The following officers were elected for the ensuing year: President, Frank D. Oaklen, Puget Sound Electric Railway, Tacoma, Wash.; first vice-president, C. M. McRoberts, Los Angeles (Cal.) Railway; second vice-president, P. O. Solon, Tacoma Railway & Power Company, Tacoma, Wash.; third vice-president, J. W. Grace, Sacramento (Cal.) Northern Railway.

American Association News

Convention Entertainment Features

IN AN attractive leaflet just issued by association headquarters, there is outlined in connection with the daily program of the convention at Atlantic City the various entertainment features which have been arranged for the idle hours.



ATTRACTIVE COVER OF CONVENTION LEAFLET

Early birds at Atlantic City will find arrangements for the golf tournament to start on Sunday, Oct. 2, all ready for them. A Sunday evening musical concert at the Marlborough-Blenheim has also been arranged.

On Monday evening the annual reception has been scheduled in the Venetian ballroom, Hotel Ambassador, at 8 p.m., which hotel has been designated as the social headquarters for the convention.

On Tuesday evening a combined dinner and evening meeting have been arranged as previously announced, this also to be held at the Hotel Ambassador, Renaissance Room.

On Wednesday evening in the same room at the Hotel Ambassador will be held the annual ball.

No special arrangements have been made for the last evening, Thursday, but the entertainment committee calls attention to the various attractions at the theaters along the Boardwalk.

As usual the entertainment committee has provided an interesting program for the ladies in attendance at the convention. On Monday afternoon will be held the obstacle golf tournament.

On Tuesday afternoon there will be an informal afternoon tea for the ladies at the Hotel Ambassador, with special orchestra. On Wednesday afternoon the usual ladies' bridge tournament will be held and on Thursday afternoon in the Trellis Room of the new Ritz-Carlton will be held a ladies' tea party. Music will be furnished by Veschey's Parisian band.

The leaflet also contains all of the regular program material, the whole arranged by days. It forms an interesting reminder of the advantages of attending the convention and should tend to encourage those who may at present be in doubt to come to Atlantic City as they should.

Executive Committees Meet at Atlantic City

EXECUTIVE COMMITTEE meetings of the American, T. & T. and Engineering Associations have been called to convene at Atlantic City on Sunday and Monday, Oct. 2 and 3. All of them will be held at the Marlborough-Blenheim as follows:

The meeting of the American executive committee will be hold on Monday, Oct. 3, at 11 o'clock.

The meeting of the T. & T. executive committee will be held on Sunday morning, Oct. 2, at 9 o'clock Eastern standard time, in the committee room on the first floor below the office.

The meeting of the Engineering executive committee will be held in the committee room on the first floor below the office on Sunday morning. Oct. 2, at 11 o'clock, Eastern standard time.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Detroit's Municipal to Buy Canadian Power

Negotiations are being continued between the city and the Hydro-Electric Power Commission of Ontario for the importation of power to Detroit to operate the municipal street railway system. The commission has offered power to the city at $36 per horsepower, but Mayor Couzens is confident that he will be able to obtain it at a lower price than that.

The Mayor intimated that he favored importation of power commencing on a small scale, possibly not more than 10,000 or 15,000 hp. By bringing power in on a small scale at first the Mayor says it would not be necessary to make any great capital investment and the commission could provide the city with 15,000 hp. from the lines already running between Windsor and Niagara Falls.

MAYOR TAKING NO CHANCES

According to the Detroit *Free Press* the Mayor is quoted as saying: "I believe we will do better by importing only a small amount at the beginning. Take any large business and the men behind it will tell you that had they started business on a large scale they would have made a mistake. If we go into this business on a small scale at first, we will make fewer mistakes, and as there is practically no capital investment, we stand no chance of a loss."

When negotiations first started with the Ontario commission, the Mayor believed that eventually it would be possible to provide sufficient power to enable the city to retail it to industrial concerns.

Lightning Destroys Substation

A terrific electrical storm swept over Chicago and the surrounding country in the early evening on July 7 and caused considerable disturbance to the various electric railways. The accompanying picture shows the remains of a portable substation which was destroyed by fire as the result of lightning. This was located on the line of the Chicago & Interurban Traction Company at a point known as Stone Quarry, about midway between Harvey and Chicago Heights, Ill. The car on which the substation equipment was mounted was built with a wood underframe and corrugated iron superstructure. The equipment and car were a practically complete loss. The substation was covered by insurance.

On the same evening lightning caused an interruption in the high-tension power supply of the Chicago, North Shore & Milwaukee Railroad, which was so serious that service was off on the north end of the line from 6 o'clock until the following morning.

PORTABLE SUBSTATION DESTROYED BY LIGHTNING AND FIRE

Labor Men Told What They May Expect

The city administration and the street railway commission will not discuss wages and working conditions until the entire municipal system has been completed, Mayor Couzens recently informed the Detroit Federation of Labor.

The Mayor stated that the street railways now operating did not bring in returns sufficient to pay the bond interest nor the taxes nor put anything aside for a sinking fund and that the city was in no position to discuss wages or working conditions until the whole system was in operation so it could determine its financial situation under the complete scheme.

Chaotic Conditions in Dayton

Immediate Action Necessary if Transportation Catastrophe Not Unlike Des Moines Is to Be Avoided

The electric railway situation in Dayton, Ohio, presents a problem probably unparalleled in the history of Ohio municipalities. The most pressing immediate need is to restore co-operation, such as existed between the operating companies prior to the trainmen's strike in July. There are four independently operated systems in Dayton and they have been rent by dissension since the strike.

AS A result of the difference among the railways, the bus lines, which have been in operation since July, are making a very strong bid for the passenger business of the city, but to date their success has been of no large consequence other than the assistance obtained from the City Commission, which, following the strike, passed an ordinance compelling the railways to reduce fares from 7 to 5 cents.

In addition to the four railway systems, two interurban companies—the Cincinnati, Hamilton & Dayton Traction Company and the Dayton & Xenia Traction Company—operate lines from the heart of the city to the outlying suburbs. The other interurban lines, which merely enter the municipality, are the Dayton & Western Traction Company, the Dayton & Troy Traction Company, the Dayton, Covington & Piqua Traction Company and the Indiana & Eastern Traction Company.

The break among the city railway systems resulted when the People's Railway and the Dayton Street Railway granted their employees 48 cents an hour, instead of 45 cents, which the motormen and conductors on the lines of the City Railway and the Oakwood Street Railway are receiving today. Officials of the latter companies would not yield to the demands of their employees, and as a result many of the men operating the cars on these lines are non-union, while the union is picketing and urging the people not to ride on the cars operated by these companies.

When the men went on strike the Oakwood Street Railway and the City Railway, which is the largest of the four systems, informed their employees that they could not pay them more than 45 cents an hour and that if this pay was not satisfactory the men need not return for work. Following the first day of the strike, the city manager of Dayton informed the officials of the Oakwood and the City Railways that if they did not operate their cars the city would.

Non-union men were employed to

take the places of the strikers, and in twenty-four hours after the city manager's order was issued every car on the lines of these two companies was running. In the meantime the People's Railway and the Dayton Street Railway settled the controversy with their employees, who returned to their posts, after an idleness of four days, for 48 cents an hour. This was 3 cents more on the hour than the motormen and conductors were receiving on any of the other city railway systems. Prior to the strike trainmen employed by the four companies were getting 62 cents an hour.

Bus Lines Now Operating

Immediately following the strike the City Commission licensed bus lines, which are still in operation. These carriers to date have offered most competition to the City Railway and the Oakwood Street Railway, which are the only roads that refuse to recognize the union. The trade of the buses, which are competing with the railways under conditions most unfavorable to the trolleys, is largely drawn from union sympathizers and visitors.

The Oakwood Street Railway probably felt the effect of the strike less than any of the other lines, because 70 per cent of its employees are non-union and the places of the union men were easily filled.

Shortly after the People's Railway and the Dayton Street Railway settled their differences with employees the City Commission adopted an ordinance requiring the operating companies to reduce fares as follows: Adults, 5 cents; children, 3 cents; transfers, 1 cent. Under the old system fares were 7 cents for adults and 4 cents for children, with transfers free. The railways put the new rate in effect on Aug. 27, although the date specified in the ordinance was Sept. 17.

Dayton has not been free in the past from occasional bickerings between the railways and the city, but with the adoption of the commission form of government, which gave the city officials a wider range of action, the railways and other utilities came under fire. In other words, in the public utility industry Dayton has become known as a "tough" town in which to operate. Despite all these hindrances the railways have thus far evaded receivership.

New Fare Ordinance Opposed

W. A. Keyes, president of the Dayton Street Railway, said that the new ordinance regulating fares eventually would mean the confiscation of the company's assets. When the time arrived that his company could no longer operate under the new fare provision, it reserved the right to adopt such a course, without regard to the fare ordinance, as was best calculated to protect the interests of the stockholders.

The railway officials opposed the new fare ordinance on the ground that the City Commission was making no strenuous effort at the time the measure was passed to eliminate the bus lines. The bus lines, according to the traction officials, were to cease operation after the railways had restored adequate transportation service. Today the bus lines are operating on a basis of $11 a month, $10 of which is national tax and $1 city tax.

The railway officials contend that if the City Commission permits the bus lines to operate on the present basis it will drive the railways from the field. On the other hand, the question is raised as to where, in the event they cease to function, is the city going to collect the $250,000 revenue which comes from the railways yearly. In addition to the $250,000 tax, the railways bear a certain portion of the cost of improving streets on which their cars operate. Under the present arrangement the bus lines, for $11 a month, are permitted to operate over streets which the railways help to keep in condition. They are also permitted to do business without indemnity insurance.

Compelled to Cut Wages

Henry Gebhart, general manager of the Oakwood Street Railway, said that the road was compelled to cut the employees' wages to meet operating expenses. Last year the company, according to Mr. Gebhart, had to borrow money to meet its obligations. Mr. Gebhart said that before the company would continue such a policy it would junk the equipment. In an interview with a representative of the ELECTRIC RAILWAY JOURNAL Mr. Gebhart said:

> The amazing thing is the fact that employees on our road wanted a higher wage on an open-shop basis than the men employed on the line of the Cincinnati, Hamilton & Dayton Traction Company, which is the only strictly closed-shop line operating in this territory.

Another important feature is that no wage agreements are made between the companies and employees. Everything is done by bulletin. The action of the People's Railway and the Dayton Street Railway in granting their employees 48 cents an hour instead of 45 cents did not meet with the approval of the two other city systems. This has caused dissatisfaction on both sides and may prove detrimental to the combined systems at this particular time, when the bus lines are attempting to disrupt this business.

The Bulletin of July 19 setting forth the scale of wages, with arbitration, accepted by the employees of the People's Street Railway follows:

> 1. Properly authorized officials of the company shall meet and treat with a properly accredited committee of the employees upon any and all grievances and complaints, except that of dishonesty, that may arise between them during the life of this bulletin. If an agreement cannot be reached in this manner, the question in dispute shall be immediately submitted to a board of arbitration, composed of three men, one of whom shall be selected by the company, one shall be selected by the employees, both to be selected within a period of ten days from date of notice of submission to arbitration. The third arbitrator shall be selected by the two arbitrators first chosen, provided they can agree within a period of five days; upon failure to agree within the specified time they shall jointly request the appointment of a third arbitrator by the Judge of the United States Court for this District.
>
> When this board is complete they shall meet daily for the consideration of such matters as are properly before them and report their finding promptly in writing to the parties hereto. The decision of a majority of this board shall be final and binding upon the parties hereto.
>
> 2. That all employees of the company shall immediately return to their respective positions as they were on July 5, 1921, without discrimination.
>
> 3. That all regular runs shall be nine hours as near as schedules may permit, and that time and one-half be paid for all time in excess of regular scheduled runs.
>
> 4. All employees to return promptly to their respective posts of duty upon a wage of 44 cents an hour for men of less than three months of service, 46 cents an hour for those of three months and less than one year of service, 48 cents an hour to those of one year or more, for a period of six months; or, all employees of the company shall return to their respective positions as provided above, and without a rate of wages for a period of thirty days, the rates of wages shall then be submitted to a board of arbitration as above provided, who in fixing the award shall give consideration to two points: First, a living wage for the employees; second, the company's ability to pay. The findings of the board shall be for a period of six months from date of resumption of service.
>
> 5. That each conductor shall be furnished with the necessary amount of change for the proper operation of his car.
>
> 6. Negotiations upon a new bulletin shall be opened up thirty days prior to the date of expiration of this bulletin.
>
> 7. The company will, as in the past, maintain the open shop policy. This bulletin and the provisions herein shall be in force on and after July 6, 1921, until July 5, 1922. A modification or repeal of the present fare ordinance will automatically open up the wage provisions herein for adjustment after the six months period stated above.

The same working agreement was accepted by the motormen and conductors on the line of the Dayton Street Railway, although the bulletin is worded a little differently.

The recent strike was a repetition of the one in 1920, when the men were out on all systems for twenty-one days. This year the strike lasted sixteen days, although some of the railways operated cars during the strike controversy.

New Bus Ordinance Introduced

The City Attorney of Dayton has prepared a new bus line ordinance which if passed by the City Commission will virtually put the bus owners out of business. This measure has been given its first reading by the commission.

The city manager must approve all applications for licenses.

Penalties for violation of the ordinance range from $50 to $500 and imprisonment from ten days to six months.

Bus owners say the license fee, indemnity bonds and front and rear exit provisions of this measure if unaltered will prohibit the operation of buses in Dayton. They are planning to circulate a referendum petition on the ordinance.

Efforts are being made by Charles Mendenhall, City Commissioner, who represents the labor element, to have certain provisions in the ordinance changed, so as to enable the bus line owners to continue operation.

The proposed ordinance becomes operative thirty days after the date of passage.

Wage Decrease Advised

Nebraska Commission Denies Application for Fare Increase and Advises Wage Reduction

The Nebraska State Railway Commission has denied the Omaha & Council Bluffs Street Railway an emergency relief rate of 8 cents, recently requested on account of a decrease of nearly 6 per cent in gross revenue for the year. The company applied for this temporary rate pending the determination of a permanent rate case now before the commission, the hearing upon which was resumed Sept. 12. In its finding on the temporary rate application the commission recommended that the company reduce the wages of trainmen from 10 to 15 per cent. The board of directors of the railway met Sept. 8 and decided to hold in abeyance the wage reduction until R. A. Leussler, general manager, shall have made a thorough survey of wage conditions for street railway employees throughout the country.

On Aug. 10, 1919, the commission authorized the following temporary rates which are now in effect pending the outcome of the application for permanent rates: Cash fare 7 cents or four tickets for 25 cents; children 5 to 12 years, ten tickets for 30 cents; school tickets 5 cents each. The application just denied asked for a cash fare of 8 cents or four tickets for 30 cents, with children's tickets at 4 cents.

CAUSTIC COMMENT BY COMMISSION

The railway estimated that the proposed 8-cent rate would yield increased revenue of $722,725 a year and contended that this sum was required if a fair return on the value of the property was realized. The commission found that the reduction in the number of revenue passengers has been 4 or 5 per cent compared with the same period a year ago, and stated that this rate of loss continued up to the week of Aug. 15, 1921, when the loss was 6.1 per cent.

The following are excerpts from the order of the State Railway Commission, denying the emergency rate of 8 cents:

> Under the estimates based on April, 1921, the net income would have lacked $111,460 of paying the interest on the Nebraska portion of the outstanding bonds, which amount to $10,000,000. The actual interest deficit, January to July, inclusive, was $27,009.19; that is, the company lacked that much revenue to meet its bond interest. On this basis, the total deficit for the year would amount to $49,730.04, which is $61,730 less than estimated. The applicant has outstanding $4,000,000 in preferred stock, covering the property as a whole. Dividends at 5 per cent on this preferred stock would amount to $200,000. This added to the prospective deficit in bond interest indicates a total deficit for the year of $250,000. There is thus presented a serious situation, for the company must, if it maintains its credit, at least pay the interest on outstanding bonds, and it should, if its general credit is to be maintained, be able to pay the dividends on its preferred stock. This is essential to the continuation of good service, and the public for this reason is as vitally concerned in the payment of interest and dividends as are the stockholders and the management.
>
> The applicant asserts that its only remedy is to increase rates again. It is quite obvious, however, that it does not require $725,000 of added money merely to meet interest on the bonds and dividends on the preferred stock. This is an emergency proceeding and applicant stipulates orally that it will accept, as a measure of its immediate necessity, a net return sufficient to pay the interest on its bonds and dividends on its preferred stock.
>
> Consideration of the evidence in this record and of general industrial and financial conditions, of which it must take cognizance, leads the commission to the conclusion that relief for the company lies not in again raising its rates but in reducing, if that be possible, its operating costs. Wages paid labor have receded to a marked degree throughout the country. An exhaustive investigation made by this commission during the summer of 1920, prompted by a threatened strike, disclosed that the applicant was at that time paying trainmen wages in most cases as high and in several cases higher than is paid in other occupations of a comparable nature.
>
> The time appears to be ripe, therefore, for action on the part of the applicant looking to a readjustment of its labor costs down to a basis comparable with that experienced by other industries. Laboring men in other walks of life whose wages have been reduced and who are compelled to use the street cars to go to and from their work have a right to ask that wages paid to street railway men be reduced also, if that is necessary to prevent a further increase in fare; this being on the assumption that street railway wages were raised during the period of the war to meet abnormal conditions.

The commission also went on to point out that other economies could be expected as a result of a reduction in material costs, and that if it reduced wages and used a portion of its depreciation reserve allowance, it should be well able to meet its interest on bonds and dividends on preferred stock, making unnecessary the increase in rate which has been asked.

The commission also pointed out that the existing industrial depression, a large number of unemployed and the prevailing discontent were such that it was impossible to estimate or forecast the effect of an increase in fare, were it granted. The increase, unless it were very slight, might result in accelerating the present loss in traffic where added revenue could not be secured, and in its opinion the necessities of the company at this time were not sufficiently great to make it necessary for the company to assume the hazard of such a loss. If, however, the company after putting into effect the suggested economies, still does not succeed in accomplishing results desired, then the only alternative will be an increase in rates.

In a supplementary expression Thorne H. Brown, member of the State commission, stated: "This utility (the street car company) is second to none in the country in point of service and modern equipment. It has made an enviable record during the period of high operating costs."

Railway Officials at Clam Bake—Edward H. Chapin, vice-president of the National Car Wheel Company of Rochester, entertained the officials of the New York State Railways at a clam bake at his cottage at Conesus Lake near Geneseo, N. Y., on Sept. 1. Upwards of fifty or sixty were present. Last year Mr. Chapin entertained the officers of the same company at a large dinner at his house in Geneseo. A very enjoyable time was had by all on both occasions.

Detroit Ouster Delayed

Merchants Want Issue Put Before People—Other Railway Matters Also Submitted

The proposed ouster of the Detroit United Railway from Fort Street and Woodward Avenue in the city of Detroit has been delayed by the filing of petitions by interested business men located on the thoroughfares in question. The petitioners ask that the issue be put to a vote of the people. Under the provisions of the ouster ordinance passed by the City Council, the company would have had to commence removing its tracks on Sept. 2.

The steps taken by the business men on both streets where franchises have expired are a continuation of the protests against the removal of the tracks, voiced when the ordinance came up for action in the City Council following the company's refusal to accept the offer of $388,000 for the Fort Street and Woodward Avenue lines made by the Street Railway Commission.

The filing of the petitions to put the question on the ballot will delay the ouster proceedings, and has been termed a stumbling block to the municipal program by Mayor Couzens.

OTHER QUESTIONS GO TO VOTE

Two other questions pertaining to street railways will probably be voted on at the primaries on Oct. 11. A resolution has been presented to the Council at the request of Mayor Couzens providing for a vote on a charter amendment enabling the Street Railway Commission of the city of Detroit to acquire, construct or purchase and to own, maintain and operate gasoline motor buses, trackless trolleys or such other type of trackless transportation as may be deemed necessary or desirable for the purpose of supplying transportation to the inhabitants of the city within a distance of 10 miles from any portion of its corporate limits that the public convenience may require, together with all required equipment.

The other question to be incorporated in the amendment is a provision that contracts of construction, purchase or other matters entered into by the Board of Street Railway Commissioners shall not be required to be made through the department of Purchases and Supplies and shall not require the confirmation or approval of the Common Council.

The buses and equipment referred to may be operated either independently of, or in conjunction with the Municipal Street Railway System. This will settle an issue existing among the councilmen as to whether or not purchases for the Street Railway Commission must be made through the Department of Purchases and Supplies the same as for other city departments.

Arbitration of the price to be fixed on the day-to-day lines which the city seeks to take over from the Detroit United Railway was further delayed for additional investigation with regard to the value of materials and equipment involved. The taking of testimony in the hearing relative to the valuation of the 29 miles of day-to-day lines was reported as completed at the City Hall. It is not expected that a final evaluation will be reached or the findings of the board presented for several days.

200,000 Fewer Riders a Day in Cleveland

Further efforts, some of them of the most drastic nature, are being taken by the Cleveland (Ohio) Railway in an effort to end heavy losses the company is incurring by reason of a tremendous falling off in its receipts, due to heavy decreases in the number of car riders.

The company is now carrying 200,000 fewer riders each day than the same time a year ago. During July, for example, the number of car riders for the month dropped to 32,396,891, a decrease of nearly 17 per cent over the number carried in July, 1920. Passenger earnings were $1,382,733. This is a loss of more than 7 per cent over the same month a year previous, although the cash fare is now 1 cent higher than it was then and the ticket rate is ½ cent higher.

As a result of the decrease in the number of car riders resulting in great losses of revenue, the company's interest fund, which is the fare barometer, now shows a deficit of $139,254. It originally contained $500,000 and calls for a fare reduction when it reaches $700,000 and a fare increase when it drops below $300,000. However, the company is now operating at the maximum rate of fare permitted by the ordinance, namely, 6 cents cash, nine tickets for 50 cents, with a 1-cent charge for transfer.

Steps now being taken to curtail the company's losses are:

1. Operation of one-man cars at least on one line.
2. Establishment of a five-day work week for employees in the company's main shops at Harvard Avenue and East Forty-ninth Street.
3. Curtailment of all except vitally essential maintenance work.
4. Further salary and wage reductions now under consideration as well as reduction in the daily hours for shop men from nine to eight hours.

Operation of the one-man cars takes effect on the Harvard-Dennison cross town line beginning Sept. 16. The eighteen cars on that line will be manned by only a motorman. This will decrease the number of conductors by twenty.

So as to prevent any confusion when one-man car operation goes into effect, the company moved the fare box forward and for a week prior to the change the conductor has been collecting fares and issuing transfers at the front end of the car.

John J. Stanley, president of the company, says that if the one-man operation is a success, cars on other lines will be operated in a similar manner.

In July the company's mileage run was 3,026,802, a decrease of 11 per cent. In view of the heavy decrease in travel due to the industrial depression, further cuts have been ordered.

Saginaw's Patience Tried During Fair Week

Five weeks ago the Saginaw-Bay City Railway went into the hands of a receiver. Since then Saginaw along with Bay City, a neighboring comcommunity, has been forced to accept jitney buses as the only means of transportation. "How much longer is this going to last?" has been a question asked many times recently, but the owners of the railway and Otto Schupp, the receiver appointed by the United States district court, have had nothing to say. Apparently the suspension is indefinite.

COUNTY FAIR WEEK

This week the annual county fair is taking place. The traffic has been so heavy that the jitneys and other makeshift conveyances which have been brought into use have failed to carry the crowds. As a result Mayor B. N. Mercer, who has always contended the city should have electric railway service exclusively, has asked all owners of automobiles on the way to the fair to pick up people not so fortunate. In 1920 more than 250,000 persons went through the turnstiles at the fair grounds. The fair management, cognizant of the need for electric railway service, did everything in its power to get street cars running for this week, but the company said it was beyond its jurisdiction to resume service, and the receiver has been out of the city for the past two weeks and could not be reached. Even had Mr. Schupp been in town it is doubtful if a satisfactory arrangement could have been made.

Since the railway suspended the Council has had up for consideration the matter of passing a suitable ordinance regulating the buses, but it has not been passed for the simple reason the members started in to require a suitable indemnity bond for compensation if any of the passengers were injured and the jitney owners said that if the Council passed the ordinance they would ask a referendum on the question. The members of the Council then gracefully backed down.

MAYOR FAVORS INSURANCE

The Mayor took the stand that each bus should carry a policy which would provide $5,000 for the injuries to one person, or $5,000 for one accident. The bus owners claimed the premium was prohibitive. The other members finally agreed to a $25,000 policy for one accident and now matters have reached a point where the Councilmen are about ready to accept a policy of $1,000 for one person and $5,000 for one accident.

Several companies have offered to come into the city and operate motor buses, but as yet nothing has come of these offers. One Detroit concern wanted $150,000 worth of transportation sold in advance, but this was finally disapproved by the board of commerce committee which investigated the proposition. The Imperial Omnibus Company, New York, has forwarded a proposition to establish a line in Saginaw and officials of the company may be invited to present their plan.

Wage Cut in Topeka

Wages of employees of the Topeka (Kan.) Railway have been cut from 7½ to 10 per cent, effective to Dec. 31.

The new wage award in cents per hour is as follows:

	Two-man cars	One-man cars
First six months.......	40	43
Second six months.....	41	44
Third six months......	42	45
Fourth six months.....	43	46
Fifth six months and after	47	50

In a statement issued in connection with the Topeka wage adjustment Judge W. L. Huggins said that the railway property was suffering financially from the jitney competition in the city, that only a very meager return upon its investment was being made. However, living costs have come down 20 per cent since the former wage award of 1920 and that it was on this decrease that the recent cut was based.

10 Per Cent Wage Cut in Fort Wayne

Officials of the Indiana Service Corporation, Fort Wayne, Ind., have announced a reduction in wages effective on Sept. 16 of approximately 10 per cent, affecting practically all employees. A decrease in business, with a falling off in the number of passengers handled on the city lines during the previous month as compared with the same month of last year, is given as the reason for the action.

Robert Feustel, president of the company, in commenting on the reduction, said:

> Our company has been up against the same decreases in business that have affected all other lines of industry. These decreases have been continuous since the first of this year. We have been slow in making the reductions in wages because we were slower than some of the industries in making increases in the past.
>
> Our increases in the past were made regardless of our ability to afford them. but because the increased cost of living made increased wages absolutely necessary. For six months after our increase in fares the Fort Wayne city lines were on a self-sustaining basis. but from March, 1921. the net revenues have decreased rapidly.
>
> There were 225,000 fewer passengers handled on the Fort Wayne city lines in August this year than were transported in August, 1920.
>
> We are making an average cut of 10 per cent. whereas the last increases made in 1920 averaged 25 per cent. With the next scale of wages in effect. 80 per cent of the Fort Wayne city trainmen will receive 50 cents an hour. This rate is still 100 per cent increase over the average trainmen's wages in effect in 1914.
>
> We, of course. cannot tell what the future will do for us. but the best service that it is possible for us to give is the aim of the company. This property must continue the building up process for good service that has been in effect for the past four years if all of our communities are to be well served.

May Electrify Lines.—It was announced at San Francisco on Sept. 6 that William Sproule, president of the Southern Pacific Company, had been authorized by the board of directors of the railway to investigate the feasibility of electrifying the Southern Pacific lines between San Francisco and peninsula points.

Financial and Corporate

Receivership Terminated

United Electric Railways at Providence, R. I., Freed from Receiver—Old Claims Liquidated

By decree entered in the Superior Court on Sept. 6 by Justice Tanner the receivership of the Rhode Island Company, Providence, R. I., has been terminated. The decree directs the receivers to deliver about $1,070,000 in cash and all their books and accounts to the United Electric Railways. The Rhode Island Company, controlled by the New York, New Haven & Hartford Railroad, which set out to control the trolley lines in Rhode Island, went into receivership on Jan. 30, 1919.

The receivers for the railway were Frank H. Swann, Theodore F. Green and Z. W. Bliss. The United Electric Railways at the time the hearing was held controlled the greater portion of all general claims against the estate of the Rhode Island Company and maintained that a continuance of the receivership would be an unnecessary expense.

It appears that the following claims against the Rhode Island Company have been liquidated and allowed pursuant to orders and decrees of the court by William B. Greenough, special master, to whom they were referred:

New York, New Haven & Hartford Railroad	$4,123,411
New England Investment & Securities	593,992
Rhode Island Company 5 per cent secured gold notes	1,696,625
Miscellaneous general contracts and property damage claims	10,707
Other claims	35,148
Total	$6,459,815

The first three classes of claims have been acquired by the United Electric Railways. In addition to the liquidated claims allowed by Mr. Greenough there are now on file and pending before him tort claims to the extent of $3,030,903. Also pending before R. E. Lyman, special master, is a claim of the Sea View Railroad amounting to $1,181,000. An agreement has been reached in regard to this last claim by which it has been acquired by the United Electric Railways.

The outstanding tort claims against the Rhode Island Company estate are said by the receivers to amount, when liquidated and allowed, to not more than $175,000. Of these the United Electric Railways has acquired judgment claims of the face amount of $24,800, and negotiations are pending for the balance of these claims.

General and tort claims not entitled to preferential treatment have been made the subject of an offer on the part of the United Electric Railways to pay 25 per cent, if agreements are made before next April.

Cash in the hands of the Rhode Island Company receivers approximates $1,700,000. All of the properties operated by the Rhode Island Company, except the Union Railroad, Pawtucket Street Railway, the Providence Cable Tramway and the Rhode Island Suburban Railway, were operated at a deficit and the cash now in the hands of the receivers was received from the operation of these properties.

The deed of conveyance, dated Aug. 12, 1921, transferred all the properties purchased by C. H. W. Mandeville under a decree of sale to the petitioning company and the receivers delivered possession to the United Electric Railways at midnight, Aug. 19. The petition before the court for the dismissal of receivers sets forth that the need no longer exists for continuing the receivership.

Bond Issue Offered

Bonds amounting to $600,000 will be placed on sale shortly by the Johnstown & Somerset Railway, Somerset, Pa. The bonds will be in denominations of $1,000 and $500. Somerset county residents recently bought $400,000 of the railway bonds. This makes $1,000,000 up to date against the $1,500,000 voted by the directors of the property when they took up the work of financing building operations about three months ago.

In connection with this bond issue it is said that the company will shortly meet its interest obligations at the Equitable Trust Company, New York, N. Y., the financial agent of the traction concern.

Binghamton Deposit Agreement Changed

Holders of the 5 per cent first mortgage consolidated gold bonds of the Binghamton (N. Y.) Railway have been notified by the Fidelity Trust Company, Buffalo, of certain changes in the bondholders' agreement. The most important change says that "the period of five years is specified as the period in which the depositors will be entitled to the return of the securities which they have deposited hereunder or the receipt of new securities on reorganization or readjustment."

Perry E. Wurst, Buffalo, secretary of the committee, says that inasmuch as the changes materially affect the rights of depositors any depositor may withdraw from the agreement at any time upon surrender of his certificate of deposit and upon payment of 1¼ per cent of the face of each bond deposited. The assessment of 1¼ per cent covers contribution toward the compensation, expenses and obligations of the committee. Those who surrender their certificates will receive bonds to the amount represented by the certificates surrendered.

Steam Line Seeks Electric

Western Pacific Would Formally Acquire Extensive Holdings of California Electric Line

The Western Pacific Railroad has applied to the California Railroad Commission for authority to acquire the Sacramento Northern Railroad properties as feeders to its system and to approve the financial arrangements for consummating the transaction. It is proposed to acquire the Sacramento Northern Railroad through a new company, the Sacramento Northern Railway, organized as a subsidiary of the Western Pacific. The Sacramento Northern Railroad joins in the application requesting authority to sell all of its properties, rights and franchises to the Northern Railway for the sum of $730,000 cash.

The Western Pacific Railroad Corporation of Delaware, which is the owner of all the capital stock of the Western Pacific Railroad now owns more than 97 per cent bonds of the Sacramento Northern Railroad and trust certificates representing more than 95 per cent of the outstanding stock.

The Sacramento Northern Railway now seeks authority from the commission to issue and sell for not less than 100 par 9,950 shares of its capital stock to the Western Pacific Railroad and from the proceeds to obtain the $730,000 to be paid to the Sacramento Northern Railroad for its properties and franchises the remainder to be used as working capital. The Western Pacific Railroad asks to be allowed to use money from the sale of its $20,000,000 first mortgage 5 per cent bonds, previously authorized, to acquire the stock of the Sacramento Northern Railway, the subsidiary corporation in the transaction.

The Sacramento Northern Railroad has outstanding $5,224,373 of bonds and outstanding stock as follows: $1,808,362, first preferred; $793,152, second preferred, and $1,883,382 of common stock, all of which is deposited in trust with the Union Trust, San Francisco, under a voting trust agreement. Under the arrangement approved by the bondholders and stockholders the bonds of the Sacramento Northern Railroad are to be exchanged for Western Pacific Railroad bonds in the ratio of 100 to 80 and the stock is to be purchased at $27.50 a share for the first preferred, $15 a share for the second preferred and $6 a share for the common.

In support of its application to acquire the extensive electric lines of the Sacramento Northern, the Western Pacific states that it is in great need of branches and feeders to furnish traffic to its main line and the present electric system is admirably adapted to its purpose.

The acquisition of these electric lines, it is pointed out, will avoid expensive duplication and the sale will be of mutual benefit as the Northern Electric line is now being operated at a loss.

Interborough Receivership Case Again Postponed

Judge Julius M. Mayer in the Federal District Court Sept. 9 adjourned until Sept. 21 the hearing on the application for a receiver for the Interborough Rapid Transit Company recently made by the Continental Securities Company. Judge Mayer in granting an adjournment said: "In view of the notes being scattered throughout the world and in view of several of the bondholders being out of town on vacation, I adjourn this proceeding to permit deposit of the outstanding notes and shall not appoint a receiver for this company unless it is unavoidable." The previous history of these proceedings was described in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 3, page 376.

James L. Quackenbush, attorney for the Interborough, in reviewing the situation in connection with the three-year Interborough notes maturing Sept. 1 this year, said: "Since the argument a week ago and up to the close of business yesterday 710 holders had deposited notes to the principal amount of $4,432,200 and have agreed to the extension. This brings the total deposits and extensions up to $33,444,100, which is equivalent to 87.68 per cent of the notes outstanding. While this result is most gratifying in the amount of notes represented, the number of depositors, 4,140 out of a total of 7,610 known holders of these notes, indicates that the 3,430 non-depositors for the most part are holders of small amounts."

William D. Guthrie, representing the Empire Trust Company and supporting the Interborough's petition for an adjournment, said that his company is trustee of 97 per cent of the Interborough Rapid Transit stock, composed of 340,000 shares. Elijah Zoklin, attorney for the Continental Securities Company, in opposing an adjournment, told the court that there should be immediate action on the application for a receiver in view of the company's having no funds and was unable to obtain additional securities to satisfy matured obligations. Dwight W. Morrow of J. P. Morgan & Company appeared in behalf of the holders of the 5 per cent bonds and 7 per cent notes of the Interborough Rapid Transit Company. The group of bankers he represented, he said, had no interest whatever in the bonds or stocks of the Interborough Consolidated Company nor had they any interest in any of the New York surface lines. His sole connection with the transit situation in New York City, he said, was as representative of the group of bankers who secured for the Interborough Rapid Transit approximately $200,000,000 in connection with construction of extended subways.

Mr. Morrow added that J. P. Morgan & Company have always been of the opinion that, receivership or no receivership, holders of the 5 per cent bonds and 7 per cent notes will ultimately be paid principal and interest. He was very much averse to a receivership because there are so many small holders of securities to whom the interruption of interest would be a severe hardship and who in fact might be compelled to part with their bonds and notes at a great sacrifice. Therefore, such a result should be avoided if possible.

Increased Fare Has Little Effect on Receipts

The 7-cent fare on the lines of the Louisville (Ky.) Railway put into effect following an injunction granted by Judge Walter Evans scarcely has improved the company's general financial status since Feb. 21, it has been declared.

In the six months period from Feb. 21 to Aug. 25 the increase under the 7-cent fare over the same period in 1920 was approximately $175,000. This is an 8.4 per cent increase in gross revenue, instead of 20 per cent as expected. But the expense for track maintenance, fuel and wages in the half-year period will be approximately $150,000 greater than in 1920, according to officials.

There has been a great decrease in the number of passengers carried during the year. It is estimated that the total number of cash passengers in 1921 will be between 65,000,000 and 68,000,000. In 1920 80,000,000 cash passengers were carried.

Officials said that while it was true that the jitney buses had diverted some of the passengers who formerly rode on street cars, the big decrease could not be explained except as due to general business depression and a consequent curtailment in the number of car passengers. Automobile use also has increased, it was said.

Payments Deferred Until Termination of Receivership

Upon receipt of a letter from George B. Tripp, receiver of the South Carolina Light, Power & Railways, A. B. Leach & Company, Inc., representative of the stockholders, sent out a letter to the noteholders stating that no payment would be made on the $650,000 of 7 per cent notes until the receivership had been terminated, but that it had every reason to believe that within a reasonable time the receiver would be successful in developing the situation so that the property could be returned to the company and a financial agreement made satisfactory to the stockholders.

In the communication to Leach & Company Mr. Tripp outlines the progress of the railway under the receivership, which was authorized in February of this year. The recent increases in fares and power could not be determined at the time of his writing (July 30), but that beginning Aug. 1 it was expected that the net income would show a substantial amount over operating expenses and fixed charges. The receiver also expressed the hope that in September, when the municipal elections took place, amendments could be secured and modifications made in the regulation of electric railway service.

Financial News Notes

Line Operating Again—After being idle for six months over a wrangle to increase fares, the city lines of the Kentucky Utilities Company in Somerset were placed in operation again on Aug. 26, with new cars, and with a 7-cent fare in effect.

Wants to Abandon Another Line—The Pacific Electric Railway, Los Angeles, Cal., has sought permission of the State Railroad Commission to abandon its line between San Bernadino and Arrowhead. The line is more than 7 miles long.

Municipal Bonds for Sale—It will be necessary for the residents of Eureka, Cal., to buy in $25,000 of bonds for the purchase and rehabilitation of the Humboldt Transit Company. The city now has in prospect $105,000 of the required $130,000, the First National Bank having fulfilled its agreement to take that amount. The plans to have the city take over the property have been reviewed previously in the ELECTRIC RAILWAY JOURNAL.

Stockholders Will Be Protected.—Following the application for a receivership for the Interborough Rapid Transit Company, New York, N. Y., a committee was formed to protect the interests of the stockholders of the Manhattan Railway, New York, N. Y. Alvin W. Krech is chairman of the committee. A depositary agreement is in process of preparation under which the Equitable Trust Company will act as the depositary.

Sale Under Foreclosure Postponed.—The sale of the property of the Second Avenue Railroad, New York, N. Y., which was set for Sept. 1, has been adjourned until Dec. 1. The sale was under foreclosure proceedings instituted to satisfy mortgage judgment on its defaulted bonds, amounting to $3,473,511. Part of the property to be sold consists of the carhouse block bounded by First and Second Avenues and Ninety-sixth and Ninety-seventh Streets. The company also has 22 miles of tracks.

Railway Being Reorganized—The Brunswick & Interurban Railway, Brunswick, Ga., now being organized will be the successor company to the Brunswick Street Railway. The new incorporators are all members of the Young Men's Club, who submitted a plan for the operation of the local property. When the final order of sale is issued by Judge Evans it is believed sufficient capital stock will have been paid in to purchase the property and carry out the plans of reorganization. It was announced in the Aug. 6 issue of the ELECTRIC RAILWAY JOURNAL that no bid for the property had been received and that the line would probably be sold as junk.

Traffic and Transportation

Duluth Fights Fare Increase

City Gets Injunction Against Increase and Appeals from the Decision of the Commission

An injunction was granted Duluth on Sept. 10 by the District Court whereby the Duluth (Minn.) Street Railway was prevented from putting into effect an increase in fare granted by the State Railroad & Warehouse Commission. The order of the court is to remain in effect until three judges pass on the merits of the request of the railway.

COMMISSION CUT COMPANY'S DEMAND

The State Railroad & Warehouse Commission, to which the Duluth Street Railway appealed for a 7-cent fare or four tickets for a quarter, denied this request, but ordered a 6-cent fare to go into effect Sept. 1 pending a permanent fare arrangement, contingent on a valuation of the company's property now being made. The railway asked for 6 cents at a time when the high costs of operation were pressing it very hard, but the city refused the increase, the people voting against it twice, although the issue both times was complicated by collateral matter.

Following the decision of the commission, John B. Richards, city attorney, stated that the issue would be taken into the District Court immediately in an attempt to obtain an injunction forbidding the collection of a higher fare until November at least, when the valuation of the property has been finally determined.

In his demand for a stay, Mr. Richards took the position that there was no basis for the claim that there was an emergency within the meaning of the statute. The commission authorized the increase on that basis, while denying that the company needed the 7-cent fare requested in its petition.

Commissioners F. W. Putnam and Ivan Bowen filed a majority order granting the increase, while Chairman O. P. C. Jacobsen issued a dissenting opinion denying the existence of the emergency and suggesting that through the co-operation of the City Council economies might be effected.

CITY WELCOMES DELAY

The entire legal battle is expected to take several months, and such a delay would be welcomed by the city because, by November, Byron C. Gifford, the city valuation expert, will have completed his survey of the company's property and the commission will then be enabled to make its final decision as to a proper fare to be determined by allowing the company a reasonable return on a fair valuation.

In its decision the commission said:

> A fare of 6 cents will produce an increase in revenue of approximately $189,000 per annum. This amount of additional revenue is necessary to enable the company to meet the existing emergency. The commission further finds that the rate of fare of 6 cents cash is a reasonable fare and will not return the Duluth Street Railway more than a reasonable return on the fair value of the street railway property within such city as an operating system.

Legal Battles in Bridgeport

The jitney-Connecticut Company-Utilities Commission controversy in Bridgeport continues to be a legal skirmish with first one side and then the other the victor.

The third injunction since state enforcement agencies commenced carrying out the provisions of the new jitney law was granted the Bridgeport Bus Association by Judge Walsh of the Common Pleas Court. It restrained the police from enforcing the order of the Public Utilities Commission until Oct. 11.

On Sept. 1 the buses were stopped by the police and there followed two days of marking time and this calm was followed by the injunction proceedings. The buses had been operating as free buses or on the club plan but the police arrested the drivers for not having a "J" marker as per the order of the Utilities Commission. After the buses stopped the Connecticut Company increased its service and taxicabs with "O" markers entered into the game.

Following the injunction the jitneys began operating in full force without interference from the police. The status at present leaves the jitneys in possession of the field with tentative moves by the Connecticut Company to quash the injunction.

Chairman R. T. Higgins of the Public Utilities Commission has announced that the commission had tentatively agreed on Sept. 22 as the day for a rehearing on petitions for jitney routes in Bridgeport. The new hearings are to be held in response to a petition of the board of Aldermen of Bridgeport. The petition also requested the commission for a hearing on a reduction of trolley fares, but this matter will not be touched upon in the hearing scheduled for Sept. 22.

Will Not Fight Fare Reduction

At a special directors' meeting held last month it was decided that the Washington Railway & Electric Company, Washington, D. C., would abide for the present on the decision of the Public Utilities Commission which authorized a fare reduction to five tokens for 35 cents effective on Sept. 1.

In a statement giving the company's views on the cut in fare Mr. Ham of the railway stated that the new rates would receive a fair trial though it was conclusively proved that they would not net an adequate return. Meanwhile the directors of the company will look for justice from the public and remedial legislation from Congress in the form of relief from taxation and other burdens.

Albany Jitneys Suppressed

Breach of Injunction Order Held by Judge to Be Criminal Contempt of Court

Supreme Court Justice Harold J. Hinman, in the Albany, N. Y., special term on Sept. 11, fined eleven jitney men $100 each, with the alternative of serving thirty days in jail, for criminal contempt of court in violating his injunction order and announced he would sign a blanket injunction applicable to all jitney operators "who persist in defying the law."

The court, in passing sentence, also gave warning that the punishment meted out for the first convictions will not be the measure of future penalties. This is regarded as the signing of the death warrant for the jitneys that have been operating in territory served by the electric railway. Justice Hinman said:

> Such publicity has been given the fact that the operation of jitneys has been held to be illegal that no person can longer believe he is engaged in a legitimate business in continued operation. There can be no further excuses for violation of the law and persistence must be deemed willful. They have doubtless seen other means intended to enforce the law laughed and scoffed at and fail in its purpose.

A further appeal by the men convicted is considered unlikely. Those represented by Mr. Murray, by the pleas of guilty interposed by him in their behalf, are precluded from taking an appeal. The others, it is pointed out, were in default, because even though they appeared, they failed to avail themselves of the opportunity, given them in the order served on them, to show cause why they should not be adjudged guilty on the evidence contained in the moving papers of the traction company's attorneys.

WILLFUL VIOLATION CHARGED

An appeal to the appellate division may be taken by Mr. Murray, however, from the order overruling his demurrer to the traction company's complaint, on which the injunction order was granted. Such an appeal, however, would have no bearing on the status of the defendants convicted of violating the temporary injunction while it was in effect.

Following the argument on the demurrer to the injunction order, granted against 211 alleged jitney operators named in the application of the United Traction Company several weeks ago, John E. MacLean and J. Stanley Carter, representing the company, presented a petition charging seventeen of the defendants with willful violation of the order forbidding them from illegally competing with the company by operating automobiles without the consent of the local municipalities or a certificate of convenience and necessity, required by section 26 of the transportation law.

Court Prevents Fare Increase in Twin Cities

In both Hennepin and Ramsey County District Courts the order of the Minnesota Railroad & Warehouse Commission granting an emergency increase in trolley fares from 6 to 7 cents, as outlined in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 3, page 380, has been suspended, for further hearing as to the merits of the cases. This means that the Minneapolis Street Railway and the St. Paul City Railway could not put into effect the advance rates ordered effective Sept. 1. The court took cognizance of the cases through appeal by the city attorney in Minneapolis and the Corporation Counsel in St. Paul. The Minneapolis hearing began Sept. 12, the St. Paul hearing will begin some time in October.

Judge J. C. Michael of Ramsey County said that the contention that the finances of the St. Paul company necessitated an increase "seemed to be considerably exaggerated." He said that "no valuation of the railway property was made by the commission and the city's request for a reasonable postponement to enable it to make a valuation of the properties as required by law in such cases was denied by the commission."

O. P. B. Jacobsen, chairman of the commission and the dissenting member when the order was issued, said: "I believe the testimony of the experts introduced by the street railway company failed to disclose any urgent need for an increase in fares at present or until such time as this commission is able to obtain a reliable valuation of the company's property."

Judge E. A. Montgomery in the Hennepin County District Court said:

> In the first place, I hold that the law is constitutional. As to the question of the rate, I do not believe that the evidence before the commission was sufficient to justify the finding that the company was not getting a fair and reasonable return on its investment. I very much doubt whether, under the evidence presented to the commission, any emergency was proved to justify the commission in fixing its temporary increase at this time. I am very clear, however, after reading the order of the commission and all the evidence in the return and all matter presented to me upon this hearing, that there is no emergency existing which would justify carrying into effect the order of the commission granting the street car company an increase to 7 cents. No emergency existing, the fair and just thing to do now is to suspend the order of the Railroad & Warehouse Commission until the hearing of an appeal fixed by the city. I therefore will make an order suspending the operation of the increase until the final determination of the case which is now in appeal is made.

Jitney Licenses Allowed

Pending approval of the Park Board, jitney licenses were issued recently to operators in Tulsa, Okla., over the objections of the Oklahoma Union Railway and the Tulsa Street Railway. The line will run from the post office out Denver Avenue and Easton Street through Owen Park to the monument in Irving Place.

The Oklahoma Union Railway protested that the establishment of the line would probably result in the railway's abandoning its Owen Park service. The Tulsa Street Railway claimed that a jitney line on West Easton Street would cause a cut in service on its Main Street line.

Three-Cent Fare Petitions Filed

Signed by 13,582 names, Councilman Oliver T. Erickson's initiative petition has been filed with City Comptroller Carroll of Seattle, Wash. The petition provides for the maintenance and operation of the Municipal Street Railway out of funds raised by taxation, and payment of interest and principal of the $15,000,000 debt owed by the city to the Stone & Webster interest out of operating revenues only.

Although the proposal makes no specific mention of the amount of fare to be charged on city street cars under this proposed plan, the petitions have been known during their circulation as "Three-Cent Fare Petitions," because that is the fare which Councilman Erickson has estimated would be required to meet the interest payments if all other charges were made to taxes.

Under the city charter, initiative petitions must be signed by 10 per cent of the number of voters who cast ballots for office of Mayor at the last municipal election before such petition can be placed on the ballot. This initiative measure must bear the names of 8,470 registered voters if it is to be voted on at the next municipal election in May, and work of checking over the signers is under way. Councilman Erickson announces that an active campaign in support of this measure will be started early in November under auspices of the Public Ownership League, which sponsored the circulation of the petitions. Following is the petition:

> We, the undersigned qualified voters of the City of Seattle, Washington, propose and ask the enactment as an ordinance of the following bill, or measure, to-wit: An ordinance relating to the municipal street railway system of the city of Seattle, and declaring the fiscal policy of the city in relation thereto.
>
> Whereas, It is to the public interest that the City of Seattle declare and establish a fiscal policy in relation to the municipal street railway system whereby the cost and expense thereof shall be borne, as nearly as may be, by all who benefit thereby; now, therefore,
>
> Be it ordained by the City of Seattle as follows:
>
> Section 1. That from and after the first day of January following the taking effect of this ordinance, all cost and expense of the maintenance and operation of the Municipal Street Railway system of the City of Seattle shall be paid wholly out of the revenues of the City of Seattle derived from taxation.
>
> Section 2. That from and after the taking effect of this ordinance, the City Council of the City of Seattle shall annually, in the manner prescribed by law, provide for the levy of tax on all the taxable property of Seattle sufficient to defray the cost and expense of the maintenance and operation of said railway system for the ensuing year
>
> Section 3. That the cost and expense of maintenance and operation, as used in this ordinance, shall be computed pursuant to, and in accordance with, the requirements of the laws of the State of Washington or of any commission or bureau thereunto authorized by such laws.
>
> Section 4. That there be and hereby is created a fund to be known as the "Extension and Depreciation Reserve Fund," into which the City Council shall set aside, monthly, from the gross receipts of the municipal street railway system, an amount not exceeding 1½ cents for each pay passenger, exclusive of policemen and firemen. The amount thus set aside shall be expended solely for extensions and renewal of track and equipment.

Seattle Jitneys Will Try U. S. Supreme Court

Jitney interests in Seattle recently took the only means left to them to escape temporarily the ban of the city, backed by the final order of the State Supreme Court, when they served notice that they will present to Chief Justice Emmit N. Parker of the State Supreme Court a petition for writ of error to the Supreme Court of the United States. As a result of this action, Chief Justice Parker directed that the final order of the State Supreme Court, vacating the injunction which now protects the Sound Transit Company buses, be held in abeyance until after this petition is heard in Olympia.

The city, expecting receipt of the final order, planned to put it into effect immediately and oust the jitney buses from the street. It was anticipated, however, that the jitney interests might endeavor to prolong their existence by an appeal to the federal court, and the city is prepared to resist this, contending that the case has no federal aspect, as pointed out by all court decisions rendered so far in the city's long battle with the jitneys.

A compromise proposal has been submitted to the City Council by the Auto Drivers' Union, whose buses are at present banished from city streets by the jitney regulatory ordinance, as the union drivers do not enjoy the protection of the McGlothern injunction. The union drivers proposed to limit their operation to long haul lines and to limit the number of buses operating there, where they would be in competition with the railway. The proposition was referred to the public utilities committee.

Twin City Railways Handle Fair Crowd

To handle the crowds that annually attend the Minnesota State Fair, this year from Sept. 3 to Sept. 10, the Twin City Lines placed all the front-exit cars in operation on the interurban trolley line, the fare between the two cities being 12 cents in two payments. Although somewhat confusing to the traveling public because the cars are front exit the first half of the distance and front entrance the last half of the distance between the starting points in the two cities; and pay-as-you-enter for the first half and pay-as-you-leave the second half, the system worked well.

Persons entering the cars between the municipal limits of either city and the neutral zone division line within the limits of St. Paul, on payment of fare received an identification slip which they surrendered on exit. Persons riding the entire distance paid a second cash fare of 6 cents upon leaving. The street railway opened a fixed car loading terminal at the fair grounds this year, which facilitated removal of the big crowd at rush times. The average attendance at the fair was 50,000 daily and a good proportion of the people attending the fair used the street car service.

Public Service Railway's Last Stand

Company Covering Practically All Jersey Fights in Court for Increase in Fare Denied to It by Public Regulatory Body

Federal Judges Rellstab and Davis of New Jersey and Wooley of Delaware in the United States District Court at Trenton, N. J., heard argument on Sept. 13 in connection with the application of the Public Service Railway for a preliminary injunction to enjoin the State Public Utility Commission from interfering with the company in instituting a 10-cent fare. The commission recently denied the company a 10-cent fare and directed it to continue its 7-cent fare, but allowed it an increase from 1 to 2 cents for transfers. This increase the company contends is totally inadequate to its needs and insists that if a substantial fare increase is not granted, it will be forced into bankruptcy.

THE railway was represented by Frank Bergen, general counsel, former Attorney General Robert H. McCarter and Richard V. Lindabury, special counsel. The utility board's interests were looked after by L. Edward Herrmann, general counsel. Attorney General Thomas F. McCran was present for the State, which is a co-defendant in the suit. Newark, Jersey City, Elizabeth and Passaic were represented by counsel who made application to be admitted as co-defendants in order to fight the prospective fare boost.

George L. Record, special counsel for Jersey City, in renewing his application, denied at a preliminary hearing, to have Jersey City admitted as a co-defendant, insisted that the city had an interest apart from the State in the proceedings. He argued valuation was necessary in rate making.

To this Judge Rellstab replied:

> Where a deficit has resulted the valuation cuts no figure. Is that not the opinion of the court of last resort in New Jersey?

In reply Mr. Record said:

> I attack the theory. I say that in normal times there is no decision of our courts where valuation is not the determining factor.

Judge Wooley pointed out that if a number of municipalities were admitted as co-defendants, the issues in the case might be confused in the multiplicity of ideas.

Mr. Record said the company was asking the public to pay the company's business losses, which he contended the directors of the company were solely responsible for.

Mr. McCarter said that Congress had by statute foreseen that the public had an interest in rate making cases and had given their interests into the hands of the attorney general. It was the duty of that official, Mr. McCarter said, to look after the public's interests. He said he noted that the Attorney General, with his assistants, was present.

Mr. McCarter said that the ordinances of Newark and Jersey City fixing fares had been repealed and this fact, he insisted, nullified most of the argument of Mr. Record. He said further that Jersey City could certiorari the rate in the State Supreme Court if not satisfied with it and the same course could be followed by other cities. He objected to the admission of any of the cities in the case except as "friends of the court" by briefs.

Frank H. Sommer of Newark, associated with counsel for the municipalities, said that nothing should operate against the rights of the municipalities to be heard. Judge Wooley speaking for the court said that there was not sufficient time to consider the questions raised and render an opinion immediately, but a decision would be rendered at the proper time.

The main case was then taken up. Mr. McCarter said he would not press at any length the attack on the constitutionality of the New Jersey rate-making law and Attorney General McCran said this would shorten his argument as he was prepared to defend the state statute.

VALUATION TESTIMONY RULED OUT

The court refused to admit as evidence the great mass of testimony taken by the utility board on the question of the valuation of the company's property on which the 7-cent rate was fixed. The court said this testimony could not be admitted as a whole, but intimated that part of it would be accepted if the Board of Public Utility Commissioners would indicate those parts pertinent to the present argument. Mr. Herrmann for the board took exception to this ruling.

Mr. Bergen's brief sketched the organization of the company and pointed out that in the years 1918, 1919 and 1920, "the company earned $1,635,691 less than the amount necessary to pay its operating expenses, taxes and fixed charges and of course nothing on its capital stock of $48,731,600 outstanding." Because of the failure to allow an adequate rate, the railway property had depreciated so that "in the past four years physical property of the plaintiff worth $5,000,000 has been actually taken and used by the public without compensation, and its property is still being taken for that purpose in direct violation of the fourteenth amendment." Mr. Bergen said further that "according to the defendant's own order property of the plaintiff to the amount of $2,000,000 has been consumed since 1917 in serving the public."

Decision of the higher courts of New Jersey and other States, as well as numerous decrees of the Supreme Court of the United States, were quoted by Mr. Bergen, in support of the legal propositions set forth in the brief. He pointed to the O'Brien case wherein the courts held that the company was entitled to an increase in rate sufficient to meet increased costs and added that the utility board's action "in refusing to respect the law as stated in the O'Brien case was emphatically condemned by the Supreme Court of New Jersey," the brief adding: "We have therefore two solemn adjudications of the highest courts of New Jersey in this very matter which entitle the plaintiff to the relief sought by its bill—that is an increase of revenue at once."

Mr. Bergen stated that although he did not think it necessary to discuss or decide the question of the valuation of the company's property on the pending motion, the company was quite willing to meet it. The brief declared that the utility board in arriving at a value of $82,000,000 rejected most of the intangible values and ignored the fact that every consolidation agreement by which the plaintiff was enlarged and every lease now operated "was when made, and still is strictly legal in every particular." It is asserted that the application for injunction is based "on substantial facts which cannot be seriously disputed and rules of law that are settled beyond controversy."

What are declared to be "a few of the important particulars in which the reports of the defendant and the orders based on them are plainly erroneous" are set forth in the brief. Summarized they are:

1. In ascertaining the present value of the tangible property of a utility company by the reproduction method present costs must be used. The defendant recognized this rule of law but added only $12,000,000 to its estimate of pre-war cost of construction which testimony and affidavits demonstrate is much less than should have been allowed. In an affidavit Prof. Henry C. Anderson estimates the difference at $43,000,000.

2. No allowance was made for the value of the contract under which the railway receives current to propel its cars, although the courts have repeatedly held that such a contract is valuable and must be included in the valuation of a utility for the purpose of a base rate.

3. Allowance was not made for "Cost of Money" amounting to millions of dollars, although "no one disputed the correctness of the figures or denied that the expenditure is a legitimate part of the cost of construction of the plaintiff's property." It is pointed out that the utility board excluded this item from its valuation of the property and said it would consider it in fixing a rate of return but failed to do so.

4. The proof shows that $5,000,000 worth of the plaintiff's physical property has been taken for public use without compensation during the last five years and that taking is still going on.

5. The railway owes the electric company $2,500,000 for power which indebtedness was allowed to accrue because the plaintiff was seeking increased rates but if such increase is not allowed the electric company must and therefore will discontinue furnishing power.

6. The experience of the plaintiff from Aug. 4 to Sept. 6 indicates that the income from the additional cent for transfers will amount to $266,911 less per annum than the utility board estimated, and instead of there being an increase of 1.31 per cent in passengers as the board figured, there will be a decrease of 6.94 per cent, making the company's gross revenue $1,999,266 less than the utility board figured it would be.

7. In the O'Brien case and in the more recent case decided last July, the courts of New Jersey have held that the plaintiff is entitled to an increase of rates sufficient to pay for the increased expenses of maintenance and operation and taxes. "No increase in rates allowed by the defendant to the plaintiff since Jan. 1, 1918, has obeyed those decisions."

8. During the past eighteen years the company has expended more than $2,000,000 a year on the average to maintain its property. Such amounts must continue to be spent if the property is to be kept up and the money must be obtained, sixty per cent from a depreciation fund, and

forty per cent new capital. The rates allowed by the utility board do not permit the company to earn any depreciation fund and it will be impossible to get new capital without a substantial increase in revenue.

"The recital of fact could be much extended," Mr. Bergen says in concluding his brief, "but it is unnecessary. From what clearly appears it is manifestly impossible for the plaintiff to continue to operate or to maintain the unity of its property, unless additional income is provided at once and the company protected in the exercise of its rights by the injunction of this Court."

Messrs. McCarter and Lindabury before going into a discussion of the facts pointed out that the plaintiff has an inherent right to appeal to the United States Court for relief. Among authorities quoted sustaining the company's petition were the late Chief Justice White and Justice Peckham of the United States Supreme Court.

In discussing the law and the facts the brief goes into the board's order and report with great particularity and combats the findings therein expressed, supporting the plaintiff's contention with quotations from decisions in similar cases. The lawyers contend that the board's orders and reports are fallacious and altogether wrong and are based on a misapprehension of the board's duty.

After setting forth the general principles involved and treating them and the law applicable to them the special counsel direct their attention to what they term the "improprieties" of the board's report. These are set forth under sixteen headings each of which is discussed in more or less detail and which are as follows:

1. The failure to give to the Ford, Bacon & Davis report the presumptive evidence to which it is entitled by the statute.
2. The board improperly ignored the railway's power contract with the Public Service Electric Company.
3. The board's figure of $12,000,000 for what is called "appreciation" is ridiculously small.
4. The board erred in rejecting as an element of value the amount actually expended in procuring capital required for the work of construction by the plaintiff.
5. The report is obviously wrong in that it allows so little revenue that it will be impossible for the plaintiff to obtain any new capital.
6. The report is wrong in that it makes no provision whatever to reimburse the plaintiff for the deficiency in operation during years 1918, 1919 and 1920, aggregating $1,635,691.
7. The board totally ignored the fact that the railway is indebted to the electric company in the sum of $2,500,000 for power furnished.
8. The board grossly erred in only allowing the sum of $12,000,000 for what it called "going value."
9. The board's treatment of the subject of depreciation of the value of the physical property of the plaintiff is erroneous.
10. The board erred in making no allowance for unearned profits during the past three years.
11. The income purported to be provided by the board's figures assuming their accuracy in all respects is itself insufficient and confiscatory.
12. The board having required in 1918 that the company should annually appropriate $800,000 for depreciation and expenses for replacements and renewals, and being aware that owing to its minimized revenue, the company has only been able during the three years to appropriate $448,002 for the purpose, nevertheless instead of allowing a rate that will promptly make up this deficit spreads it out over a period of five years.
13. The board erroneously concludes that the sum of $715,000 will be annually raised from the additional 1 cent permitted to be charged for an initial transfer.
14. The board has improperly minimized the amount of the plaintiff's revenue that will be required to pay for accidents.
15. The board improperly underestimated the taxes the company will be required annually to pay amounting to at least $100,000.
16. The amount allowed by the board for depreciation and maintenance is at least $1,200,000 less than the sum that must be spent within the next year.

Fare Changes on Michigan Property

A 10-cent cash fare with four tickets for 25 cents and children's fare at 5 cents was put into effect on Sept. 5 by the Michigan Railroad in Jackson and Battle Creek. The same rate was authorized in Lansing except that the cash fare was 8 cents.

The Michigan Public Utilities Commission, in whose hands the matter of a temporary fare was put for Kalamazoo, made the rate for that city the same as Lansing. The commission made an audit and an appraisal of the Kalamazoo property. A hearing has been set for Sept. 21 and an authorized rate of fare is looked for sufficient to pay operating expenses and taxes and to net a fair return on the value of the property.

In Jackson the Mayor appointed a Citizens' Committee for the purpose of establishing a rate of fare, much on the same principle as the commission's plan for Kalamazoo. Lansing will also make an audit of the books and an appraisal of the property.

The story of the fare troubles in the cities in which the Michigan Railroad operates was told in the ELECTRIC RAILWAY JOURNAL for Sept. 3.

Chicago's Eight-Cent Fare Attacked

The fight for a 5-cent fare on the Chicago Surface Lines was renewed before the Illinois Commerce Commission on Sept. 14. For several days preceding this hearing the city attorneys issued statements charging that the companies had been making excessive profits and that the 8-cent fare was unreasonable.

Williston Fish, general manager of the Surface Lines, gave out a statement in which he showed that the $8,237,948 which had been referred to by the city as "profits" for seven months ended July 31 were only the net earnings after deduction of operating expenses. He explained that from this amount the city would get $1,970,997 as its share of the net divisible receipts. Further deduction of $4,809,159 would be made for interest on bonded debt and loans, also $207,083 for sinking fund requirements, and $109,447 for corporation expenses and federal corporation taxes. This would leave net for stockholders $1,141,263.

The amount left after paying the city's 55 per cent would mean a return at the rate of 6.73 per cent per year on the recognized valuation of the properties. In view of declining business it was estimated that the return for the year would not exceed 6.5 per cent. This was identical with the return for the year ended Jan. 31, 1917, which had been referred to by the city as a "banner year" under a 5-cent fare. The fact that the companies will not have a larger return under an 8-cent fare was due to greatly increased wages and material costs. The management insists that a 5-cent fare is impossible and it would only be feasible to grant a 7-cent fare by a drastic cut in the wage scale.

Transportation News Notes

Seven Cent Fare Ends Tieup.—An agreement was reached recently between the City Council of Somerset and the Kentucky Utilities Company whereby the company will charge a 7-cent fare for operation of the railway line. The company discontinued service several months ago because the Council would not grant a 10-cent fare.

Another Bus Line Started—The Connecticut Company recently organized a new bus line in Hartford. The bus had its trial trip on Aug. 27 and carried such distinguished passengers as Mayor Brainard, Chief of Police Farrell, Police Commissioner Cady and others. The bus is No. 16 and starts from Union Station, going over the High Street route.

Bus Line for New Orleans—A local automobile delivery company has asked for a franchise to operate bus lines on the principal streets of New Orleans and has promised to order fifteen buses when a favorable answer has been received. The application states that ultimately they expect to have 200 buses in operation, each one to cost $5,100 and to seat thirty passengers. The proposed fare is to be 6¼ cents.

Improved Service Praised—According to the annual report of the Public Utilities Commission service on the lines of the Washington Railway & Electric Company, Washington, D. C., has been improved by a rerouting scheme and by the addition of a few one-man safety cars. On the subject of jitneys the report states that during the year twenty-seven applications were approved for the operation of jitneys over prescribed routes.

Jitneys Not Very Active—Jitney buses are not causing nearly so much trouble as they did just after the 7-cent fare on the lines of the Louisville (Ky.) Railway went into effect. Drivers have found that there is no money in it, while the city officials are now forcing the autos to quit blocking corners in the business sections, and prosecuting them for violation of traffic regulations, parking laws, etc. A few more weeks and it is believed the jitneys will be out of business.

Personal Mention

L. C. Bewsey Local Manager in Kalamazoo

L. C. Bewsey, electrical and mechanical engineer, has been appointed superintendent of the Michigan Railway Company's lines in Kalamazoo, Mich. At one time Mr. Bewsey was superintendent of transportation of the Buffalo, Rockport & Rochester Railway, which has headquarters at Rochester, N. Y. From 1911 until he went to Rochester, Mr. Bewsey was the local superintendent for the Union Traction Company of Indiana at Indianapolis. Mr. Bewsey was born in Clinton, Ind., in 1882. His first railroad experience was as a fireman and brakeman for the Baltimore & Ohio Railroad and the Big Four Railroad. In 1899 he entered the service of the Lafayette (Ind.) Railway and served as motorman and shop foreman until he became connected with the Union Traction Company. In 1909 when the "Muncie Meteor" was put on by the Union Traction Company, he became motorman and continued in that position until he was appointed local superintendent.

Toledo Claim Agent Elected County Recorder

Arthur D. Hill has just left the Toledo Railways & Light Company to take the position of recorder of Lucas County, Ohio, having been elected on the Republican ticket for a two-year term. Mr. Hill is a much valued member of the Doherty family in Toledo. His rise in the company has been rapid, due both to his ability and capacity for making friends and for always working for the success of the company and the men in position over and under him.

Mr. Hill first became connected with the company in August, 1913, as chief clerk for the claim department. He continued in this work until he went to the Mexican border in June, 1916. After returning from France in 1919 he returned to the claim department, and when the separation of the traction property from the light and power properties came in February of this year he was appointed claim agent for the Toledo Railways & Light Company, the Toledo Beach Company, the Toledo, Ottawa Beach & Northern Railway, and the Adrian Street Railway. He also was in charge of the safety-first work.

His war record has been as brilliant as his success with the company. In fact, he is an old-time military man. He enlisted as a private in the Ohio National Guard in 1895 and was in the military service continuously for over twenty-four years, having served in every grade of the service from that of private to that of major. He commanded the first battalion of the Sixth Ohio Infantry on the border, and after war was declared with Germany and the Sixth Ohio Infantry was made the 147th Infantry, he commanded the first battalion of the 147th in France. It is said that he left the service with the respect and confidence of every officer and man who served under him, an enviable record indeed.

Mr. Coryell in Oklahoma

A. B. Coryell, who at present is superintendent of power for the Laurel Light & Railway Company, Laurel, Miss., has been appointed general superintendent of the Muskogee (Okla.) Electric Traction Company and the Shawnee & Tecumseh Traction Company with headquarters at Muskogee.

Mr. Coryell has a wide knowledge of the utility field, having had more than thirty years' experience in the construction and management of electric railway, light, power and gas properties. He expected to take up his new duties about Sept. 15. His successor has not yet been appointed.

Previous to his present connection in Laurel, Miss., Mr. Coryell was power superintendent of the Port Huron Gas & Electric Company, Port Huron, Mich. Previous to that he was in business for himself in Buffalo, N. Y. During the time that he has had charge of the construction and management of different properties his connections have been mainly in the southern states. He was, however, for four years superintendent and purchasing agent of the Moncton Tramways, Electricity & Gas Company, Moncton, N. B.

C. M. Chandler Again Head of Georgia Railroad Commission

C. Murphy Chandler was elected chairman of the Georgia Railroad Commission for his sixth consecutive term at a meeting of the commission held Aug. 28. Mr. Chandler was elected to this place by unanimous vote of the other members, Paul B. Trammell, James A. Perry, J. D. Price and John T. Boifeuillet. At the same meeting Mr. Trammell was re-elected vice-chairman.

Chairman Chandler has served twelve years as a member of the Railroad Commission until April 1 this year. He was a member of the State Legislature as a representative of DeKalb County when first named to the position twelve years ago. He resigned as member of the Legislature to take up the new duties. He had served six terms in the Legislature.

During his term as chairman of the State Railroad Commission Mr. Chandler has presided over some of the most famous and most important railroad and public utility cases that have ever been considered in Georgia. He succeeded Fuller E. Callaway, of LaGrange, as a member of the commission, and succeeded H. Warner Hill as chairman of the body.

Mr. Trammell was re-elected to the commission last fall. He has presided as vice-chairman in several important cases when Mr. Chandler was absent from the city.

Transportation Commission Now Operating Toronto Railway

With the formal passing of the Toronto (Ont.) Railway into the possession of the citizens of Toronto on Sept. 1, General Manager H. H. Couzens of the Toronto Transportation Commission was appointed general manager of the property and D. W. Harvey, assistant manager of the civic car line, was made assistant manager. R. J. Fleming, former general manager, will continue in the service of the Toronto Railway as operating head of the Toronto & York Radial Railway, which is owned by the Toronto Railway.

The members of the Toronto Transportation Commission are P. W. Ellis, chairman, Frederick Miller, George Wright, and H. H. Couzens.

W. G. Foster now fills the position of auditor of the Aurora, Plainfield & Joliet Railroad, Joliet, Ill. Chester G. Moore was formerly the auditor on this property.

Neill W. Funk, superintendent of the claim department of the Louisville (Ky.) Railway, and son of the late Thomas Funk, for years superintendent of the company, while recovering from serious injuries at his home, had a fall last week in which he fractured his leg. Mr. Funk was in an automobile accident some weeks ago while returning from an outing of the Round Table Club.

R. E. Shartell has been appointed to the organization of the Minneapolis, Northfield & Southern Railway, Minneapolis, Minn., in the capacity of purchasing agent and claim agent. Also, E. T. Selmer has been added to the staff in the capacity of general freight and passenger agent. Art Cutland now fills the position of engineer maintenance of way and roadmaster, left vacant by E. L. Norton.

Robert D. Armstrong, examiner for the Public Service Commission of Indiana, has resigned, effective Oct. 1. He will complete advanced courses in an Eastern law school and return to Indianapolis to practice law. He will be succeeded by Frank Faris, assistant examiner. Mr. Armstrong has been a member of the commission staff since leaving the army at the close of the war. He was also connected with the commission before the war. He has conducted the hearings and prepared orders for the commission in a number of important cases.

W. Harry Stone, who was superintendent of electrical construction and has been with the Los Angeles (Cal.) Railway for many years, has resigned and entered business with his sons. Mr. Stone has taken an agency for art materials, with offices in the Pacific Electric Building, Los Angeles.

M. Holt is no longer connected with the St. Paul Southern Electric Railway, St. Paul, Minn., as auditor. His duties have been taken over by the assistant general manager, C. T. Kuckler.

Edward Flad, St. Louis, Mo., member of the Missouri Public Service Commission since April 15, 1917, has tendered his resignation to Governor Hyde to become effective Oct. 1. He was appointed by Governor Gardner for a term expiring April 15, 1923. His relations with the other members of the commission have always been pleasant, but a desire to return to his old profession of civil engineer had become so strong that he felt he could not resist it any longer. He will return to St. Louis when his resignation becomes effective and resume his profession. His work on the commission has been regarded highly because of his long experience and wide knowledge of engineering.

Obituary

L. D. Howard Gilmour, general solicitor of Public Service Railway, Newark, N. J., died after an operation for appendicitis Aug. 21. Mr. Gilmour had gone to the hospital on the day before and had been attending to his regular work practically up to the time he was taken to Newark from his home at Fair Haven. He was a familiar figure in the state and noted for his kindness and genial disposition.

J. J. Landers, auditor of the York, (Pa.) Railways and president of the American Electric Railway Accountants' Association, died on Sept. 9. Mr. Landers had been connected with public utility undertakings for the greater part of his business career, mostly in accounting work. Mr. Landers was born in 1876 in Bucks County, Pa. At an early age he moved to Philadelphia. He received his education at St. Joseph's College and shortly thereafter entered the employ of the Philadelphia Traction Company, later the Union Traction Company, as chief clerk to the superintendent of power. This position he held until 1899, when he went to Scranton as the chief clerk in the auditing department of the Scranton Railway. In 1903 he was appointed cashier of the Conneaut & Erie Traction Company, then under construction. When operations started he assumed the duties of treasurer and manager. In 1905 he was appointed superintendent of the Rock Hill (S. C.) Light & Water Company, and after two years in the South returned to Pennsylvania as auditor for the York Railways and subsidiaries. Mr. Landers was for three terms vice-president of the Accountants' Association and last year was promoted from the office of first vice-president.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

A Flurry in Copper

Shading of Prices, After Attempt to Hold Up Levels, Expected Unless Demand Improves

Copper is slightly more active than it has been for some time with prices still firm. Most of the larger producers are now quoting 12 to 12¼ cents a pound for Lake and electrolytic copper. Inquiries from domestic and foreign consumers are increasing.

During the past week those in control of the copper situation put up their prices ¼ to ½c. per lb., and the others followed in the hope of getting the higher prices. but fearful of the outcome of such a move. As a matter of fact there seems to be no excuse whatever for putting up prices ¼ to ½c. under the conditions prevailing at present. The market has been in a stagnant condition for so long that consumers could not be expected to crowd each other to pay the advances.

The reaction was that domestic consumers showed more interest in the market, and while they had been hesitating somewhat after the advance was made, it is the opinion in the trade that practically all the users are bare of supplies and would find it necessary to get into the market to cover for their requirements.

It is learned that more than one selling interest was in favor of a still greater advance in quotations, but the more conservative interests are opposed to such a move, pointing out that several months ago when the demand was holding comparatively well, a sharp upturn in quotations caused the withdrawal of buyers from the market, and resulted in the lowest quotations on record.

While none of the leading authorities in the industry is looking forward to any great buying movement, it is felt that users having been holding off for so many months will be compelled to enter the market for their needs in the near future, and unless an attempt is made to rush up quotations, it is believed that a healthy and steady increase in buying will be experienced.

The revived interest, however, was short lived. for domestic consumers again withdrew from the copper market and as a result there is some unsettlement in the situation. It is merely a repetition of what has occurred on numerous occasions in the past. Just when consumers appear to be ready to come into the market for fair quantities of the metal some of the big interests insist upon advancing quotations and the result has again been the same, namely, the withdrawal of buyers and the struggle between buyers and sellers for supremacy as to prices.

Domestic consumption so far this year has averaged about 52,000,000 lb. a month, or at the annual rate of about 624,000,000 lb. a year. If no change occurs, therefore, in the rate of deliveries, there will have gone into consumption during 1921 approximately 1,180,000,000 lb. of copper. As near as can be estimated the refinery output of this country for the first seven months of this year, which includes imports of copper matte from South America, aggregated about 560,000,000 lb., or an indicated excess of deliveries over refinery output of about 136,000,000 lb. Carrying this method of figuring a little further, or to include an estimate of the full year on the basis of unchanged monthly refinery output and domestic and foreign deliveries, it is to be observed that indications point to a reduction in the surplus stocks of metal of upward of 400,000,000 lb. Even if the actual refinery output proves larger than it is possible now to estimate, there is also a strong likelihood of increased sales of copper in the last quarter of this year, which, although not immediately translated into deliveries, would have a stimulating effect on the market because of the plain inference of marked reduction in surplus soon after the beginning of 1922.

Under such circumstances it is well within the realm of possibility that something will happen in the copper market similar to that which has recently taken place in cotton. With no increased consumption to speak of in cotton, but with a bearish government report as to the 1921 crop outlook, there has been wild speculation in cotton futures and prices have advanced 85 per cent.

Railway Motor Repair Parts Reduced 10 per Cent

One of the largest manufacturers of railway equipment on Sept. 1 made public a price reduction of 10 per cent in the repair parts for railway motors, controllers and air brakes. This cut also applies to circuit breakers, car switches and fuse boxes. Other manufacturers have not made any definite cuts along this line but claim that their prices are gradually being revised according to changes in labor and raw material prices. Apparently they have not seen fit to bring about a sweeping reduction in an effort to stimulate buying as one has done.

Demand for motor repair parts is, of course, fairly constant and has been of good volume, it is reported. Deliveries are favorable since shipments can be made immediately from stock for parts of standard equipment in general use.

Prices of Overhead Line Material Cut

On Sept. 7 practically all manufacturers of overhead trolley line material announced a price reduction on all malleable iron parts ranging from 2 to 7 per cent. This includes the whole line of malleable iron suspensions, turnbuckles, ears, clamps, strain plates, frogs, etc. No change was made in the prices of bronze and composition material.

Several of the large manufacturers report that there is a very steady demand of this class of supplies, most of the sales going to fill maintenance requirements. Stocks are in good shape and it is possible for buyers to receive shipments of any regularly listed articles in about a week's time.

New Brill Company in Canada

J. G. Brill Company, Philadelphia, announces the formation of a new company for the sale and construction of electric and steam railway rolling stock in the Dominion of Canada. This new company, which is known as the "Canadian Brill Company, Ltd.," has taken over the plant and equipment of the well known Preston Car & Coach Company, Ltd., Preston, Ontario, and has a number of orders now in process of construction.

This plant is a modern car shop having 11½ acres of ground located on the outskirts of the city. Railroad facilities for the shipment of its products to all parts of Canada are provided by the Grand River and Grand Trunk Railways.

The executives of the "Canadian Brill Company, Ltd." are: Samuel M. Curwen, president; H. K. Hauck, 1st vice-president; Alfred Clare, 2nd vice-president; H. D. Scully, general manager and secretary; and E. P. Rawle, treasurer. Mr. Scully, who has been officially identified with many important Canadian enterprises, is located in Preston and, as the resident manager, will direct the operation of this new Brill plant.

Extension of Electrification in Australia

It is reported in the *Times* (London) *Trade Supplement* that the Victorian Railways Commissioners (Australia) are about to convert a further 100½ miles of their lines from steam to electric traction and that the work is to be completed by the end of February, 1923. In addition to this electrification, which covers the passenger carrying routes, a number of lines exclusively used for freight traffic are to be converted and the electric system extended over several of the busier sections of the country lines. This work will entail the overhead wiring of considerably over 100 miles of track, the erection of a number of sub-stations additional to those already in use, the replacement of the existing signaling equipment, and the construction of several workshops fully equipped with machine tools.

Rolling Stock

Toronto (Ont.) Transportation Commission has ordered seven motor buses for experimental purposes during next winter. One bus will be supplied by the Leyland Company, London, England, another by the Eastern Motor Truck Company, Hull, which will be built similar to those operated by the Fifth Avenue Coach Company, New York, while the fourth bus will be supplied by the Associated Equipment Company, London, and the fifth bus by the Fifth Avenue Coach Company, New York. The cost of each bus will average between $13,000 and $14,000.

Franchises

Indiana Service Corporation, Fort Wayne, Ind., has petitioned the Board of Public Works of that city for franchises covering the proposed changes and extensions of the city street car lines on Pontiac Street, Oxford Street and West Main Street. The lines in some instances will be double-tracked and certain of the extensions will require the opening of new streets. A period of five years is asked for in the construction of the double-track lines on Oxford Street from Calhoun Street to Turpie. The company, however, in its petition agrees to complete the Pontiac and West Main Street changes by the fall of 1922. It is stated by the officials of the Indiana Service Corporation that a petition will soon be presented to the board of public works asking that a franchise be granted which will permit the double-tracking of the Columbia Street line to Anthony Boulevard. This work will also be completed before the end of 1922. If the franchise is granted the delay until that time will be necessary in order to permit the completion of the fill at the new bridge over Delta Lake.

Track and Roadway

Claremont (N. H.) Railway expects to re-lay 2 miles of track with A. S. C. E. 70-lb. T-rail with continuous joints, to reclaim 1,500 joints of 60-lb. T-rail with continuous joints and to replace the ties in 3 miles of track with standard chestnut ties.

Mesaba (Minn.) Street Railway has completed most of the road and trackwork on the new right-of-way at Hibbing, and the stringing of trolley wires will be finished shortly. The engineers of the company will provide some means of electric car service although this will be a problem until the new power plant is built in Hibbing.

Portland Railway, Light & Power Company, Portland, Ore., has completed engineering estimates and plans for a $30,000 street improvement job on Third Street, between Washington Street and the approach to the steel bridge at Franders Street. The work involves the complete reconstruction of the track, roadway and paving on the west half of the street, only one side of which will be improved at this time, so as to avoid serious impairment of traffic. The work will require about one month.

Power Houses, Shops and Buildings

Claremont (N. H.) Railway will build a 35-ft. extension to its carhouse. It will also build a workshop 15 ft. x 35 ft.

Cincinnati (Ohio) Traction Company has awarded the general contract for a $30,000 electric transformer station, which will be built on Walnut Street, to the Hazen-Jones Construction Company of Cincinnati. It will be of concrete and steel construction. The improvement, one of a series being built about Cincinnati, will enable the traction company to obtain its motive power from the Union Gas and Electric Company.

The Tokio (Japan) Municipal Railway lost by fire, on Aug. 21, the Hamimatsu-Cho repair shop and carhouse, which is the largest one of the Tokio municipal system. According to information received by Kazutada Sakurai, equipment engineer of the street railway lines in Tokio, who is now in New York, about 100 double-truck cars, principally of wooden body construction, were destroyed. One thing which the meager information so far received does not explain is how such a disastrous fire could occur in this carhouse, which is of the most modern type of reinforced concrete construction.

Trade Notes

William Colin Robinson, vice-president and chief engineer of the Underwriters' Laboratories, died on July 31.

Railway & Industrial Equipment Company, Houston, Tex., has been organized by Arch McDonald, D. L. O'Connor and J. S. O'Connor, and will do business generally in the South, especially in Texas, and also in Mexico, in the line of railway and industrial supplies and equipment.

John A. Roebling's Sons Company, Trenton, N. J., manufacturer of wire rope and other wire products, has preliminary plans under way for a new one- and two-story addition, 500 x 850 ft., for the production of copper and other wire, estimated to cost about $150,000.

The Service Bureau of the American Wood Preservers' Association has just been established, with headquarters at 1146 Otis Building, Chicago. It is intended to make the Service Bureau a headquarters for the source of reliable information on the practice of and the results obtained from the art of wood preservation.

Metals Coating Company of America, manufacturers and distributors of the Schoop metal spraying process, by means of which metallic coatings of any kind may be sprayed onto any surface, is now in full operation at its new plant, 495-497 North Third Street, Philadelphia, having removed from its former locations in Boston, Mass., and Woonsocket, R. I.

The Brush Electrical Engineering Company, Leicestershire, England, lost by fire recently one of its timber sheds containing a valuable stock of seasoning timber for rolling stock manufacture. Manufacturing operations have not been curtailed in the least, nor will any unemployment be caused. The large stocks of cars, buses and similar work in process of manufacture were not harmed.

Dwight P. Robinson & Company, New York, have been retained by the Brazilian Federal Government to supervise a large amount of enginering and construction work in connection with the government's plans for the reclamation of its semi-arid states. This work, which is located in the states of Cara and Parahyba, will include the construction of five large dams, involving nearly a million cubic yards of concrete, to create storage reservoirs. The ultimate importance and economic value of this project is comparable to the irrigation work carried on since 1903 by the United States Government.

New Advertising Literature

Insulators.—The Porcelain Insulator Corporation, Lima, N. Y., is distributing bulletins No. 1 and 2, covering its "Pinco" insulators.

Surge Arresters. — The Electro Service Company, Marietta, Ga., is distributing a four-page pamphlet illustrating the "Bennett" surge arresters.

Resistor Arc Welder.—The General Electric Company, Schenectady, N. Y., is distributing a four-page pamphlet covering its type AW resistor arc welder.

Switches and Accessories. — The Hart & Hegeman Manufacturing Company, Hartford, Conn., has issued catalog H, covering its "H & H" barrier 600-volt switches and all types of switches and accessories.

Safety Starting Switches.—The Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is manufacturng a switch with quick-make and quick-break action, known as type WK-55, for both alternating-current and direct-current motors.

Small Motor Starter. — A new type of motor starter, the WK-30, has been developed by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., for starting small alternating-current motors by connecting them directly to the line.

"Better Salesmanship in Transportation" Issue

Electric Railway Journal

[Consolidation of Street Railway Journal and Electric Railway Review]

Volume 58 New York, Saturday, September 24, 1921 *Number* 13

Selling Transportation — the Subject of This Issue

MANY keen observers have declared that electric railways have not paid enough attention to merchandising their product. This may be because of a feeling that if good service was given business would come as a matter of course. Nevertheless, there is no doubt that business can be increased by attention to methods well recognized in other lines as desirable for stimulating trade. The reports during the past two years of the committee on merchandising transportation show at once the growing interest in this phase of the work and excellent examples of how to go about it.

It is the object of this number largely to tell what the sales department can do, what it should consist of and how all of the different departments can help in the sale of transportation.

One purpose of the sales effort on an electric railway should be to increase the riding from necessity riding to that which can be obtained if the riding habit is well developed in the community served by the railway. To secure this result the public should be saturated with the idea of the desirability and economy of riding. This is one of the duties, perhaps the primary duty, of the sales department, and for a nation which has the reputation of always being in a hurry, it ought not to be a difficult task in most cities by stressing the time-saving idea to increase the riding habit.

The owner or manager of a successful department store, however, does not stop at creating a desire in the minds of his patrons for merchandise of various kinds. He knows that that alone will not sell goods. He tries to meet the desire which he has created for the articles which he has for sale by putting the merchandise up in an attractive way. He must also charge an attractive price for it, although this does not mean that the goods must be sold at cost or less than cost. The price is not controlling in the sale of either transportation or general merchandise. Provided the goods are what are wanted and the seller has the reputation of being satisfied with a reasonable profit, the public is not apt to complain about the price.

It is here that all of the departments can help. To some, the connection between the track engineer and the sale of transportation may appear very far apart. Nevertheless the connection is very close. Bad track discourages travel. In like manner the superintendent of equipment, the designer of cars, the schedule maker and other heads of departments have an important influence over the popularity of the electric railway, in accordance with the efficiency with which they carry on their respective duties. They are helping to put the package of transportation up in the form wanted by the prospective passenger or buyer.

Finally, the whole organization should be inspired through the chief active executives with the sales idea. It will pay.

A Critical Demand for Financial Leadership

WHILE the present issue is devoted largely to a plea for sales leadership in the electric railway industry, a demand which is at least as critical must not be overlooked. This is the demand for financial leadership in the industry. It is less tangible to talk about; it is not something which can be expected of the whole organization as can salesmanship; it must be confined to and expected of only a very few of the higher executives, but the necessity for it—immediately—is very real. This idea is suggested incidentally, too, in Mr. Goodwin's article. In the composition of his board of directors it will be noted that a balance is suggested between the three groups of sales, financial, and engineering and operating. Engineering and operating talent the industry has and can be proud of. But Mr. Goodwin might have said as much about the necessity for financial statesmanship as he does of sales statesmanship in the directing personnel of the company.

Bankers, as such, are not what the industry needs. There is enough ready talent for the mere marketing of securities once issued. What is needed is real financial genius in the rebuilding of the financial structures of many companies. It is well recognized—emphasized definitely during the past few years of adjustment and readjustment—that the greatest load carried by some

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companies is the load of the existing financial organization. Not that it was originally faulty. It merely doesn't suit now. What to do can be determined only by real ability. Credit relief is necessary, but at best temporary; it will make the job easier. But the desirability—the necessity—of something more fundamental is evident. There must be constructive leadership in determining the most sound and practicable financial policies for electric railways.

From time to time special commissions investigate and report with suggestions. Public service commissions take a hand. Occasionally receiverships occur. All of these are mere symptoms. The real solution must be found from the inside. The opportunity and the obligation therefore rest on those now in positions of financial responsibility in the railway industry.

Come to Atlantic City Prepared for Discussion

WITH the advance papers in the hands of the membership and the convention so close at hand, it is greatly to be hoped that a large number of the members of the American Electric Railway Association are preparing or have already prepared discussions of the various committee reports. These, almost without exception, represent an amount of hard work little realized by those who have not served on the committees. The need of full and general discussion is particularly great in the case of the Engineering Association, for whether "standards" shall be stepping stones or stumbling blocks in an industry or art depends on careful determination and accurate statement. As in the case of the man who was in doubt as to whether to buy a camisole or a casserole, the answer depends on whether the "chicken" is "alive or dead."

A well-chosen standard represents the average judgment of the men who prepared it. But changes in materials and methods may materially alter conditions and so make modifications necessary; or misunderstanding, due to poor wording or what not, may demand a clearer expression. Knowledge of the need of these comes most quickly and best from the men who actually do the work.

Other years, at the booths, a large amount of most valuable practical information has been "swapped"; indeed, a good many consider these over-the-exhibits discussions more valuable than those in the regular sessions, and the latter have suffered considerably in consequence. This year, however, with no exhibits, and with special efforts being made by the association and by committee chairmen and members personally to secure comments, there should result such attendance and discussion as cannot fail to be most valuable, both to the association and to those who take part in it.

New Commission's First Important Decision

SIX CENTS is to continue to be the fare in Utica, N. Y. This is the decision of the new Public Service Commission in its first important rate case. In this late day nothing extraordinary in the way of interest attaches to a fare decision such as this, but in the present instance the case takes on special significance because of the standard of future action which is set down by the commission. Fault is found by the commission with the basis of value set up by the railway, and the pronouncement is made that "public utilities just as other departments of business must expect to cope with periods of depressions, just as at other times they enjoy periods of prosperity and full dividends." This is good as a theory, but in the case of the New York State Railways it does not appear that the company ever enjoyed any periods of prosperity and full dividends. Moreover, it would seem that the commission is oversanguine as to the results likely to be attained in reduced expenses through the use of one-man cars and by the general lowering of the prices of commodities needed by the railway in the conduct of its business. These are just a few of the things in which it would appear that the judgment of the commission is not likely to be approximated.

But whether or not the commission is proved to be correct in its judgment, the decision ought to set at rest the opinion which gained circulation during the session of the Legislature at which the new regulatory body was created that the public utilities would have an easy time of it before the incoming body. Coming as the ruling does almost on the eve of the November elections, the opponents of Governor Miller have been handed a resounding whack that will be heard through the length and breadth of the state. It may be that the New York State Railways will be able to accomplish under the continued 6-cent fare in Utica all that the commission anticipates, but if Syracuse, in which the same company is operating at an 8-cent fare, is any criterion, then the likelihood is remote of its getting on as gloriously in Utica as the commission expects.

Safety in Bus Design an Important Factor in Selling Transportation

IN THE PAST many patrons of the motor bus have commented seriously on the accident hazard of this type of vehicle. Fear of overturning, irresponsible driving, poor brakes, etc., have kept away many prospective passengers. During the past year considerable pioneering work has been done by the manufacturers of motor buses, as is evidenced by a glance at different designs of bus bodies published elsewhere in this issue. They show that serious thought has been given to the question of both chassis and body design from the standpoint of safety and comfort of passengers as well as for easy ingress and egress.

That there will not be, for a long time to come at least, a standard bus body for each of the several carrying capacities is probably more nearly the fact than with the case of the rail-borne vehicle. This is evident particularly when a study is made of the various chassis now in use in motor-bus operation. There are, however, several salient facts that seem to stand out as being of the utmost importance, and especially so if the bus manufacturers want their products used by the electric railway industry.

The railway executive has always made every effort to transport his patrons to their destinations in safety. This is one of the essentials in railroading. So, when considering the purchase of rail-less vehicles, his first thought will naturally be toward safety. Buses to meet this requirement must have a large factor of safety against their chance of overturning in case of skidding and striking obstructions or holes in the highways. While the method of rear-end drive has much to do with the question of the height of floor and the resultant center of gravity above the street, there is no doubt that the rear wheel tread should be widened out proportionately with the floor height to meet this requirement. What valid reason exists to make the rear tread of passenger carrying motor buses the same as the standard railway tread, namely, 56½ in.?

Another thought as to safety comes to mind, namely, the street accident or collisions with other vehicles. The bus being mobile and not tied to any particular course along the highway as is the case of the trolley car, the operator can by quick perception of the situation avoid many collisions. Not so with the operator of the trolley car. He can only avoid collisions by stopping unless the obstruction clears away. In the case of the motor vehicle there is a large proportion of accidents that can be eliminated if the vehicle could but be steered easily and the driver be able to take quick advantage of his distance. With a narrower front wheel tread, which will permit of quicker and shorter turns than if both axles treaded alike, the street accident liability can be reduced without affecting the factor of safety against overturning.

These factors, together with ample braking surfaces designed for smooth retardation, though sufficiently rapid to bring the vehicle to rest promptly without unnecessary skidding on smooth surfaces, and careful drivers so located that they have a clear vision forward and on both sides, should allay any fears on the part of the passengers or operators against increased accident hazard due to bus operation.

Modern Housing vs. Profitable Transit

THERE was a time when transportation lines for cities were, as a matter of course, run through the regions of densest population because their builders frankly were out to get a return on their investment. It is true that in the United States, particularly, many lines were also built through sparsely-settled districts, but in these instances the promoters generally were hopeful that the money-making density would come in time. No restrictions on the height of buildings or on the relation of open spaces to built-over areas were known or thought of in those earlier days of electric railroading.

Today the situation is vastly different. First of all there is a much greater interest in securing park areas and large open spaces around public buildings or civic centers. Second, and far more important, is the garden city housing movement. The projectors of garden cities deliberately plan for a density of population, say twelve per acre, which is far below the density required to make the city railway a profitable venture (approximately 200 is the figure for Manhattan Borough, New York). Third, the usual garden city is not the rectangular roaded affair for which trackways are most suitable, but is likely to be made up of curved streets following, more or less, the natural grades of the terrain.

It would seem from the nature of this development that while the city of the future will be more healthful for the inhabitants, it will offer less opportunity for profit-making transportation. Either of two results must flow from this change: Transportation must become a community affair in which the city absorbs all losses through the tax rate, or else the district affected must pay a direct subsidy to the transportation company. Otherwise the transportation company must make the service for such communities self-sustaining by charging a higher rate of fare than in the poorer but more populous districts. The latter alternative is not at all fanciful but is already a fact in Great Britain, where the motor-bus service introduced as the natural transport means for such districts tends to average a higher rate per mile than the service by car. In these cases, also, the flexibility of the graduated fare makes it possible to have an apparently like but actually different scale of fares through the simple expedient of giving shorter stages per penny via bus than via car.

Determine the Traffic Possibilities— Then Act Accordingly

THERE is a question as to how far an interurban railway can go profitably in attempting an intensive campaign of advertising and solicitation for new traffic. If the business being handled is a large proportion of the total available in the territory, there is little to be gained in such a campaign. But if the business handled is only a small part of the traffic moving between the points under consideration or originating within the territory served by the electric line, then there is room for development.

For example, the Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is handling 85 per cent of all traffic, freight and passenger, originating within and moving between the limits of its lines. With that condition, it would obviously be a waste of effort and money to undertake any special work to secure the other 15 per cent, a good deal of which is probably identified with the competitive railways in some way that would prevent any possibility of securing it for the electric line. On the other hand, the Chicago, North Shore & Milwaukee Railroad probably hauls not to exceed 25 per cent of the traffic moving between Milwaukee and Chicago, having a field of 75 per cent on which to work. With such a proportion of the business going over other lines and such splendid termini as Chicago and Milwaukee, the possibilities for securing more business are very real and one may easily justify a considerable advertising outlay and an intensive solicitation program.

These two examples are perhaps the two extremes. Few electric lines have the business of the territory served so completely in hand as the Iowa company, particularly in a case involving steam lines. And few lines have the possibilities in uncultivated business that the North Shore Line has, of which it is quite evidently not unmindful, considering the development work that is being done. By determining the total amount of business being handled by all the transportation agencies, then, once or twice a year, and taking into account the nature of the territory served, an interurban can arrive at a rough measure of how heavily it can afford to go into new traffic solicitation for the next year. The article on advertising and soliciting for traffic, elsewhere in this issue, will supply a few ideas on how new business can be secured. In general, it might be said that almost universally in the interurban field there could be a much more determined and resourceful, persistent and intensive solicitation to traffic than exists, with worth while results.

Basically Success in Selling Transportation Depends Upon Fundamental Principles of Salesmanship — Whether the Commodity Be Transportation, Merchandise or Personal Service, the Principles of Presentation Are the Same

Wanted—A Transportation Sales Manager

By William L. Goodwin

Assistant to the President the Society for Electrical Development, New York, N. Y.

SALESMANSHIP, definitely recognized by the inclusion of a sales manager as a leading executive of the railway organization, is, in a word, a suggestion which appears to me to offer the opportunity to railway executives today.

Perhaps I should explain why I, who am not an electric railway man, dare make such definite suggestions. In September, 1920, I received through J. G. Barry, manager railway department General Electric Company, Schenectady, an invitation from Harry Reid, president Interstate Public Service Company of Indianapolis, to address the fall meeting of the Central Electric Railway Association. My first reply contained this expression:

> As you perhaps realize, this street railway business is quite foreign to the work I have been undertaking. I have never attempted in any way to help the street railway industry because I know nothing about this highly specialized business—hence I hesitate to accept.

However, the message was transmitted to Mr. Reid; it brought forth a reply that the invitation stood, and I would be asked to talk on the subject of "Co-operation," with the qualification: "This is a broad subject, and Mr. Goodwin is at liberty to handle it in any way he may see fit."

Having no specialized knowledge of the street railway industry, but a background of some twenty years in practical selling and trade co-operation, I felt that this permitted broad latitude, and the invitation was accepted. The study which I made then, the talk I gave there, and the arguments which have ensued, have caused more study and analysis of the situation, from which I believe some useful conclusions may be drawn.

Not being dependent upon the electric railway industry for my livelihood I exercised the privilege of a frank expression in my Indianapolis talk. I wished there, as I wish now, that my ideas may be of value. Again when the ELECTRIC RAILWAY JOURNAL requested an article I felt that unless the privilege of free expression was granted no good would result. The privilege granted, let us hope that at least one idea will come to you from this effort.

My observation of the electric railway industry and the outstanding facts which present themselves to me can be summed up in the broad statement: "The industry is sick; far too many companies are in the hands of receivers, and the majority of the remainder are seeking havens of safety." And I think all will admit that the electric railway industry is sick, very sick, but it is not suffering from an incurable ailment. The illness is not one that could be singled out as a specific ailment. It is a complication of many ailments, which I will touch upon later. That the ailment is curable I am convinced; that the solution will be found is certain.

THIS CAR IS IN CHARGE OF
CONDUCTOR
S. L. VINSON
MOTORMAN
I. V. EIDSON
PLEASE HAVE EXACT FARE READY

The Ultimate Salesman on the Job and How He Is Introduced to the Patrons by the Georgia Railway & Power Company, Atlanta

It *must* be found, and found quickly.

But why mention specifically the one hundred and one ills of the electric railway industry? How to correct them is what we are concerned about. This naturally leads to the question: "Why should an American industry of such essential and important value to our citizenship be in this condition?" and the self-determined answer which I assign is "incompetent management." I use the term "incompetent" in the broad sense, since success or failure, when attributed to an industry or parts of an industry, in the last analysis, must reflect a debit or credit on the side of competent or incompetent management as reflected in dividends.

Over a long period of time, competent management reflects an ability to employ invested capital at a profitable return. Incompetent management indicates a lack of ability to employ capital continuously at a fair rate of return. Since the electric railway industry is not earning a proper return on the invested capital and since investment in the industry is frowned upon by experienced investors, responsibility for this condition must be placed in the management of the electric railway companies.

Volumes could be written upon the underlying reasons for failure, and the subject offers ample opportunity for our most experienced debaters, but summarizing all the causes and reducing them to a single statement I still believe that the electric railway industry is the only great American industry that has attempted to operate without a sales department. Here is the fundamental reason for the present condition of the electric railway companies of this country.

But right here is an opportunity. The very fact that the industry is in this condition should immediately suggest to the live executive the many ways in which the business cannot only be brought back to a normal state but can be made a very substantial and consistent profit earner.

COMPETITION MUST BE MET

Transportation is too important a part of civilization to be ignored. The public is going to have transportation and transportation which will gain its approval. Grumbling about the problems encountered and the competition met and offering alibis for inability to cope with the situation get one nowhere. The question is merely one of competition, and in time men will develop who are capable of meeting this situation and they will be the successful executives of the future. This is simply history repeating itself, but why wait for the development of another generation for relief? You, the present operatives of the electric railway companies, have the ability to meet the situation, if you will but take yourselves away from your problems long enough to get a picture of what is on the horizon. Let us assume that the business of transportation is sound, and its service is necessary and desirable. Then let us assume that the industry has found itself in its present state because of excessive competition. Do you recognize your present condition as the result of competition? The professional politician, the demagogue newspaper, an ignorant or indifferent public, regulation or restriction covering fares to be charged are all as real forms of competition as are the jitney, the walker, the stay-at-home and the pleasure automobile. In a broad sense let us recognize them as competition and let us compare this form of competitive restriction and regulation with what every other form of business has to contend with and then realize that your proposition is no more difficult than that of your successful associate in your community.

PRACTICAL knowledge of operating problems in the electric railway industry has no value, in the final analysis, if it cannot be translated into dividend earning ability. Passing the buck of responsibility gets us nowhere. The time has come when you must produce dividends or step aside and allow others to do so.

Let us, for example, take some of the conditions in other branches of the electrical industry—the manufacturing, jobbing and retailing fields. Whatever their problems, invariably they are met by sales methods. You have the professional politician who is constantly criticising you for his personal advancement. The jobber and the contractor each have thousands of competitors who never tire of criticising them whenever they see an opportunity. You have the newspapers; they have the intensive advertising of the competitor, each contending superior merit for his products and superior service for his company. Ignorance and indifference are common to all industries, and in the sales of electrical products generally and also of electrical energy the public was, and to a large extent still is, totally ignorant of the real nature of the product. But by a constant high-pressure active sales effort individually and collectively they meet this ignorance and indifference and orders are secured. As against your regulation by the state or municipal bodies and the difficulties resulting therefrom, they have the Sherman law, the Clayton law, a monopoly or combination law in every state, inspection of their products, regulation of the methods of installation, bond laws, lien laws, and a dozen other restrictive measures which you have not and which do not discourage them in the least, nor cause them to attribute failure to these agencies.

There is one thing more which you have recently had a taste of, and which is a matter of common practice in other lines of business. I refer to competitors who are ignorant of cost and persist in selling their goods at ruinous prices. True, they fall by the wayside occasionally, but others spring up rapidly and the merry race goes on. The right sales arguments soon acquaint the purchaser with the facts. Goods are sold at a higher rate because the seller has established his good will. Value and dependable service offset the lower price. In your case you have the jitney offering for a nickel a ride that you know can not be produced at double the price. Is not your answer a selling proposition? If you can establish the fact that your commodity is worth what you ask for it and you have the confidence of your customers, they will buy your product in spite of a lower price and a poorer quality. But the burden of such work is on you. For a time you are going to have a very difficult job in convincing your customers, because, generally speaking, you do not enjoy their good will. Good will in business is nothing but a consistent and persistent repetition of the qualities of your product or service rendered. You have had the product and you have rendered the service, but you have failed persistently and consistently to keep the qualities of your product before your customers. If everybody in the community is damning street car service and you know it is good, why not tell them about it? But if you keep silent long enough, the fact has been established and sooner or later you are inclined to believe it yourself.

If you will analyze any of the large successful industrial corporations in this country you will readily discover that their principal executives possess real sales instincts. Presidents, vice-presidents and general managers are nothing more than a selection of the most competent sales minds in the institutions. Every problem in the final analysis is approached from a sales standpoint. Talk to any of the great legal minds, even, in our largest manufacturing companies, and you will recognize instantly a keen sense of sales instinct. Decisions affecting internal or external problems are always given with the interest of the customers ever in mind.

The law is very definite and specific. Sales departments are told what they can not do, but the sales instinct of the legal mind always suggests to the sales department what it can do as a way out. That is the effect of sales instinct in the legal mind. Does the counsel of an electric railway company advise his executives from this standpoint? If he does, then he has a legal mind with a sales instinct, but if his advice is always solely from the standpoint of the company and its rights and if he constantly urges on the executives the need of standing on their rights, then the decision is a legal one and the reaction on the industry is only what you now face.

In considering the problem of your industry, or in fact, any activity for profit, knowledge is of little or no value unless you can translate it into dividends commensurate with investment and risk. Industrially speaking, what is the value of knowledge of operating, engineering, financial problems, of the handling of men, of schedules, or any other subdivision of the business, if the operation does not produce profit? There is ample knowledge in the industry of operating problems —to apply this knowledge profitably is a selling job.

THE question of overcapitalization, that our professional politicians like so much to talk about, is incidental in relation to the failure.

The question of overcapitalization would in time have readjusted itself had proper sales effort been put forth.

Many, if not most, industrial enterprises are overcapitalized, and yet they are successful. The number of companies or corporations conducted upon a conservative capital basis is the exception rather than the rule, yet we can daily observe and record successes in spite of this overcapitalization.

THE TRANSPORTATION COMMODITY AND ITS VALUE

An electric railway company has a commodity to sell that is just as tangible as merchandise, be it either necessities or luxuries, just as tangible as banking service, just as tangible as professional service, engineering, medical or scientific, and just as tangible as the service of selling amusement.

In the electrical industry as a whole, the commodity is either electrical energy, transportation or commodities. Transportation and electrical energy represent intangible forms of service, principally because the "man in the street" has little or no opportunity of applying relative values. Whatever, then, the price charged, there is a natural tendency toward suspicion of an excessive charge.

From infancy we are taught relative values, and this simple, yet fundamental, principle of relativity stays with us throughout our life. But in service commodities, such as electrical energy and transportation, no such principles of value have been established. It is evident, therefore, that as a fundamental proposition, we are attempting to sell something of unknown value, "unknown" in the sense that we, of the industry, have failed to establish the value. Such intangible forms of service must be translated into relative values in order that the average mind may comprehend value received for money paid. To my mind, here we hit upon the fundamental fault in past and existing methods of selling such a commodity as transportation. In almost every line of human endeavor, measures of standard have been established, be it yardstick, the quart measure or the pound weight. The fact that in this particular case we are selling car rides makes no difference.

Here is another way of expressing it. Trade is founded upon the principle of the exchange of services for money. "Services" in the broad sense may be interpreted as the exchange of commodity or service, at a profit. You are selling street car transportation; I am buying it. Your success depends upon your ability to sell what you have to me at a profit and to make me satisfied with the sale. In this case we are talking of a car ride at a given figure. If I get the value for my money and don't know it, it is your fault. The burden of proof is always on the seller. Here, I think, the electric railway industry has failed to realize its responsibility.

Let us analyze service and see whether or not salesmanship is the foundation of success.

Everywhere we look and everywhere we turn, we see evidences of real selling effort to attract our attention to this or that commodity.

In the field of luxuries such as automobiles, musical instruments and home furnishings generally, proper salesmanship induces us to buy many times our requirements and at values greatly in excess of our ordinary needs.

Banking, which has to do purely with the producing of profit in the handling of money, has felt the necessity of employing the most modern methods of salesmanship, and every successful bank on this continent today features the value and character of the service it renders as a means for holding its present clients and acquiring new ones.

In the field of amusement the most intensive application of sales principles is involved. People have literally been brought to a condition of mind that they consider amusement almost a necessity.

Only in the professions do we find the lowest degree of scientific sales methods, and this is largely due to the fact that the professions long since established ethics which frowned upon salesmanship. But the professions are still in the classification of individual effort, and the compensation received by the average professional man is directly in proportion to the degree to which he applies or fails to apply sales ability.

The electric railway industry for one reason or another has failed to follow some of its early experiences of proved value. Very recently, consideration of the application of scientific principles of selling transportation has again been taken up. But nowhere do we find in the electric railway industry well-defined sales departments, headed by men with sales instinct.

In spite of this, there are many examples of excellent sales ability in the transportation business. Perhaps a discussion of some of these, coupled with an interpretation or discussion of what I mean by the more or less intangible and usually undefined term "salesmanship," may prove of interest. It may also help lead to my suggestion as to how the railway may organize for this sales effort.

Probably one of the most consistent examples of salesmanship in transportation is the case of the California Street Cable Railway of San Francisco. This company has constantly enjoyed the confidence of its patrons and the San Francisco public since the first wheel was turned. I cannot recall $1 that ever was spent for newspaper publicity, nor do I recall any specific case where publicity of any kind was used in the company's cars or elsewhere.

For many, many years I personally walked several additional blocks to ride on this railroad in spite of the fact that the time element of service from the given point to which I traveled was about five minutes longer than a more convenient electric road. But I, together with many thousands of others, had been sold as youngsters to the transportation of this railroad. I am now convinced that the directing genius of the road had a high sense of selling ability. The many, many courtesies which were daily evidenced by the gripmen and conductors on this railroad brought them close to the hearts of the people of San Francisco.

I cannot recall a single instance in which the question of time element in trips ever interfered with courtesy and convenience. Cars stopped in the middle of the block, or at the beck and will of the rider. I have actually seen these cars stop, both going up and down hills, on grades of from 10 to 15 per cent. These were always made in a courteous way, with evident pleasure to the car operators.

There were no signs on the cars "Do Not Talk to the Motorman." In light of the speed at which the cars traveled and the equipment provided for emergency stops, this was probably unnecessary, but the fact remains, nevertheless, that there was a feeling on the part of the car rider that, once boarded on a California Street Railway cable car, your safety was assured, and your comfort and pleasure was a consideration.

The old Sutter Street Railway of San Francisco was another typical example. Both of these roads were close and keen competitors; in fact, they operated on parallel streets three blocks apart. There is hardly anything that I could say about the California Street Railway that I could not say with equal emphasis about the Sutter Street Railway. In both cases the employees were of the highest intelligence; they remained in the service of the company for long periods of time; the equipment in both cases was maintained at the highest possible physical standpoint, and as I recall these bright, shining, clean, convenient modes of transportation, with equipment designed particularly to meet the needs of San Franciscans who delighted in riding on the outside, or open type car, I can again realize that here was an earnest effort to meet the need of customers by supplying equipment and service in conformity with their desires.

Probably the next nearest example that I may cite, even recognizing that there is a lapse of some thirty years between the time that the incidents have occurred, and which left such an impression upon me, is the modern day method of selling transportation as exemplified by the Fifth Avenue Coach Company. Any car rider in the metropolitan district of New York will realize instantly when boarding one of these coaches that the management as well as the operating personnel of the buses represents men of well-formed sales habits and ideas. The chauffeurs of these buses have a keen sense of human instinct, and can actually convey these buses through the most crowded section of New York, and can, almost with an uncanny instinct, select their customers waiting on street corners at a considerable distance before they approach them.

Here, again, the equipment is kept in the highest possible physical condition, and a rider on a Fifth Avenue coach cannot help but realize a feeling of company interest when patronizing these buses. And remember the slogan on each bus—"Civility."

On any bright Sunday it is impossible to secure seat accommodation; true, the buses and their routes lend themselves to such desires on the part of their patrons, but the fact remains that public prejudice against either the management, the equipment, or the security of transportation, any or all, would result in a public reaction that would make the bus a very undesirable conveyance.

STRANGE though it may seem, it is nevertheless a fact, invariably the less the competition, the less the success of the enterprise.

It would be interesting to acquire statistics to determine if it is not a fact that more failures have been recorded where exclusive privileges are granted than through any system of competition.

An exclusive privilege without proper regulation and direction stultifies initiative and causes us to assume such a self-satisfied attitude of mind that we become lazy to our responsibility and indifferent to our opportunity. After a time we commence to feel that we are serving by sufferance, and this underlying thought or principle has perhaps done more to injure the electric railway industry than any highly competitive system that ever might be encountered.

And bear in mind that the fare on these buses, so long as my recollection goes back, has always been 10 cents, and there is no criticism, apparently, on this charge, in spite of the fact that buses are operated over routes established by the city in certain sections of the metropolitan district at one-half this fare.

The question of the cost of transportation after all is secondary to its value. My personal experience has been during the past four years that I actually seek a Fifth Avenue coach in preference to a Broadway surface car, in spite of the fact that the time element between my office and home is considerably less on the street car than it is on the coach. When we consider that the Fifth Avenue coach line is under the same management as the Interborough Subways and other transportation systems in metropolitan New York, the natural query is why this fine discrimination in service and the attitude of the people one toward another.

Apparently the operators of the Fifth Avenue Coach Company, including the motormen or chauffeurs and the conductors, realize they are in competition with other modes of transportation, and it is this realization of competition undoubtedly which reflects the character of the service rendered; in other words, salesmanship is the predominating, managing influence of the Coach Company and has been instilled into every one of the operators having to do with it.

Many similar cases could be cited.

Evidences of salesmanship in the steam railway field are too numerous to mention at length, but a few examples of early sales effort may suffice: the Santa Fé and its Harvey dining service, the Southern Pacific and its poppies, the Northern Pacific and its great big baked potato for 10 cents, the Milwaukee and its popular dining car conductors, the Canadian Pacific illustrated and descriptive time-tables and hotel system, the extra fare trains of many roads, where you are rebated upon failure of the company to make schedule, the amusement parks of most early ventures. These and many similar are all evidences of a lost art in selling transportation.

A comparison between the Fifth Avenue coach system with other methods of transportation in the metropolitan district does not reflect credit on the latter. Many, if not most, of the surface cars are poorly kept. The platform men are far separated from their patrons. Either the operating schedules are so fast or the rules of discipline so rigid that the platform men carry an expression of intense pain in the performance of their duties. Riding on surface cars in the metropolitan district has long ceased to be a pleasure; it is a painful duty which the patron must perform.

QUESTIONS of publicity have a definite relationship to the product to be sold. Publicity as such has no value unless we have something to sell at a profit, and the product we offer for sale must have merit. It is useless to spend money for publicity in promoting a product without merit, and merit is of no value unless people can be made to understand it.

Of course no one rides in a subway for mere pleasure, but that is no reason why the journey should not be made pleasurable. It is difficult to keep the cars clean. The underground mileage operates against this, but does this justify trains being turned back at the end of runs littered with papers, dust and dirt which could easily be removed and would be removed if salesmanship were employed? In the entire subway operation, comfort and convenience have been made secondary to efficiency, and every car rider feels this the minute he enters a subway station.

VALUE OF THE SERVICE MUST BE DETERMINED

The great contest which is on at the present time between almost every electric railway company and its local community, between operating costs and fare income can be corrected by proper sales methods.

There are two ways to fix the price of transportation.

1. Fix the fare first, and then give as much (or as little) as that fare will buy. This has been the practice of the past, and broadly speaking, is the practice of today. It has resulted in failure. It does not employ or consider sales instinct or application.

2. Establish a standard of service and then fix the fare at a figure that will maintain this standard. Adjust the fare from time to time as standards of service and other factors change from time to time. This should be the 1921 model. It is based on scientific selling, salesmanship, sales instinct. Do not be misled.

You must establish a measure of transportation value. Whether you use a yardstick, a quart measure or a balance scale, the measure must be one which the public understands. Relatively speaking the electric railway companies offer more for the money than any other industry or business institution in the community, but they have failed utterly to acquaint their patrons with the character and value of the service rendered. The keen sales manager realizes this only too well. He will rapidly reach a common understanding of what the transportation company has to sell and how it shall be sold.

THE PUBLIC MUST BE "SOLD" ON THIS VALUE

American people with whom we must deal, even though the majority do not realize it, possess a keen subconscious realization of human psychology, know the value of commodities or service in relation to the purchasing power of the nickel, and will be quick to grasp the situation, once it is properly presented subconsciously. *They know* the value of an average car ride is worth more than a nickel, and what they are really doing is testing *your* selling ability.

Give them the facts in true selling form, and profit for your effort is assured.

They are not of socialistic tendencies, and Americans will pay for what they get, when they know the truth and value of transportation, and it's up to you, Mr. Street Railway Executive, to produce the goods.

Your business is selling transportation at a profit. Whether the fare be 5 or 10 cents is immaterial. It may be 5 cents in Pessimistdunk, 7 cents in Mediadunk, and 10 cents in Optimistdunk. The variables in each case will determine results, but the net return from the operation should be relative, all factors considered.

A RADICAL CHANGE OF POLICY NECESSARY

There are only two ways out—public ownership or change of policy. The first would be a national calamity; the second would be the salvation of the industry. Change of policy need not mean change of management. Increased fares are but temporary expediencies—with them must come an understanding on the part of the public of a measure of service and a recognition of a modified policy.

The electric railway company is looked upon as a corporation whose temperature is always below freezing. Raise its temperature by employing sales methods. As a matter of fact, it is and should be the most human thing in the community. Salesmanship in transportation means to sell more rides to more people and always at a profit.

One way not to do this is to post up too many directions for the car riders to absorb at one time. Well-worded regulations are necessary. But sometimes I see them given in such large doses that I am minded to ask how much does a patron have to learn and what antics does he have to go through in addition to paying his fare in order to get his ride.

Other conditions which should not exist are:

Men, equipment, schedules, tracks and the physical properties with the appearance of neglect. Street cars littered with indiscriminate advertising, from vague, patent medicines to other joy killers. Platform men.

improperly equipped from every angle to perform their duties. And the thousand and one other negative selling suggestions which are successfully destroying an otherwise profitable business.

MAKE YOUR COMMUNITY PROUD OF YOUR COMPANY

Talk about the city—about things along your right-of-way. Let the people know you are interested in civic affairs. People like to know about important industries. Talk about your receipts, your expenses, your fixed charges, cost of maintaining track, etc. Be liberal in transfer time privileges or eliminate them entirely. Public opinion is discernible; psychology plays an important part in molding favorable opinion. Favorable public opinion is an asset—it is difficult to acquire and when once possessed, guard it zealously.

You need the help of business men, you need the help of the whole community. Such appeals are always received in terms of reciprocity. If you want others to help you, you must be willing to help them.

The electric railway industry has held itself aloof, either from community co-operation or industrial co-operation. I have attended many conventions in the electrical industry. I have observed men from every other branch of the industry in attendance at your conventions, either for the purpose of selling their wares or acquiring information, but if you tabulated the attendance of all the electric railway men in the country at all the other trade conventions in the country, you would be ashamed to discuss the result. The sooner electric railway men recognize this principle and affiliate with other successful companies and organizations, the sooner will they acquire sales instinct.

Here is another job for the sales director or sales manager. Unquestionably more real information of value can be secured from an attendance at a convention representing commercial men than ever could be acquired by attending solely conventions of operating electric railway men. You must take yourself away from your own problem long enough to find out how the other fellow handles his problem.

You are breathing rarefied air; the atmosphere in which you live does not contain a sufficient amount of oxygen to keep you healthy. Think of business as you would a vacation. Get away from the daily grind of your business; go to the mountains or the seashore and get that relaxation and inspiration that enables you to take up your duties with renewed energy. In other words, mix with fellows in some other line of business, particularly in other divisions of the electrical business.

It is a great satisfaction to read one's own writings, but after all, it is wise also to read what the other fellow writes.

WHAT IS SALESMANSHIP?

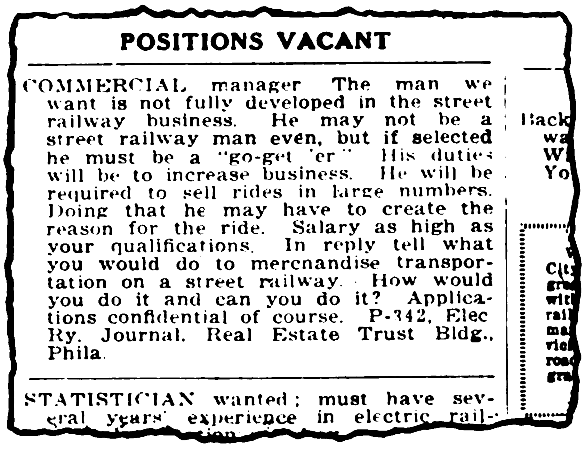
For any industrial operation to be successful, there must be in the institution a certain proportion of individuals blessed with what we clearly recognize as "sales instinct." The recorded instances of success without this sales instinct are so exceptional that it is difficult, if not impossible, to find them; at least a sufficient number to merit any consideration.

Sales instinct dictates, first, a knowledge of product; second, a knowledge of policy, and third, the right thing to say at the right time. The skilled salesman comes home with the order, and a profit results from the transaction. Industrially, we are a nation of skilled salesmen. Once we instill in the electric railway industry this necessary fundamental instinct, we will have started on our journey toward success.

Sales instinct may be likened to psychology; no two men employ the identical method in similar cases. The personal equation always enters. Did any one with a knowledge of selling ever hear of a standardized, standard package, capsule form of sales argument? Did any salesman ever formulate his sales argument and then, when admitted to the office of the executive or purchasing agent, ever carry out an argument so formulated?

On the contrary, the number of failures in industry which have been recorded through a lack of sales instinct are so numerous, and can be so definitely proved, that one hesitates almost to think about it.

Sales ability recognizes competition, no matter in what form it appears; it will be merely a matter of every-day routine. Analyze, if you will, the personnel of our most successful industrial corporations, confine your analysis further to the electrical industry, and you will find the men at the head of these institutions, and those all the way down the line in charge of operations, to be men of sales instinct, call them executives, managers, or what not.



POSITIONS VACANT

COMMERCIAL manager The man we want is not fully developed in the street railway business. He may not be a street railway man even, but if selected he must be a "go-get 'er" His duties will be to increase business. He will be required to sell rides in large numbers. Doing that he may have to create the reason for the ride. Salary as high as your qualifications. In reply tell what you would do to mercnandise transportation on a street railway. How would you do it and can you do it? Applications confidential of course. P-342, Elec Ry. Journal. Real Estate Trust Bldg., Phila.

STATISTICIAN wanted; must have several years' experience in electric rail-

Somebody Is Apparently Waking Up! This Advertisement Appeared in the Sept. 17 Issue of ELECTRIC RAILWAY JOURNAL

If they are successful, they possess sales instinct, otherwise they are soon relegated to the scrap heap of routine positions.

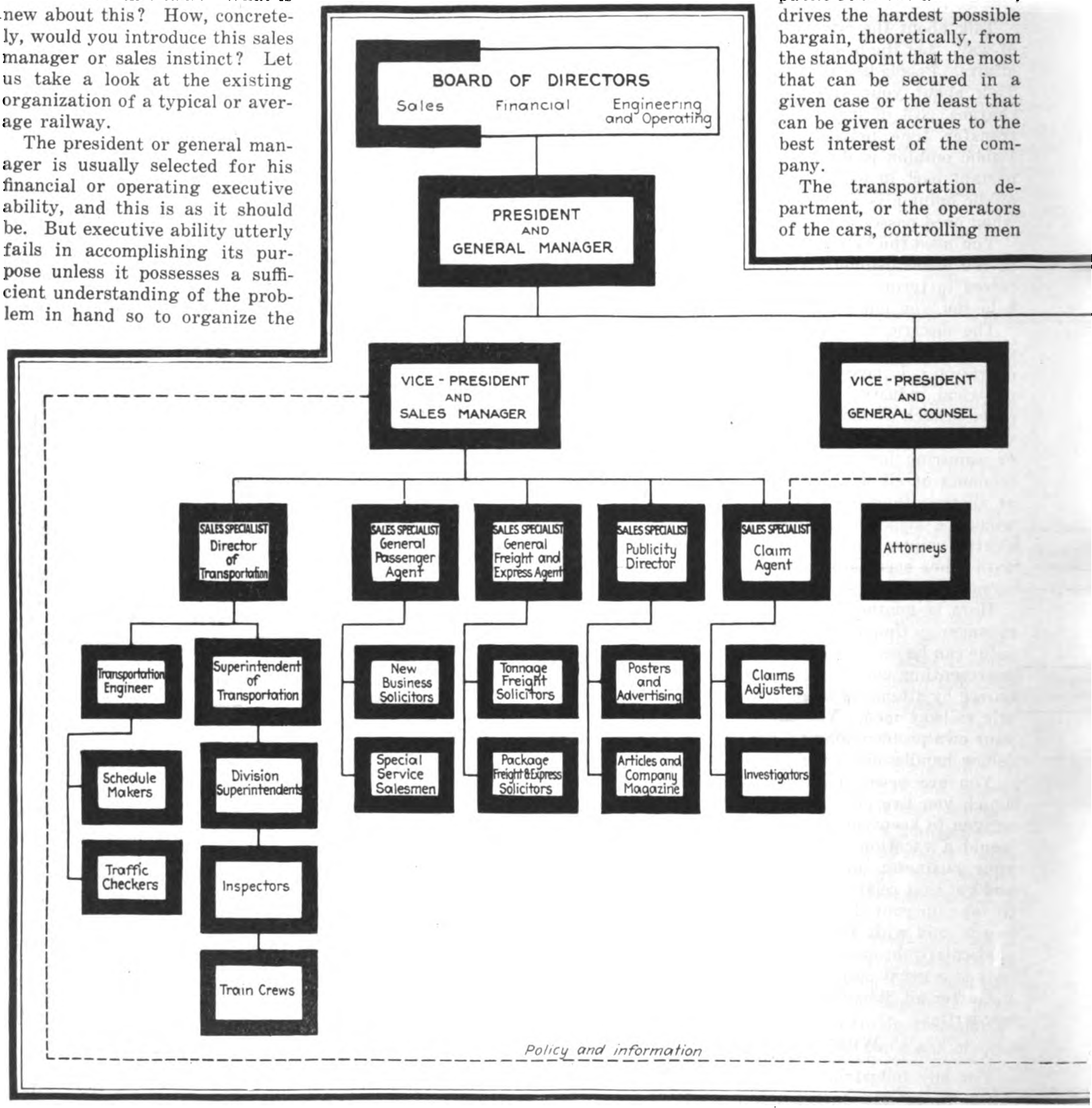
It is recognized, and undoubtedly is a fact, that the less competition, the less the opportunity for success. The principal trouble with the electric railway company, it has not had real, severe competition, in the usual recognizable form. Hence it has not felt the necessity of developing sales methods and employing sales instinct to meet its competition. It has viewed its problem from an operating basis, and operators, as such, do not recognize their competition when they see it. Hence, they do not know how to combat it.

Why talk about competition? The electric railway company has no competition in the broad sense, except the competition which it creates itself. What an opportunity for a real salesman! The only company in the community, with the whole community as a prospect twice every day! Boards of councilmen, politicians, and demagogue newspapers should be easy prey for the real salesman. There is a constant attempt to justify failure on the form of competition encountered. A successful salesman has no alibis to offer. A lost order is of passing moment in his career. He seeks new fields, new prospects, and builds new customers.

The stay-at-home, the walker, the jitney, the bicycle rider is the lost customer. He will be lost until he is brought back with renewed effort, founded on right selling.

You very properly are asking by now, "What is the answer to all this talk? What is new about this? How, concretely, would you introduce this sales manager or sales instinct? Let us take a look at the existing organization of a typical or average railway.

The president or general manager is usually selected for his financial or operating executive ability, and this is as it should be. But executive ability utterly fails in accomplishing its purpose unless it possesses a sufficient understanding of the problem in hand so to organize the company or institution that the business can be operated at a profit.


BOARD OF DIRECTORS
Sales
Financial
Engineering and Operating
PRESIDENT AND GENERAL MANAGER
VICE - PRESIDENT AND SALES MANAGER
VICE - PRESIDENT AND GENERAL COUNSEL
SALES SPECIALIST Director of Transportation
SALES SPECIALIST General Passenger Agent
SALES SPECIALIST General Freight and Express Agent
SALES SPECIALIST Publicity Director
SALES SPECIALIST Claim Agent
Attorneys
Transportation Engineer
Superintendent of Transportation
Schedule Makers
Traffic Checkers
Division Superintendents
Inspectors
Train Crews
New Business Solicitors
Special Service Salesmen
Tonnage Freight Solicitors
Package Freight & Express Solicitors
Posters and Advertising
Articles and Company Magazine
Claims Adjusters
Investigators
Policy and information

A Suggested Organization for an Electric Railway

Merchandising transportation, which is probably an appropriate expression to cover the broad field, means selling transportation at a profit. But we cannot undertake a merchandising proposition without sales management or sales direction.

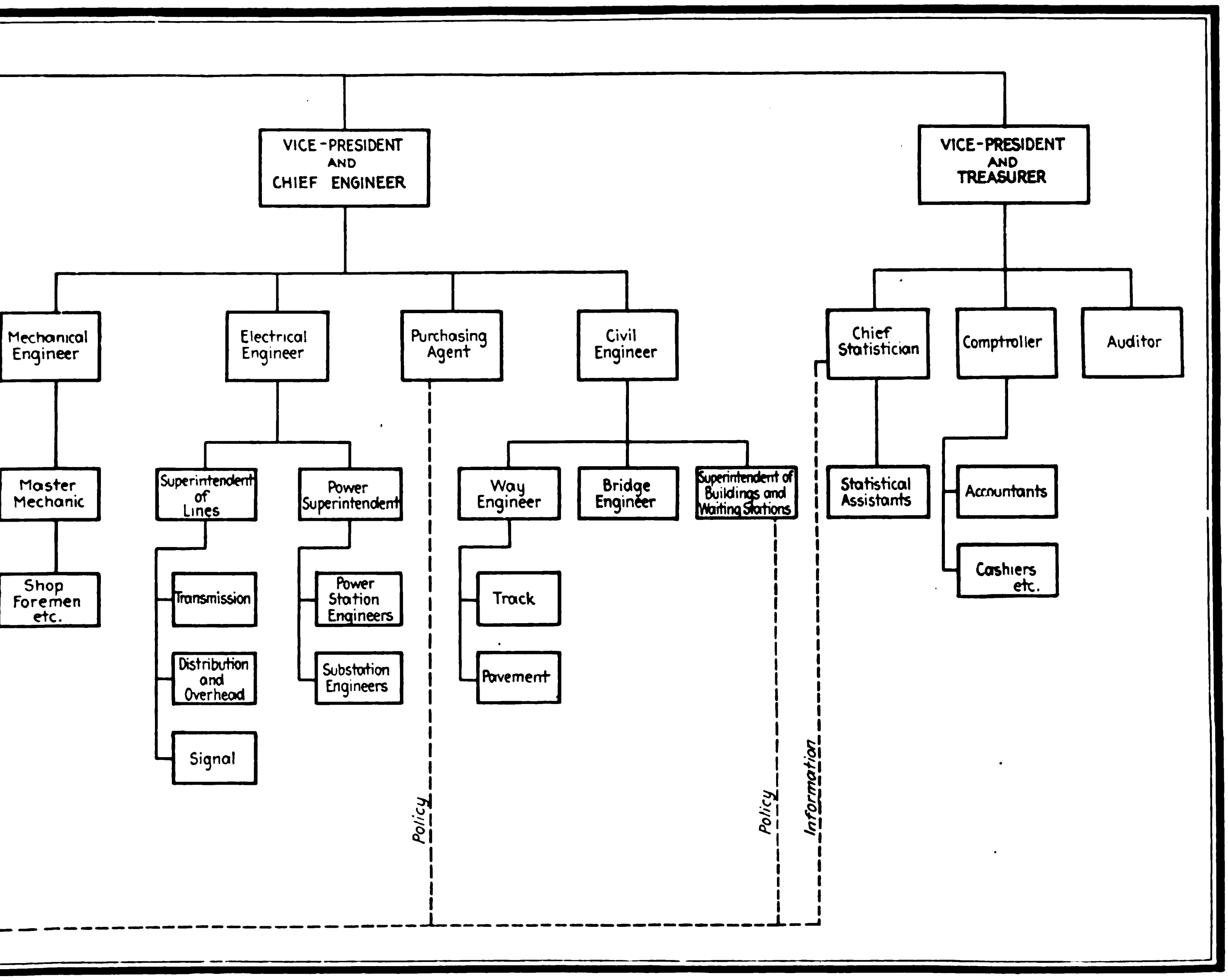
But what do we find? We find that the president or general manager has set up a number of sub-departments which we call "legal," "transportation," "power and overhead," "equipment," "way," and "accounting." Now let us analyze these departments from the standpoint of the personnel in charge.

The legal department, in the matter of franchises, public relations and claims, drives the hardest possible bargain, theoretically, from the standpoint that the most that can be secured in a given case or the least that can be given accrues to the best interest of the company.

The transportation department, or the operators of the cars, controlling men and runs, approaches the problem from the standpoint that the man-power operating the cars has the same relation to the physical operation of the road as the motor under the car. Platform men are really individual salesmen of the transportation company, but they are trained as car operators and not as individual salesmen. The successful platform man should be selected upon his ability to cultivate good will of his patrons and to cause them to enjoy street car riding. A five-minute discussion with the average motorman or conductor will convince you that the motorman is primarily interested in getting his car over the ground and the average conductor is so involved in collecting fares and keeping time schedules that courtesy to patrons is of secondary moment.

The fault is probably due to the system under which the men are employed; they are employed as car operators and not as company salesmen.

Next let us consider the schedule makers in this department. They are charged primarily with the problem of dealing in loads and schedules. The pleasure they derive from their work is their ability to keep cars loaded to maximum capacity and schedules based on maximum efficiency. At the slightest sign of a slackening of traffic, schedules are reduced, and in multiple-car equipment cars are taken off. The result of this condition is obvious to all—it ceases to become a pleasure to ride during the busy hours because of the overcrowded condition of the cars, and during the slack hours because car schedules are so designed that the average patron is so annoyed in waiting for cars that he is in an unpleasant frame of mind when he enters the car and drops his nickel into the conductor's fare box.


VICE-PRESIDENT AND CHIEF ENGINEER
VICE-PRESIDENT AND TREASURER
Mechanical Engineer
Electrical Engineer
Purchasing Agent
Civil Engineer
Chief Statistician
Comptroller
Auditor
Master Mechanic
Superintendent of Lines
Power Superintendent
Way Engineer
Bridge Engineer
Superintendent of Buildings and Waiting Stations
Statistical Assistants
Accountants
Cashiers etc.
Shop Foremen etc.
Transmission
Power Station Engineers
Track
Distribution and Overhead
Substation Engineers
Pavement
Signal
Policy
Policy
Information

mploy the Principle of Salesmanship in Transportation

It is not necessary here to review the conditions in other departments of operation—power and overhead, equipment, way and accounting. These divisions of electric railway operation are so intangible to the average layman or passenger that we can easily group them under a general department of operating and providing the character of equipment and service essential to success.

This does not minimize the necessity of their recognizing their relation to the final sale. They do not come in direct contact with the sale, which is the point now in mind.

Recognizing that the present condition is one of long standing and will take a considerable time to correct, you should first start by a general reorganization of your internal affairs and put your house in order. Let us maintain your present executive head under the title of president and general manager. Now let us set up those departments necessary to present your service, with intelligent salesmanship as a foundation.

I have prepared, with the co-operation of the ELECTRIC RAILWAY JOURNAL editors, a chart which embodies my ideas of an organization based on this sales idea. It is only a sample chart and is not intended to be complete or all inclusive. But it does point out where I think salesmen should be. Each of the heavily bordered blocks represents a man chosen for his "sales instinct."

We will have first a sales department, then a legal department, then an engineering department and last a financial department. Each of these departments will be in charge of a vice-president—the senior vice-president in charge of the sales department, and next in order legal, engineering and financial. The chart herewith in the main would outline an organization of such departments with additions or subtractions dependent upon individual cases.

I think the idea which I wish to convey is largely evident on the chart itself. The sales department is charged with selling transportation at a profit. It is responsible for all relations with customers (the riding public), it is charged with relations with the general public. The man at the head of this department must be a man who first, last and all the time is a salesman. All other qualifications are secondary to it.

The sub-departments of the sales department must also be manned by men whose outstanding quality is sales instinct. They must naturally have ability to organize and handle their departments. The director of transportation, for example, must be a man with ability to organize and direct human energy. He must be able to fraternize with his men, and from his own sales ability and sales spirit to inculcate in them the ability to handle in a satisfactory way the patrons of the company. Under such organization and direction, platform men become the individual salesmen. On them rests largely the ability to maintain proper relations with customers.

The transportation engineer, too, as well as the superintendent of transportation, must be a salesman. He must approach his problems not only from the standpoint of efficient operation, but also to satisfy the needs of the community; in fact, the latter is his principal job. Time schedules, while essential to successful operation, should not be permitted to interfere with the convenience and comfort of patrons. They should be fitted to that convenience.

The transportation department is not the only sub-sales department. Certainly the passenger agent and the freight and express agent, with their forces, must be the very essence of salesmanship. The publicity director must recognize that advertising is only a piece of salesmanship. There is precedent enough in successful utility companies for placing the claims department in the sales department to justify that suggestion here. We must keep in mind that it is salesmanship of the broadest order that we are talking about, and not merely stimulation of a few more car rides. The claim agent is in a most advantageous position to exercise real sales ability.

It may be wondered at that I insist that the general counsel be as much of a salesman as the sales manager, but I think that earlier in this paper I have indicated the relation of the legal adviser to the sales policy of the company. Certainly some of the greatest salesmen in the industrial field today are the principal legal vice-presidents. On the other hand, some of the greatest hindrances to successful sales efforts on the part of whole organizations are attorneys who judge or predicate their actions on technicalities rather than on sales instinct.

While not advisable to place them in the sales department, I have provided connection between both the superintendent of waiting stations and the purchasing agent to the sales manager for contact on the question of policy. The reasons, I believe, are very evident. And that there should be a very close relationship between the statistical department and the sales manager is axiomatic. The statistician should certainly be governed by sales direction. It is through him that the sales manager acquires information regarding those more tangible forms of competition, such as the stay-at-home, the walker, the private automobile (with its increasingly helpful hand to passers-by), the taxicab, the jitney and the bicycle.

I repeat that the organization indicated in this diagram is but a suggestion which I am using as a graphic picture to indicate what I mean by the importance of placing men with sales instinct in railway organizations as an answer to what to do in order to institute the radical change of business policy which the industry really needs.

I have no thought that the personnel of the electric railway should immediately be transformed to conform with the ideas here suggested, but a step might be taken at once; viz., those executives and others indicated in the diagram as essentially sales positions might well take a course in salesmanship; they might devote a part of their time to an extensive study of selling, salesmanship, sales psychology, and sales instinct.

Whether these qualities are natural or acquired makes no difference. For the present, a school in salesmanship could be started in each company, and it would probably be astonishing to realize how quickly the men would respond to the ideal. As new men are hired, particular emphasis should be given to sales instinct.

As to how the men would be rewarded, either in compensation or other ways, for their particular selling ability, is a matter that would not necessarily lend itself to any standardized practice. Each sales executive would determine from the broad principles involved the best practice to apply in his particular case. If the right man is selected as the vice-president and sales manager, or such other title as may be most appropriate to his position, his sales instinct will soon be reflected throughout the organization, and the existing counsel, president and general manager, and all others will sooner or later acquire a broad conception of the fundamental principles and policies involved, and the reaction throughout the organization will be speedy and profitable.

But the trainmen are the salesmen, and they should be employed, first, for their sales ability. The sales executive with real sales instinct, having his finger on every vibration of the entire system, will know the right thing to say at the right time, will outline for the advertising department the broad ideas to be expressed, and the advertising department will translate these ideas or expressions into appropriate language for public consumption.

But the printed word must be backed up by performance, and performance to the car rider is what he sees and feels and absorbs by instinct, psychology, or whatever else you chance to call it, and he will not be fooled by any clever expression, beautiful pictures or other appeals not supported by a mental and physical realization of a modified policy in service.

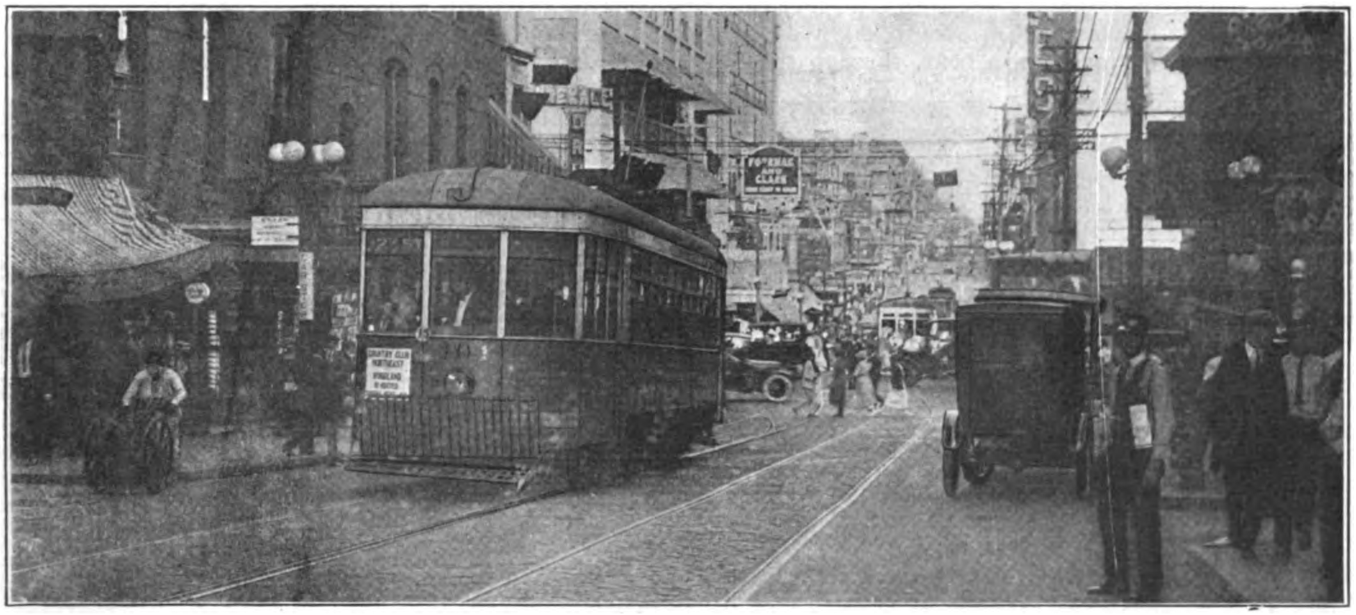
A sales manager is not a panacea for your every ill—the professional politician, the demagogue newspaper and the ignorant or indifferent public will always be with you—these are merely forms of competition—recognize them as competition and combat them by proper sales methods. That is the job of your sales manager.

Some Operating Economies Made Possible by Increased Schedule Speed, Better Distribution of Service and Rerouting—Obtaining the Most in Service and Earnings from Car-Hour Expenditures

Greater Operating Efficiency Enables Better Merchandising of the Service

By F. G. Buffe

General Manager for the Receivers the Kansas City (Mo.) Railways



Corner of Main and Twelfth Streets, Kansas City, Mo., at 5 p.m.

A westbound car is shown stopping in the berth just west of Main Street. At the right of the picture is seen a front-end collector wearing the new portable farebox waiting for a car to pull into this eastbound double berth. Two cars have just left this stop and have crossed Main Street and are proceeding across Walnut Street to the double-berth stop between Walnut and Grand, skipping both Main and Walnut. The traffic officer is allowing north and south bound traffic to proceed after he has passed the east and west-bound cars across the intersection. The double-berthing signs are shown at the left of the west-bound car. Seven cars are in sight, as the headway at this point at 5 p.m. is forty-five seconds in the maximum direction.

A PLANT manufacturing transportation reckons the expense of production in car-hours. Every sixty minutes of measured time means a money outlay for platform wages, power, maintenance and the other expenses which go up and down with this extremely busy little unit of measurement. At least 60 per cent of an electric railway's maintenance and operating cost varies directly with the number of car-hours operated. Therefore, one of the greatest, if not the greatest field for making major economies lies in utilizing car-hours so that the public and the company receive from them as nearly as possible 100 per cent efficiency. Cars standing in congested districts waiting to get through bottle necks; cars consuming too much time loading and unloading; cars not getting through heavy traffic points on schedule time; cars routed so as to provide excess and duplicate service are all expense producers and revenue reducers. Such cars are not only depriving the public of service, but are increasing the company's operating expenses, making higher fares necessary and detracting from the quality of the product which the plant is turning out to sell.

Many crimes are committed in the name of economy, and very often methods are employed for this purpose which when analyzed not only fail of the result expected but actually entail added expense either through increased overhead cost or lack of efficiency in some other direction. There have been bonus systems instituted which only resulted in increasing wages under another name. The library of perhaps every company in the country contains handsomely-bound copies of elaborate efficiency reports upon one phase or another of its business, prepared at large expense, which could not today be located were it not for a good cross index filing system. One useless car, useless either because of congestion or poor routing, operating eighteen hours a day, 365 days a year, will eat up $12,000 in wages, power and other direct costs.

The best merchandising transportation advertisement, after all, is service, and without it all the advertisements and all the propaganda in the world will not convince the car-riding public that it is getting what it should get for the increased fare it has been made to pay. In practically every fare increase in the country the public has countered by demanding service, and that town in which there is the least complaint over fares is the one in which the street car company is furnishing the public the maximum in car service.

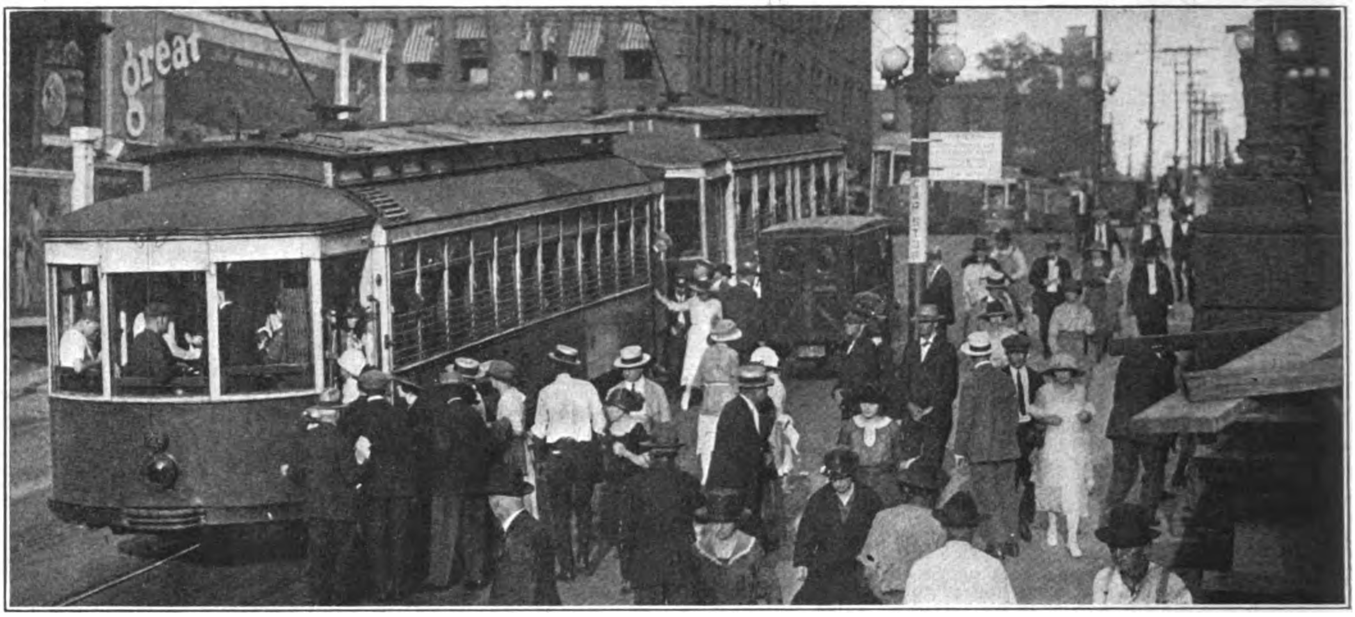
In Kansas City we found that our biggest field for improving service and effecting operating economies that counted was in the better arrangement of our car-hours and getting more out of them than we had before. After doing all the minor things that could be worked out we reached the conclusion that drastic and radical measures would have to be adopted to give the public the best our facilities afforded and to effect economies which were imperative.

Due to the topography of Kansas City, and especially the severe conditions in the retail district, operation of an electric railway system is, to say the least, extremely difficult. The retail business and office buildings of the city are concentrated within a comparatively small area, six blocks north and south and five east and west. In the maximum rush hour, through the intersections within this area 5,000 car movements were formerly made, of which an astonishingly large proportion were left-hand turns. Extremely narrow and congested streets further aggravated the situation. To make matters worse, because of the topography of the district only two east and west lines were possible. In addition to the car movements, there were at the same time more than 400 jitneys plying their trade in this district and a good proportion of the 40,000 automobiles owned by Kansas City's 350,000 citizens. The absence of parking restrictions converted the narrow streets into outdoor garages, so that it was impossible for vehicular traffic to pass between car tracks and parked automobiles.

This situation became so bad that in December, 1919, we showed speeds as low as 0.8 m.p.h. through two blocks representing the point of maximum congestion. This condition would exist for fully fifteen-minute periods. During the rush hour the average speed of street cars and vehicular traffic was reduced practically to a walk. All principal intersections were choked with traffic. At one corner 243 cars were scheduled through an intersection during the hour between 5 and 6 in the evening. These cars were provided and dispatched, but only 190 were able to get through due to the fact that the intersection was plugged for practically the entire time either by cars or vehicles, and as a consequence the public was deprived of fifty-three cars when most needed although the company had provided them and was paying the car-hour expense they entailed.

The services of John A. Beeler and his staff were enlisted, and together with our own transportation department force, more than a year was spent working out this problem. Recommendations were made from month to month and changes were gradually instituted in which public officials gave good co-operation. The measures for relief which were adopted and which are now in effect are principally as follows:

Car stops were relocated and combined, making what is practically a skip-stop system in the business district.



Double-Berth Stop on Eighth Street Near Grand Between Grand and Walnut

The severe grade on which the cars must stop and the narrow street make this one of the most difficult operating points. At this intersection 243 cars pass between 5 and 6 p.m., and at Eighth and Walnut Streets, 258 pass during the hour. A car stop sign and an information sign just above are seen at the right of the illustration.

Cars on the two heavy east and west streets were made to clear in one movement the heaviest intersections and to stop at designated points regardless of corners.

Double berthing was arranged at all downtown stops.

Traffic officers were instructed to pass cars across intersections in pairs and simultaneously in opposite directions whenever possible.

Automobile parking restrictions were put into effect during rush hours.

Additional street collectors were employed so as to facilitate loading and unloading, and to see that the doors are closed promptly as soon as proper loads are on the cars.

Cars were made to stop but once at each passenger stopping point and proceed after the doors are once closed.

These and other minor remedies upon adoption produced the most gratifying results. They have now been in effect for more than a year and a half. In the direction of heavy travel during the evening rush hour on five principal streets in the business district the average increase in the number of cars passed is 30 per cent and the average speed of cars has been increased 42 per cent. In other words, the car rider is now receiving 30 per cent more service at the right time and is being carried out of the congested district 42 per cent faster than formerly.

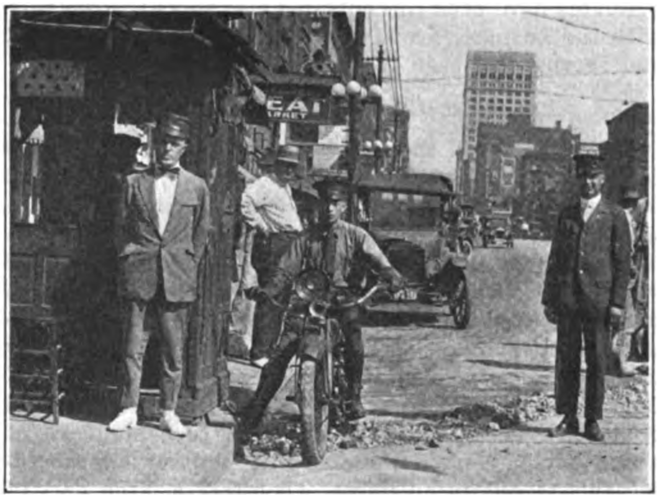
Because these "bottle-necks" were opened so that scheduled cars are enabled to pass through on schedule time, headways are regular, delays due to congestion are practically eliminated and the entire system moves easily and without confusion. As a result, several hundred car-hours per day were saved in cars sent from the carhouses to fill spaces formerly caused by the inability of scheduled cars to get through the congested district. Every car-hour paid for was available for public use and returned its correct proportion of revenue. The public talked of increased service, when as a matter of fact the company had not increased the number of cars dispatched but had only made it possible to put its transportation service at the disposal of the public when and where it was needed.

The system average schedule speed has increased from 8.8 m.p.h. to 9.3, an increase of more than 5½ per cent. The resulting economies and better service can be easily computed.

MAJOR REROUTING DIFFICULT BUT EFFECTIVE

The next strenuous problem attacked was that of rerouting the lines. This was an extremely difficult task and required not only careful and conscientious work to reach the best solution, but extremely diplomatic handling in order to secure permission of the city authorities. To change routes of years standing is a radical move, and is immediately met by the resistance of business interests which feel that they will suffer a loss with the change of routing.

However, the plan recommended by Mr. Beeler, with a number of modifications, described on page 957, Volume 56, ELECTRIC RAILWAY JOURNAL, was finally adopted by the City Council and much of it has been put into effect. Changes have been made very gradually, one line at a time, so as to avoid inconvenience to the public, and to date, although some of the largest and heaviest lines have been changed, there has been no complaint but, instead, universal commendation.

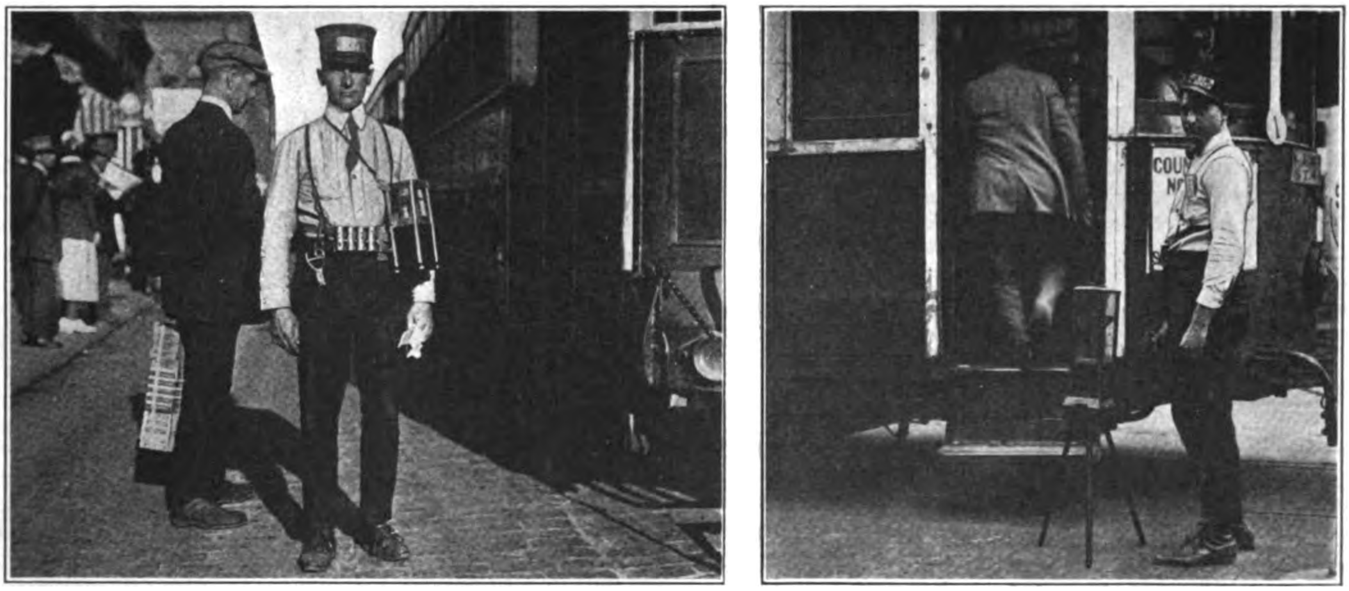


Dispatcher's Booth and Attendant at a Busy Corner, Motorcycle Inspector and Uniformed Inspector

Unfortunately, it was not possible to put Mr. Beeler's report into effect in its entirety, and certain changes insisted upon by public authority have reduced the estimated savings which were inherent in the plan. Nevertheless, the fact remains that for the first six months of this year there has been saved in platform labor and power an average of $22,000 per month, and in July, due to added rerouting under the ordinance, this saving was increased to $31,000.

The Kansas rerouting is still being discussed by the city authorities of Kansas City, Kan., and the receivers, and should permission be given to install the plan proposed, which is a modification of that outlined by Mr. Beeler, it will mean an additional saving of approximately $8,500 a month.

The rerouting has resulted in a 20 per cent decrease in intersection car movements in the downtown district, has eliminated left-hand turns to a large extent, and has consequently increased the ease and rapidity with which cars are moved. The economies from the rerouting arise from the absence of duplication and the fact that cars are kept moving throughout the length of their routes over producing territory. All downtown loops and dead mileage have been eliminated wherever possible.

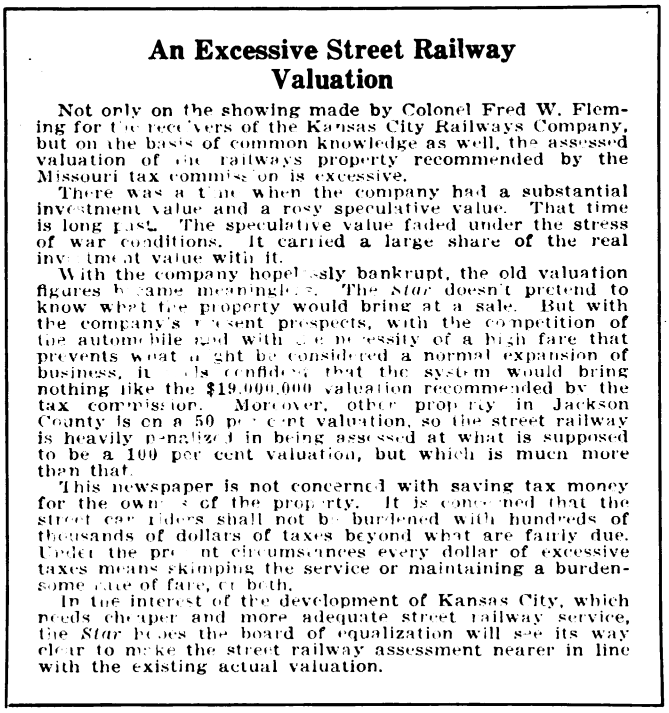


Street Collectors Are Supplied with a Belt-Type or Tripod-Type Farebox for Use in Front-End Collection in Congested Districts

Routes have been concentrated also so as to keep pace with the business growth and development of the city, and service has been correspondingly regulated.

RECEIVERS GO THE LIMIT ON SERVICE

Coincident with the appointment of Senator Francis M. Wilson and Colonel Fred W. Fleming as receivers in October of last year, a decided increase in service was inaugurated. Jitney competition was then at its maximum, 400 jitneys daily carrying an average of from 40,000 to 50,000 passengers. The receivers, although previously acquainted with the street railway business other than as passengers, decided that the only limit to car service in Kansas City would be cars and facilities. The Board of Control's rush-hour standard of 4 sq.ft. per passenger and a non-rush standard of a seat per passenger was discarded and service exceeding this placed on all lines. Therefore a large part of the savings effected through rerouting and other car-hour economies have been used in giving Kansas City without question the finest street railway service it has ever enjoyed, and as far as I know the equal of any being furnished anywhere in the country today. It certainly is, as measured by any comparative loading and service standards authorized by commissions.



An Excessive Street Railway Valuation

Not only on the showing made by Colonel Fred W. Fleming for the receivers of the Kansas City Railways Company, but on the basis of common knowledge as well, the assessed valuation of the railways property recommended by the Missouri tax commission is excessive.

There was a time when the company had a substantial investment value and a rosy speculative value. That time is long past. The speculative value faded under the stress of war conditions. It carried a large share of the real investment value with it.

With the company hopelessly bankrupt, the old valuation figures became meaningless. The *Star* doesn't pretend to know what the property would bring at a sale. But with the company's present prospects, with the competition of the automobile and with the necessity of a high fare that prevents what might be considered a normal expansion of business, it feels confident that the system would bring nothing like the $19,000,000 valuation recommended by the tax commission. Moreover, other property in Jackson County is on a 50 per cent valuation, so the street railway is heavily penalized in being assessed at what is supposed to be a 100 per cent valuation, but which is much more than that.

This newspaper is not concerned with saving tax money for the owners of the property. It is concerned that the street car riders shall not be burdened with hundreds of thousands of dollars of taxes beyond what are fairly due. Under the present circumstances every dollar of excessive taxes means skimping the service or maintaining a burdensome rate of fare, or both.

In the interest of the development of Kansas City, which needs cheaper and more adequate street railway service, the *Star* hopes the board of equalization will see its way clear to make the street railway assessment nearer in line with the existing actual valuation.

Editorial Comment from the Kansas City "Star"

At the time service was so increased other economies in the transportation department were inaugurated as rapidly as possible, many of which had been put into effect prior to the receivership, and the results of which were utilized to give this greatly enhanced service. These are more or less familiar to every one, including, wherever possible, turn-back schedules so as to keep the maximum number of cars in the districts of maximum population and travel. In other words, an effort was made so to arrange schedules as to give zone service where it could possibly be done. This resulted not only in economies in schedules, but in maintaining headways to correspond with the traffic density of the various sections of the city, and not to run expensive car-hours where they were not needed.

Safety cars, of which this company operates 100, were adopted as early as April, 1919. At the present time approximately 20 per cent of the daily car-hours are safety car-hours. Allowing for 40 per cent decrease in headways and a corresponding increase in service, this means a direct daily saving of $400 under the amount it would require with the larger units.

Labor turn-over has been reduced to the lowest in the history of the company. In August it was less than 2 per cent. This, coupled with intensive instruction and the easier and less congested movement of cars through the business district, has resulted in a 24 per cent decrease in all classes of accidents for the first six months of this year as compared with the first six of last year.

The reduction in the number of transfers as a result of the rerouting is another important effect. The necessity for transferring has been reduced at least 25 per cent with the routes already changed, and studies show that with the entire rerouting in, the 150,000 daily transfers should be reduced to not to exceed 100,000.

Today 690 maximum rush-hour cars are being operated as against 640 a year ago. Car-hours have been increased from 7,400 to 7,900 a day with a corresponding increase of 4,600 car-miles. When it is considered that every car is getting through congested points on schedule time, that turnbacks on all principal lines are returning cars to the business district when needed, and that combination of routes has eliminated downtown loops and service duplications, it can easily be seen that the actual increase of service to the public is much greater than as represented by the actual increase in the number of hours operated. Kansas City is today receiving at least a 30 per cent better street railway service as service is measured by loading standards, headways, car availability and speed than it did prior to the changes related.

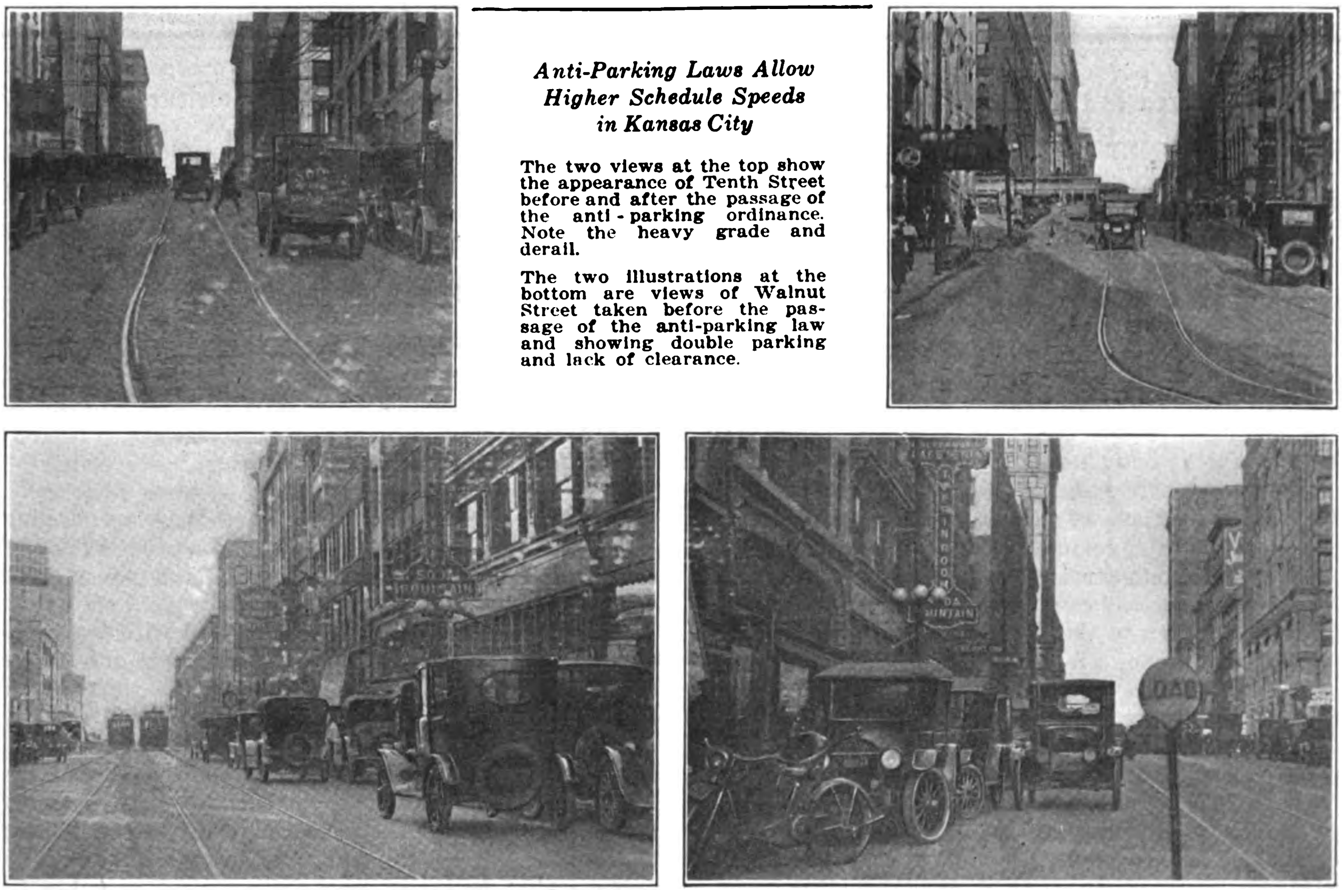
IMPROVED SERVICE HAS WON PUBLIC FAVOR

Without one line of advertising or publicity of any kind this transportation service is merchandising itself. The receivers have made plain to Kansas City that notwithstanding that every possible economy has been and will continue to be made, it will not be in those directions that will curtail car service. As a result of this continued policy there has been a most astonishing reversal in public opinion in Kansas City. This is perhaps well illustrated by the change in attitude of the Kansas City *Star*, as shown by the accompanying editorial quoted from the *Star*, which has always been very antagonistic to the company. Although the receivership is not yet a year old, jitney competition has practically been eliminated almost entirely through the force of public opinion. The number of jitneys has been reduced from 400 to 130, and through ordinances recently passed these are now operating illegally and unless legal complications arise they should disappear from the streets entirely within another thirty days. The first ordinance was one prohibiting jitneys on car track streets. The next ordinance required them to secure the consent of 51 per cent of the property frontage from property owners on all residence streets upon which they operated. They failed to do this on every route and have been ordered off the streets of the city.

Contrary to most cities during the past three months of extreme industrial depression, the number of passengers has not decreased under those carried a year ago, but has shown about a 3 per cent increase. The public and the press are both keenly alive to the policy of the receivers and there has been in Kansas City no agitation for a decreased fare.

The receivers' policy has been better to merchandise their product, not through maintaining the selling price and reducing the cost, but in return for the fare paid to reduce the operating cost and give back to the public part of the saving in increased comfort and increased service. It has been a far-sighted policy of reconstruction not influenced by loading standards, slide rule calculations or false economies. The policy is well summed up in the statement of one of the receivers in giving his orders to the operating department:

"I don't care anything about hearing of 4 sq.ft. of space per passenger or speaking of human beings as if they were articles of merchandise. I have ridden street cars for years, am a strap hanger and a seat rusher by nature, and common sense teaches me what square service to the public means. Our first job is to show the people of Kansas City that it is the duty of a public service corporation to serve the public, and whenever it ceases to do this the very name is a fraud practised upon the people and it ought to take in its sign and quit business. Our job is to please the people who ride our cars, and within a reasonable limit, wherever legitimate requests are made, they will be complied with or good, sufficient and satisfactory reasons given why they cannot be."



Anti-Parking Laws Allow Higher Schedule Speeds in Kansas City

The two views at the top show the appearance of Tenth Street before and after the passage of the anti-parking ordinance. Note the heavy grade and derail.

The two illustrations at the bottom are views of Walnut Street taken before the passage of the anti-parking law and showing double parking and lack of clearance.

DISPATCHING SYSTEM KEEPS PROPER SPACING

The dispatching system, the company police force, and the inspectors on the Kansas City Railways are other effective means at the disposal of the transportation department for facilitating movement of traffic, preventing congestion, eliminating delays and otherwise saving car-hours and better serving the public. Although most of these methods are in use to a certain extent on other systems, a brief description may be of some interest in showing the relation to more economical and more regular service.

All cars are operated on regular schedules. The dispatching force reports to an official known as the chief dispatcher, located in the office of the superintendent of transportation. On every line dispatchers are located at important points and at terminals. At the more important places small dispatchers' booths, with the permission of the city, have been erected at the corner. Dispatchers at the heavy points are on duty eighteen hours a day, and at other points during the rush-hour periods. These dispatchers are of course in constant touch with the office of the chief dispatcher. Their duties consist of checking the cars to see that they are running on schedule time. Any gaps in the spacing that occur are filled at once by taking cars from other lines, by ordering space cars sent from division points, or by emergency turnbacks.

Because of this system of dispatching and the ability to correct bad spacing, it is not necessary in schedule making to leave slack in the schedules or to arrange for layovers at the end of the line other than the time necessary for switching. This means a tremendous saving in the course of a year in car-hours operated in providing equal service.

At extremely heavy loading points in the downtown district starters speed up loading by starting cars by whistle signals. It is their duty to note when a car is sufficiently loaded and then give the signal to proceed, and to co-operate with crossing policemen so that when right of way is given there is no delay in starting the car. Street collectors and trainmen also work in connection with the starter at these locations.

Uniformed inspectors are employed, who act in the nature of supervisors. During the rush hours these men are stationed at all heavy points and act in case of emergency, assisting traffic officers in getting cars through. In addition they take immediate charge of any important situation that arises.

As an experiment some time ago an inspector mounted on a motorcycle was added to the force. He is stationed at a central point downtown and is able quickly to reach any point in the central zone where trouble occurs. This experiment has been so successful that several more will be added to the force of inspectors.

The company also maintains an extremely efficient force known as the police department. This force is made up of ex-policemen and its organization is similar to an ordinary police department with a day captain and a night sergeant on duty at all times. These men are commissioned special police officers. They co-operate with the city police department and are stationed at such heavy loading points as ball parks, pleasure parks, theaters, coliseum, and wherever usually heavy crowds are anticipated. They assist in loading the cars, preserving order, clearing up automobile congestion, and in any other way that a commissioned officer can assist traffic.

As a result of the policy outlined above and of the extremely large operating economies made possible by some of the methods explained, and a return of a large part of these savings to the public in service, we have increased the quality and quantity of our product and it is rapidly merchandising itself in an increased public confidence and public good will.

The Employee Is the Direct Salesman to the Public of the Transportation Which the Company Produces—Much Depends on Whether He Knows His Business

Relationship Between Management and Men—A Traffic Factor

By James P. Barnes

President Louisville (Ky.) Railway

THE obligations of management are threefold and may be briefly summarized as follows:

1. Adequate service to the public.
2. Fair wages and conditions to the employees.
3. Fair return to the investor.

These obligations are as fundamental and important each to the others and all to the undertaking as are the individual legs of a tripod. Let one fail and the whole structure totters and falls. Moreover, each expresses an obligation as well as an inherent right.

The public is entitled to adequate service. This is its right, but coincident therewith exists the obligation *on* the public of fair treatment to employee and investor.

The employee's right to fair wage and working conditions is beyond argument, but here again are the parallel obligations *on* the employee of adequate public service and fair return to the investor.

The right of the investor to fair return for the use of his property in public service is equally fundamental, but only upon condition of adequate service and fair treatment of employees.

In this triangle of relationships there exists for a single right a double obligation upon each side. Each side of the triangle touches the two other sides, and symmetry is lost when pressure is uneven and the balance is destroyed between privilege and obligation.

It is the primary duty of management to maintain the proper balance between the three parties at interest or the three forces at work, and this three-phase nature of management must be always maintained. Management should stand as the trustee for the public when it is dealing with the employees and the investor; as the trustee of the employees when they are dealing with the public and the investor, and as the trustee of the investor when he is dealing with the public and the employees.

Now a trustee is one who is intrusted with the property (or interests) of others and is bound to administer those things intrusted to his care in the interests of the rightful owner. The management of a public utility is in its highest and best sense a trust to be administered in the interest of the public, the employees, and the investor. Nor is this an anomalous situation, for only by the fair and proper treatment of all of these three parties at interest can the life and usefulness of a public utility be truly preserved.

Having in mind the three-sided responsibility and outlook of management, then, let us consider some of the details of its particular relationship with the employees. The management stands as the representative of the public and the investor when they are dealing with the employees and as the representative of the employees when they are dealing with the public and the investor. It follows then that the task of the management is first and foremost to find a point of balance where these contrasting duties can be consistently discharged. This position is necessarily one of absolute and impartial justice to all three parties at interest for the undue favoring of one party carries with it, as a matter of course, discrimination against the other two. The problem of human relations here involved is the problem of weighing and balancing interests sometimes partially or wholly conflicting, though often identical.

It is now the generally accepted basis of management that the public is entitled to the service it wants. At the risk of digression it is not out of place to say that the problem of the management on the side of public relations today consists almost wholly of the honest endeavor to determine what kind and quality of service the public really wants (*i.e.*, is willing in the mass to pay for) and to adjust the service rendered so as to satisfy the public demand to the greatest possible extent. The function of modern management is not the arrangement of arbitrary schedules with existing facilities in a mere effort to satisfy the apparent demand as indicated by riding habits with present facilities. Modern and progressive management must seek below the surface and endeavor to determine what facilities as well as what arrangement of facilities are desired by the public.

> **IN this article Mr. Barnes points out how the public, the employees and the investor have mutual obligations and rights, while the management is the trustee whose duty it is to preserve a proper balance between the three parties in interest.**

The management must fearlessly follow out the development of popular demand and be prepared to meet any conclusion the logic of circumstances may indicate. If the public demand is truly for new or novel means of transportation in whole or in part, even to the point of the abandonment of considerable portions of present plant, how much better is it to go courageously forth in an effort to meet, standardize and supply that demand than to sit dolorously wringing the hands and complaining of "fickle sentiment" while some broader-visioned, perhaps newly organized, competitor prepares to absorb the business that is ready and waiting for the hand of him who will reach out to grasp it! Without an open mind there shall be no progress, and he who clings to the dead past will be buried with the rest of its dead.

Modern management should, by virtue of its angles of contact with public demand, be the first to sense desire for change and improvement. With this demand formulated in definite terms, trusteeship asserts itself and management becomes the pleader with the employee and the investor for that which the public requires. Public demand will in the long run be satisfied so far as it is reasonably possible, and management can have no greater asset than the ability quickly to appreciate and promptly to meet the public need.

SYMPATHETIC UNDERSTANDING OF EMPLOYEES' NEEDS ALSO NECESSARY

It is equally true that the employee will have in the long run that to which he is fairly entitled in the way of both wage and working conditions. In the past far too much time has been consumed in negotiation of small advantages and burdensome conditions both on the part of management and employees, and far too little time has been devoted by either to the earnest, straightforward attempt to analyze, understand and sympathetically treat the ideals, desires and strivings of the other.

With very few exceptions, the executive of today has passed through a course of practical railroading which by a mere effort of memory should recall to him the nature and conditions of all phases of activity in the organizations whose affairs he administers. Unless he can know and understand these things, his right to the trusteeship of management is or should be forfeit. Sympathetic understanding of conditions surrounding each class of work upon a property is fundamental in just and correct dealing with the employees involved, and as no man can of his own activity keep in touch with all these things, save on very small properties, it follows that the first requisite for sympathetic and just relations is a sympathetic and just organization for the handling of these relations.

The distinction between duties of staff and line officers is nowadays too well understood to require more than mention, and the modern manager will avail himself of these two types of organization which may almost universally be concentrated in one general organization. The duties of a department head are dual in that he must represent his employees in dealing with the management and the management in dealing with his employees. Here are the staff and line duties almost exactly defined and, as the staff officer advises and confers as to successful strategy and tactics, so will the department head advise and confer as to successful policy and fair dealings.

Now the successful functioning of a staff depends upon thorough understanding and frank discussion of fundamentals as to both conditions and symptoms. So the staff organization must for successful functioning comprise all department heads and the type of organization adopted by modern management should for the sake of prompt and efficient work be divided into as few major departments as possible. Within each of these departments should be a distinct staff organization functioning in precisely similar manner to the general staff and serving as a clearing house for many departmental matters which would otherwise occupy the time and delay the work of the general staff.

To illustrate: It has been found that the work of large organizations can be successfully handled with a manager's staff of say five department heads representing respectively the transportation and traffic, engineering, legal (including claims), accounting and financial departments. Observe how closely this classification follows the lines of the American Electric Railway Association and its affiliated bodies and that each of these department heads is, in the work of the association, furnished with a reference library especially devoted to his own line of every-day activity.

RULES FOR STAFF MEETINGS

Staff meetings should be frequent and regular so that policies shall be consistent and logical but not so frequent as to interfere with proper performance of line duties. Generally speaking, not oftener than once a week and not less often than once a month should suffice. Staff meetings should be held in an atmosphere of utmost frankness. Personal animus and sensitiveness to criticism should be left at the door and, if possible, the claim check lost entirely. The rule of discussion should be "criticism of every point where weakness is apparent, but no criticism that is not constructive." We all know lightning storms are bad, but it does no good to complain of their effects unless the complaint results in more efficient arresting apparatus.

There has been too much in the past of the so-called executive session, which sometimes savors of conspiracy and is always subject to such interpretation. That this criticism may not arise, let there be no taboo on subjects of discussion at staff meetings. Let the one touchstone be "for the good of the property or of the industry" and let discussion be free and open with reasons given and opinions exchanged. If possible by discussion, even though more time be taken (it is seldom wasted), let decisions, especially as to major points, be unanimous.

Going from the staff meeting after full and free discussion and with knowledge of all facts and conditions bearing upon the points at issue, our line officer is doubly qualified for the discharge of his duty and the further dissemination of the real truth about company affairs.

Being a public servant our business is a matter of public concern, and there is no place in our program for "confidential memoranda" or "inside information." Rather, let all confidential matter take such form that employee, public and investor can be confident of its correctness and straightforward truth, and let all inside information be available to and understandable by all who wish to see the inside. Many a bitter complainant has been converted into a stanch friend by a glimpse of the inside difficulties surrounding the thing or element of service which touches his interests. Consistent truth telling will in the end result in a reputation for truthfulness, and he who makes none but reliable statements will in the end enjoy the reputation of reliability.

In the relationship between management and men it is of especial importance that the barriers to mutual understanding and confidence be removed. Here, as elsewhere, the initiative is with the management, and perfect frankness regarding all matters of operation and finance is fundamental. No good rule was ever weakened by explanation of the reasons for it, and no bad one ever strengthened by refusal to discuss its purport. No honest plea for relief or assistance was ever weakened by disclosure of the actual need. "Tell the truth and shame the devil" is a schoolboy motto, but a good rule for adult mankind none the less. Honesty is the best policy if policy it be rather than principle, and only upon such a basis can mutual confidence be established sufficient to meet and overcome the emergencies which will arise.

TEACH THE NATURE OF THE DUAL TRUSTEESHIP

Let every officer who has authority over men, and especially those who exercise discretionary authority, be fully instructed as to the dual trusteeship of his employment. Let him understand that he is staff and line officer both, and that he can carry the burden of his responsibilities on both shoulders only walking straight with head up and eyes to the front. Even-handed justice and a fair distribution of burdens and courtesies to all will bring sunshine to the cloudiest atmosphere and produce relations like those which surrounded a certain carhouse foreman, who because of efficiency was promoted to fill a vacancy at a larger carhouse. Twenty-odd of his men, understanding only that he had been transferred, called at the superintendent's office to request that he be left at their head "because he treated us square." When they learned that the transfer was in fact a promotion they sent him a note of congratulation and cheerfuly reported to his successor. Such relations are the stuff of which success is built, and it is not in the carhouses of such foremen or such men that strife is born.

It is not severe discipline but uneven discipline that hurts the hearts of men. The surest way to general dislike is the playing of favorites to a few who usually join the hue and cry in the end, and this rule applies throughout the organization from the humblest straw-boss or foreman to the titular head of the concern. Moreover, it cannot be effectively impressed by preachments, for here as elsewhere the initiative rests with the management, and the contacts of every-day business must be arranged to function from the very fountain-head of all authority with equality of justice to all.

Every office door should be open to all men whose activities come under the direction of that office. Many men will suffer for days together under trying conditions or under what they feel to be unjust discriminations. When such a man reaches the pitch that determines him to lay his troubles, real or fancied, before "the boss" a discouragement or undue difficulty in reaching his interview may leave him a disgruntled and dissatisfied worker, when a sympathetic reception, a friendly interview and a frank discussion might not only have turned a knocker into a booster but have brought out suggestions of real merit for the simplifying or expediting of other men's work as well as his own. The old saw that there never was but one man who was always right and he's dead, carries more than a grain of truth, and the foreman or superintendent who inclines a sympathetic ear to the troubles or inconveniences of his men will not only know better and be better known, like better and be better liked, but will find his business efficiency improved by the thoughts that will be brought to his desk.

Definitely organized vehicles for suggestion and discussion regarding every-day matters of operation and maintenance may well be instituted and a good central figure for this purpose is a safety committee or council with numerous committees functioning in all departments. On one property where a dinner is given monthly for employees of the carhouse operating the highest mileage per accident the number of miles per accident has been more than doubled over the entire property. Some of the carhouses have gone so far (and this is the suggestion of the platform men themselves) that a chart is posted conspicuously bearing the names of all platform men and a black cross marked opposite the appropriate name for each accident so that all may know the individual safety record of each fellow employee. No disciplinary action is based upon the record of black crosses but the self-discipline brought about thereby and manifested in greater caution of operation is making better operators and better men of many whose only fault was heedlessness.

Relationship between the management and employees becomes, then, just this series of relationships between man and man, man and foreman, foreman and superintendent, superintendent and department head, staff and line officer which, founded on square dealing and sympathetic consideration of both sides of every question, and, carried out upon the basis of the triangular relationship with double obligation, makes for understanding, confidence and cohesion.

But relationship between management and men is not completely or correctly functioning unless it recognizes and affects the means and methods of carrying out the employee's double obligation to public and investor, which completes his side of the square deal.

DUTIES OF EMPLOYEES TO INVESTOR AND PUBLIC

Adequate service is the right of the public. To render such service is the duty of the employees. Fair return is the right of the investor. To secure fair return is the duty of the employee. The individual employee, particularly he who comes in daily contact with the public, is seldom in a position to see the problem of service as a whole. Like a well-cut jewel, perfect service has many faces, and the outlook from one of these differs from the outlook from any of the others. The point where the work of each employee affects the safety, comfort and convenience of the public is for that employee the outlook from his particular face. Be he trainman, car cleaner, trackman or what not, each employee can know the effect which his own work should have on the public and by that standard may he measure the performance of his obligation to render adequate service. The motorman who jerks his car, the conductor who insults the complainant, the car cleaner who passes by a smudged spot and leaves a potential clothing stain, the trackman who leaves rough spots to jar equipment and destroy the nerves and comfort of passengers and passersby; each in his particular face of the jewel of service is failing in his individual responsibility to the public and is rendering imperfect or unsuccessful in his particular place the attempts of the management to achieve adequate service.

Perfect Service Is Like a Well-Cut Jewel

MR. BARNES *says:*

THE individual employee, particularly he who comes in daily contact with the public, is seldom in a position to see the problem of service as a whole. Like a well-cut jewel, perfect service may have many faces, and the outlook from one of these differs from the outlook from any of the others. The point where the work of each employee affects the safety, comfort and convenience of the public is for that employee the outlook from his particular face. Be he trainman, car cleaner, trackman or what not, each employee can know the effect which his own work should have on the public, and by that standard may he measure the performance of his obligation to render adequate service. The motorman who jerks his car, the conductor who insults the complainant, the car cleaner who passes by a smudged spot and leaves a potential clothing stain, the trackman who leaves rough spots to jar equipment and destroy the nerves and comfort of passengers and passersby; each in his particular face of the jewel of service is failing in his individual responsibility to the public and is rendering imperfect or unsuccessful in his particular place the attempts of the management to achieve adequate service.

No service can be best service unless every man concerned in the rendering of it puts forth his best effort to make it so. And every one in the employ of a railway company, from the track laborer to the motorman, from the transfer clerk to the switchboard operator, is concerned in rendering service and can by his best and only by his best bring that service to the point where with honest pride all can say: "We render to the public the best service that can be given." Not for less than his best effort can the employee discharge his obligation to the public, and if the discharge of the obligation is less than his best so is he entitled to less than the most that can be done for him.

Just as distinct though less obvious is the employee's duty to the investor. Tracks, cars, wires and buildings are the property of the investor and are lent for the public service. Abuse of this property resulting in too rapid deterioration or premature scrapping constitutes a breach of the employee's obligation to deal fairly with the investor. Proper economical use, such use as one would give one's own, is the fair measure of the employee's duty to the investor in the use of this property, and only by such use can the obligation of the employee to the investor be discharged and the employee become entitled to all that may be his right from the investor.

Again, the employee's double obligation places him in the position of mediator between public and investor. Having in charge the comfort of the one and the property of the other, he is in a position oftentimes to protect and defend the interests of the one from the attack or injustice of the other. To the public he says, "Without the good will of the investor and the investment of his funds, I cannot obtain the equipment to render you the service you desire." To the investor, "Without the good will of the public obtained through adequate service, I cannot earn the hire of your property." He can explain the desires of the public to the investor and the difficulties of the investor to the public for he is in touch with both and his daily work teaches him the needs and obligations of both. Now these things being so and the employee for the most part being engaged full time in his daily work it becomes the function of the management, with whom is the initiative, to bring these things to the attention of employee, public and investor. Let the employee know by square dealing throughout the organization that the square deal brings the best results. Let the public know by service rendered and shifted or altered to meet changing requirements that square dealing with the public is the rule of good operation. Let the investor know through his board of directors the getting of a square deal means the giving of two square deals. Let service be measured by the Golden Rule.

THE RULE OF THE SQUARE DEAL

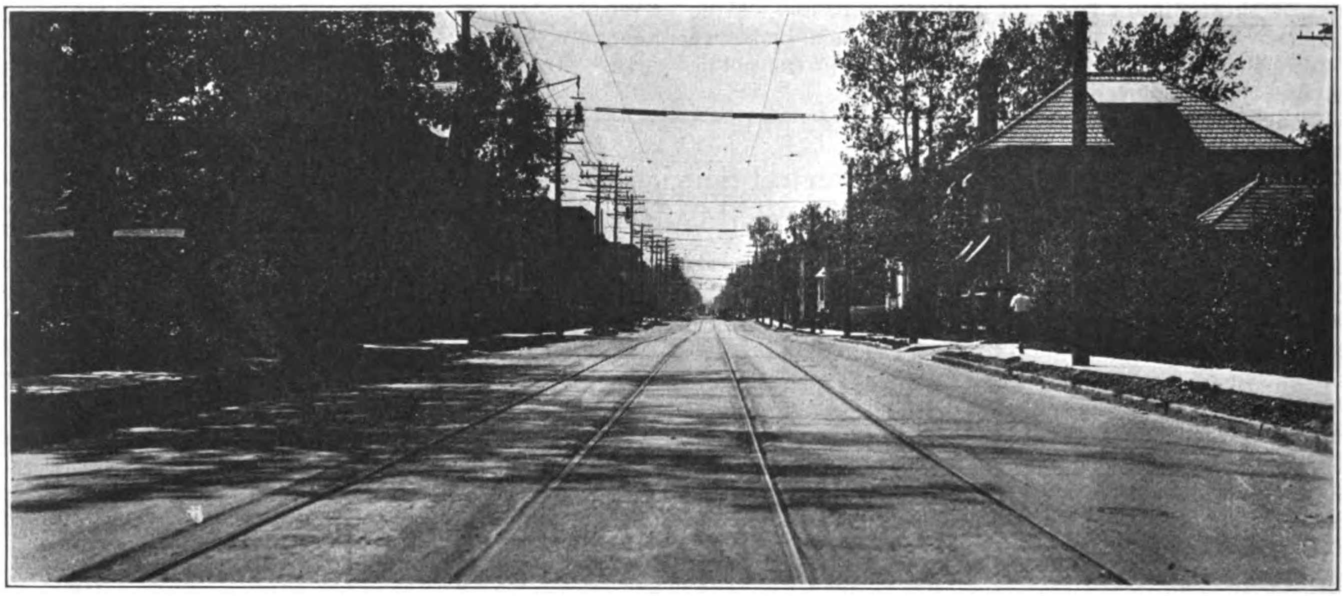
Remembering that the square is not merely a four-sided polygon but is made up of two pairs of parallel lines, each square to the other, let all functions of management in relation to employees and to public and investor be discharged according to the rule of the square deal. This in its simplest terms is the heart of the relationship between the management and men: Square dealing, based on sympathetic understanding and honest endeavor not only to protect rights but to discharge obligations.

An organization thoroughly permeated with these ideals will bring about satisfaction to public, employee and investor alike; will meet no insurmountable obstacles and few difficulties; will function in bad times as in good; will, in short, perform that ideal thing—A Public Service.

Street Railway Tracks Are the Show Windows of the Industry—Object of Track Is to Sell Rides—Track Maintenance the Keynote in Transportation Sales

The Track Department As a Factor in the Sale of Transportation

By William R. Dunham, Jr.
Formerly Engineer Maintenance of Way the Connecticut Company,
Now Chief Engineer Engel & Hevenor, New York



A Show Window That Sells Rides

SALES depend upon the attractive or pleasing display of the article offered. Salesmanship consists in offering inducements to the prospective purchasers as well as consummating the deal. The purpose of the writer is to try to show how the upkeep of the track structure of an electric railway will offer inducements to the public to buy transportation. The track and pavement are the show windows of the industry, for they show the buyer what he may expect in the way of comfort when he purchases his transportation. They are always before the eyes of the prospective patrons and make or mar the pleasure of riding.

The comfort and safety of the traveling public who patronize the trolley car depend on the track to a great degree. With this thought in mind, it becomes evident that good track makes for the sale of transportation, and it is only for selling transportation that the trolley came into being and exists. Street car rails or tracks are but an improved pavement for one class of vehicle, and the smoother and easier this pavement is kept the greater inducement for customers to buy the transportation offered.

From the standpoint of the railway managements the track is the fundamental part of the railroad. It is necessary to care for the transportation needs of the community in addition to being the window display.

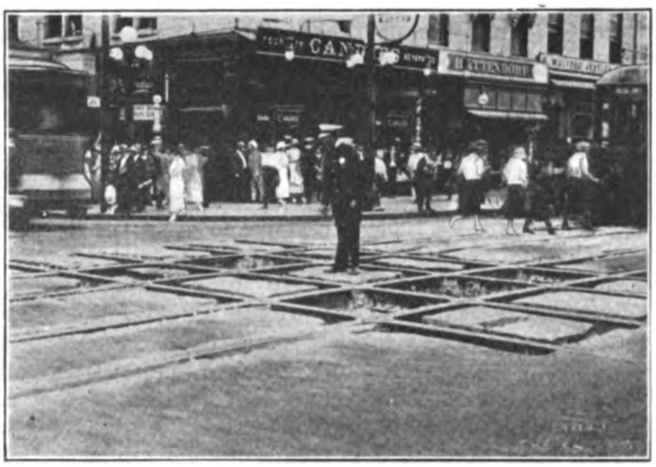
Managements can spend money to best advantage on track and should not cut the maintenance fund during every wave of economy and should not put in cheap track at any time. It is true that about the only place to cut expenses is in maintenance—cars will run a long while on bad joints, but after a while deferred maintenance means a new track or no transportation and a resultant outlay that amounts to more than would have been necessary to keep the old track in repair.

It is good business and sound economics to put in the best possible track on new construction jobs. The over-all cost of installation plus maintenance will always be less for the good construction, and sufficient experience and data are available to enable any management to put in a good track.

Track is the advertising agency of the railway business and has nothing to do with production costs. Its business is to sell rides and it should be supported to that end and its success measured by the business brought into the industry. The track advertises the railway business twenty-four hours a day, year in and year out, and its business is to make sales at the established price.

It is doubtful if many maintenance engineers look upon themselves as sales engineers for transportation, yet all their endeavors to keep their tracks in good condition have a bearing on the receipts of the company—for a smooth-running, easy-riding track offers an inducement to ride—it sells transportation. All the efforts of the maintenance-of-way men, therefore, are directed toward selling transportation, and every improvement in track conditions is a bid for riding.

The Advertising Force at Work



A Job of Special Trackwork That Makes for Comfort

Make sales by making good tracks and maintaining good tracks and then go after production costs.

One element in the functioning of the maintenance force is its relation to the public and the municipal highway officials. Here is a fine place to sell transportation. Letters complaining of bad tracks or pavements should be answered and the complaints considered. Free advice should be thankfully received even if not acted upon.

The highway officials also must be treated fairly and must be sold street railway transportation. These officials get the complaints of the public and often have the authority to order ill-advised remedies or changes. It is good business to educate these officials and to maintain cordial relations with them, so they can understand the viewpoint and problems of the transportation and maintenance men in the railway organization.

THE EVOLUTION OF THE TRACK

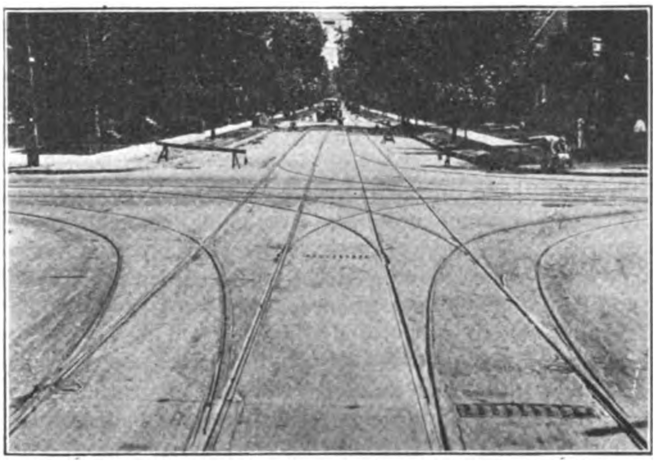
Many improvements have been made in track construction for street cars since the industry was started. It began with a light iron strap spiked down on wooden stringers in the horse car days and weighing 30 lb. to the yard; and then changed to a light T-rail, 18 lb. per yard, heavier and laid on ties with no ballast. From these beginnings, the industry has advanced until the modern track uses rails weighing as high as 140 lb. per yard with stone or concrete for ballast, and the ballast drained to prevent, as far as possible, the deterioration due to the presence of water. Improvements in joints, the weakest factor in the track structure, has kept pace with the better rails. It is a long step ahead from the light four-bolt joint previously used to the improved joint of today—be it the heavy twelve-bolted joint or the welded joint, which means no joint at all so far as the effect on the purchaser of transportation is concerned.

Perhaps no greater attempt for smoothness of riding has been brought out than the easy approach to curves, through the use of spirals or easements. It is not so hard to remember, when the car in turning a street corner would change its direction of movement with a suddenness which was most uncomfortable—but now, with the use of the easement, the change in direction is made more gradual, and the comfort of riding is enhanced, so the curve approach is a piece of salesmanship.

Curved-head rails are one of the latest salesmanship features produced by the up-to-date sales or way engineer. He will tell you that it puts off rail corrugations or cuts maintenance costs, but either one of these statements is merely another way of saying that it makes riding more comfortable—for the less that maintenance costs, the better and more comfortable the riding will be, and the greater the inducement to ride. A similar effect is obtained by tilting the rails, and this has positive effects on the purchasers of transportation. They have asked, "What makes this track ride so smoothly?" after the improvement has been made. So the difference in the riding qualities of the track, as noticed by the layman, are not always to its discredit.

As an advertising feature for a company, the track is always before the public. Its condition, and the condition of the adjoining pavement, is inseparable, and

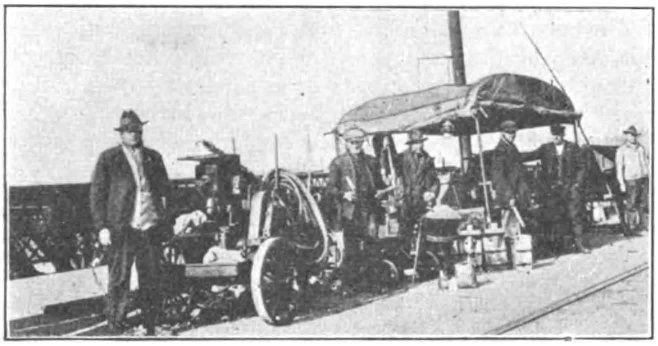
Asphalt Next to Rails Rapidly Deteriorates



Cars Should Cross This Without Jar

while the condition of the pavement will not induce riding, it is an index of the condition of the track, for good pavement cannot exist in connection with poor track. Good track and pavement is the "show window" of the transportation sales shop. It shows what the purchaser can expect for his money, and while he is perfectly willing to be shaken up and jolted around on a "scenic railway," he expects, and is entitled to, a smooth ride for his fare when going to and from his pleasure or business.

It is not necessary in the present stage of the art to spend large sums, relatively speaking, to keep tracks smooth. With the various types of welding, in many instances poor joints can be taken care of as fast as they develop, and while the perfect welding and welder have not yet arrived, it is poor salesmanship to put off this class of work until that happy time comes. The man who has paid for his transportation is not interested in knowing that 2 per cent of the welded joints have been broken and you are waiting until the art is perfected before you do any repair work, but he is vitally interested in the fact that 98 per cent of the joints have held up, for in that amount his riding is made more comfortable.


Ready to Weld Joints

He won't say so, nor will he understand even that the joints are welded—he only knows that his riding is a smooth accomplishment. Perhaps that is one of the discouraging phases of selling transportation—if it is comfortable riding there is usually no comment; the discomforts are the facts dwelt on.

The construction of modern track for street railways is the result of years of careful study on the part of many engineering minds. It has swung from rigid to elastic construction, with exponents of both types still in evidence. As the pavement is usually rigid, the elastic type of track results in excessive pavement repairs—and usually, disintegrating pavement is a public irritant of great potency. The advocates of this type of construction point to the greater costs of track and equipment maintenance, if the rigid type is used. The modern pavement, however, usually has a concrete foundation which surrounds a good part of the rails, so that resilience through the use of wooden ties cannot be obtained without breaking the bond between the concrete and the rail. As this permits seepage of water into the substructure, it begins to disintegrate with resulting bad effects to both track and pavement, for nothing is so demoralizing to a track structure as water. To overcome this and also to take care of ground water, the modern track is subdrained. This alleviates but does not entirely remove the effects of the moisture. The ties become soft and spongy, allowing the rails to work, and in the winter frost action heaves the pavement, and surface water seeping down along the rails carries surface dirt which works in between the paving top and base until the rails have the appearance of being below grade and are between two ridges of pavement. A very unsightly condition and not conducive to the comfort of other users of the highway results. There may be instances of elastic track construction where the track and pavement remain in good condition. However, it hardly seems practicable. The semi-elastic type of track construction assumes to give resilience by interposing an elastic cushion, usually in the shape of a wooden tie, under the rails. This tie is imbedded in concrete which also imbeds the rail base between the ties. In theory, the wheel loads go through the rails at the ties only, and the resiliency of the wood relieves the hammer blow of the wheels. Just what happens to the concrete between the ties and what its function may be is not quite clear, nor is it clear how the resiliency in the wooden ties is taken up so that the movement in the rail does not break the bond between the rail and concrete paving base. The question as to how the rails are held so rigidly by the concrete paving base that they do not move and so disintegrate the pavement, and yet are so resilient that they do move but do not wear out under the hammering of the wheels, is an interesting one. They furnish a rigid support for the pavement and a resilient way for the car wheels, two apparently opposite results.

The rigid type of construction is the other extreme. It is designed as its name implies—not to move. In this type, the substructure is drained to provide for ground water; steel ties are imbedded in concrete, which extends up high enough on the rails to act as a base for the paving; the paving surface is made as impervious to surface water as it is possible to waterproof it, either by cement grout or pitch in the paving joints and along the rails or by a concrete pavement to the top of the rails. Whatever resiliency is obtained in this type of construction is that which is inherent in the rails themselves.

The advocates of elastic track construction point to the evils of rail corrugation, which must occur in the rigid type of construction, but this effect also occurs in the elastic or resilient type. There are many theorizers on the causes of rail corrugation, and as many theories. Every one of them can be proved.

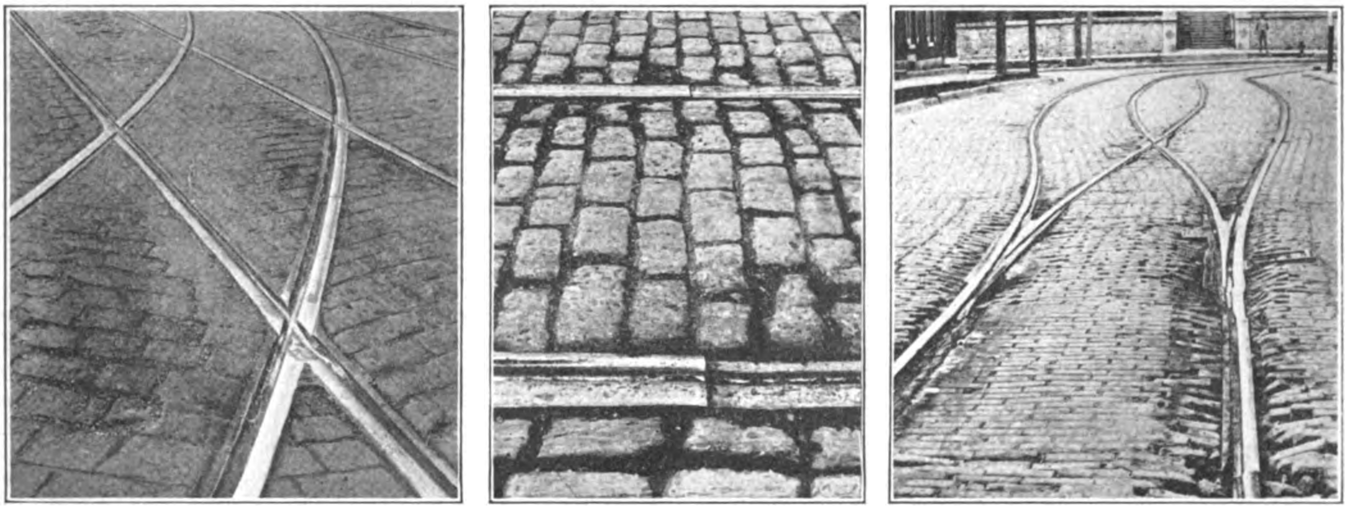
Track construction in itself can be made to sell transportation. Many examples are available where citizens write in to the railway company to advise it how to construct track on a new job or to complain about some feature of the construction work. It seems that every patron thinks he knows how to make good track, and the interested group of citizens found on a new construction job is evidence of these conditions. Such advisory letters should be answered in the same manner as a salesman answers the inquiry of a customer.

Then, again, in doing construction work it is good salesmanship to do it rapidly and without troubling other traffic. It is bad salesmanship to make all automobiles drop down over a 6-in. curb of pavement or dirt when crossing a street on which a railway company is doing construction work. A little effort and a little money to prevent these things will pay dividends through the reaction of public sentiment.

The main point in selling transportation, however, is not the type of construction so much as it is the keeping of the track in the best possible line and surface and giving the smoothest ride for the money that can be obtained. The type selected, therefore, should be determined on, by what it will cost to maintain the track after it has been built. This cost must include the maintaining of the pavement, which is the advertising side of the proposition, for the prospective passenger will judge of the track and the service by the sightliness of the street surface as this first meets his eyes.

Make and Maintain Good Joints

The joint is, structurally speaking, the weakest part of the track, the part that has been more thought over perhaps than any other feature. With the advent of the heavy deep rails, steel channel bars have been used with six, eight and twelve bolts to hold them in place. They have been welded by pouring molten iron around the rail ends, with several ways of melting the iron; special forms of bars have been applied to the webs of the rails, these bars being then welded to the webs in spots by the passage of a heavy electric current through the bars and rails, and the application of a heavy pressure against the plates; by drawing an electric arc along the top and bottom edges of the plates at the junction of the rail heads and rail bases, depositing steel from the arc by melting; or by laying a steel rod along the top and bottom edges of the plates and melting it into the rail and plate with an electric arc so that they are welded together. The plates have also been riveted together through the rail, and one type of joint has molten spelter poured in between the plates and rails—the whole being riveted. All these methods are being used in an endeavor to keep the rail ends from moving.



Examples of Poor Merchandising

The application of each method depends on the use of a relatively high temperature, and as the temperature is confined to a short section of the rail near the end this makes a critical point where the heat crystallizes the steel and a fractured rail may result, usually just back of the line of molten metal in the cast-welded joint or the ends of the bars in the electric-welded joints. This break is not perhaps a frequent occurrence, but does occur often enough to prevent use of these forms of joints by many way engineers. So far, perhaps, the welded type of joint is the better practice.

With the bolted type of joint, the continual passing of car wheels over the rail ends gradually depresses the head of the receiving rail and a "cupped joint" is formed. This small depression rapidly grows worse as its depth increases, until the whole joint disintegrates. It can be remedied at the start by grinding the two rail ends level, using one of the numerous forms of grinding machines now on the market. The depression can also be built up by welding steel onto the rail head, using the electric arc and a steel rod, the excess steel deposited being ground off with a grinding machine. Another method is to weld the joint plates to the rails and then build up the heads of the rails as this practically removes the joint. The welding and grinding require care, but laborers with a fair degree of intelligence can be trained in a short time to do this sort of work. This trouble does not ordinarily occur with joints which are welded when the track is constructed.

The larger roads have separate gangs of men who do nothing but weld, but any road large enough to operate cars is large enough to have at least one welding and grinding outfit, providing it wishes to sell transportation by means of smooth riding track, and if properly handled such an outfit makes for economical track maintenance.

Rail corrugation is one type of track deterioration the cause of which every maintenance man knows, and there are as many theories for it as there are track men, and a few more. It occurs in all types of construction, most frequently in the grooved or tram sections of rails, occasionally in the plain or standard girder types; on tangent and curved track, but generally on rails the heads of which are on a slope horizontally toward the gage line. There is one remedy, an expensive one, and that is grinding out the corrugations. The rail head, when corrugated, has a series of waves along the surface. The passing of car wheels over these waves jars the whole track and pavement structure, loosening the rails from the ties and breaking up the pavement surface. It is also very noisy and disagreeable. The corrugation should be ground out as soon as it occurs, although it has been known to disappear after a time, but in selling transportation, no chances should be taken and it is better to renew the rail if no grinding outfit is available.

Special Trackwork Costly But Essential

The most expensive part of the railway track is the special trackwork, and next to the joint, perhaps more thought has been given to its design than to any other one feature of the track structure. The first cost is high, the life is short, and the cost of renewal is large, compared with the same length of tangent track.

Special trackwork is a convenience and necessity for crossing tracks or switching smoothly and rapidly. More complaints can arise because of 50 sq.ft. of bad special trackwork than from the occasional pounds caused by bad joints on miles of straight track.

Special trackwork is very expensive to install and to maintain, but money is well spent in this manner for crossings are aggravating sources of trouble from a sales standpoint. If switching causes a car to stop or slow up, causes the motorman to throw the switch by hand or causes a bad jolt, the passengers are irritated and become nervous. Another factor in causing rough riding is that at some congested crossovers the traffic officers or late schedules will force the motorman to operate the car at high speed, even though against the company rules, and the passengers get the benefit of all the rough spots.

Another point in regard to special trackwork is that it should be smooth so as not to irritate or cause jars to other vehicular traffic. In Little Rock, for example, the automobile owners commented very favorably on the fact that the street railway had put in special trackwork which caused no rough riding in the automobiles.

Another case that comes to mind that hurt sales is where a pavement and special trackwork repair job at an important crossing was prolonged until the volume of complaints became enormous. Quick repair with the least interference with other traffic or the appearance of the street is an essential requirement to maintain public good will.

Speed of movement can be increased at crossover and switching points by the use of special trackwork and electric track switches. The electric switches save money in the long run and also do away with schedule delays caused by the motorman having to stop his car, get down and throw the switch. A psychological factor is the fact that the pasengers, when they see a motorman throw a switch by hand, think the method crude, but when the switch operates by electricity they think the idea splendid and guess as to how the feat is accomplished.

FOUNDATIONS AND PAVEMENTS DISCUSSED

The best foundation possible should be put in at all special trackwork locations, using ballast well tamped under the ties, and well drained. Provision should also be made for draining surface water away from the structure, especially at the switches and frogs; if possible, the track elevation should be such that surface water will flow away from rather than toward the layout.

Undoubtedly the best type of pavement around frogs and switches is granite block on a concrete foundation with cement grouted or pitch and pebble joints. Cement grouted pavement will undoubtedly be more permanent, but granite block with pitched joints will be easier to remove when it becomes necessary to renew the worn pieces. The average life of frogs and switches, under fairly heavy traffic, is about five years, and as the pavement is broken up from the constant pounding before it becomes necessary to renew the pieces, it is well to have the pavement of a type easily removed and when removed fit to use again. Undoubtedly a granite block pavement with pitch filled joints comes nearest to these requirements. A hard brick pavement with cement grouted joints could be used, although the constant jar of the wheels passing over the various gage-line intersections will tend to disintegrate this pavement more quickly than it will the granite block. With either type of pavement and joints between the pavement steel switch pieces and rails should be waterproofed with an elastic material such as pitch or asphalt. Cement grout should not be used for this purpose as it will shatter quickly, thus letting water seep between the rails and pavement with consequent rapid disintegration of both.

The conclusions to be drawn, therefore, are that the maintenance of a track structure and pavement are of vital importance to the advertising and sale of transportation; that the sale of transportation is as necessary to a manufacturer of transportation as is the sale of any other commodity, and while people will ride of necessity, the ease and comfort of riding should be so pronounced that the non-riding public would get the riding habit, not from necessity but because it is easy.

Managements should see that the maintenance department has the best equipment and skill at its service if they wish to sell transportation. This equipment and skill is needed for several reasons—it means speed in repair work and minimum cost, and it means good advertising in that the public takes pride in seeing modern equipment used by the railway and is convinced it is up to date and that the management knows its business.

The writer believes that the way engineers can go a long way to obtain this result by looking at their work from the viewpoint of salesmanship. While the cars deliver the goods, the track advertises and displays them and also makes for safe and comfortable riding and easy delivery.

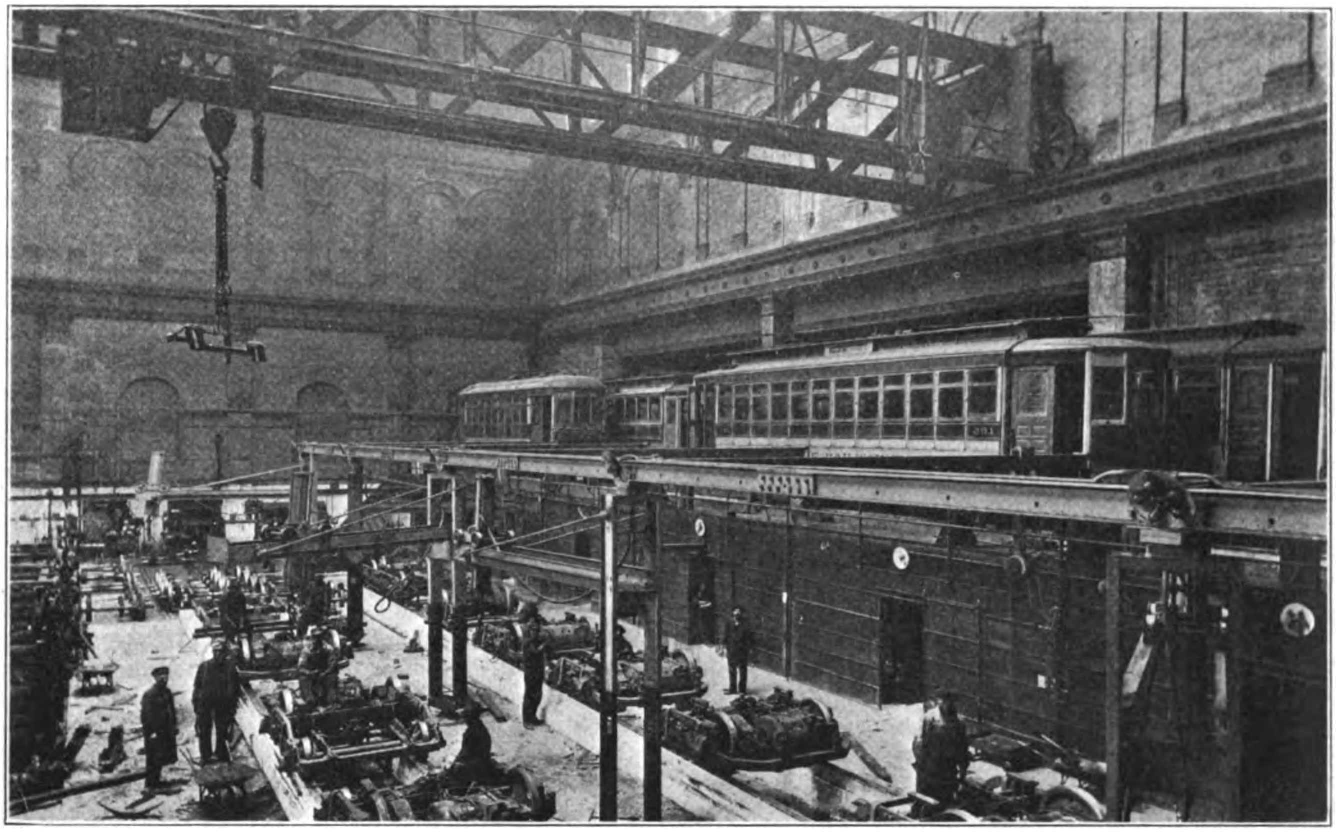
Installation of Steel Ties in Detroit

The Efficiency of a Street Railway Organization and the Class of Service Furnished Are Accurately Reflected by the Condition of the Rolling Stock Equipment

Relation of the Equipment Man to the Sale of Transportation

By J. S. McWhirter

Master Mechanic Third Avenue Railway, New York



Adequate Overhauling Facilities Make Reliable Equipment

THE QUESTION, "What part does the car equipment man take in the sale of transportation?" may be answered by the analogy between the organization of the supply company and that of the electric railway. Like the factory engineer or manager of the supply company, the car equipment man does not come in contact with the customer as does the salesman or the transportation man. But as the efforts of the salesman fail unless he is backed up by the factory engineer or manager, so will the efforts of the transportation man fail unless he is backed up by the car equipment man. Therefore, the part of the car equipment man in the sale of transportation is to meet the requirements of the company's customers from the car equipment standpoint, in order that the transportation man may have the strongest "factory" support in the sale of his product.

First of all, from the standpoint of the customer, is the general appearance of the car, in which painting and cleaning play a large part. The use of a bright and pleasing combination of colors is the basis of an attractive appearance, which must be maintained free from dirt and dinginess. The average appearance is improved by the practice of touching up and revarnishing at frequent intervals as compared with burning off and repainting at longer intervals.

The appearance of the car windows is as important as the appearance of the painted surfaces. Dirty windows are perhaps the most obvious indication that the customer is not receiving the grade of service which he expects. Floors are also closely observed by the customer, and while he realizes the impossibility of spotlessness, he is quick to resent any unnecessary accumulation of dirt or refuse. Hence the car equipment man must make car cleaning one of his most important duties, while in the design of equipment his efforts must be directed toward the elimination of dirt pockets and ease of cleaning.

DISCOMFORT AND ANNOYANCE WITHIN THE CAR MUST BE MINIMIZED

After a passenger has boarded a car it is most essential that he be carried without discomfort. Here the seat and seating arrangement play an important part.

The contour of the cushion and back, the height of the cushion above the floor, and the allowance of knee and foot space are the first considerations. Next is the question of arrangement. While there is an undoubted preference in the mind of the average car rider in favor of the cross-seat he is generally willing to sacrifice this preference on short rides in favor of the ease of access which is secured with the longitudinal seat. Then there is the question of the seating material, the factory worker generally being indifferent to the material while the office worker and shopper prefer rattan seats. Here the car equipment man must weigh the economy of the longitudinal or wood slat seat against the possible gain in patronage or good will to be secured with cross seats or rattan-covered cushions and backs.

For those passengers who cannot be accommodated by the seats, hand holds must be provided. The considerations are that these must be sanitary and sufficient in quantity.

The window is an important point of contact between the car equipment man and the car rider. While it is not necessary for window sash to be movable during the "closed car" season, in the summer time it is desirable that the lower sash may be readily and safely opened or closed by the passenger. Another chance for irritation which the equipment man can avoid is loose or rattling sash or glass.

From the passenger's viewpoint the push button signal system is important. He has a right to expect that his signal given on any push button will be audible to the operator of the car. As it is not the number of push buttons, but rather their reliability, which is important, a push button so located as to be convenient to each exit may replace a number of push buttons on the window posts with economy and increased reliability.

Heating and ventilation require careful design by the car equipment man. The main considerations are the maintenance of a moderate temperature and the avoidance of drafts and foul air. The first two considerations can only be secured with cars whose doors are so interlocked with the controller or brake that they must be closed while the car is running, and when these conditions have been met it is a simple matter to proportion the ventilating system to remove a sufficient quantity of foul air. Thermostatic heat control has been found superior to hand regulation to provide the proper temperature, but the car equipment man must not neglect its maintenance as proper operation depends to a large extent on this.

THE OPERATION OF THE MOTIVE POWER AND BRAKES MUST BE SMOOTH AND FREE FROM JERKS

Smooth acceleration is desirable from the passenger's viewpoint, while the opening of the circuit breakers or a flashing of the controller are very alarming to the more timid. The car equipment man can generally provide smooth acceleration by a careful adjustment of the resistance steps. The annoyance of blowing circuit breakers is best avoided by the use of line switches located under the car floor, but fuses must be used with the line switches to secure full protection. The flashing of controllers is greatly reduced by the line switches, which remove the breaking of the heavy arcs from the controllers, but even with this protection, controller frames must be well grounded.

As smooth acceleration is desirable so also is smooth braking. Brake handles and valves must be kept in such a condition that the operator will have no trouble in applying and releasing the proper amount of air, and the brake release springs must provide for prompt releasing of the brakes.

THE RUNNING GEAR IS ALSO AN ELEMENT IN MAINTAINING GOOD WILL

Probably the source of greatest annoyance toward electric railway car equipment is the flat wheel. In too many cases poorly laid out brake rigging has been responsible for an excess of flats. Yet flat wheels will always develop, and that car equipment man will cause the least annoyance who will get his flat wheels off the road the soonest.

Noisy gears are close seconds to flat wheels as sources of annoyance. Now that the split gear is a thing of the past and efficient noise-reducing gear lubricants are available, the problem is largely one of the worn axles and axle-bearing housings. The elimination of these requires an expensive program of arc welding and reboring for the maintenance department, yet the car equipment man finds this the most economical course in the long run.

Loose and rattling truck parts give the public the impression that a car is on the way to the junk heap. When this condition prevails the car equipment man is more apt to be at fault than the truck and careful attention is needed.

The car rider appreciates an easy-riding car just as he appreciates an easy-riding automobile. Some designs of trucks are hopeless misfits from this important viewpoint, but it is the duty of the car equipment man to provide easy-riding trucks to the greatest of his ability.

CONTINUITY OF SERVICE IS IMPORTANT

Continuity of service is as important to the electric railway as it is to the power company. Delays in either case result in loss of revenue. Motor failures are an important source of delays which can be largely prevented. Flashing can be prevented by close attention to brushes, brush-holders and commutators. Coil trouble can be minimized by dipping, baking and hot banding. The remaining electrical troubles are more easily avoided.

While certain car riders are impatient of folding doors and steps, it has been found that the elimination of boarding and alighting accidents produces much more good will than is lost by the use of these safety devices. It may be noted that the accident-saving efficiency of these devices is materially increased when they are so interlocked with the control or brake apparatus that the car cannot be started until the doors are closed. Another element of good will is the number of pick-ups which are being scored by automatic wheel guards in knock-down cases. The maintenance of these safety devices is an additional expense to the car equipment man, but he is glad to maintain them for the benefit of the organization as a whole.

The hand brake is a safety feature of the modern car which the customer expects will be available for his protection when needed. The co-operation of the transportation man with the car equipment man is necessary to keep the hand brake in operating condition, but the latter should provide a brake with which the car can be controlled as readily throughout its range as with the air brake throughout the entire range of piston travel of the air brake.

While the human element in car operation is fallible the car rider expects the car equipment to be infallible, and it is the duty of the car equipment man to meet this expectation. Brakes, wheels, sanding apparatus and the emergency features required for stopping the car must be in safe operating condition at all times, but this is only another way of saying that they must be well maintained.

The part of the car equipment man in the sale of transportation is thus to provide to the best of his ability bright, clean, well-maintained cars which are suited to the requirements of the car rider, and which operate smoothly, reliably and with a maximum of safety. If he would succeed in fulfilling his part he must be willing to devote all of his thought and an eternal vigilance to the task. The points enumerated constitute the major portion of his creed. It is evident that he must be a man of broad gage.

Car Design Is Intimately Connected with Volume of Traffic—How the Car Can Be Made Attractive to Patrons and Thus Increase Business

The Car as a Transportation Salesman

By Norman Litchfield

New York

WHO is the true sales agent of the electric railway—the president? Hardly, for at best he can come in contact with but few of the road's patrons. The general manager? Perhaps more nearly so, but he is apt to be too busied with the prevention and settlement of strikes, the hammering down of the ever-soaring operating rates, placating commissions, and buried under the multitudinous tasks that form the heavy chain which, like Marley's ghost in Dickens' famous story, he is doomed to carry clanking behind him throughout his existence.

And so we would find it if we traveled down the line of the various officials, that one and all, necessary though their functions be, are tied and bound by their duties so that as salesmen of their company's only product, transportation, they fail to get acquainted with their customers and make sales—a very picture of unsuccessful salesmanship. They play rather the part of the production end of the plant, analyzing the needs of the market and providing the necessary output and an attractive product.

How does a customer get to know a manufacturing concern? Through its salesmen, of course; that goes without question. Then how does a patron get to know a railway? Chiefly, and in the case of the average electric railway, almost entirely through its cars. We may therefore fairly state that the cars form the sales force of the railway. If the headway be too great and Salesman Trolley Car does not show upon the job at the psychological moment and Salesman Jitney steps in, he gets the business. Why not? "Absence makes the heart grow fonder" was never said of a trolley car, that's sure. And if Salesman Trolley is dirty and his shoes need shining and he is loud and noisy, who wants to associate with him? A wise receiver, now gone to his rest, spent the greater part of his first receipts in painting his cars, and the attitude of his public quickly changed. No matter how decrepit the internals might be, the surface looked clean and shiny, and people were willing to ride in it. It's the rosy cheek that sells apples; it even often gets husbands, and so why not patrons?

If we agree that the trolley car is the road's most potent salesman, we may then proceed to analyze the characteristics which make for success and point out some of the errors time has shown to exist, and so pave the way for a better understanding with our patrons and a surer marketing of our product.

Let us assume, therefore, to begin with, that the transportation department has provided a schedule with headway sufficiently close so that I, the patron, when I come into the market, find Salesman Car conveniently near when I call for him. Note that phrase, "When I call for him."

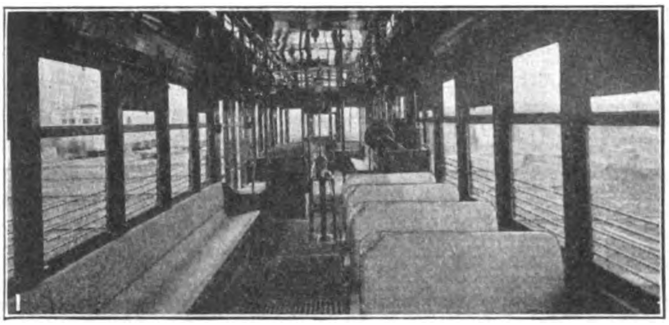
If he thrusts himself noisily upon me when I don't want to hear him, disturbing my work and mayhaps my rest, you may be assured I will have none of him and will turn to Friend Jitney, who, though he squawks a bit too much, yet travels on rubber heels.

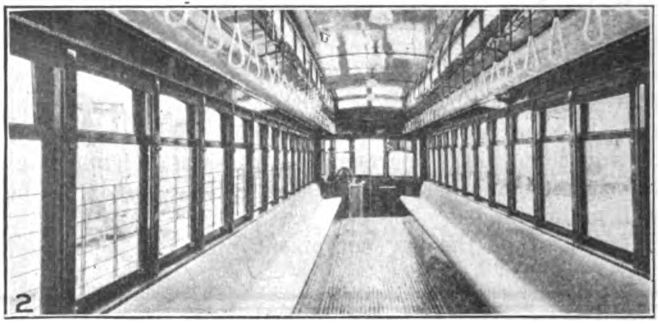
NOISE MUST BE REDUCED

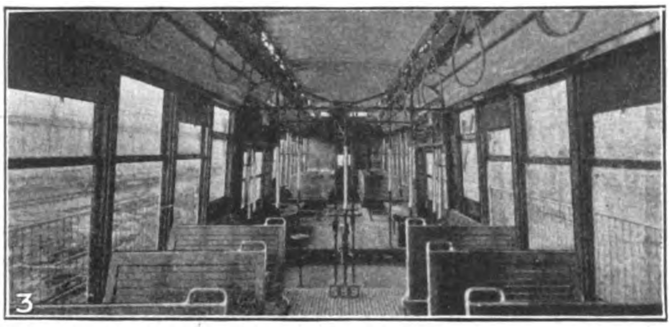
Therefore, to begin with, we must provide means of making our cars run quietly. Notable work has been done along this line in the use of helical gears for motors, strict truck maintenance, eliminating loose and rattling parts, non-chattering brake hangers and the use of wooden blocks for the support of brake rigging. Another aid is the pit grinder, which can help make the soul-racking flat wheel a thing of the past. Then, too, the science of lubrication has been developed to the point that on a well-conducted property the hot box is a rarity where formerly it was a troublesome pest. In this part of the subject comes the question of the car weight, for it is undeniably more difficult to operate heavy cars quietly than light ones, not so much because of any inherent defect in the car itself, but because of the greater blow given at rail joints and crossovers. Who has not lived at some time near crossovers, where one could almost tell the class number of the car by the noise it made?

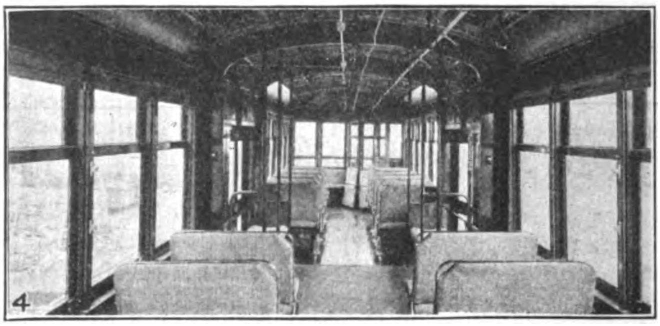
No specific cure-all for noise can be given, but those items already mentioned have done their part in making a more favorable attitude of the public toward the roads.

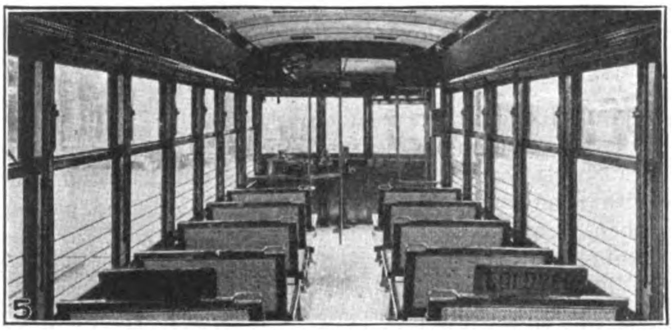
The car approaches, and I attempt to board. If many people are leaving the car, do I have to stand out in the wet and cold until the last man has disembarked before I can enter? Or, on the other hand, do I still

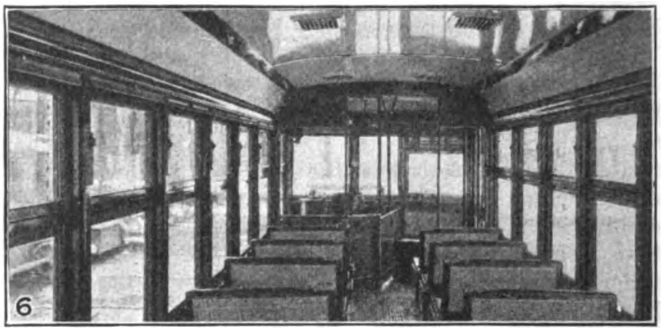


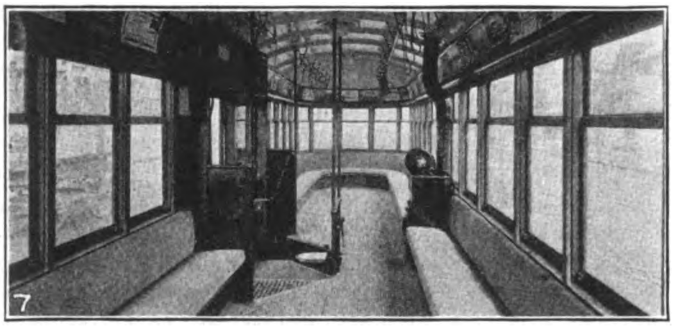


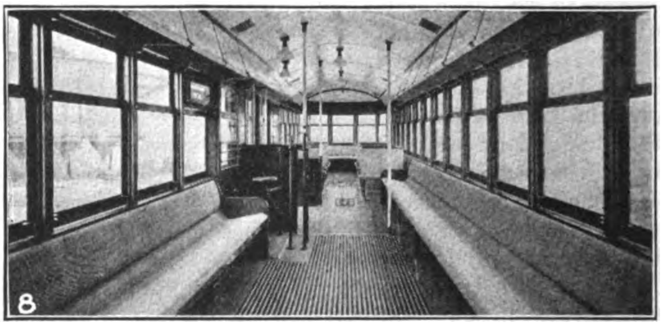


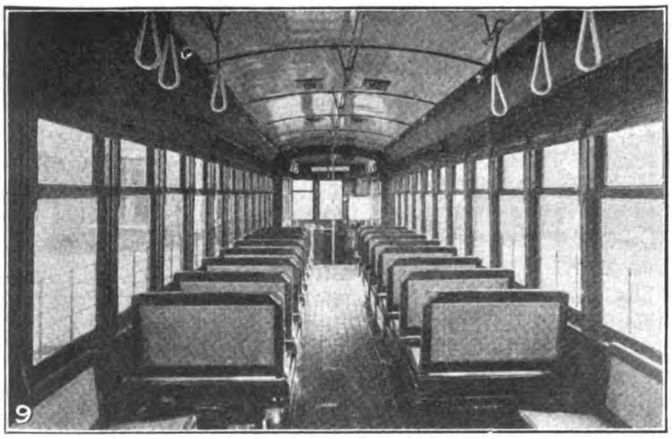


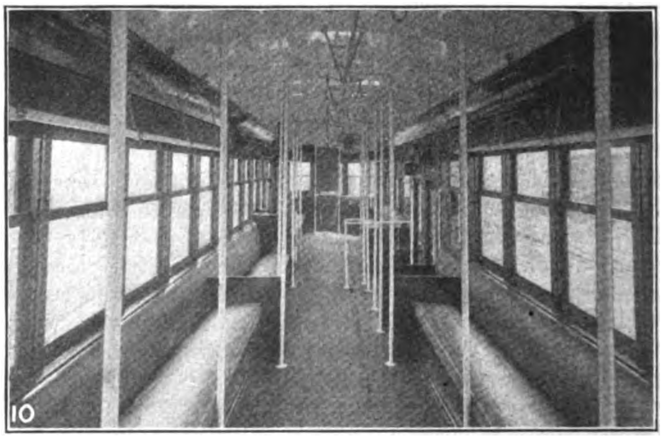












Types of Cars—Interior Views

No. 1—Center-Entrance Car with Staggered Arrangement of Seats to Equalize Load.

No. 2—Double-End Car with Longitudinal Seats.

No. 3—Center-Entrance Car with Longitudinal Seats Near Well and Cross Seats Near Ends.

No. 4—Center-Entrance Car with Cross Seats.

No. 5—Safety Car with Division for Colored People.

No. 6—Safety Car with Separating Partition for Operator.

No. 7—Center-Entrance Trailer.

No. 8—Peter Witt Car with Longitudinal and Cross Seats.

No. 9—Double-End Car with Cross Seats.

No. 10—Peter Witt Car with Stanchions Instead of Hand Straps.

have to stand out in the weather while the conductor is laboriously collecting the fares of a long line of passengers ahead? How often is my enthusiasm for a road dampened before ever I have left the pavement? So herein has come about the development of five distinct classes of car:

1. Rear entrance, front and rear exit with separate motorman and conductor.
2. Center entrance and exit, with crew of two.
3. Front entrance and exit, with crew of two.
4. Front entrance and center exit, with crew of two.
5. Front entrance and exit, with one-man crew.

We cannot now go into a discussion of the relative merits of these different types of car. Like salesmen, a different type is needed for each set of conditions. But in each class there are certain constructional details which bear vitally on the selling of transportation, and it is with these we wish to deal.

STEPS AND DOORS

First among these comes the question of the number of steps, whether one or two. In answering this it must be made clear just what is meant by the "number of steps." Is it to mean simply external steps or is it to include all the upward rises from the street level to the car. If external steps are the criterion, there can be but one answer, namely, one step, largely for the reason that folding doors and steps have become a *sine qua non* of safe operation, and it is not practicable to use two external steps and have them fold. If it means, on the other hand, the total external and internal steps, then the question becomes not of one or two steps but rather of one, two or three steps, counting the external step as one, the platform as two and the body floor as the third. As to which is the more preferable arrangement, this question, like many others, cannot be settled entirely by itself, its solution generally being a compromise between the desirable rise of each step and the height of the top of the motor from the track.

We must therefore first give consideration to what constitutes a desirable height of step. This is determined by considerations of comfort, safety and speed of interchange of passengers. For stairs a rule in common use by the architects provides that the sum of the lift and tread shall equal 18 in., this giving a proportion which has been found by experience to be one which is comfortable and which makes a flight of steps which can be traversed at a reasonable rate of speed. This matter of tread and lift proportion is one which is frequently misunderstood, it being sometimes thought that if the step is low it will be comfortable, which is not the fact if the tread is not properly proportioned. I have in mind one stairway on a suburban line which has badly proportioned low steps which are a constant source of complaint—verbal if not written—on the part of the road's passengers.

For the first step from the street level to the external step or well of center-entrance cars it would be desirable to limit the height to 12 in. It must be admitted at once, however, that this has been accomplished in but few instances, and then somewhat at the sacrifice of other important features, and the best that can be accomplished is about 14 or 15 in. In fact, this may be considered to be about the general standard height, practically no cars now being built with anything over 15 in. where external steps are used.

Having determined 14 in. as the height of the first step, the two others become dependent on the height of the body floor from the rail, which in itself is dependent on the height of the motor. Much effort has therefore been expended by the motor designers to produce a motor of minimum diameter. This has resulted in a car floor averaging about 34 in. from the rail, with a maximum of say 36 in. With 14 in. first step, this leaves from 20 to 22 in. to be divided up between step to platform floor and step to car floor. Now, it is particularly on the step from the folding step to the car platform that the matter of proper proportion of tread to life becomes important. Using the formula already quoted, with tread say 10 in. or so, the proper lift becomes 8 in. Two conditions prevent the attainment of this ideal, the one the necessity for drawbars in many cases under the platform and the other the vastly increased use of the life guard installed under the platforms and for the successful operation of which sufficient clearance must be maintained between it and the platform arms for the body of a grown man or woman. This means a platform floor height of about 27 in., making the lift from the external step to the platform floor about 13 in. This is uncomfortable and makes for accidents in boarding and alighting. This leaves the lift from the platform to the car floor about 7 to 9 in.

To sum up, therefore, it will be seen that the selection of step heights is not one that can be made at will, but is controlled by well-defined conditions, and that for the end-entrance car the average figures are:

	Desirable	Actual Average
Rail to external step	12 in.	14 in.
External step to platform	8 in.	13 in.
Platform to car floor	7 to 9 in.	7 to 9 in.
Total lift	27 to 29 in.	34 to 36 in.

We have therefore been forced to put our patrons to discomfort at the very entrance to the end-entrance car, although the matter is one which has been much improved in recent types as compared to designs of some years ago.

With the center entrance and exit there does not exist the necessity for body clearance underneath the car framing and hence better conditions are found. It also is almost universal to use sliding doors, without external steps, a common feature being to have a center well from 14 to 15 in. above the rail, a step from well to car floor of from 9 to 10 in. and a ramp from this point to the necessary motor clearance level.

In the end-entrance, center-exit car the exit is built with the car floor flush and with two internal steps of dimensions about:

From floor to first step	10 in.
From first to second step	10 in.
From second step to rail	14 in.
Total	34 in.

Confronting the would-be passenger at the time of boarding are the doors with which all modern cars have their platforms equipped inclosing the car and protecting the crew and the passengers from inclement weather. How shall they be operated, by hand or by power?

That is a question that must be left to the opinion of the individual operator, for as far as the passenger is concerned both work reasonably well, and it is questionable whether his desire for the company's product will be affected one way or the other, whether the "gates are set ajar" by compressed air or by brute force. On the other hand, from the viewpoint of the crew, the pneumatic operation so lessens their labor that it should tend materially toward giving them an attitude favorable to the interests of the company, and so help to improve the quality of the company's only output, transportation, which is delivered to the customer through the medium of the crew, who if they be worn out and grouchy inevitably arouse in the passenger a feeling of hostility. And it should be noted, as the writer has frequently observed, that this hostility is not directed against the individual conductor or motorman, but against the railroad and its management. That might form an interesting subject for thought on the part of some of the expert psychologists who masquerade on our payrolls in the guise of publicity men.

Hence the welfare of the crew is in no small sense vital to the successful marketing of transportation, and pneumatic operation of doors and steps should go a long way in obtaining the desired result, and it may be remarked in passing that manufacturers state that the large majority of the cars built in the last five years have been furnished with pneumatic doors. If it be a safety car, then pneumatic operation, preferably foot controlled, is a necessity to permit the operator to be free at all times to make change, issue transfers, etc., and get away promptly.

Closely connected therewith too is the matter of safety, for if the doors be pneumatically operated it is possible and customary to interlock them with the control and the brakes so that they cannot be opened until the car has stopped, or to start the car until the doors are fully closed. Some one may ask, How does such an arrangement sell transportation? The answer may be somewhat negative, but is none the less apt, that a hurt passenger can lose the company many more dollars than the amount settled by the claim agent, for it is certain that no amount of money ever made up for the loss of an arm or a leg, and the maimed passenger becomes the worst possible kind of publicity agent whose workings, while not always visible, are surely there, undermining the company's credit and stealing its patrons.

While therefore the pneumatic door devices may cost more than the manual arrangement, the balance seems to be in their favor, and we can rightfully say that they too aid in "selling transportation."

FARE COLLECTION

We have thus assumed that our passenger is safely on board the car, housed safe and snug, but, alas, if it be a prepayment car, and the crowd be great, he may still be standing in the street, held up by the line of people in front of him, who, oddly enough, are trying to present some money to the railway company, a strange and unusual proceeding! And more strangely, it is often here that apparently the most effort is made to slow up the proceedings, as it were. One would expect, rather, that the fare collector would be trained by the starving company to pounce upon his victim and extract the necessary nickel from him with the minimum of delay. It sometimes appears that so much attention has been paid to the prevention of the loss of the fraction of a per cent of the revenue through the peculations of the crew that it has entirely blinded our eye to the fact that we are not getting our passenger on quickly enough and with due regard to their comfort. Protecting railings should be carefully studied and reduced to a minimum and the farebox placed where it will allow the general average pick-up load to board the car and have the doors shut before the first man pays his fare. This presupposes the fare box entirely off the platform, and, if weather conditions permit it, away with bulkheads and everything else that hinders free movement of passengers! Adequate change-making machines and foot-operated registering devices all help, but there is still room for improvement and the door is wide open to the inventor who perfects better and more automatic means of fare collection and registration.

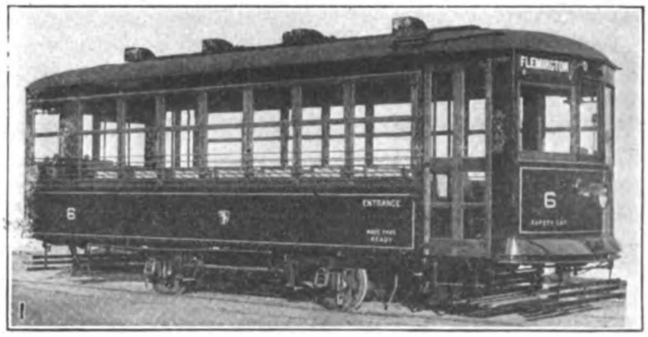
So at last we have our passenger safely in the car, having had due regard to his safety, his comfort in climbing the steps, etc., and have succeeded in separating him from his nickel (I write in New York), or in more generous towns his dime. It is astonishing when one jots it all down to see what care and attention has been paid to the mere getting our friend on and into the car. I doubt if our millions of riders ever begin to appreciate it, but make but one error in any of these points and they will appreciate your mistake, never fear, and the public is a past-master at the expression of such appreciation.

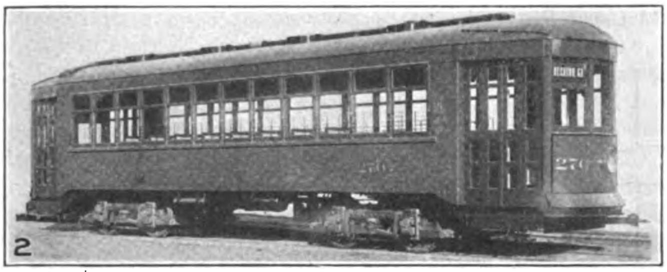
COMFORT IN SEATING

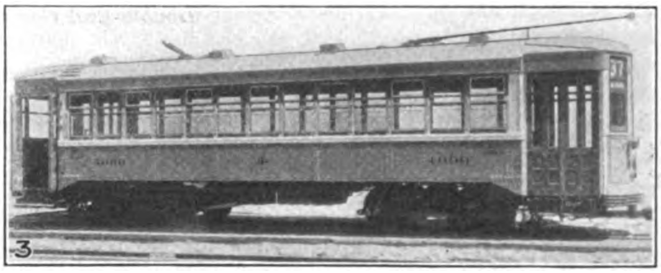
Having paid his fare, the passenger naturally turns his thoughts toward the possibility of a seat, and he attempts to thread his way through the throng, which, regardless of the type of car, always congregates around the entrance, resting its weary frame against anything leanable against. His comfort is then vitally affected by two things which are practically inseparable in their importance, namely, the aisle width and the character of seat. Here comes in the consideration of what constitutes the aisle and what the most desirable type of seat. The latter really comes first, and the selection should be made according to the character of the service. If it be one of frequent interchange of passengers, the personnel of the load changing several times in a trip, the longitudinal seat is desirable, as it gives the widest and most flexible aisle, allowing free movement of passengers so that they are more likely to distribute themselves throughout the length of the car, and furthermore the short rider is not much interested in having a cross seat.

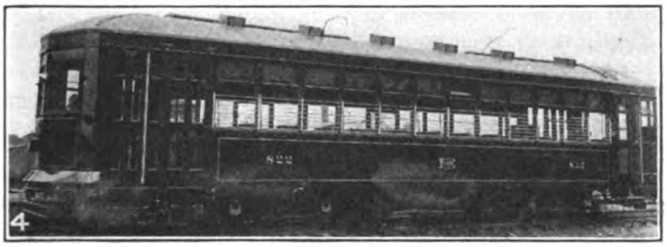
If, on the other hand, the service is one where the load is picked up in a small area and carried some distance to various points where they disperse to their homes, then the cross-seat arrangement becomes the proper one, provided the way clearances are such that a reasonable width of car can be used. For it must be remembered that, regardless of what width we make the actual seat, for comfort each person should have about 18 in., and unless we put arms on the seat will take that much, whether we as operators like it or not. Therefore with two cross seats, one on either side of the central aisle, 6 ft. are going to be occupied by the seated passengers, and unless a reasonable width of car is possible the clear aisle will be so narrow that congestion will result and passengers will be seriously inconvenienced and annoyed. If it is less than this the aisle is bound to be congested and passengers seriously inconvenienced and annoyed.

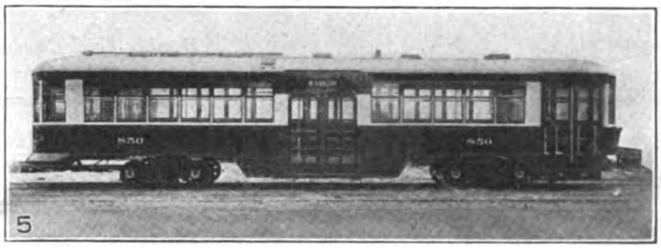
Then comes the question of the space that shall be allotted between cross seats. It certainly should be sufficient to allow a fairly tall passenger to sit in comfort, not always in a rigidly upright position as some cars require, and further to place a reasonably sized bag under his knees and in front of the seat. To attempt to work too closely is but folly, as it does not please the passengers and tends to slow up passenger movement so that, if the headway be close, less passengers can be carried past a given point than if fewer seats were furnished. In fact, it would seem that in two things there has been somewhat of a tendency to go too far, the one in the extreme lightening of the car and the other in the crowding in of seats, merely as a talking point that so many seats have been provided.

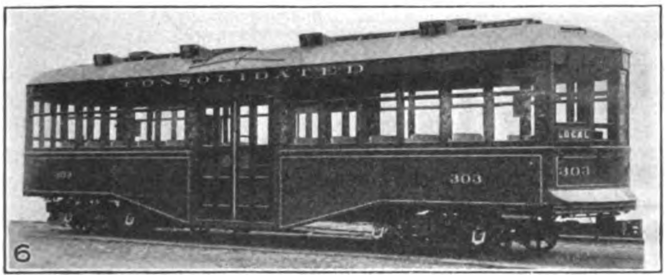


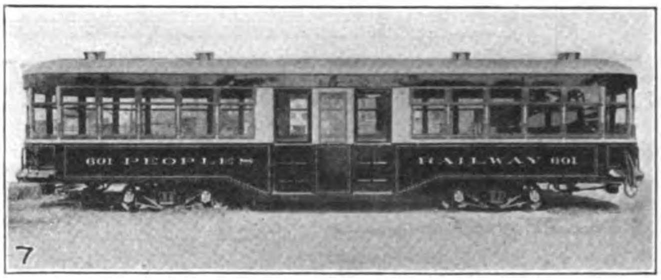


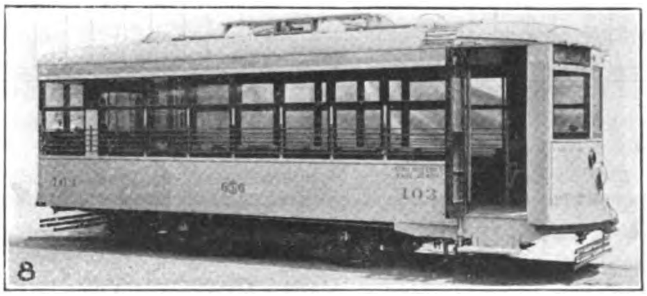












Tyes of Cars—Exterior Views

No. 1—Safety Car.
No. 2—End-Entrance Car with Cross Seats.
No. 3—End-Entrance Car with Longitudinal Seats.
No. 4—End-Entrance Car with Double Folding Steps.

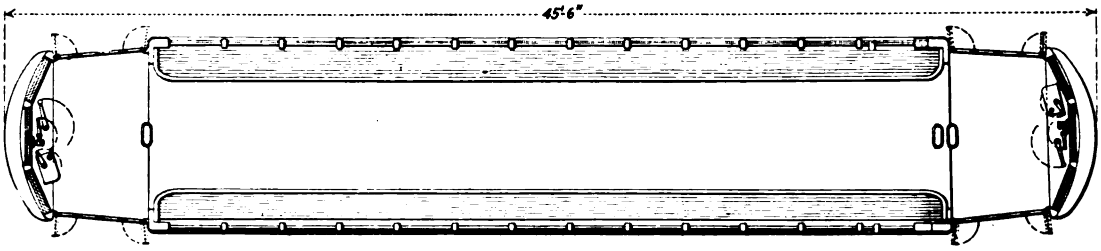
Tyes of Cars—Exterior Views

No. 5—Peter Witt Car.
No. 6—Center-Entrance Trailer.
No. 7—Center-Entrance Trailer with Double Doors.
No. 8—Safety Car.

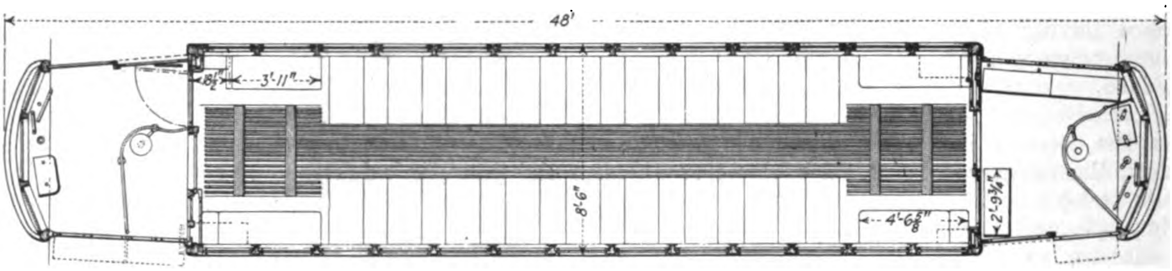
Having seated him or herself in the corner next the window, the passenger attempts to rest his arm on the window sill, and often finds it missing; a slight inconvenience, but nevertheless one which is not only an inconvenience but something of an irritation, and the small amount of weight that is saved by its omission certainly does not justify the possibility of making the passenger uncomfortable and put him in a mood wherein he is apt to find fault with the company. It is all very well to argue that the aisle seat is built without an arm rest, therefore why not the window seat? The answer is obvious that it is too bad we are forced by our narrow city streets to omit the arm at the aisle so as to give more free aisle room. Here the advantage in flexibility of passenger movement outweighs the discomfort to the individual and is therefore properly condoned, but not so at the window. By all means let us have the arm rest.

For windows we have the choice of one of four arrangements: First, the double sash in its two varieties, one with the lower sash designed to raise, the other with the lower sash stationary and the upper sash designed to drop; second, the patented semi-convertible arrangement in which the whole sash lifts into the roof, necessitating a rather awkward and displeasing looking ceiling arrangement; third, the single sash designed to drop into a pocket, and, fourth, the single sash arranged to be removed permanently during summer weather.

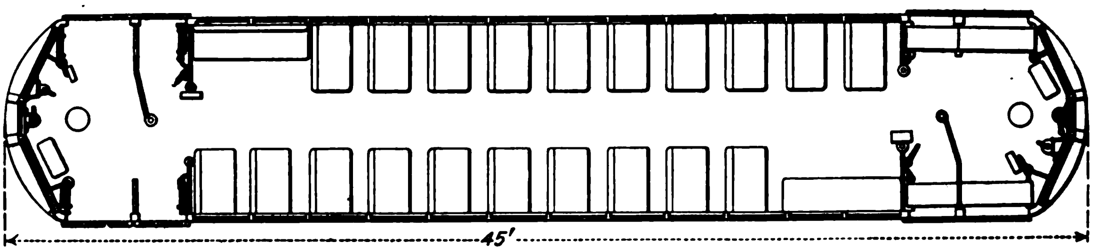
Which pleases the patrons of the road most? I wonder if that question has always been uppermost in the minds of designers. It sometimes seems not,



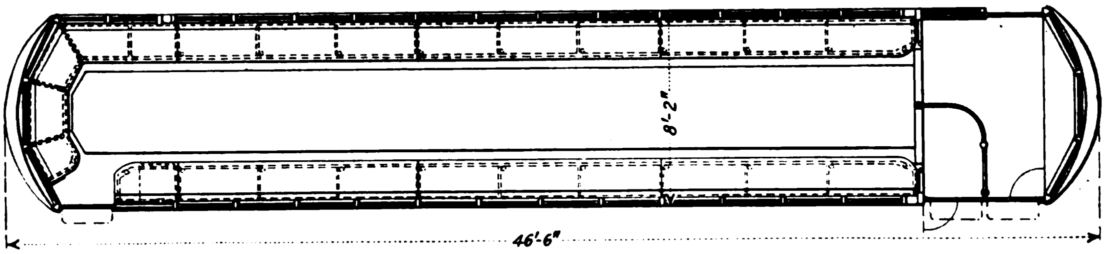
Double-End Car with Longitudinal Seats


48'
18½"
3'-11"
8'-6"
4'-6⅝"
2'-9¾"

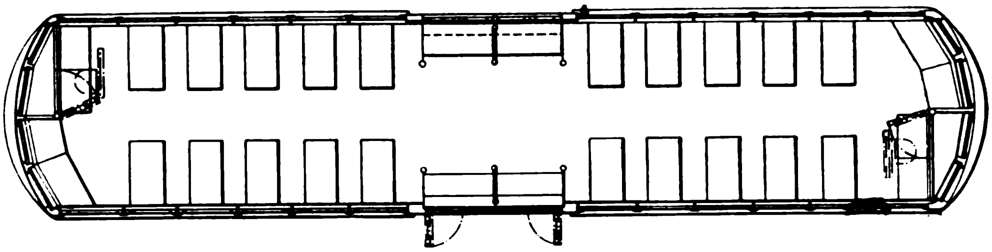
Double-End Car with Cross Seats



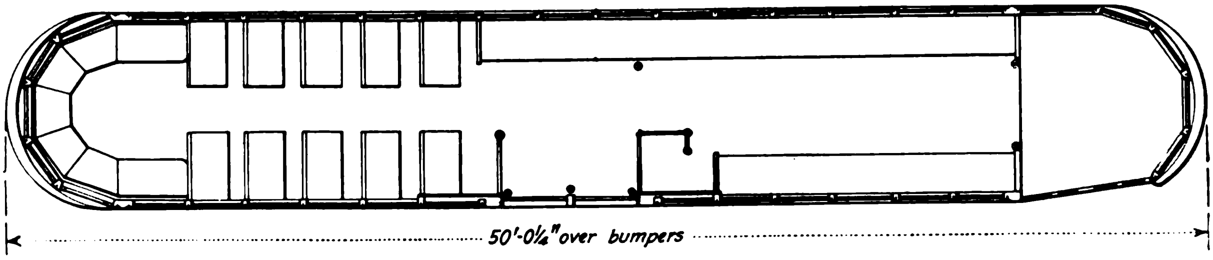
Double-End Car with Cross Seats



Front Entrance Car with Emergency Exit



Center Entrance Car


50'-0¼" over bumpers

Peter Witt Car

Plans (Drawn to the Scale of ⅛ In. = 1 Ft.) of Typical Double-Truck City Cars

whereas it should be, for it does not take many additional passengers to pay for whatever may be the additional cost of upkeep or power consumption of one arrangement over the other.

Let us analyze the matter. In the first place, no one in these days of good-looking houses, cars and automobiles likes to ride on a car which has not a pleasing interior; secondly, he wants to be able to see out with the least obstruction to his vision; further, he desires to be as cool as possible in the warm summer sun, and yet hates to get chilled and wet if the summer shower suddenly descends. And all the time we must remember that if he is sitting in a cross seat he demands his full 18 in. width of seat. That is a specification of desires that is troublesome of fulfillment, as is evidenced by the numerous varieties of window construction that have been brought out.

The decision, if it were left to the passenger, I believe, would be for the single sash dropping into a pocket for longitudinal seats, and for cross seats a single stationary sash, removed altogether in summer time, with a good substantial curtain that he can pull down in case of rain.

Now, the latter arrangement undeniably puts a big burden on the railroad company, requiring it to provide large space and arrangements for storing the sash in the summer time, and probably the best compromise is the double sash, with the lower sash arranged to lift just as far as it can be made to do so.

HEATING AND VENTILATING GO HAND IN HAND

The reverse of these conditions obtains in winter time, for then the passenger wants the window closed and a reasonable heat provided. The heating of the car, it may at once be said, has been pretty thoroughly worked out and the heater companies are prepared to provide heaters which will maintain an even temperature of about 50 deg. F., which is the most comfortable for passengers, who as a general rule in city cars do not wish to remove their overcoats or their furs with which they have provided themselves in cold weather. But this requires attention of one sort or another to maintain the even temperature desired, as much or even more discomfort being caused by an overheated car as by a cold one. The true solution seems to be the use of a thermostat automatically controlling the heaters, and while they are not as yet entirely perfected, yet they have been brought to a stage of development where they perform fairly satisfactorily, and the large amount of power saved by their use considerably overbalances the cost of their upkeep.

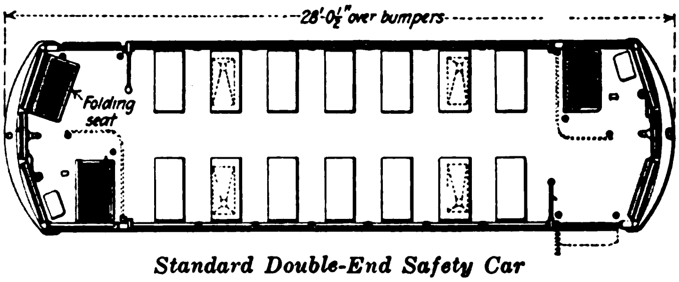
Closely in hand with the matter of heat goes that of ventilation, a subject on which there has been and even yet is about as much misinformation and ignorance as any subject with which designer and operator have to do.

It was the old theory that poor ventilation was caused by an excess in the air of carbon dioxide, the waste gas that we breathe out from our lungs.

Careful experiments made some years ago at one of our large universities, however, threw some light on the interesting and disputed subject. A number of men were inclosed in a large glass box and kept under observation while they pursued various activities such as reading, writing, etc. In the meanwhile no fresh air was admitted into the box; it, however, was equipped with electric fans, which at the beginning of the experiment were not in motion. After a time the inmates began to show signs of physical exhaustion, and then the fans were set in motion and the men immediately revived and picked up their work again, and continued working without serious discomfort even though no "fresh" air had been admitted and the CO_2 content of the air was very much higher than generally considered desirable.

Further practical experience has been along the same lines, so that it seems to be pretty well established that to secure satisfactory and comfortable ventilation enough cool, fresh air must be admitted to prevent foul odors, and it must be in gentle motion so as to provide sufficient evaporation from the skin of the passengers so that they will not suffer from excess bodily temperature, and at the same time the motion of the air must not be violent enough to cause a strong draught. It is not possible in an article of this character to discuss the merits of various systems of ventilation, and it can merely be pointed out that the foregoing constitute the fundamentals of good ventilation and that the findings are rather against the pre-heating of the incoming air and the use of any type of ventilating system which will not cause the free admission of cool, fresh air when the car is moving slowly or is stopped altogether.

The American rider, as a rule, is a cleanly and somewhat particular person, and to a large extent his nose rules him in his judgment of the railway company. The matter of ventilation, therefore is one, aside from a matter of health, that should receive careful and intelligent attention and should not be lightly shoved aside for purely constructional reasons.



Standard Double-End Safety Car

CURTAINS HELP

The next thing that affects our riders' comfort and convenience is that of the window curtain. Some discussion has arisen of late whether these are not merely a useless extravagance. This seems doubtful. The railway company in accepting its passenger tacitly agrees, within reason, to carry him to his destination in safety and comfort, and in both of these items the curtain plays its part. Most all riders are readers, and no one can read with full sunshine on the printed page letter in comfort or in safety, for the glare on the white page is an acknowledged severe strain on the eyes and one which should be avoided. Again, in case of sudden storms arising in the summer, when the windows are open and have remained open for some time, even the most ardent advocate of this or that style of window will agree that occasionally (some of us think frequently) the windows stick and it is impossible to close them. Then the question of the presence or the absence of the window curtain comes very much to the front and, if absent, ruined costumes and disgusted riders result.

Conditions vary of course, and too sweeping a conclusion should not be drawn, but in the main, and with reasonable prices in a period of the President's "normalcy," which it is to be hoped is at least on the horizon, the verdict is for them, as constituting one of the small things that represent "service."

LIGHTING ARRANGEMENTS NOT UNIMPORTANT

Being seated comfortably, housed snug and warm and dry, and being, as aforesaid, a somewhat literary person, the rider opens his newspaper or his favorite "movie magazine" and starts to read. Now, in the matter of illumination, I think we are more inclined to be overgenerous than stingy. Many of our cars belong, so far as age is concerned, to the era of the old "16-candle power" carbon filament lamps, and the lighting system was laid accordingly. Even then, if the voltage regulation was reasonably good, the amount of illumination provided was large and the cars presented generally a decidedly brilliant appearance. To realize this, we have only to turn our minds back to the wonderful center oil lamp of the old horse cars with its many-faced prismatic reflectors, whose sum total of candle power was so small that it seemed like the coal fire of Scrooge's clerk, which if poked at all, went out, giving up the ghost and saying, "What's the use?"

Then later came the marvelous Mazda lamp of today, a very scientific baby whose christening was not in candle power, of the meaning of which we had a glimmer of understanding, but in something called "watts," so that we hardly realized that we were obtaining a unit of double the brilliancy, and we stuck them in our cars, lamp for lamp, in the old socket just as they were, turned on the "juice," and sat back and exclaimed, "My, isn't it fine and bright!" And the funny thing of it is that we are hurting rather than helping our eyes. For the eye is so constructed that light is admitted to the retina, whose function is somewhat that of the "movie" screen, through the pupil, which is a shutter, or rather an aperture, which automatically opens or shuts to admit more or less light to the retina as it finds it well for the general well being of the eye. This accounts for the fact that when we enter a dark room at first we can see nothing, but gradually things begin to appear out of the darkness and we are able to find our way about, even though falteringly. This is due to the fact that the pupil has opened to its widest extent, admitting all the light there is and producing thereby a faint picture on the retina. Equally so, when suddenly exposed to a very intense, brilliant light, the pupil immediately contracts and admits a smaller amount of light to the retina, and hence the picture is somewhat dimmer.

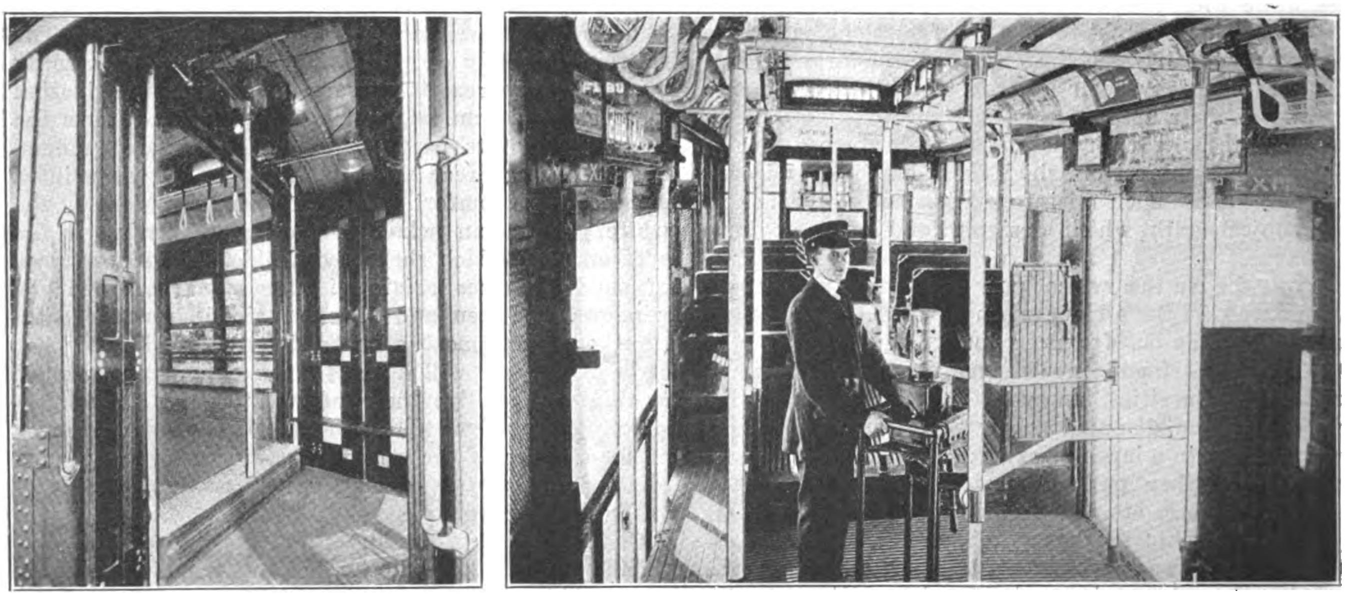
Now, while the Mazda lamp as a whole unit gives a degree of illumination which may not be considered excessive, nevertheless the filament itself is extremely brilliant, as is evidenced by the fact that we cannot look directly at the filament without instinctively turning away with our eyes smarting. It is desirable, therefore, that the lamp be shaded so that in an ordinary standing or sitting position the eye will not see the bare filament, and by so doing a less total amount of illumination is required for the reason before stated, that the pupil stays wider open. This cuts down the power consumption for illumination and is therefore desirable. The shading further permits us to use a smaller number of high-power lamps, thus reducing the first cost and the maintenance, and giving, if intelligently placed, equally satisfactory illumination.

PUSH BUTTONS MAY BE HIS LAST IMPRESSION

Our rider nears the end of his trip, and as he approaches his destination he desires to warn the car operator that he wants the car to stop. By and large, the obvious way for him to do it is by the convenient push button, one of the symbols of authority of which the American, native born or melting potted, is ever fond.

Starting out as an unmitigated nuisance, as it admittedly was in the old days of dry batteries and house-bell wiring, it has evolved into a sturdy piece of apparatus that needs only a reasonable upkeep to have it render its service quietly and unobtrusively to the passenger, allowing him to leave the car with kindly feelings toward the company and its plea for a fairer show in the municipality in which he lives. Don't forget that last impressions are often controlling.

With a few steps the passenger is off the car and our responsibility toward him is ended. What a cycle of human interest it has been from the moment that his eyes scanned the horizon for his car until we let him off at his corner, bound for his home or his work. And the cycle repeats itself millions of times each day throughout the country. And on the skill with which the cycle is traversed depends the success or failure of our service.



At Left, a Clean and Roomy Entrance Invites Attention. At Right, White Enameled Stanchions and Hand Straps for the Comfort of Standing Passengers

Merchandising Is Different in Railroading than in Private Enterprises—To Determine What Constitutes Efficient Service, Traffic Surveys Are Made and All Runs Are Charted

Making Transportation Serve—and Sell

By Clinton E. Morgan

Assistant General Manager Brooklyn City Railroad Company

Borough Hall, Brooklyn, Showing Loop and How Study Has Resulted in Elimination of Congestion Due to a More Even Car Flow

IN THE USAGE of transportation the word "merchandising" conveys a meaning not wholly clear. From whatever angle we attack the question of transportation we are met by conditions not found in the ordinary forms of business, and which, therefore, do not lend themselves to the methods and policies therein employed.

Possibly it should be true that the principal problems of "selling" transportation do not differ greatly from the principal problems of the average merchant, but whether this be so or not the essential facts of the transportation industry unquestionably exclude "merchandising" when we attempt to apply this term to the business of running a street railway system.

It is plain that the street railway systems carry obligations and enjoy rights in a sense wholly distinct from those of merchandising. All this is true even of large corporations which are a collection of individuals as holders of stock.

This general view is put forth with the idea of dispelling any misconceptions that may arise from the use of the term "merchandising." It is the duty of railways to deal with conditions as they are, not as they have been or should be. It does not aid effective policies to deal loosely with terms that may lead both the public and the workers in the transportation industry astray.

In Brooklyn, where a situation scarcely without parallel in the country has existed, the obstacles to successful management have been greater than those faced by private enterprise, even in abnormal periods. Added to the difficulties resulting from resumption of independent operation and the disentanglement of the surface lines from the great network of transportation, involving subway and elevated systems, were new and indirect difficulties presented by a combination of municipal and private ownership.

The Brooklyn City Railroad, while under separate management and control, cannot be regarded for purposes of management or of public policy as distinct from the great network of transportation interests of which it forms a part. To make the situation still harder the management of these lines was confronted not only with the unusual troubles of an unusual traction situation but also by a hostile municipal administration. The management was even forced to resort to the courts to eliminate unfair bus competition and to be enabled to exercise its franchise rights.

Dealing with the question of merchandising Brooklyn's transportation in sense of marketing or, better still, providing service, we may pursue some lines of analogy between the storeman and the street railway operator in a discussion germane to the symposium which this number of the ELECTRIC RAILWAY JOURNAL embraces. The storeman relies to a great extent on direct advertising, and, while this method is followed in varying degrees by transportation systems, selling in Brooklyn is being accomplished by the indirect method.

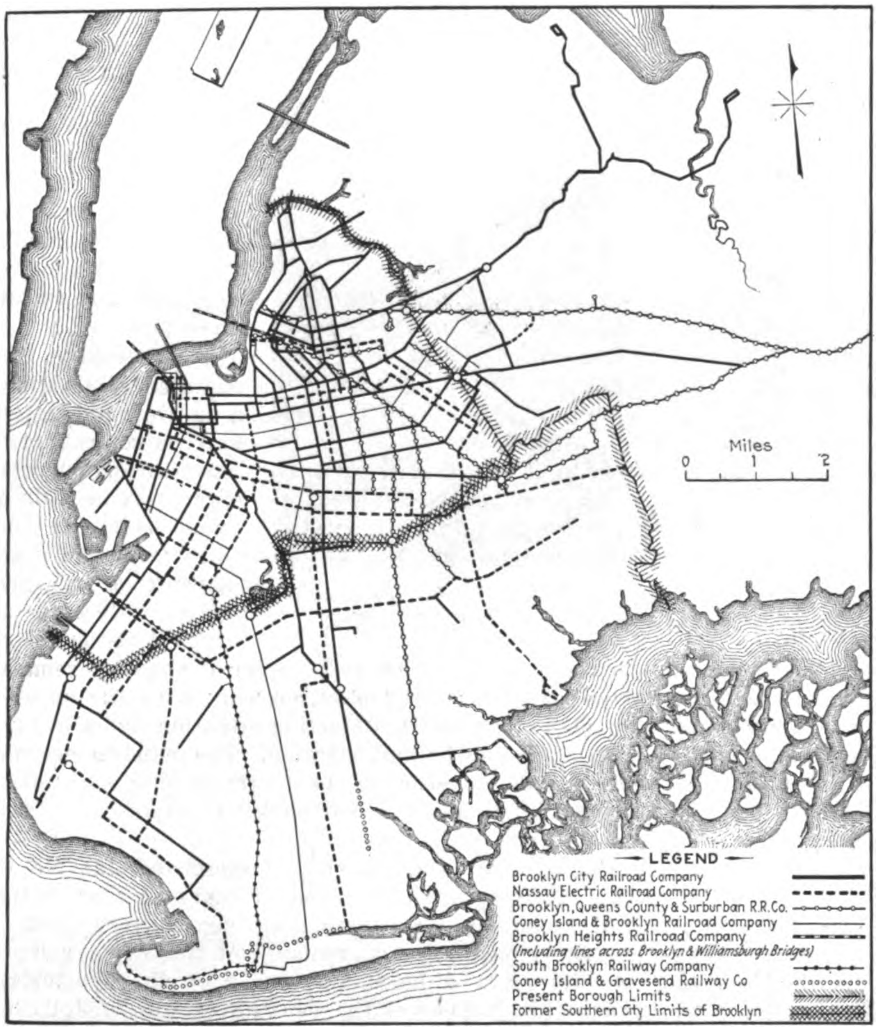
This policy is grounded on the belief that the first demand of the public is service and that when this service is supplied the result will be appropriate public acknowledgment with resultant increase in earn-

TABLE I—SUMMARY OF FOUR DAYS TRAFFIC CHECK, SHOWING OLD AND NEW RUNNING TIMES BETWEEN THE VARIOUS TIME POINTS

	April 16, 1921			April 17, 1921			April 19, 1921			April 20, 1921			Total	Average
	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time	Number Trips	Total Time	Average Time	New	Old
Buffalo Avenue to Kingston	14	62½	4½	6	27½	4½	12	54	4½	12	56	4¾	4½	6
Sterling Place	14	84¼	6	6	32½	5½	12	52½	4½	12	51¼	4¼	5	4½
Washington and Bergen	14	57½	4	6	29¾	5	12	60	5	12	67	5½	5	6½
Vanderbilt Avenue	14	31	2	5	14½	3	12	27½	2¼	12	27½	2¼	2½	3
Flatbush-Atlantic	14	49½	3½	5	15	3	12	38½	3	12	39	3	3¼	3
Livingston Street	13	37	3	6	14½	2½	12	30	2½	12	32	2½	2½	1½
Borough Hall	13	86	6½	6	32	5½	12	71½	6	12	72	6	6	6½

ings and a better understanding on the part of the car rider, whose co-operation is essential to success.

In former days little thought was given to transportation in the nature of a sale. It was simply a case of putting what you had on the street and the public could ride or not. It was ample, however, when the companies were not required to seek business through the devices of the salesman. This attitude has made the problem more difficult, for the time when the public looks upon the advances of transportation companies without skepticism has not yet arrived. In Brooklyn, however, this skepticism is fading, but owing to the complications which an unfriendly city administration had produced, the general public still harbors doubt.


Miles
0
1
2
— LEGEND —
Brooklyn City Railroad Company
Nassau Electric Railroad Company
Brooklyn, Queens County & Surburban R.R.Co.
Coney Island & Brooklyn Railroad Company
Brooklyn Heights Railroad Company
(Including lines across Brooklyn & Williamsburgh Bridges)
South Brooklyn Railway Company
Coney Island & Gravesend Railway Co
Present Borough Limits
Former Southern City Limits of Brooklyn

Map of the 525 Miles of Surface Lines in Boroughs of Brooklyn and Queens

We believe that the transportation companies cannot reasonably ask the public for substantial support unless they give the equivalent of that support in adequate service. This attitude is based not upon altruism or upon any vague theory of rights but upon the fundamentals of an existing situation.

"Service" is difficult of definition. Service that is considered adequate for one property is entirely inadequate for another. This is true even as to lines on the same property. Efficient service must be built upon two prime factors—the attitude of the car riders and the economic cost of meeting that attitude. In Brooklyn the problem of the surface lines took definite and intensive form when the Brooklyn City Railroad, by decree of the federal court, was separated from the other surface and rapid transit lines operating in the borough and resumed independent operation, following the failure of the Brooklyn Heights Railroad to meet the obligations incurred as lessor. Since that time —Oct. 19, 1919—every effort has been made to maintain car service that would meet the requirements of the public. How successful these efforts have been is shown by the results flowing from unified operation of all the borough surface lines under one directing head. On Feb. 15, 1920, the receiver for the three other surface lines with which the Brooklyn City Railroad had formerly been associated as a part of the B. R. T. system entered into an agreement with H. Hobart Porter, vice-president and general manager of the Brooklyn City Railroad, to supervise for him operation of all the other surface lines of the Nassau Electric Railroad, the Brooklyn, Queens County & Suburban Railroad and the Coney Island & Brooklyn Railroad.

During the past year, notwithstanding the trainmen's strike in August, 1920, and the opening of the new rapid transit lines, which have greatly changed the traffic flow, the management has been able, by consistent application of a fixed policy, to study the traffic needs of each line separately and to handle more passengers at a lower cost per passenger than heretofore. Results have proved that this policy was sound, as the car riders have been given a quicker and better service.

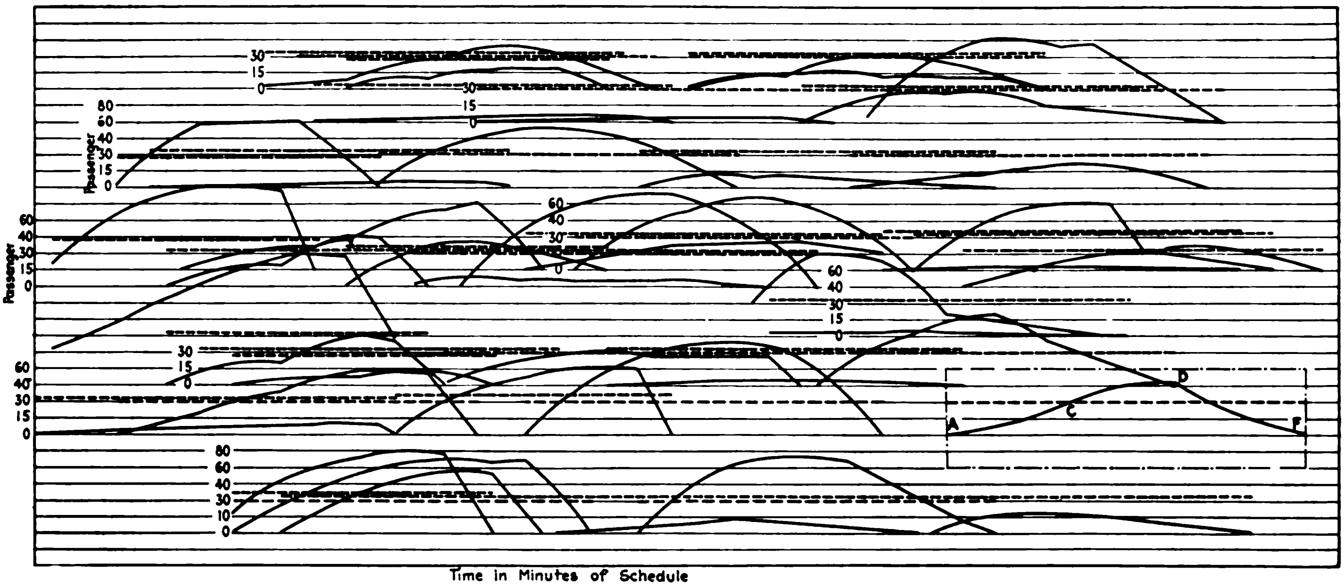
The surface lines of Brooklyn operate 524.887 miles of track and are owned and operated by seven companies as shown in table below.

Of the above, all except the Brooklyn City Railroad are controlled by the Brooklyn Rapid Transit Company's system.

Following the return of the Brooklyn City Railroad's property to its owners in 1919, and owing to the diversified ownership of the lines, it became necessary to break up several routes. The result was the forming of new riding habits by the public.

Soon after this changed condition of riding habit a thorough traffic survey was made of all surface lines. The object was to find where patrons were located, their riding habits, distance traveled, and, this ascertained, to adjust the service to their needs, with the view of determining the percentage of loading of the entire line. The further aim was to determine the methods used in the analysis, some of which are used generally throughout the country. In addition to these usual methods, and owing to the importance of complet-

	Miles of Track
The Brooklyn City Railroad	232.104
The Nassau Electric Railroad	146.409
The Coney Island & Brooklyn Railroad	52.488
The Brooklyn, Queens County & Suburban Railroad	64.956
The Brooklyn Heights Railroad	5.205
The South Brooklyn Railway	16.028
The Coney Island & Gravesend Railroad	7.697
Total mileage	524.887



Passenger Counts Plotted Graphically to Show Passengers on Cars at Each Five-Minute Interval in Comparison with Seating Capacity

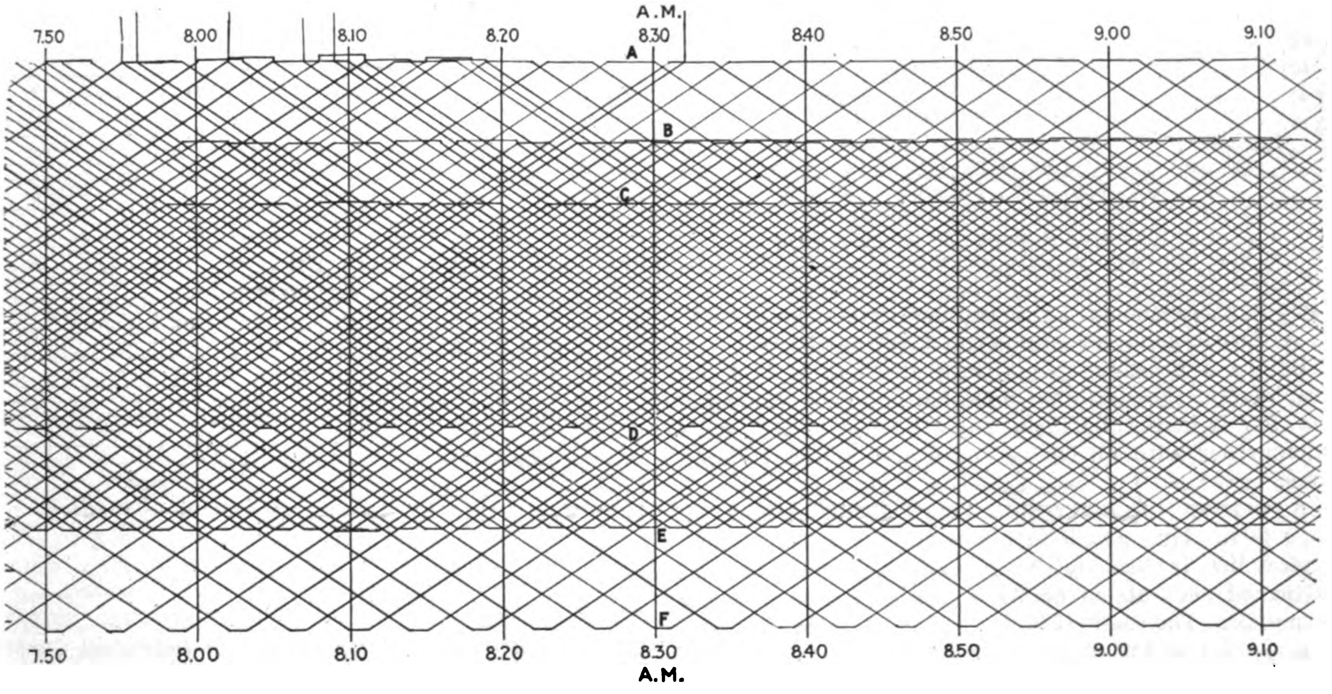
ing this survey at the earliest possible moment, many novel methods were and are now being employed to determine the necessary factors incident to providing the proper service in the most economical way.

In determining the service requirements, each line was checked from the beginning to the destination by stationing a trained checker at various points approximately five minutes from each other, regardless of distance. This virtually amounted to taking a cross-section analysis of the line. The men make a check of the line in both directions during the twenty-four hour period on the trunk lines, twenty-four hours per day, seven days per week, and on the lines of lesser travel from four to six days.

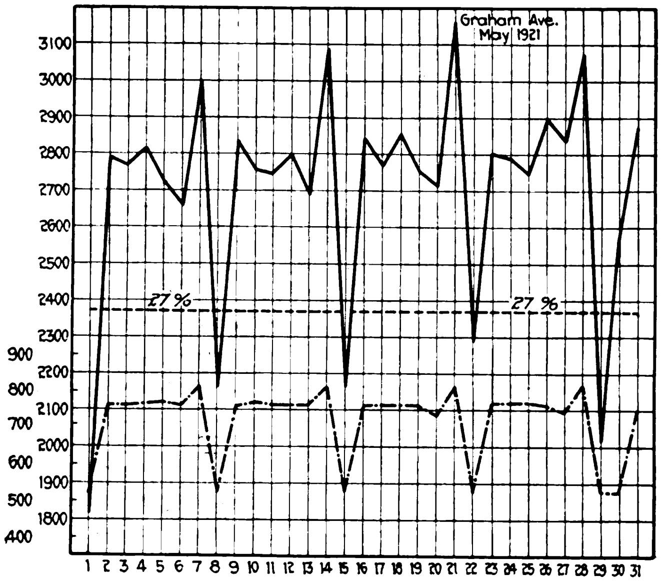
These passenger counts are then tabulated for the given line and are plotted graphically, together with the location points. From such calculations the various loading percentages in either direction on the entire line from 0 to 100 per cent are readily determinable.

While the checks are being made by checkers stationed five minutes apart, as explained, experienced operators and motormen are assigned to the line for the purpose of checking up the actual running time between any two time points for the various types of equipment, so that the correct running time can be incorporated in the contemplated schedule.

This enables us to make comparisons with similar traffic charts showing the number of seats at the same points. From these records it is easy to determine the exact loading of the lines, enabling the schedule department to build schedules to meet the requirements of the line by providing the maximum cars at the 100 per cent points, cutting back cars on either end of the line at points where the percentage of loading has correspondingly dropped.



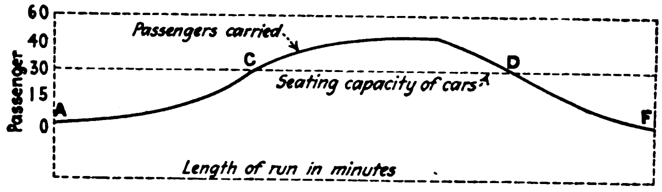
Graphical Analysis of a Schedule from Which the Movement of a Car Can Be Seen at All Times



Graphic Portrayal of Daily Car Revenues and Platform Costs for a Typical Route, Together with Semi-Monthly Percentage of Revenue Paid Out for Platform Labor. Used to Determine the Riding Pulse of the Community

The curves at top of page 501 give a series of these runs, the ordinates showing passengers carried and the abscissæ the length of run in minutes. Further, to illustrate the nature of these curves a curve showing a single run, *i.e.*, that inclosed in an insert in the lower right-hand corner of the curve referred to, has been enlarged and is reproduced below. In this run it will be seen that if a car as originally scheduled from point *A* to point *F* was operated between these points only, it would result in the operation of unwarranted service between points *A* and *C* and points *D* and *F*. These graphs enable the transportation department not only to determine the loading of a line but also the loading of each half trip. They also show where the turnbacks can profitably be established in order to facilitate handling the greatest number of people on the line with the most comfort.

After the schedule department has obtained these data, it can make up the schedules on standard A. E. R. A. forms, using as a basis the headway sheets.



Insert Enlarged Better to Show How Each Run Is Plotted

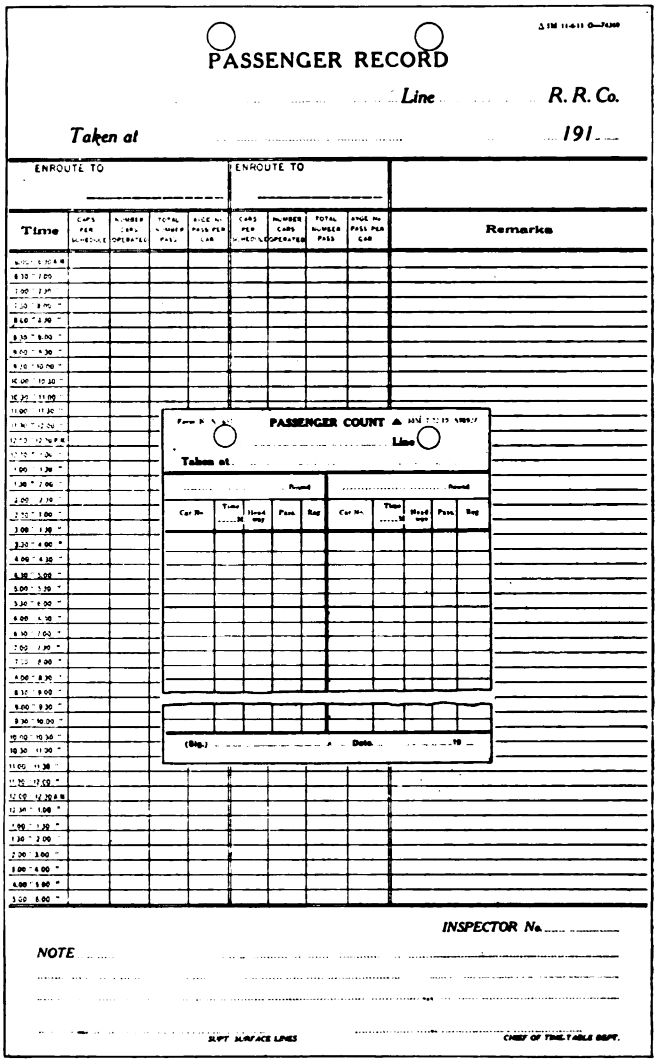
Before a schedule is put into effect it is laid out graphically, showing the movement of each car from the time it leaves the carhouse on its run until it pulls in, together with all layover time, and actual running time.

A portion of a graphic chart is illustrated on page 501. This graph is taken from a schedule of a typical line in Brooklyn and it shows that the service is turned back at six points, *i.e.*, it is a line with six terminals. The section shown is from the morning rush hour period of the complete chart, and it will be noted that the basic schedule is made up of through service from *A* to *F*. As the rush-hour riding tapers off, the short-line service operating between *C* and *D* as well as the service from *B* to *E* is dropped, leaving a through service during the non-rush hour period. This through service is likewise curtailed in line with the traffic requirements, being turned back at points *B*, *C*, *D* and *E*, in line with the decrease in riding.

In addition to enabling the operating department to provide the correct service, the plotting of these traffic studies, together with the schedules, is of material advantage to the operating company in the matter of complaints as to service, etc., from the public and regulatory bodies.

When several lines are routed over the same track for a part of their run, it is the custom to build the schedule for the joint trackage first in order to keep the cars spaced equally at all points where the greatest congestion occurs. This much of the schedule having been determined, the outlying schedules of each route are built to conform thereto.

When a schedule becomes effective, the line supervisory force and all of those connected with the direct operation of the line are schooled so that all are familiar with the schedule, it being the duty of the division operating force to operate the line in accordance with the schedule and enforce the discipline necessary to the observance of the schedule running time.


PASSENGER RECORD

Line R. R. Co.

Taken at 191

	ENROUTE TO				ENROUTE TO				
Time	CARS PER SCHEDULE	NUMBER CARS OPERATED	TOTAL NUMBER PASS	AVGE No PASS PER CAR	CARS PER SCHEDULE	NUMBER CARS OPERATED	TOTAL NUMBER PASS	AVGE No PASS PER CAR	Remarks

PASSENGER COUNT

Line

Taken at

Round					Round				
Car No.	Time M	Head way	Pass.	Reg	Car No.	Time M	Head way	Pass.	Reg

(Sig.) Date 19

INSPECTOR No.

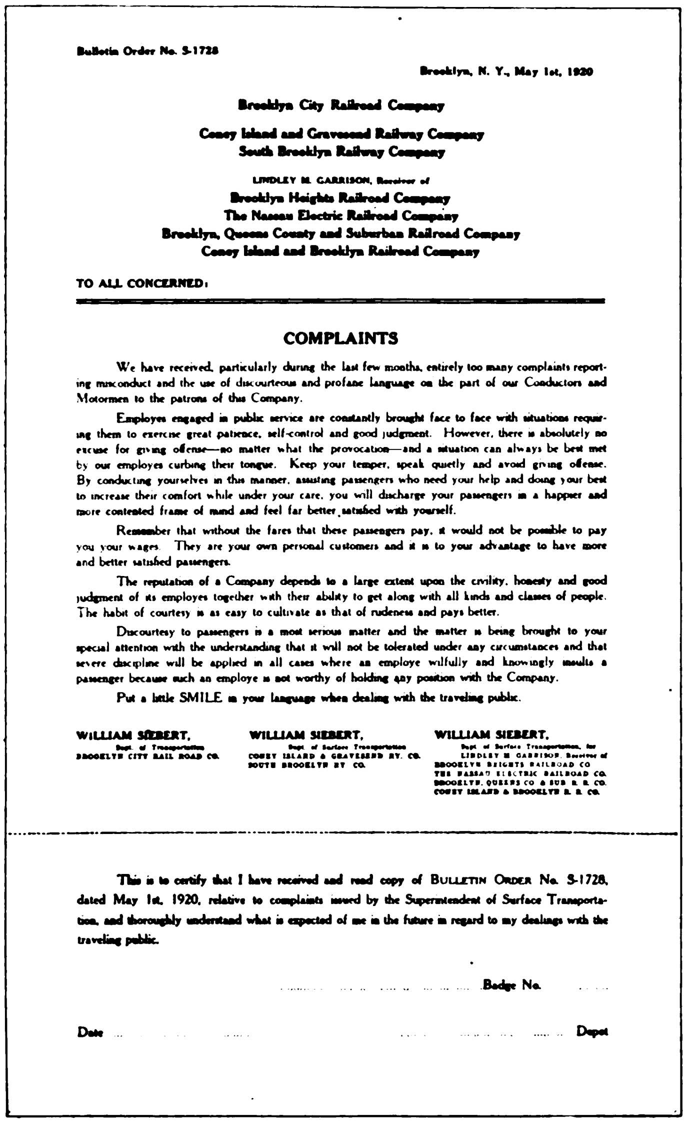
NOTE

SUPT. SURFACE LINES

CHIEF OF TIME-TABLE DEPT.

Summary Record Sheet for Tabulating Individual Counts. Insert—Form Used by Individual Traffic Checkers in Making Passenger Counts at Five-Minute Schedule Intervals

The schedule being technically correct and providing for accurate spacing, the next important item is to maintain the operation and spacing as called for in the schedule, as the proper spacing results in the selling of the transportation to the respective rider on sight, particularly when the cars are operated on a frequent headway. When a car rider observes a car approaching in the near distance he will unhesitatingly wait for it, but when there is no car in sight the result in many cases is the loss of the passenger. Particularly is this true if the destination of the passenger is within a comparatively short distance. The traffic surveys referred to enable the transportation department to determine the frequency of the headway. In any case it is of the utmost importance to keep the cars of any route properly spaced, without which an unbalanced loading condition and operation of unprofitable mileage ensues.



Bulletin Order No. S-1728

Brooklyn, N. Y., May 1st, 1920

Brooklyn City Railroad Company

Coney Island and Gravesend Railway Company
South Brooklyn Railway Company

LINDLEY M. GARRISON, Receiver of
Brooklyn Heights Railroad Company
The Nassau Electric Railroad Company
Brooklyn, Queens County and Suburban Railroad Company
Coney Island and Brooklyn Railroad Company

TO ALL CONCERNED:

COMPLAINTS

We have received, particularly during the last few months, entirely too many complaints reporting misconduct and the use of discourteous and profane language on the part of our Conductors and Motormen to the patrons of this Company.

Employes engaged in public service are constantly brought face to face with situations requiring them to exercise great patience, self-control and good judgment. However, there is absolutely no excuse for giving offense—no matter what the provocation—and a situation can always be best met by our employes curbing their tongue. Keep your temper, speak quietly and avoid giving offense. By conducting yourselves in this manner, assisting passengers who need your help and doing your best to increase their comfort while under your care, you will discharge your passengers in a happier and more contented frame of mind and feel far better satisfied with yourself.

Remember that without the fares that these passengers pay, it would not be possible to pay you your wages. They are your own personal customers and it is to your advantage to have more and better satisfied passengers.

The reputation of a Company depends to a large extent upon the civility, honesty and good judgment of its employes together with their ability to get along with all kinds and classes of people. The habit of courtesy is as easy to cultivate as that of rudeness and pays better.

Discourtesy to passengers is a most serious matter and the matter is being brought to your special attention with the understanding that it will not be tolerated under any circumstances and that severe discipline will be applied in all cases where an employe wilfully and knowingly insults a passenger because such an employe is not worthy of holding any position with the Company.

Put a little SMILE in your language when dealing with the traveling public.

WILLIAM SIEBERT,
Supt. of Transportation
BROOKLYN CITY RAIL ROAD CO.

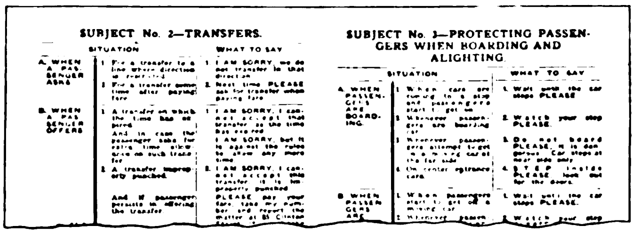
WILLIAM SIEBERT,
Supt. of Surface Transportation
CONEY ISLAND & GRAVESEND RY. CO.
SOUTH BROOKLYN RY. CO.

WILLIAM SIEBERT,
Supt. of Surface Transportation, for
LINDLEY M. GARRISON, Receiver of
BROOKLYN HEIGHTS RAILROAD CO.
THE NASSAU ELECTRIC RAILROAD CO.
BROOKLYN, QUEENS CO. & SUB. R. R. CO.
CONEY ISLAND & BROOKLYN R. R. CO.

This is to certify that I have received and read copy of BULLETIN ORDER No. S-1728, dated May 1st, 1920, relative to complaints issued by the Superintendent of Surface Transportation, and thoroughly understand what is expected of me in the future in regard to my dealings with the traveling public.

.... Badge No. ......

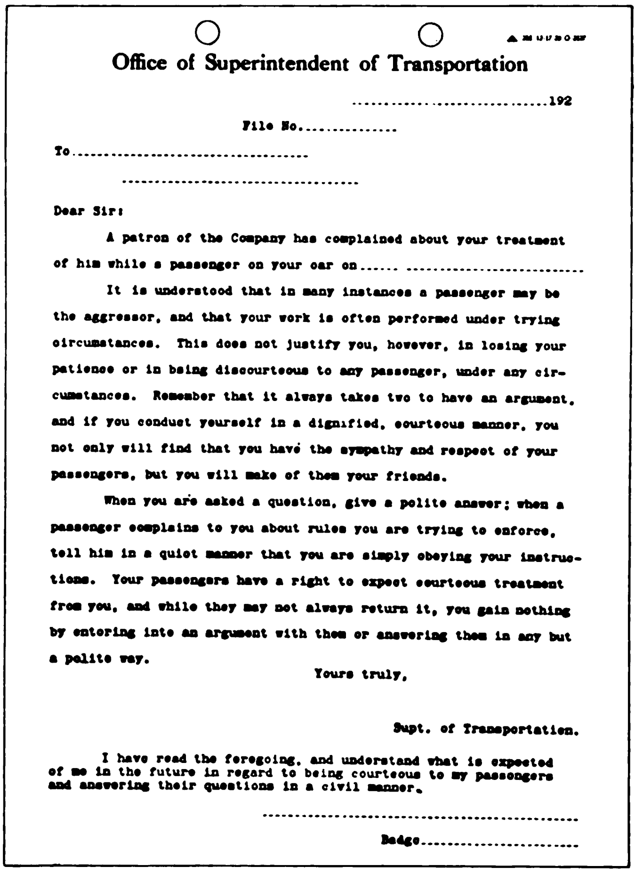
Date .... Depot



SUBJECT No. 2—TRANSFERS.

SUBJECT No. 3—PROTECTING PASSENGERS WHEN BOARDING AND ALIGHTING.

SITUATION
WHAT TO SAY
SITUATION
WHAT TO SAY



Office of Superintendent of Transportation

..............................192

File No. ....

To ....

....

Dear Sir:

A patron of the Company has complained about your treatment of him while a passenger on your car on ....

It is understood that in many instances a passenger may be the aggressor, and that your work is often performed under trying circumstances. This does not justify you, however, in losing your patience or in being discourteous to any passenger, under any circumstances. Remember that it always takes two to have an argument, and if you conduct yourself in a dignified, courteous manner, you not only will find that you have the sympathy and respect of your passengers, but you will make of them your friends.

When you are asked a question, give a polite answer; when a passenger complains to you about rules you are trying to enforce, tell him in a quiet manner that you are simply obeying your instructions. Your passengers have a right to expect courteous treatment from you, and while they may not always return it, you gain nothing by entering into an argument with them or answering them in any but a polite way.

Yours truly,

Supt. of Transportation.

I have read the foregoing, and understand what is expected of me in the future in regard to being courteous to my passengers and answering their questions in a civil manner.

....

Badge ....

Forms Used in Schooling Trainmen. At Left, Bulletin Notice Relative to Complaints. At Top, Right—Pages from Trainmen's Courtesy Code. At Bottom, Right—Form Letter to Individual Trainmen Used When Personal Complaints Are Made of Their Action

Delays, rerouting, cut-backs, turn-backs and pull-ins are all reported to the office of the superintendent of transportation, who thus can correct any irregularities.

Shortly after midnight the carhouse clerks tabulate the conductors' remittances for each line, reporting to the superintendent's office the gross revenue per line for the day, together with the platform cost for service rendered on such line. The superintendent's office compiles such figures for all lines operated, making a report each morning, which is placed in the hands of the superintendent and the management by 9 o'clock, showing the total gross revenue and platform cost for the preceding day by lines, as well as by depots or carhouses.

From this statement the revenue and platform cost are plotted graphically for each line as illustrated on page 502 with percentage ratio of the two plotted each half month.

Coincident with the plotting of the platform cost, such costs are checked with the scheduled allowance to determine their correctness and checkmate any unauthorized service being operated or the failure of any division to operate the schedule as provided. Other reports made to the superintendent of transportation show any discrepancies in or additions to the authorized schedules and their reasons therefor.

Having the reports covering the preceding day's operation early in the morning the management is able

TABLE II—METHOD OF TABULATING TIME CHECKS ON ST. JOHN'S PLACE ROUTE TO DETERMINE THE ACTUAL RUNNING TIME BETWEEN FIXED POINTS

Car Number	Buffalo Ave.	Kingston	Sterling and Rogers	Washington and Bergen	Vanderbilt Ave.	Flatbush and Atlantic	Livingston and Flatbush	Borough Hall	Date	Total Time
5092	4	6	3½	2½	4	2	5	0	.	27
5075	5	8	5	2	4	1	7	0	..	32
4589	4½	5½	4	2	4	3	5	0	..	28
4597	5	6	4	2	4	3	6	0	..	30
4593	5	6	4	2	3½	2½	6	0	4	29
5092	5	7	3½	2	3	3	5½	0	..	29
4589	5	5	4	2	4	3	5	0	16	28
5072	5	5	4	2½	3½	2	7	0	..	29
4594	4	6	4	2	3	3	6	0	20	28
4597	4	6	4	2	3	3	9	0	..	31
4588	4	6	3½	3	3½	3	7	0	..	30
4593	4	3½	3½	3	3	2½	8½	0	..	28
5081	4	7½	4½	2	3	4	9	0	..	34
3139	4	7	6	2	4	...	...	.	..	23
Total......	62½	84½	57½	31	49½	37.	86	0	..	408
Average....	4½	6	4	2	3½	3	6½	0	..	....
5088	4	7	4	3	3	3	5	0	4	29
4598	5	7	5	3	3	2	6	0	..	31
4591	4	5	4	...	...	3	5	0	17	21
5077	4½	4½	5½	2½	3	2	5	0	..	27
5090	5	4	5	3	3	2½	5	0	20	27½
5083	5	5	6	3	3	2	6	0	..	30
Total......	27½	32½	29½	14½	15	14½	32	0	..	165½
Average.....	4½	5½	5	3	3	2½	5½	..	..	....
4582	4	4	4	2	4	2	4	0	..	24
4595	5	5	5	2	4	3	6	0	..	30
4581	5	4	4	3	3	3	6	0	..	28
5082	4	5	6	2	3	2	5	0	4	27
4591	4	4	5	2	4	2	5	0	..	26
5075	4	5	6	2	2	2	6	0	19	27
5086	5	4½	5	3	3	2	6	0	..	28½
5072	4½	4	5	3	4	2	7	0	20	29½
5092	4½	4	5	2	4	3	6	0	..	28½
4579	5	4	4½	1½	2	3	7	0	..	27
4588	4	4½	5	2	2½	3	6	0	..	27
4593	5	4½	5½	3	3	3	7½	0	..	31½
Total......	54	52½	60	27½	38½	30	71½	..	..	334
Average....	4½	4½	5	2½	3	2½	6	..	..	....
5086	5	4½	5½	2½	3½	3	5	0	..	29
4588	5	4	6	2	3	2	7	0	..	29
4591	4	4	5	2	3	3	5	0	4	26
4579	4½	4	5½	3	3	2	6	0	..	28
5088	4½	4	5	2½	3	3	6	0	20	28
5086	5	5	6½	2	3	2½	6½	0	..	30½
4591	4½	3½	5	2½	3½	3	6	0	20	28
4597	4½	4½	5½	2	3½	2	6	0	..	28
4586	4	4	6	2½	3½	3	5	0	..	28
4584	6	4	5½	2	3½	3	6½	0	..	30½
4597	5	5	5½	2½	3	3	6	0	..	30
5073	4	5	6	2	3½	3	7	0	..	30½
Total......	56	51½	67	27½	39	32½	72	0	..	345½
Average....	4½	4½	5½	2½	3	2½	6	..	..	....

to analyze the operation of each individual line and to make changes in the succeeding day's operations. Any immediate necessity for changing the schedule or rerouting to improve the net result is also immediately evident from an analysis of the daily curves plotted from these reports.

In addition to the statements and graphic charts described, tables are prepared covering individual lines and showing by months the gross revenue, platform cost, car mileage and passengers carried, together with the increase or decrease over the previous year and the percentage thereof.

To arrive at the earnings per car-mile for the various types of equipment, the expenses are allocated on the car-mileage basis for the equipment on the specified line. Thus the cost per car-mile for such line can be determined with reasonably accuracy. Inasmuch as the reports give the revenue by line, it is easy, through this method, to determine at once whether or not the specific line is actually meeting its proper proportion of the expenses.

With these data at hand, the management is able to keep its finger on the "riding pulse" of the community and the service rendered and to change the schedules to meet changing conditions without waiting to secure more detailed information from actual figures submitted later by the accounting department.

In conjunction with this method of analyzing transportation, the conductor and motormen, dealing direct with the public, must be taken into account as the salesmen employed in the direct marketing of this transportation. They are being schooled continuously in politeness and courtesy so they will attract patronage and rid street car transportation from irritating disturbances and avoidable delays. In this connection the salesmen for the street car company may be likened to the salesmen for almost any concern or business which is endeavoring to place its wares before the buyer. But there is this difference: Instead of spasmodic visits, as in the case of the commercial salesman, successful transportation requires the establishment of a frequent service, so that the customers—the riders—are approached with never ceasing regularity; the service being in charge of polite and courteous salesmen, the conductors and motormen.

"Merchandising Transportation" in this sense does not mean simply running a given number of cars, nor a certain number of car-miles, nor even furnishing a given number of seat-miles on a given line. Rather, as described, it involves the policy of first ascertaining the transportation needs of the patrons and then giving them the best possible service at a minimum cost. It is this policy and these ends which are fundamental in keeping transportation "sold" and inviting new customers.

Left, Flatbush Avenue Looking Toward Prospect Park. Right, View on DeKalb Avenue, Where the Heaviest Surface Car Line Is Operated. Rush-Hour Schedules Call for Headways of Less Than Sixty Seconds from the passenger riding on the lower rate, it insures his riding the electric line every trip for some time to come, and the saving effected makes the advance ticket easy to sell.

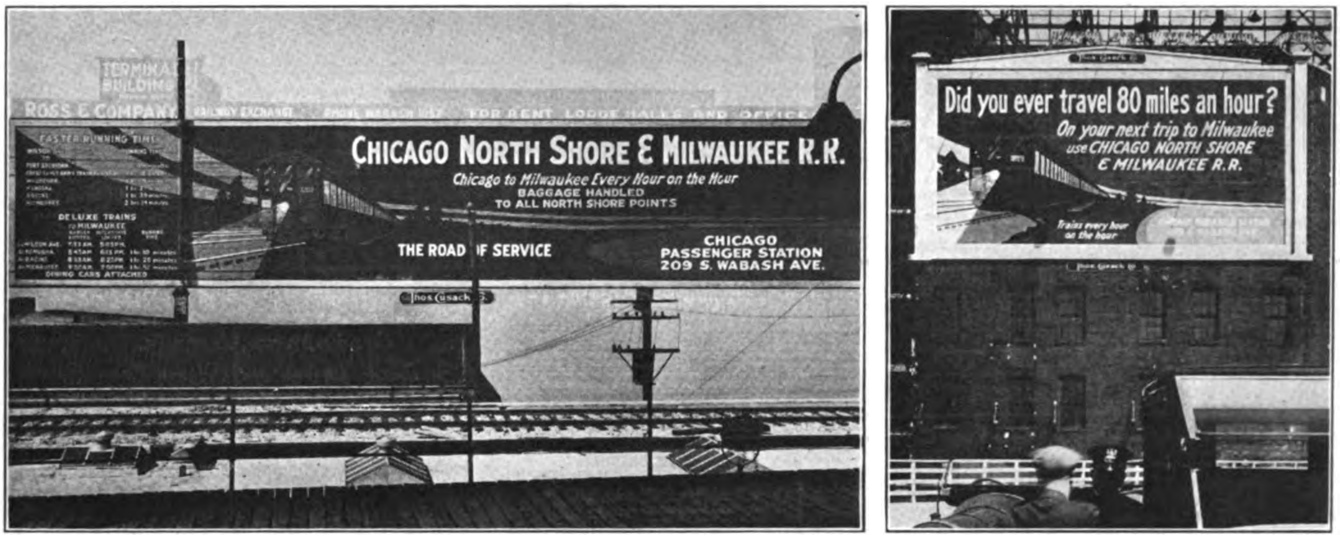
A revenue of $45 a day on the average is derived from a contract with the distributing agency for the Chicago afternoon newspapers. About three tons of newspapers a day are delivered to the North Shore Line at the Congress Street station of the elevated railways. The truck drivers place the papers on the elevator and they are lifted to an elevated platform, where they are put in a special chute which delivers the papers directly into a baggage car. This car leaves the Loop not later than 1:40 p.m. and completes all deliveries to north shore towns as far as Waukegan, Ill., by 3:15 p.m. The newspaper publishers estimate the weight involved, based on the number of packages, and send the railway company monthly a check, accompanied by a statement of the tonnage. There is no time for the railway company to take weights. A rate of 75 cents per 100 lb. is secured for this business and when the contract was secured the rate was 25 cents per 100 lb. in excess of that charged by the American Railway Express Company. Since that time, however, the latter rate has increased to $1 per 100 lb., so that the newspaper agency is benefiting from a lower rate at present as well as better service, although the matter of service was the consideration which won the contract. In dropping off papers at various stations the North Shore enforces an order that the car must come to a complete stop before the package is dropped. This is a service which has been greatly appreciated, as the papers are not torn and soiled.

A good example of what may be accomplished by carefully following conventions and looking ahead to future traffic is afforded from a recent instance. F. W. Shappert, traffic manager, attended the last convention of the Associated Advertising Clubs at Atlanta, Ga., used his influence to secure the next convention for Milwaukee, and then signed up seventy-one clubs from all parts of the country for as many chartered cars over the North Shore Line from Chicago to Milwaukee for the 1922 convention.

One of the most effective phases of the solicitation work done by Mr. Shappert is the large amount of personal service rendered to the various organizations and individuals, ever having it in mind to capitalize the advantage that this service gives him in business for the North Shore Line. In his solicitation work he makes extensive use of the associations of commerce in cities not only along the line of the railroad but in cities at distant points, wherever there is a possibility that their members can utilize the North Shore Line to advantage in their business pursuits or on some special trip.

He makes the comment that any traffic man who does not utilize and work with the commerce associations is overlooking a very important source of information and selling assistance.

Advertising for traffic is a consistent part of the efforts put forth by the Chicago, North Shore & Milwaukee Railroad to influence travel over its lines, and the duller times are the more the company advertises. The normal advertising appropriation for the current year was to have been approximately $35,000, but on account of the business depression advertising was intensified, and, as a result, between $45,000 and $50,000 will be spent this year in this manner. The advertising work is handled by John J. Moran.


TERMINAL BUILDING
ROSS & COMPANY
FOR RENT LODGE HALLS AND OFFICES
FASTER RUNNING TIME
DELUXE TRAINS
CHICAGO NORTH SHORE & MILWAUKEE R.R.
Chicago to Milwaukee Every Hour on the Hour
BAGGAGE HANDLED TO ALL NORTH SHORE POINTS
THE ROAD OF SERVICE
CHICAGO PASSENGER STATION 209 S. WABASH AVE.
Thos Cusack Co
Did you ever travel 80 miles an hour?
On your next trip to Milwaukee use CHICAGO NORTH SHORE & MILWAUKEE R.R.
Trains every hour on the hour

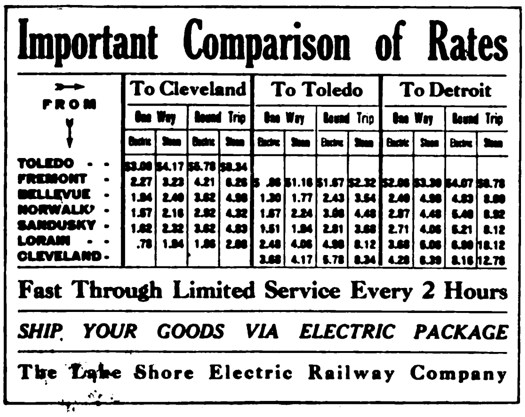
Attractive and Expensive Advertisements of the North Shore Line

At left, advertisement on building wall opposite Wilson Avenue station of the Chicago Elevated Railways. At right, billboard advertisement facing down Michigan Avenue, Chicago, for which the North Shore Line paid $1,000 for thirty days.

It is hardly possible for a person to be long in any one of the cities served by the North Shore road without being reminded of its service in some attractive way. Car cards are carried in the elevated and surface cars in Chicago, Waukegan, Racine and Milwaukee. A 30-in. advertisement is carried once a week in each of the local newspapers in the cities along the line between terminals. In Milwaukee and Chicago papers 600-line advertisements are carried once a week or more, frequently when some special occasion warrants special advertising. Another very effective advertising medium used is the Cusack Company's billboards. The total monthly expenditure for billboard advertising this year is running regularly $550 a month, while $1,000 additional was spent for the month of August for a single billboard, 14 ft. x 50 ft., which is wonderfully located where it is seen by thousands of Chicago motorists and pedestrians every day as they drive or walk along Michigan Avenue toward the bridge connecting Michigan Avenue with the Lake Shore Drive on the North Side. This is pictured herewith.

Each of the regular billboard advertisements is located at an exceptionally strategic point. In Chicago a very attractive advertisement occupying the wall of a building advertises the road to the passengers of the elevated railroad and to the large population in what is known as the Wilson Avenue district, the board being located at the corner of Wilson and Broadway. This advertisement occupies a space 137 ft. x 31 ft. and costs the railway $100 a month, including the original painting and maintenance painting twice a year. In this case the company floodlights the advertisement itself. At the corner of Kedzie Avenue and Madison Street, another important outlying business section on the West Side in Chicago, the company has a 14-ft. x 50-ft. illuminated billboard on which the monthly rental is $100.

Five other billboards in Chicago are erected on the property of the elevated railways. One of these is located on the street level at Wilson and Broadway, one on the South Side on Thirty-ninth Street between State Street and Wabash Avenue, one opposite the Marshfield Avenue elevated station on the West Side, one at Fifteenth and State, and an important one on the Van Buren Street bridge of the elevated facing Jackson Boulevard. These are all illuminated signs. There are also illuminated and non-illuminated signs at points outside of Chicago.



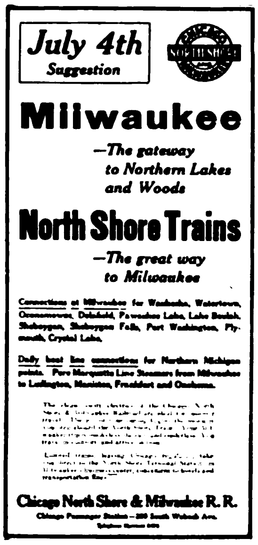
Important Comparison of Rates

FROM	To Cleveland				To Toledo				To Detroit			
	One Way		Round Trip		One Way		Round Trip		One Way		Round Trip	
	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam	Electric	Steam
TOLEDO	$3.68	$4.17	$5.78	$8.34								
FREMONT	2.27	3.23	4.21	6.26	$ .96	$1.16	$1.67	$2.32	$2.96	$3.30	$4.07	$6.78
BELLEVUE	1.94	2.40	3.62	4.90	1.30	1.77	2.43	3.54	2.40	4.96	4.63	8.90
NORWALK	1.57	2.16	2.92	4.32	1.67	2.24	3.06	4.48	2.87	4.48	5.40	8.92
SANDUSKY	1.62	2.32	3.02	4.63	1.51	1.94	2.81	3.88	2.71	4.06	5.21	8.12
LORAIN	.78	1.34	1.36	2.68	2.48	4.06	4.96	8.12	3.68	6.06	6.90	12.12
CLEVELAND					3.68	4.17	5.78	8.34	4.28	6.39	8.16	12.78

Fast Through Limited Service Every 2 Hours

SHIP YOUR GOODS VIA ELECTRIC PACKAGE

The Lake Shore Electric Railway Company



July 4th
Suggestion

Milwaukee

—The gateway to Northern Lakes and Woods

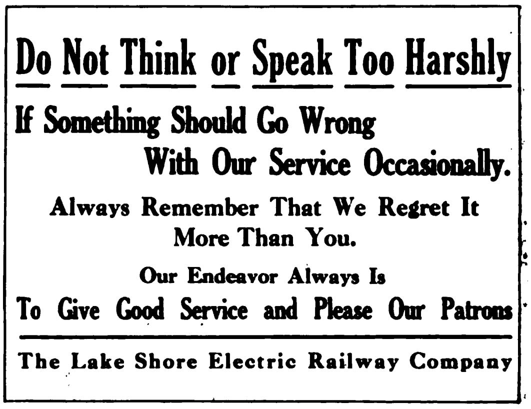
North Shore Trains

—The great way to Milwaukee

Connections at Milwaukee for Waukesha, Watertown, Oconomowoc, Delafield, Pewaukee Lake, Lake Beulah, Sheboygan, Sheboygan Falls, Port Washington, Plymouth, Crystal Lake.

Daily boat line connections for Northern Michigan points. Pere Marquette Line Steamers from Milwaukee to Ludington, Manistee, Frankfort and Onekama.

Chicago North Shore & Milwaukee R. R.



Do Not Think or Speak Too Harshly

If Something Should Go Wrong With Our Service Occasionally.

Always Remember That We Regret It More Than You.

Our Endeavor Always Is To Give Good Service and Please Our Patrons

The Lake Shore Electric Railway Company

At Left, Advertisement of Rates by Lake Shore Electric. At Right, a Bit of Candor by Same Company. In Center, 45-In. Newspaper Ad of North Shore Line

MOTION PICTURE ADVERTISING VERY EFFECTIVE

Since April of this year extensive use of a motion picture film has produced results which lead the officials of the company to believe that this is the most effective method of advertising for traffic. The motion picture used is a one-reel story having the title "Along the Green Bay Trail." It depicts the mode of travel in the days of the Indian and compares this with the modern high-speed travel in comfort and luxury over the electric line. The comparison of the two modes of travel gives an opportunity to picture many of the beautiful stretches of scenery along the electric line and the high type of rolling stock and roadbed employed in the modern means of travel. The scenario develops a very interesting little story, and the only place in the film that the name of the railroad appears is on the side of the cars as the train comes to rest in the Milwaukee terminal. Consequently, it has been possible to show the picture as an educational film in all of the principal theaters in Chicago and North Shore towns, and also in the towns in southern Illinois and those in Indiana close to the Illinois line and in towns as far west as Rockford, Ill.

Altogether, the film has been shown in some 200 theaters at picked locations, and this is done without cost for the showing, the only expense involved being $5 per day per film to the booking agency. The cost of producing this film was approximately $2,000, including seven standard prints which are used in the theaters. In addition to these prints, the company has three non-inflammable prints which cost $100 each and a small portable motion picture machine which cost $250, which have been used by representatives of the company before various business men's meetings, private clubs, associations of commerce, etc., probably averaging at least one showing a week somewhere. At Chicago's elaborate Pageant of Progress it was shown sixty times a day, and as a result several specific instances of its influence in "selling" the road were experienced. One woman watched the film through and then asked numerous questions and later came back and informed the attendant at the booth that she was taking a party of thirty-five to Milwaukee over the electric line that night. A man who became interested in the picture chartered two cars to take a party of 125 to Milwaukee, explaining that he had seen the company's advertisements, but had not realized the advantages of the North Shore Line until he saw the motion picture. Several other instances of definite business for the company are known to have developed from the showing of this film at the pageant.

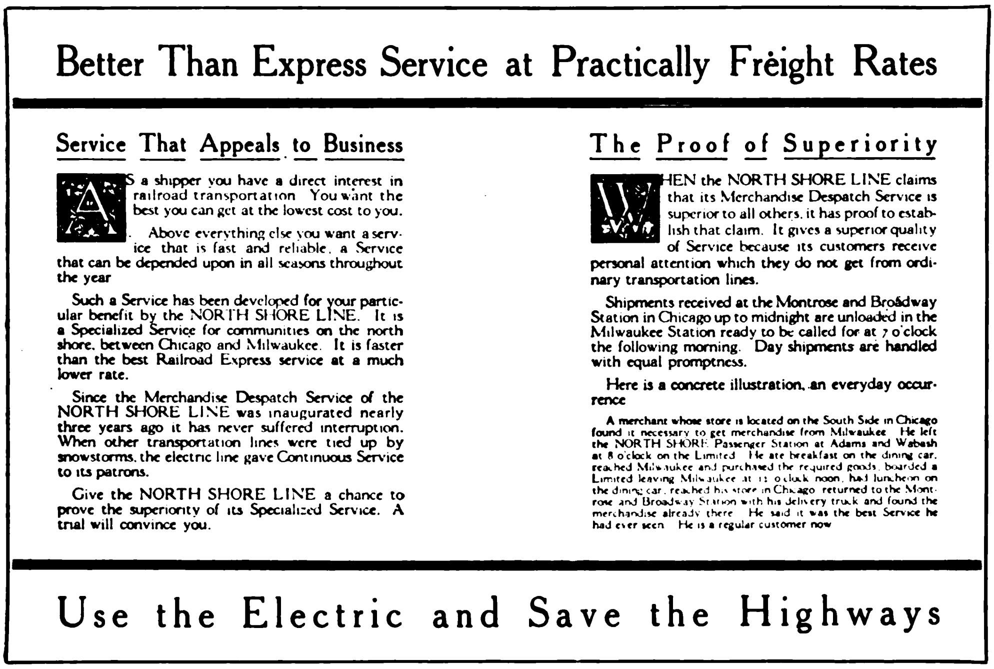
Arrangements have been completed for showing the film at the Lake County, Ill., Fair, the Ozaukee County Fair at Sheboygan, Wis., and at the Electric and Food Show in Milwaukee, all this fall.

LAKE SHORE BELIEVES IN ADVERTISING

J. F. Starkey, general passenger agent Lake Shore Electric Railway, Sandusky, Ohio, summarizes his recent activities as follows:

"I advertise constantly in the newspapers, giving the public the time of all our trains, and when anything of special importance is to occur along the line I advertise it in all the papers, using, usually, a 5-in. double column display for about a week previous to the affair. I carry a two-color advertisement, 11¼ in. x 16½ in., in the front of each compartment of all our cars, changing it about every four months. Beginning with the late spring I advertise the summer resorts, of which we have several along our line, and at other times anything that I think will attract the eye and get us patrons.

"I have advertised quite extensively the fact that our rates are lower than the steam line rates, especially since the advance of the latter to 3.6 cents a mile. In the cars I carried not merely the statement that our rates are lower, but compiled a table of comparative rates between main points and with cards about 10 in. x 14 in. gave the fact wide publicity throughout the cities and towns which we serve. At first some steam line representatives took exception to this, but we defended our action simply by claiming the right to resort to any legitimate means of securing traffic, and nothing further has been heard of it.



Better Than Express Service at Practically Freight Rates

Service That Appeals to Business

As a shipper you have a direct interest in railroad transportation You want the best you can get at the lowest cost to you.

Above everything else you want a service that is fast and reliable, a Service that can be depended upon in all seasons throughout the year

Such a Service has been developed for your particular benefit by the NORTH SHORE LINE. It is a Specialized Service for communities on the north shore, between Chicago and Milwaukee. It is faster than the best Railroad Express service at a much lower rate.

Since the Merchandise Despatch Service of the NORTH SHORE LINE was inaugurated nearly three years ago it has never suffered interruption. When other transportation lines were tied up by snowstorms, the electric line gave Continuous Service to its patrons.

Give the NORTH SHORE LINE a chance to prove the superiority of its Specialized Service. A trial will convince you.

The Proof of Superiority

WHEN the NORTH SHORE LINE claims that its Merchandise Despatch Service is superior to all others, it has proof to establish that claim. It gives a superior quality of Service because its customers receive personal attention which they do not get from ordinary transportation lines.

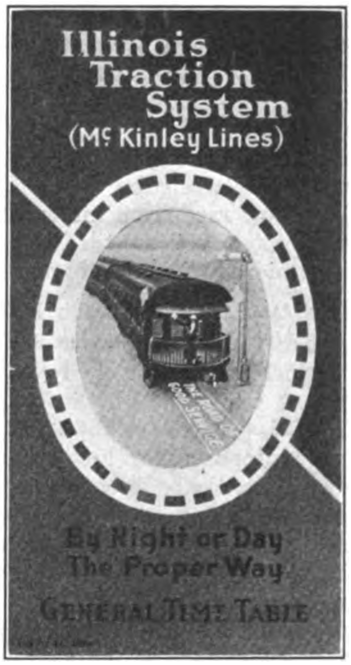
Shipments received at the Montrose and Broadway Station in Chicago up to midnight are unloaded in the Milwaukee Station ready to be called for at 7 o'clock the following morning. Day shipments are handled with equal promptness.

Here is a concrete illustration, an everyday occurrence

A merchant whose store is located on the South Side in Chicago found it necessary to get merchandise from Milwaukee He left the NORTH SHORE Passenger Station at Adams and Wabash at 8 o'clock on the Limited He ate breakfast on the dining car, reached Milwaukee and purchased the required goods, boarded a Limited leaving Milwaukee at 12 o'clock noon, had luncheon on the dining car, reached his store in Chicago returned to the Montrose and Broadway Station with his delivery truck and found the merchandise already there He said it was the best Service he had ever seen He is a regular customer now

Use the Electric and Save the Highways

Two Inside Pages of Four-Page Folder Sent to Prospective Merchandise Customers by North Shore Line



Cover of the I. T. S. Timetable

"Through close touch with connecting lines we urge the sale of through tickets whenever possible, and, of course, through the Central Electric Traffic Association, each traffic manager seeks to help a sister line all he can. In connection with the Western Ohio Railway, the Toledo, Fostoria & Findlay Railway and the Fostoria & Fremont Railway we offer a week-end reduced rate to Sandusky during the Cedar Point season. This rate is about 80 per cent of the regular fare. To Indiana interurban lines as well as the Wabash and Clover Leaf steam lines we offer the same reductions as a basing rate, and during the season we have many excursionists to Cedar Point, Cleveland and Niagara Falls. We also sell many tickets to Niagara via our line to Cleveland, the C. & B. Transit Company from Cleveland to Buffalo and the International Railway to Niagara. These rates are made good for twelve days returning and at about the same percentage of reduction as noted above. We offer special car rates that bring us much additional revenue, particularly during the summer seasons. These rates are about 70 per cent of the regular round trip rates."

THROUGH PASSENGER SERVICE SUCCESSFUL

J. A. Greenland, general passenger and freight agent Indiana Service Corporation, Fort Wayne, Ind., had this to say about building up traffic:

"I think the biggest thing we have done is the inauguration of fast county-seat-stop trains between Indianapolis and Fort Wayne, which service has been extended just recently to Lima. These trains are very seldom late and are handling an increasing number of people. Every day we hear compliments on this service and hope when business picks up to put on more such trains. We have just closed a successful campaign for Niagara Falls excursion traffic and are very much pleased with the business we have received. We handle the people through to Toledo by our line and the Ohio Electric Railway carries them to Cleveland, where they take the Cleveland & Buffalo boat line to Buffalo."

Another thing that the Indiana Service Corporation has done is to originate a timetable which shows all the through connections with other electric lines at the terminals of its lines. This has proved to be a great convenience to patrons who find it very difficult to figure out through connections where a number of timetables must be consulted. It is serving to induce more interline riding. This plan, of course, serves to stimulate traffic for other companies as well as the Indiana Service Corporation, but the idea is that the plan will later become reciprocal.

The Interstate Public Service Company, which operates the unified and greatly improved interurban line between Indianapolis and Louisville, has been very successful in building up both its passenger and freight business. The installation of fine new all steel cars and fast through schedules has attracted a considerable increase in the number of passengers. Similarly, the inauguration of an overnight freight service over practically the entire system has attracted a large amount of tonnage. No small factor in the success of the company in thus rapidly building up its business has been an active traffic department, backed up by good service and unusually good co-operation on the part of the operating department. Speaking in general terms on this subject, Bert Weedon, traffic manager, summarized the requisites of a successful interurban as being, first, thorough knowledge of the territory; second, ample equipment to care for the need of this territory; third, a freight organization with ability to cope with competitors; fourth, thorough and constant solicitation; fifth, reliable freight schedules which will supply the demand for transportation.

Sunday excursions, running from Indianapolis to Louisville one week and from Louisville to Indianapolis the following week, were inaugurated on July 31 to extend through August. On July 31 a three-car train carried a total of ninety-six passengers out of Indianapolis and a total of 206 into Louisville. On Aug. 7 114 people were carried out of Louisville and a total of 262 into Indianapolis, a three-car train out of Louisville having been relieved by two cars additional from Columbus to Indianapolis. The round-trip rate given was $3 between the terminal cities, with a correspondingly low rate from intermediate cities. L. M. Brown, superintendent of transportation, reports that these excursions were a profitable undertaking.

DETAIL INFORMATION ABOUT SHIPPERS IS HELPFUL

The Chicago, Ottawa & Peoria Railway, Joliet, Ill., is working intensively to secure all available business, if one may judge by information furnished by A. M. Farrell, general freight and passenger agent. The company prepares for intensive solicitation by delegating one of its traffic agents to call upon every merchant or manufacturing concern at any point along the line and secure information indicated on a questionnaire which he fills out as a result of his interview. This questionnaire, when completed, gives the name, address, nature of business, from what point on the company's line this concern receives freight or express, the names of the shippers, who controls the routing and if controlled by the consignee, a copy of the routing order, freight received from foreign lines and whether this is transported by steam or electric railway or motor truck. The questionnaire also calls for information as to whether the concern ships any freight or express, and if so, how it is transported, what the routing orders are, and, if any shipments are made by trucking company, the rates are secured if possible. A final question is whether this concern or party has any grievance with any department of the railway company.

By a study of the information thus secured it is often possible to show shippers where the electric line can make them a saving either of money or time in the handling of their business. This is working out to the mutual benefit of all interested parties. When any routing orders are received they are personally placed by the railway company's solicitor, which gives him a chance to ascertain whether or not the shipper has any other shipments that can be handled.

Mr. Farrell has found that the passenger business of his company depends a great deal upon the advertising which is done in newspapers and upon direct solicitation. A good deal of passenger traffic is secured through the handling of lodges and various organizations on picnics and conventions, mostly to Starved Rock, Ill. When advance notice of such a group movement is obtained the railway company has a circular printed for the organization which covers the full details of its picnic and the attractive features of the point at which the outing is to be held. These circulars are then distributed among the members of the organization and prove a very desirable form of advertising, for the reason that the suggestions of the company go into the homes of members of the lodge or other organization backed up by the committee of the lodge in charge of the picnic, whose names are printed on the circular. Often, where members are unable to take advantage of the trip at just that time, they avail themselves of a similar trip later on.

Mr. Farrell makes the observation that all electric lines should inaugurate an extensive plan for solicitation of business moving between their stations and keep in close touch with the consignor and consignee in order to straighten out any difficulties that might arise and thus establish confidence in the electric lines. He considers that every electric line should solicit business just as the wholesale grocery salesman solicits orders for his house. He contends that it is the continual repetition in advertising and solicitation that brings results and works out to the mutual benefit of railway and shipper.

C. P. Ryan, general passenger and freight agent Indiana Railways & Light Company, Kokomo, Ind., explained that for certain reasons the traffic department has been able to do but little advertising or solicitation of freight and passenger business during the last six or eight months. He says: "Our main efforts are directed toward our agents along the line of inducing them to be courteous and obliging to those who would ship freight or take passage on our cars. We urge them to promise nothing but what can be fully accomplished by our service, and we believe that this system, in the absence of actual advertising and solicitation, has accomplished a great deal toward putting this company on the list regarded as reliable in its dealings with other business men."

The creed of E. Hamprecht, general freight agent Toledo, Bowling Green & Southern Traction Company, Findlay, Ohio, in soliciting business is thus summed up:

"I find good service is the greatest advertisement. Give all you can for the money and make the patrons feel that you are interested in their walfare. Do as you promise and keep in constant touch with shippers and consignees. If this is done it will not be long until the returns will be noticeable."

H. A. Benjamin, general freight and passenger agent Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa, is quoted as follows:

"We have always tried to notify the industries which we serve of the movements of their business both in and out bound, and on their inbound business to furnish the time of arrival some twenty-four hours in advance. We have found that they are very appreciative of this information. In my opinion, in order for a railroad to increase its business it should establish service that is reliable and continue this service in such a way that the public learns to have confidence in it. This must be accompanied by close personal contact with those served."

The Chicago & Joliet Electric Railway, which operates out of Chicago and connects at Joliet with the Chicago, Ottawa & Peoria Railway, has found a profitable source of passenger business in a joint arrangement for carrying passengers from Chicago to the beautiful Starved Rock State Park, located on the latter line 83 miles from Chicago. Through tickets are sold in each direction and the cost of advertising is proportioned between the two roads. Attractive folders and space in Chicago newspapers have been used in the advertising program. Notwithstanding the industrial depression, W. H. Heun, superintendent of transportation, reports that his company has advertised the passenger service this season to about the same extent as in previous years in order to keep before the people the points of interest and the electric routes for reaching them. He commented that special care is taken in making arrangements for picnics to promise only what can be carried out to the full satisfaction of the patrons as to transportation and park privileges, this leading to repeated annual trips of excursion parties. He believes that truth in advertising is an important factor in soliciting excursion business and has been the means of holding as well as increasing traffic.

Railways Could Profitably Undertake Joint Advertising Campaigns

By J. C. Schade
General Manager Winona Interurban Railway, Warsaw, Ind.

WE OFTEN HEAR it said that advertising in the railway field is limited and this is a true statement if we decide to follow the time-worn paths of the old school. It must be admitted that service is the foundation of railway publicity, and in order that advertising may be effective service must be made to back up the whole proposition.

But it does not follow that when we have advertised the fact that "Cars run every hour between Podunk and Squeedunk" that the field has been covered! We should go further and tell the people of "Podunk" something about the interesting things which may be found in "Squeedunk." What is meant by this is that a successful railway publicity campaign must create a desire among the people of one locality to see what is actually going on in some other locality. It makes no difference how small the town may be, there is always something of interest to draw the outsider.

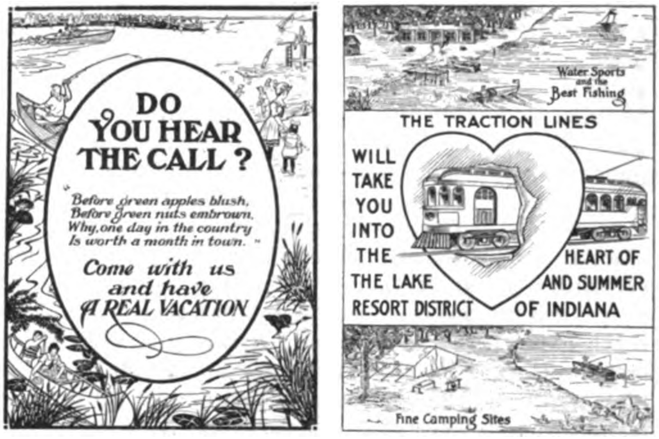
For example, the attractions of Indiana are its lakes and summer resorts dotting the whole northeastern part, its great manufacturing industries in what is known as the Gas Belt section, its State parks in the southern part and its great educational centers. Any one of these things would be suitable subject matter for advertising copy. Similarly interesting points and industries may be found in other localities and it would seem to me in looking at the proposition from this angle that we are overlooking an opportunity in the advertising field when we do not take advantage of the splendid material scattered around in our front yards.

Looking back over a period of years, we may find here and there an effort on the part of some of the electric railways to advertise things of local interest, but in the main, our efforts have been largely directed toward a scramble of local time cards, which if taken separately indicate to the public that there are only one or two electric railways operating in the entire country.

In this connection, it would seem that we are all more or less at fault. We do not place sufficient importance upon the question. For example, pains should be taken to inform travelers in South Bend how best they can get to Louisville. It would be good advertising to put this information into the hands of the public in an intelligent way. It is good business to show people how they can go from Podunk to Squeedunk and better business to show them how to get from Squeedunk to any other place.

Getting back to the question of feature advertising —we tried it out in a small way this year. With the assistance of some of the Indiana lines, 25,000 four-page pamphlets (reproduced herewith) which were descriptive of the lakes and summer resorts located in the territory served by the Winona Lines were distributed. The results have been most gratifying. In checking up with the various hotel managements, it was learned that a large number of new people had been attracted to these places, because of the publicity afforded by the pamphlet.

Let us suppose that all of the attractions in Indiana, Ohio or Michigan were treated in this manner and that the advertising campaign was put out on a co-operative basis by the several interurbans interested. There could be no question about successful returns. The normal American citizen is chock-full of play; his curiosity is easily aroused; make a noise and he wants to investigate. Why not "blow the horn" and give him a chance to come and look? It is up to the electric railways to stimulate interest in places that will mean traffic for them.


DO YOU HEAR THE CALL?
"Before green apples blush,
Before green nuts embrown,
Why, one day in the country
Is worth a month in town."
Come with us and have A REAL VACATION
Water Sports and the Best Fishing
THE TRACTION LINES
WILL TAKE YOU INTO THE HEART OF THE LAKE AND SUMMER RESORT DISTRICT OF INDIANA
Fine Camping Sites

Two Outer Pages of Attractive "Outing Folder" Distributed by Winona Interurban

The Central Electric Traffic Association is to be commended upon its recent effort to unify the rates of fare to conventions and large gatherings. It is now no longer necessary to secure the consent of individual carriers to establish reduced fares. The Traffic Association has delegated this power to a committee and the result is that the central territory railways are operating as a unit.

Let us hope that in years to come we may operate as a big family, joining in one big effort to tell the people of Squeedunk about the wonderful things which are to be found in Podunk, to tell the poor fellow at South Bend how to get to Louisville over four different traction systems without referring to a grip full of time cards, and to remove the "whereases" and "wherefores" of the individual lines and operate as an industry.

The Latest Addition to the Transportation Salesman's Stock in Trade Opens Up Many New Avenues for Selling Transportation and Developing New Car Riders

A New Merchandising Agent—The Rail-less Vehicle

An Editorial Discussion

AND what of the rail-less vehicle—the trolley bus and the motor bus? From the standpoint of the transportation man, in his rôle of salesman, in his attempt to furnish a product to meet the customer's wishes, in his effort to do business as any first-class business man by supplying his customers with complete needs in his line, the least that can be said of bus transportation is that it deserves careful study and analysis. If it will serve the transportation man in his business he should grasp the opportunity to use it not only in the places where he knows he cannot afford to operate rail service but to supplement existing routes where it is necessary to meet the wishes of the traveling public. For, today, there is a real demand on the part of the public to ride on rubber tires out in the open and for that privilege in some cases it is willing to pay a higher rate of fare. The use of the bus on the part of the traction companies also affords them many new avenues of selling transportation, thereby increasing their own usefulness to the community, in that they are able to serve a larger territory and a greater number of patrons. It also affords a means of maintaining the transportation monopoly which community welfare demands, thereby keeping out the competitor who seeks to provide service to points now readily reached by the existing transportation agency.

As yet, unfortunately perhaps, the railway man has failed to grasp the many opportunities that lay before him for bus service. But the transportation salesman who is a close observer of traffic and the whims of the traveling public is watching the rail-less vehicle. He believes it is a new and undeveloped means for increasing his volume of business both by adding new customers and by securing more purchases from old customers. This type of vehicle, he claims, has both an economic and a merchandising sphere in passenger transportation and it should receive the attention of every railway executive.

Purely from the standpoint of selling transportation, therefore, which is the fundamental service of electric railways, it would seem that rail-less vehicles can be used in both complementary and supplementary service.

There is no doubt that the public likes to ride on rubber tires, and also that the public wants increased service in many places. As stated before, the rail-less vehicle thus affords a merchandising agency to satisfy these demands. Taking into consideration the psychology of the public it deserves study by railway men. At a minimum of investment, it sells transportation that is new and that is needed.

By complementary service is meant the various classes of extensions and feeder service. For instance, extension or feeder service can be run from the end of the main street line where there are several hundred families within 1 or 2 miles. The installation of bus service in such cases not only supplies cheaply a transportation need but also develops more riders for the main railway system. Then again, bus service is feasible for outlying or remote townships or suburban centers that are infrequently served by steam railroads and that also have no interurban connections. Such service develops traffic; enables the townspeople to reach a real shopping center and fosters community interest.

The bus also offers a means to aid urban crosstown traffic by connecting the open links to form belt lines around the main and congested traffic center and to aid through traffic by connecting open links in interurban systems. There can be no question but that these applications of the rail-less vehicles will sell transportation and develop new business.

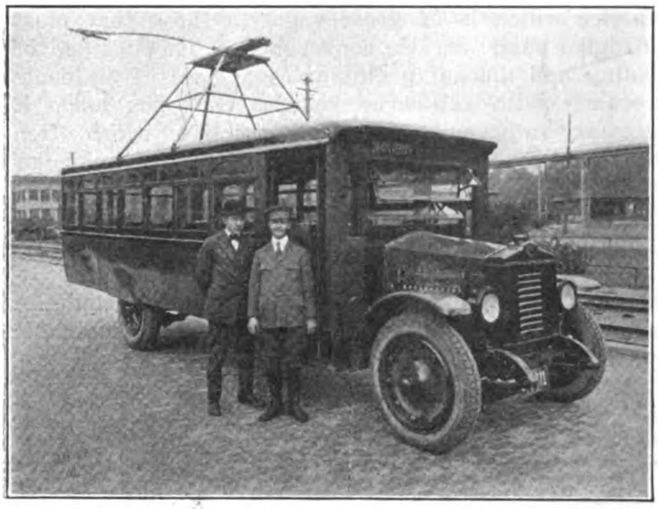
By supplementary service is meant that which assists in carrying traffic on what might be called, in a general way, existing routes. For example, in many cities there is an opportunity to use the rail-less vehicles on boulevards or other streets which are not served by railway vehicles in a sort of de luxe service on which a higher fare can be charged. This also often aids the main transportation agency by relieving overloaded heavy traffic lines. The coach systems of New York, Detroit and Chicago are outstanding American examples of this supplementary service.

The rail-less vehicle can also be used on routes which are overcrowded during rush hours. Here the rail-less vehicle is able to aid the rail system not only by transferring a certain number of passengers to the de luxe service, but also by giving an ordinary service. This kind of operation need not be confined and preferably should not be confined to the same streets on which the rail cars operate, but should be given simply between the same termini. In this way it is evident that a territory not heretofore directly furnished with transportation is traversed and becomes a source of some considerable traffic. Such supplementary service is good business, as it makes for better service and pleases the public. In general, it appears that it can be offered most economically by a rail-less vehicle.

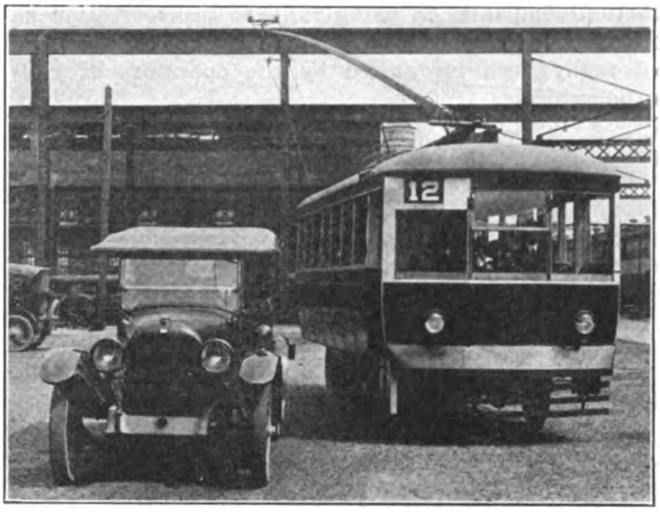
WHAT ABOUT THE ECONOMICS?

In a general way the economic situation today, at least so long as the public roadway is used, in addition to the merchandising element, provides certain saving arguments for the rail-less vehicle.

There exists in practically every traction community today a want for additional transportation service. The existing railways have found that it is increasingly difficult to finance these extensions with rail service and



Trolley Bus Developed by Trackless Transportation Company, New York, N. Y. Seating Capacity Twenty-nine. General Electric Equipment Used



"Rail-less" Car Developed by J. G. Brill Company, Philadelphia, Pa. Seating Capacity Twenty-eight. General Electric Equipment Used

often if these extensions were built the fare necessary to come anywhere near meeting the cost of the service operated would be so high that riding would be discouraged, with the result that the losses would have to be borne by profitable lines.

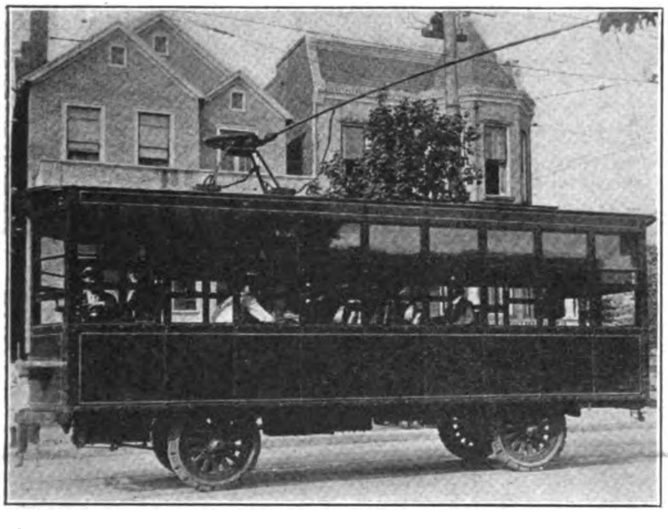
In such cases the railway can not afford in this day to neglect to provide for the growth of the community. If it does it will not be long before independent operators enter the field, and instead of co-operation to render the most economical form of transportation to answer the needs of the community there at once begins direct competition. These operators will attempt to carry passengers not alone from the terminus of the existing railway line but will duplicate existing rail service in an endeavor to reap as large a profit as possible. The usual result has already been demonstrated in several communities.

It is not always to be expected that at the start bus operation will be self-supporting. That has long been true of rail extensions as well, but with the bus it is possible, due to its mobility, to shift its route from time to time so as to accommodate the greatest number of persons. This fact alone is one of the reasons why bus transportation will play such a real part in the future passenger transportation field. Already under private individual ownership the motor bus has fulfilled a popular demand and it is now incumbent upon the existing traction companies to supply this service as a part of their own organization where the circumstances warrant.

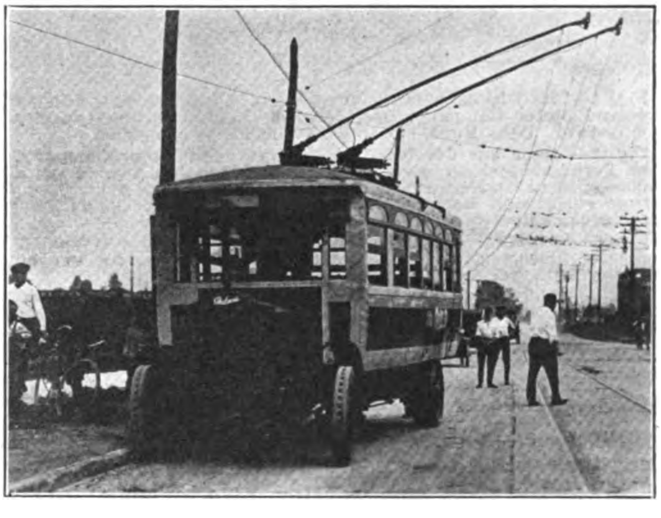
It is obvious that one organization furnishing coordinated service will supply better transportation than can several companies or individuals supplying duplicate and competing service. President Gadsden of the American Railway Association said nearly a year ago "that the railways themselves must adopt and use the motor bus in its correct economic sphere."

The traction companies have within the last year or two begun to recognize the attitude of the public mind toward the motor bus. Information gathered shows that about twenty-five electric railways are now operating approximately 130 vehicles either in complementary or supplementary service. In some cases the fares charged are a part of the street car fare, while in others an endeavor is made to maintain bus operation on its own feet.

As yet, however, only a start has been taken by the



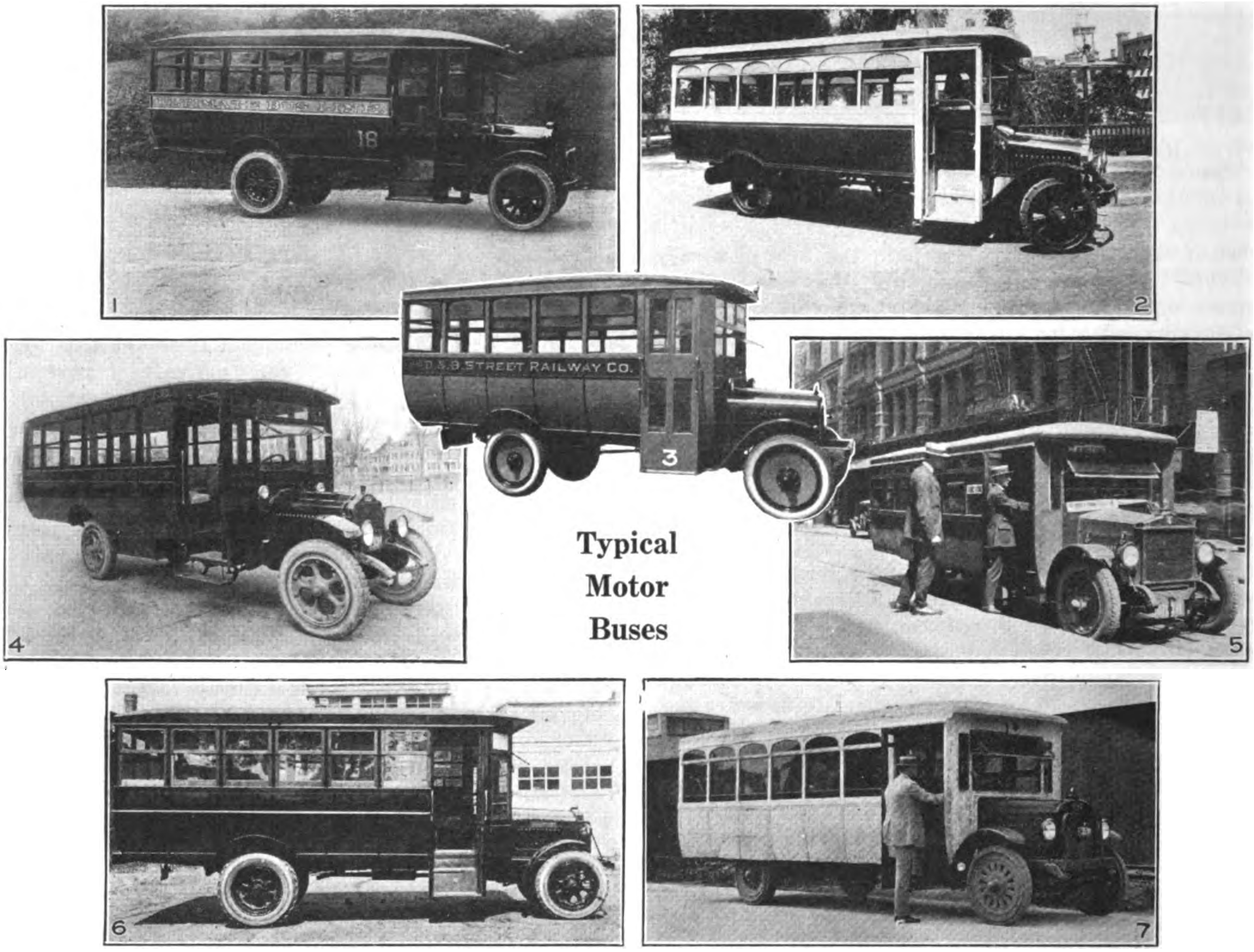
"Trollibus" Built by Atlas Truck Company, York, Pa., for Operation by the Virginia Railway & Power Company. Seats Thirty Passengers. General Electric Equipment Used



Trolley Bus Designed by Packard Motor Car Company, Detroit, Mich. Brill Body on Standard Packard ED Chassis. Seats Twenty-five Passengers. Westinghouse Equipment Used traction companies in using rail-less transportation as an adjunct of their service. Its many possibilities have not really been recognized by the operators of rail-borne vehicles.

TRANSPORTATION ADVANTAGES

From a transportation standpoint the motor bus and trolley bus appear to have distinct characteristics not possible of the rail-borne vehicle. The motor bus has two that make it the most mobile unit. One of these is its ability to be shifted at the will of the operator from one street to another as traffic conditions change; the other is its ability to avoid traffic "jams" or getting tied up on account of accidents to other units or fires along the route of operation. With the trolley bus much of this mobility is found wanting—due to being tied to overhead wires for power. While it is true that it can pass around other vehicles stalled on the street, it must nevertheless follow a fixed route.



Typical Motor Buses

Fig. 1—The Ultimate Truck, Type AJL. Designed and built by Vreeland Motor Company, Inc., Newark, N. J. Seating capacity twenty-two. Uses Buda motor with Sheldon worm drive.

Fig. 2—Motor bus developed by International Motor Company, New York, using Brill wood body on standard AB chassis, with longer springs and wheelbase. Special rubber spring blocks in spring suspension housings give easy riding with solid tires. Seating capacity twenty-five.

Fig. 3—Standard type of transit body built by Paterson Vehicle Company, Paterson, N. J., mounted on Reo chassis, for use by Danbury & Bethel Street Railway.

Fig. 4—White Motor Bus, used by Gloucester Auto Bus Company, Gloucester, Mass. Two-ton capacity chassis, mounting wood body, seating twenty-seven passengers.

Fig. 5—The Imperial Omnibus. Designed and built by the Trackless Transportation Company, New York. A low center of gravity type omnibus. Buda motor and Clark type rear wheel internal drive. Kuhlman truss side all steel body. Seating capacity twenty-nine.

Fig. 6—Day-Elder motor bus, manufactured in Newark, N. J. Zig-zag seating arrangement gives wide aisles and makes for easy unloading when crowded. Buda motor and Sheldon worm drive rear end used. Seating capacity twenty-five.

Fig. 7—Low floor type of motor bus developed by Republic Truck Sales Corporation, Alma, Mich. Uses Knight sleeve valve motor with rear wheel internal drive. Seating capacity twenty-five.

Sidewalk loading is also possible for each unit—a practice which is of great value to those that must patronize public service conveyances. This method of loading and unloading eliminates a class of accidents prevalent with rail-borne vehicles that has made it necessary to promulgate police restrictions which often impede instead of facilitate other forms of vehicular street traffic.

It is not considered at all necessary for a railway to build up an entirely separate operating and maintenance organization if it decides to operate buses. Today the majority of companies maintain a well-equipped garage under the jurisdiction of the master mechanic to look after the present automotive equipment now used by their track and line departments. It is but a step forward for this same maintenance force to care for the passenger bus, and so far as mechanical details are concerned it is impossible to see any difference except that perhaps it needs closer inspection for it must not be allowed to fail in service. Nor is a separate transportation organization necessary except in so far as bus operators are concerned. Supervision can and should be given by the traffic inspection force used for the existing rail lines.

About the only thing that would be duplicated if rail-less service was rendered would be the accounting system to determine the cost of operation. There appear to be two methods that can be followed—one is to keep separate accounts, which at the end of the fiscal period would be added in with the cost of rail service, while the other is to keep the entire cost of operation separate and add only the net result into the income account.

It is doubtful if the motor bus and trolley bus will supplant at present much if any of the existing rail lines.

The field of the bus, it appears, is not to supplant existing trolley routes but rather in furnishing complementary and supplementary service thereto. The bus can do a real work in developing new territory adjacent to growing communities and can also aid in establishing community spirit between neighboring towns and villages until sufficient density of traffic has been developed to warrant the necessary expenditure for rails, power plants and distribution systems; that is to say, a more extensive transportation system.

Editorially the ELECTRIC RAILWAY JOURNAL has already taken the position that there is a distinct field for this mode of transportation, and that it should be operated as an adjunct by existing traction companies.

There is no fear that many rail systems will be supplanted by bus systems. It is self-evident, however, that the facts as they now exist indicate a growing public use for rail-less vehicles in transportation. The field has been over-emphasized by some and under-emphasized by others. It appears that those who know most about transportation, urban and interurban, are the ones to apply the most sound business and sales ability toward the correct application of this method of transportation.

Of course the ever-rising question of cost is in the mind of every one who would like to study this situation. Several studies have been made to determine the facts, and these are now being published. One of these studies follows.

An Analysis Indicates that, Based on Cost of Service Alone, the Rail-less Vehicle, with Its Smaller Fixed Charges, Can Compete with Rail-Borne Vehicles in Certain Circumstances

The Bus Transportation Field

Good!!

By C. W. Stocks

Associate Editor "Electric Railway Journal," New York, N. Y.

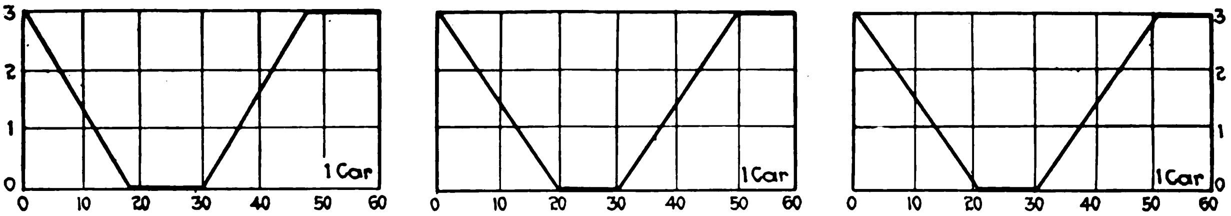
THE cost of rendering service using the motor bus, the trolley bus and safety car as part of a co-ordinated system has for some time past been a matter of much conjecture. In an attempt to determine the facts as they exist a comprehensive study has been made of the cost to build and operate a 3-mile line under varying headways with each type of equipment. In this study data were drawn from experience in so far as they were available. The figures are based on the theory that the 3-mile line is an extension of an existing transportation system, either a bus system or a trolley line. If the existing transportation system is a trolley line, there would naturally be advantages in the use of the same kind of equipment on the extension and these would be reflected in considerably lower maintenance and transportation costs than those indicated in the tables. On the other hand, if the city system was operated by buses, the same economies would follow the use of buses on the extension. The figures, like estimates of this kind, are intended to reflect average conditions and costs only. Individual cases are quite apt to show a divergence from them.

Another factor which has not been included, because it has been impossible to evaluate it, is that of relative obsolescence of the three classes of vehicles. Nevertheless, it is probable that as the electric railway art is older there is comparatively less chance of radical changes in the art than with the newer type of vehicles.

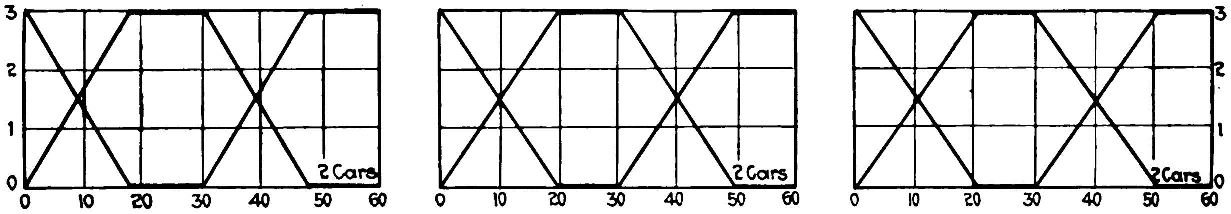
It should be understood that this analysis does not involve the question of supplanting rail service with service by rail-less vehicles. If this is contemplated it becomes necessary for the new form of service to earn not only its own fixed charges but also the depreciation, fixed charges and taxes on the investment in rails and distribution system supplanted. Such items must be added to the total cost of service shown in the supporting tables and curves for the rail-less vehicles to be used, in order to get a strictly comparable basis with the safety car.

Based on the hypothesis just stated, the analysis indicates that where the traffic is thin the field of the highway-borne vehicle is superior. On the other hand, as traffic requirements increase, the lower cost of operation of light, rail-borne vehicles gradually offsets the fixed charges for the necessary rail investment, so that, with the assumptions used, headways of less than 2½ minutes can be operated most economically with rail-borne safety cars.

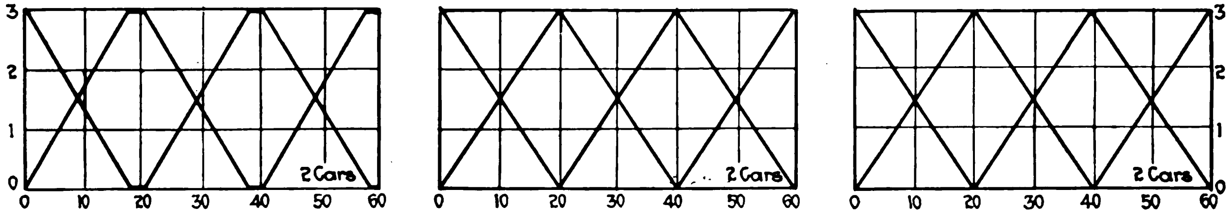
The analysis also shows that the motor bus has the most varied field and is cheaper where traffic requires less than 116 seats per hour. This means that schedules calling for headways of fifteen minutes or more can be operated economically only with the motor bus. The trolley bus, due to the investment required for overhead wires and the slightly greater cost of the vehicle itself, even though its bare operating costs are less than the motor bus, has its field of economic operation between the motor bus and the rail-borne vehicle. Traffic requirements calling for headways ranging from two and one-half to twelve and one-half minutes which furnish from 720 down to 150 seats per hour can best be handled by the trolley bus.



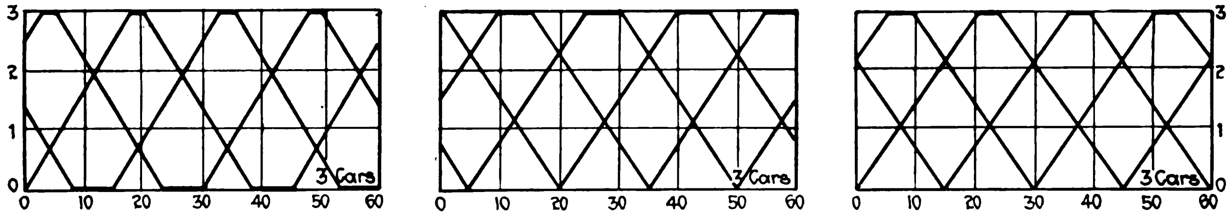
60 MIN. HEADWAY, 39,420 MILES PER YEAR



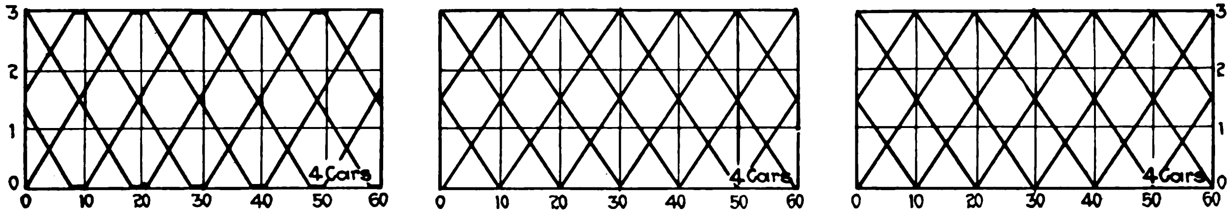
30 MIN. HEADWAY, 78,840 MILES PER YEAR



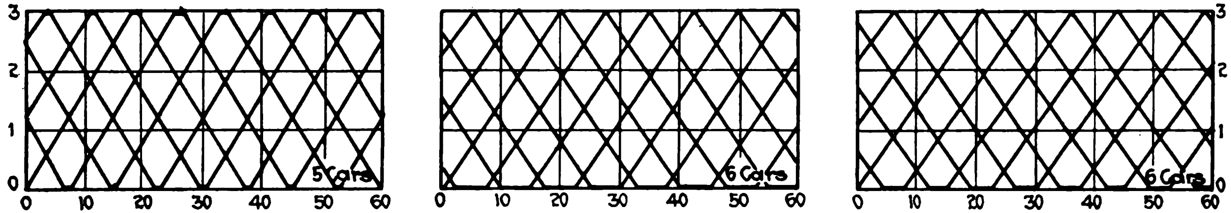
20 MIN. HEADWAY, 118,260 MILES PER YEAR



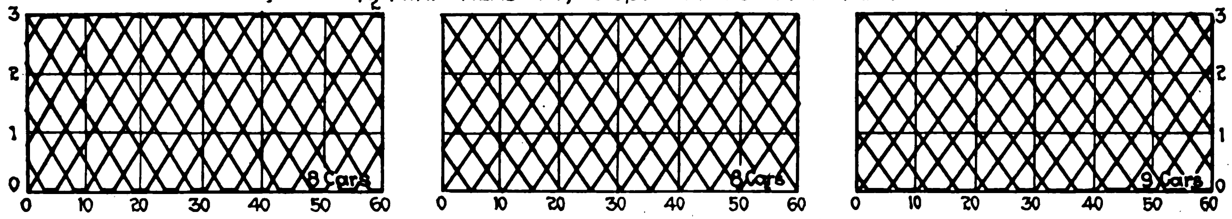
15 MIN. HEADWAY, 157,360 MILES PER YEAR



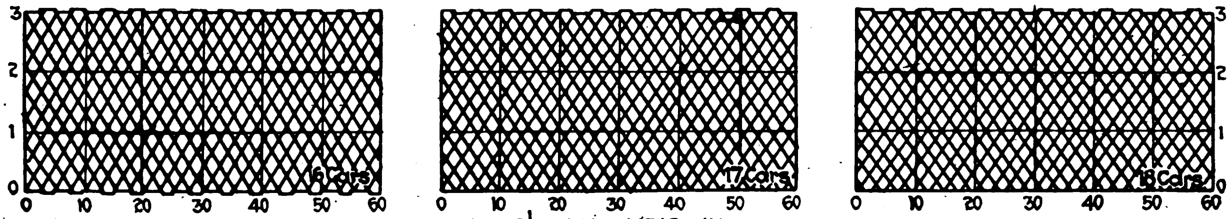
10 MIN. HEADWAY, 236,520 MILES PER YEAR



7½ MIN. HEADWAY, 315,360 MILES PER YEAR



5 MIN. HEADWAY, 473,040 MILES PER YEAR



2½ MIN. HEADWAY

946,080 MILES PER YEAR   963,326 MILES PER YEAR   952,971 MILES PER YEAR

Reading from Left to Right, Operating Schedules for the Motor Bus, the Trolley Bus and the Safety Car at the Headways Assumed

It is only natural that the bus is shown to be the most economical for operation under long headways; that is, where the traffic is thin. In reality this appears to be the field which has the greatest possibility of future development, for practically all of the needed extensions that the railways should have built in the past few years are just suited for exploitation by the rail-less vehicle.

It is evident that even with present costs of new construction urban transportation facilities cannot be built so as to operate at the rate of fare in effect on systems built under pre-war conditions. The investment for track alone would provide many vehicles.

This difference in investment necessary as between the several modes of transportation is sufficient to warrant the railway operator in adopting the bus for original development purposes on (1) extensions to existing rail lines; (2) for crosstown services, especially between factory districts and housing developments that have no direct rail service; (3) for belt lines in urban centers to connect mid-points of rail routes so as to facilitate passenger convenience and reduce the time spent in traveling via a roundabout rail route. As the density and permanency of the traffic develops other types of vehicles may be found more economical of operation.

Both the motor bus and trolley bus are also possible of use to supplement existing rail service where traffic has outgrown present track facilities. In the case of the motor bus, though, it is not necessary to confine its route of operation to that of the existing rail service, but simply between the same termini. Even an entirely alternate route through adjacent territory can be used, thus opening up new territory not heretofore directly furnished with transportation. Another undeniable field for the motor bus is to outlying suburban points even as far as 20 miles where only several trips a day are necessary to meet the traffic requirements.

The 3-mile route was selected as the basis for computation in the belief that from an analysis of the cost of service thereon the relative practicability of each mode of transportation could be indicated. Such a length of line may also be considered as the average needed extension branching off of an existing route or for a new route starting from some civic center and tapping territory not served by other forms of transportation.

Among the factors considered in making the analysis were those of service, speed and mobility of operation. The service was laid out to operate on headways varying from sixty to two and one-half minutes in order to determine the variations in cost of service as the number of vehicles and car-miles increased. The whole analysis was predicated on the standard classification of accounts for electric railways. By so doing direct comparisons as to costs for each form of vehicle can be made.

For convenience of operation and ability to maintain the proper headways a double set of overhead wires were strung for trolley bus operation in view of the tight schedule when the headway was reduced to twenty minutes. Double tracks were considered necessary for operation of safety cars when running on less than a fifteen-minute headway.

It is estimated that approximately the same amount of traffic can be handled on each form of vehicle, although undoubtedly a safety car can carry a greater number of standees. It was assumed that the motor bus and trolley bus would seat twenty-nine and the safety car thirty. On the basis of maximum capacity, the buses would each carry forty-five, as compared to fifty-three on the safety car.

TABLE I—INVESTMENT ACCOUNT UNIT COSTS

	Unit	Motor Bus	Trolley Bus	Safety Car
Vehicles	Each	$7,500	$8,000	$6,000
Seating capacity	Each	29	29	30
Garage or carhouse, including shop space	Per vehicle	$750	$750	$750
Land for garage or carhouse	Per vehicle	250	250	250
Shop tools and machinery	Per vehicle	250	250	250
Electric lines — Single pair	Route-mile	....	4,500	....
Electric lines — Double pair	Route-mile	....	6,000	....
Distribution system — Single track	Route-mile	....	....	3,500
Distribution system — Double track	Route-mile	....	....	7,000
Track construction — Single track	Per mile	....	....	30,000
Track construction — Double track	Per mile	....	....	60,000

The unit prices used in calculating the total investment for each mode of transportation are given in Table I. The prices used are believed to be conservative and, except for the cost of vehicles, represent pre-war prices. Present-day prices were taken for the rolling stock in each case.

In calculating the cost of service many items of expense were found to vary directly with the number of car-miles operated, while with others the expense does not vary with the service. For instance, much of the expense incident to the way and structure maintenance for rail service is due to the elements, irrespective of the number of cars operated if the same operating efficiency is maintained at all times. For this reason the maintenance figures per car-mile for track include a fixed expense of $466.66 per mile of route, a total of $1,400 to cover the cost of removal of snow and ice, cleaning and sanding track, etc. Electric line maintenance, likewise, includes $166 per mile of route, or $500 to cover the cost of painting poles, repairs to broken wires and damage caused by storms.

The allowances for superintendence of equipment, for transportation and for general and miscellaneous expenses represent the practice of up-to-date operating electric railway companies. This service was taken as being a part of a co-ordinated system.

TABLE II—UNIT COSTS USED IN CALCULATING COST OF SERVICE

	Unit	Motor Bus	Trolley Bus	Safety Car
Way and Structure Accounts:				
Highway expense	Route-mile	$75	$75	....
Track maintenance and bonding				
Fixed expense	Route-mile	....	....	$466
Variable expense	Vehicle-mile	....	....	0.9 cents
Electric line maintenance				
Fixed expense	Route-mile	....	$166	$166
Variable expense	Vehicle-mile	....	0.4 cents	0.3 cents
Maintenance buildings, fixtures and grounds	Investment	2 per cent	2 per cent	2 per cent
Depreciation track	Investment	....	....	4 per cent
Depreciation electric lines	Investment	....	6 per cent	6 per cent
Depreciation of buildings	Investment	2 per cent	2 per cent	2 per cent
Equipment Accounts:				
Superintendence	Vehicle-mile	1.6 cents	1.6 cents	1.6 cents
Maintenance of vehicles	Vehicle-mile	5.0 cents	3.0 cents	2.0 cents
Service equipment maintenance	Total	$100	$100	$100
Shop equipment maintenance	Total	$100	$100	$100
Shop expenses	Vehicle-mile	0.3 cents	0.3 cents	0.3 cents
Depreciation vehicles and equipment	Investment	12.5 per cent	12.5 per cent	8.333 per cent
Depreciation shop equipment	Investment	10 per cent	10 per cent	10 per cent
Power Accounts:				
Gasoline—wholesale Unit cost	Gal.	22 cents	....	....
Gasoline consumption	Miles per gal.	7.0	....	....
Lubricants	Bus-mile	0.4 cents	....	....
Cost of power, at 2½ cents kw.-hr.	Vehicle-mile	....	3.16 cents	3.62 cents
Conducting Transportation:				
Superintendence	Vehicle-mile	1.3 cents	1.3 cents	1.3 cents
Wages of operators	Man-hour	65 cents	65 cents	65 cents
Cleaning and washing	Vehicle year	$100	$100	$100
Other transportation expenses	Vehicle-mile	Balance to make 0.5 cents per mile with cleaning and washing		
Traffic expenses—Advertising	Vehicle-mile	0.16 cents	0.16 cents	0.16 cents
General and miscellaneous expenses	Vehicle-mile	3.9 cents	3.9 cents	3.9 cents
Taxes on physical property	Investment	2 per cent	2 per cent	2 per cent
State license	Vehicle	$50	....	....
City permit or car license	Vehicle	$25	....	....
Fixed charges—interest	Investment	7 per cent	7 per cent	7 per cent

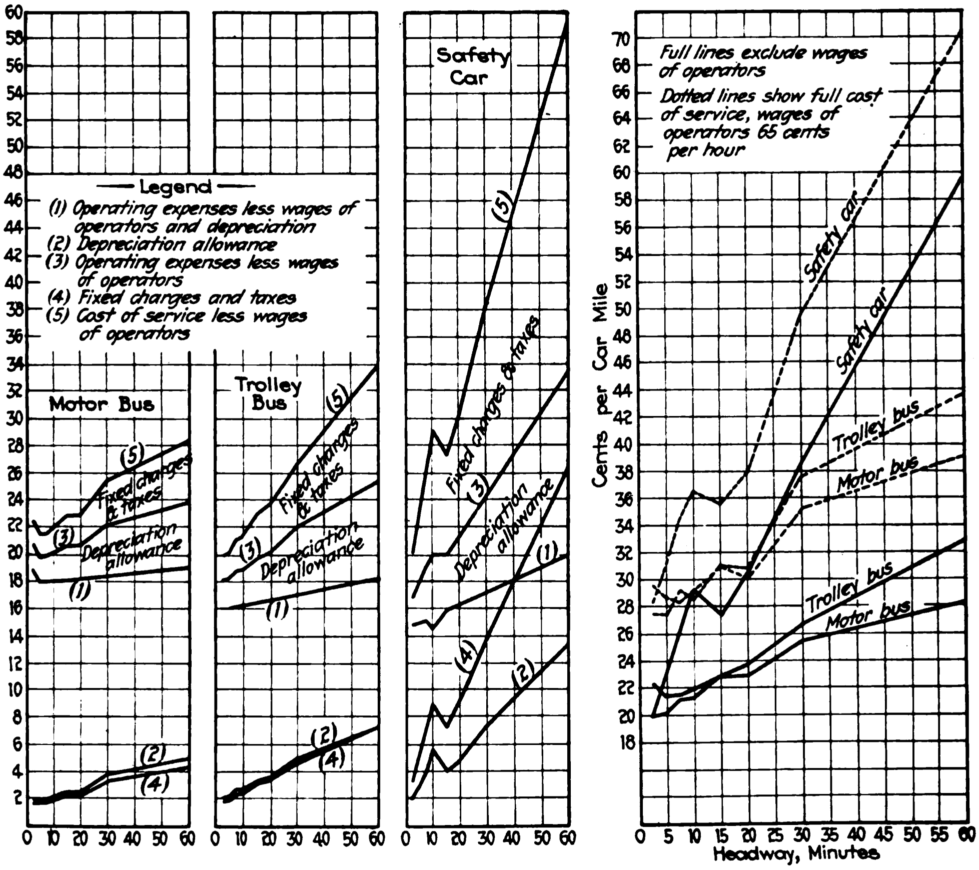
TABLE III.—ANALYSIS OF COST OF SERVICE ON A 3-MILE EXTENSION

	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car
Headway (minutes)	60	60	60	30	30	30	20	20	20	15	15	15
Mileage run per year	39,420	39,420	39,420	78,840	78,840	78,840	118,260	118,260	118,260	157,680	157,680	157,680
Car-miles per car-hour	6	6	6	6	6	6	9	9	9	8	8	8
Necessary vehicles	2	2	2	3	3	3	3	3	3	4	4	4
Revenue seats	29	29	30	29	29	30	29	29	30	29	29	30
Revenue seat-miles	1,143,180	1,143,180	1,182,609	2,286,360	2,286,360	2,365,200	3,429,540	3,429,540	3,547,800	4,572,720	4,572,720	4,730,400
Dead time in schedule	40%	33⅓%	30%	40%	33⅓%	30%	8⅓%	None	None	20%	11.1%	6⅔%
Total investment	$17,700	$32,200	$115,200	$26,550	$41,550	$122,550	$26,550	$46,050	$122,550	$35,400	$55,400	$129,300
Cost of Service (cents per vehicle-mile):												
Maintenance of way and structures	0.647	2.315	6.095	0.342	1.376	3.667	0.228	1.051	2.845	0.181	0.888	2.443
Depreciation of buildings	.076	.076	.076	.057	.057	.057	.038	.038	.038	.038	.048	.038
Depreciation of track	....	....	9.132	....	....	4.566	....	....	3.044	....	....	2.283
Depreciation of electric line	....	2.055	1.598	....	1.027	.799	....	.914	.533	....	.685	.399
Total way and structures	0.723	4.446	16.901	0.399	2.460	9.089	0.266	2.003	6.460	0.219	1.621	5.163
Maintenance of equipment	8.908	6.908	4.408	8.564	6.654	4.154	8.570	6.570	4.070	8.526	6.526	4.026
Depreciation of vehicles	4.756	5.073	2.537	3.658	3.805	1.903	2.379	2.537	1.268	2.378	2.537	1.268
Depreciation of shop machinery	.127	.127	.127	.095	.095	.095	.063	.063	.063	.063	.063	.063
Total equipment	13.791	12.108	7.072	12.317	10.554	6.152	11.012	9.170	5.401	10.967	9.126	5.357
Power	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620
Conducting transportation	12.641	12.641	12.641	12.633	12.633	12.633	9.022	9.022	9.022	9.925	9.925	9.925
Traffic	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160
General and miscellaneous	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900
Total operating expense	34.758	36.415	44.294	32.952	32.867	35.554	27.903	27.415	28.563	28.714	27.892	28.125
Taxes	.898	1.634	5.845	.674	1.054	3.109	.449	.779	2.073	.449	.703	1.640
Licenses and permits	.380	....	....	.285	....	....	.190	....	....	.190	....	....
Fixed charges	3.143	5.718	20.456	2.357	3.688	10.882	1.571	2.726	7.254	1.572	2.459	5.740
Cost of service	39.179	43.767	70.595	36.268	37.609	49.545	30.113	30.820	37.890	30.925	31.054	35.505

Ample allowances have been included for depreciation. Buildings were assumed to have a life of fifty years, track structures twenty-five years, electric lines sixteen and two-thirds years. The life of the motor bus and trolley bus was taken at eight years, while that of the safety car was assumed to be twelve years. Shop tools and machinery were estimated to last ten years.

The estimates for power are based entirely on purchased power at a rate of 2¼ cents per kilowatt-hour at the car so as to forego the necessity of calculating power plant and substation costs. Power consumption was figured at 1.4 kw.-hr. and 1.6 kw.-hr. per mile respectively for the trolley bus and safety car. These figures are predicated on 250 watt-hours per ton-mile for the rubber-tired vehicle as against 200 watt-hours per ton-mile for the safety car. Gasoline consumption for the motor bus was estimated at 7 miles per gallon at a wholesale cost of 22 cents per gallon.

Separate schedules for each of the several headways taken were figured for each mode of transportation. The schedule speed, however, was taken at 10, 9 and 8¾ miles per hour for the motor bus, the trolley bus and the safety car respectively. This gives a one-way trip in eighteen, twenty and twenty-one minutes. It was assumed that the rail-less vehicle, due to its greater mobility, could hold a faster schedule than the safety car. The schedules as assumed are shown in the accompanying diagrams. From these diagrams it will be noted that for each of the headways the actual speed in miles per hour for each of the three vehicles is the same until the headways are reduced to seven and one-half minutes or less; then, due to the difference in speed and layover time necessary, the car-miles per car-hour for both forms of rail-less vehicles are greater than for the rail-borne safety car.



Graphical Analysis of Items Involved in the Cost of Service

Operator's wages were taken at the same rate for each form of vehicle, for it

TO AN EXISTING TRANSPORTATION SYSTEM FOR VARIOUS HEADWAYS

Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	Motor Bus	Trolley Bus	Safety Car	
10	10	10	7½	7½	7½	5	5	5	2½	2½	2½	Headway (minutes)
236,520	236,520	236,520	315,360	315,360	315,360	473,040	473,040	473,040	946,080	963,326	952,971	Mileage run per year
9	9	9	9.6	8	8	9	9	8	9	8.625	8½	Car-miles per car-hour
5	5	5	6	7	7	9	9	10	18	19	20	Necessary vehicles
29	29	30	29	29	30	29	29	30	29	29	30	Revenue seats
6,859,080	6,859,080	7,095,600	9,145,440	9,145,440	12,460,800	13,718,160	13,718,160	14,791,200	....	27,936,454	28,589,130	Revenue seat-miles
10%	None	None	4%	11.1%	None	10%	None	None	10%	4.16%	5%	Dead time in schedule
$44,250	$64,750	$237,750	$53,100	$83,450	$252,350	$79,650	$102,150	$274,500	$159,300	$196,650	$348,000	Total investment
												Cost of Service (cents):
0.127	0.738	2.035	0.099	0.663	2.836	0.077	0.583	1.634	0.052	0.507	1.431	Maintenance of way and struct.
.032	.032	.032	.029	.033	.033	.029	.029	.032	.029	.029	.032	Depreciation of buildings
....	....	3.044	....	....	2.283	....	....	1.522	....	....	.756	Depreciation of track
....	.457	.533	....	.342	.400	....	.228	.266	....	.112	.132	Depreciation electric line
0.159	1.227	5.644	0.128	1.038	4.552	0.106	0.840	3.454	0.081	0.648	2.351	Total way and structures
8.494	6.484	3.984	8.464	6.464	3.964	8.442	6.442	3.940	9.420	6.420	3.920	Maintenance of equipment
1.982	2.114	1.057	1.784	2.220	1.110	1.790	1.903	1.059	1.783	1.971	1.050	Depreciation of vehicles
.053	.053	.053	.047	.048	.055	.048	.048	.053	.047	.049	.052	Depreciation of shop mach'y
10.529	8.651	5.094	10.295	8.732	5.129	10.280	8.393	5.052	11.250	8.440	5.022	Total equipment
3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	3.543	3.160	3.620	Power
9.022	9.022	9.022	8.570	9.925	9.925	9.022	9.022	9.925	9.022	9.336	9.782	Conducting transportation
.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	.160	Traffic
3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	3.900	General and miscellaneous
27.313	26.120	27.440	26.596	26.915	27.286	27.011	25.475	26.111	27.956	25.644	24.835	Total operating expense
.374	.548	2.010	.338	.529	1.600	.337	.431	1.160	.337	.407	.732	Taxes
.159	....	....	.142	....	....	.143	....	....	.142	....	....	Licenses and permits
1.309	1.916	7.036	1.178	1.852	5.602	1.179	1.511	4.062	1.180	1.422	2.550	Fixed charges
29.155	28.584	36.486	28.254	29.296	34.488	28.670	27.417	31.334	29.615	27.473	28.117	Cost of service

is believed that those who are operating with one man per car would have to pay the same rate irrespective of the form of vehicle. The base rate was taken at 60 cents per hour, with 5 cents per hour added for loadings such as pull-in and pull-out time, making out reports and the like. This wage figure is, however, subject to many variations due to purely local conditions which are not at all universal.

As will be noted, there is considerable leeway or layover time in many of the schedules, while in some cases no layover time is allowed. In actual operation tight schedules are difficult to maintain, but in view of the fact that this study is of operation on an extension and not through central business districts where delays might be encountered due to vehicular traffic, it is believed that these tight schedules are feasible.

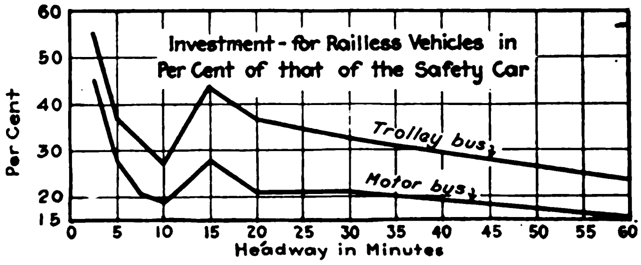
Working from these assumptions to determine the cost of service, the results shown in Table III were obtained. The results are also shown diagrammatically, the costs for each class of service being plotted to the same scale so as to show more readily the variations that exist in the three modes of transportation.

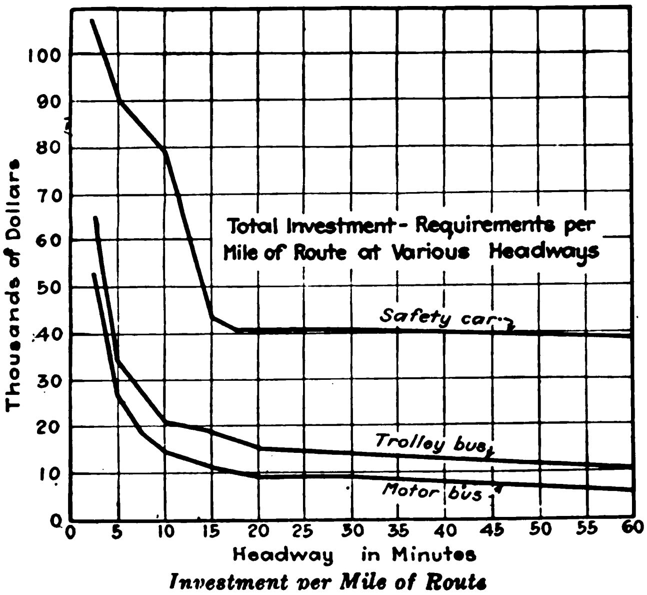
CONCLUSIONS

From an analysis of the curves it is evident that under the conditions assumed the relative fields for the use of these three different forms of transportation, namely, the motor bus, the trolley bus and the safety car, are distinctly divided. Two sets of curves showing the cost of service, with and without wages of operators, are given for the purpose of pointing out what an important part this expense bears to the total cost of service for each vehicle.

The field of the motor bus appears to be the most varied. It is apparent that on schedules with headways of fifteen minutes or more calling for a maximum of 116 seats per hour in each direction the motor bus on the basis assumed can be operated more cheaply than the other types of vehicles. It has a field of its own in the exploitation of new routes, and in addition, even with this seemingly small number of seats per hour, it is believed that there are many places in and around traction centers where such service would be welcomed.

The trolley bus has its field of operation in between that of the motor bus and safety car. It is but natural to believe that as the traffic increases and a larger investment is warranted the cost of operation should decrease and so pay the larger fixed charges rendered necessary. The trolley bus appears to be able to accomplish this. Its cost of operation is lower than the motor bus for headways below fifteen minutes, but for headways of less than two and one-half minutes, or where more than 696 seats per hour are required in each direc-





Investment per Mile of Route

tion, rail-borne service can be operated more cheaply. This analysis is based on the assumption that road vehicles will not be subjected to any road tax above the usual license fees which have already been included. If such a tax should be imposed, the relative economies of the different modes of transit would be changed.

Any individual operator can easily substitute for the assumptions made actual cost figures to fit individual conditions. Such a substitution might vary the conclusions considerably, especially if a different length of route were taken and the operating conditions were such that the schedules as laid out could not be maintained with more or less layover time.

Credit for collaboration in the preparation of this article should be given to Albert S. Richey, electric railway engineer, Worcester, Mass. All of the assumptions used and the method of calculation followed were agreed upon after conference.

Another Trolley Bus Tested

Details Follow in All Essential Features the Specifications Issued by the Detroit Street Railway Department, Which Incorporated Some Novel Features

TESTS on an improved new type of trackless trolley car or trolley bus, manufactured by the Trackless Transportation Corporation of New York, were completed last week at the General Electric Company's plant, Schenectady, N. Y., where the electrical equipment is being installed. This new trackless trolley will shortly be placed in operation in Detroit by the officials of the Municipal Railway and will be used for demonstration purposes. It incorporates a number of new features both in design and operation not found in any previous bus installation.

The bus demonstrated at Schenectady is an adaptation of electric drive to the standard low center of gravity gasoline motor bus built by the Trackless Transportation Corporation. The driving motors and control are placed beneath the hood. The collector consists of a standard U. S. trolley base, a 14-ft. Shelby seamless steel trolley pole with a double-contact sliding-type collector head. This collecting head is swiveled on the pole and provides sufficient flexibility for making close contact with the overhead under all service conditions.

The main dimensions of the bus are: Length from spring horn to back of body, 25 ft.; wheelbase, 183 in.; over-all width, 88 in.; over-all height, 8 ft. 2 in. loaded and 8 ft. 4 in. light; weight 10,700 lb.

The chassis is of pressed-steel frame with specially designed front axle and internal gear rear axle. The propeller shaft is equipped with service brakes and there are external drum-type brakes on the rear wheels for emergency.

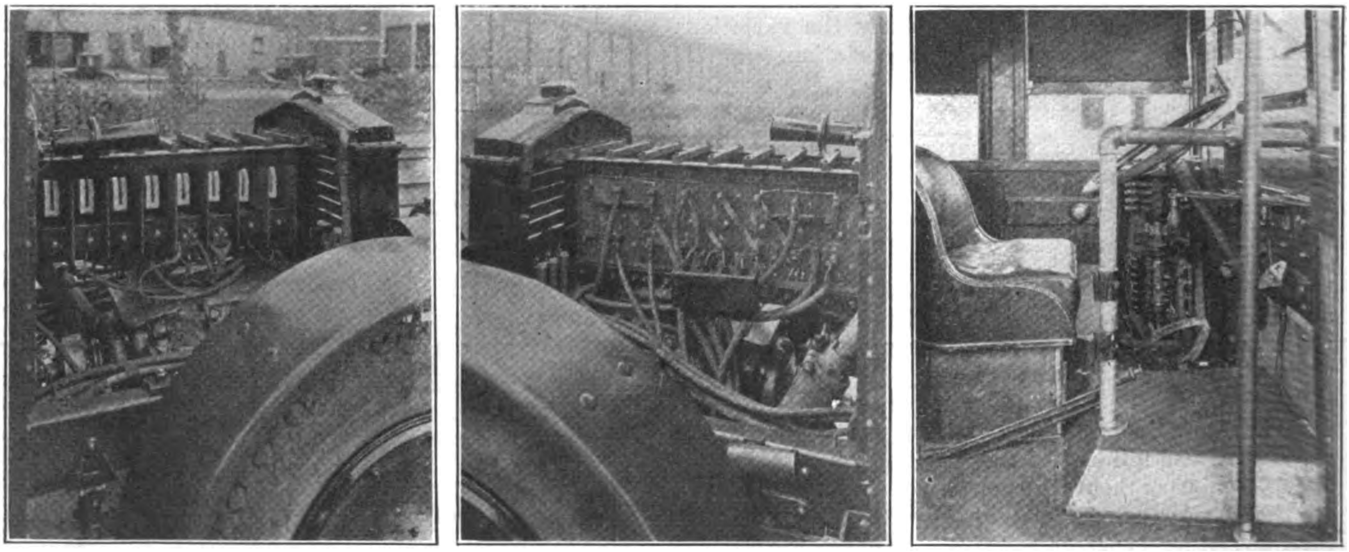
The driving mechanism consists of two 600-volt GE-258 railway motors connected in tandem and drives the standard rear axle through the usual universal joints. The maximum speed will be about 25 m.p.h.

The control is of the series-parallel type consisting of eight electrically operated contactors and a foot operated master controller of the non-automatic type. This allows the operator to select the most suitable speed for operation. The control has four steps in series and three in parallel, which is ample for starting easily without a hammer blow on the gearing or discomfort to passengers.

Overload protection is provided by two 600-volt cartridge fuses M.E.C. standard. Experience has proved that overload protection by means of circuit breakers is unsuitable to the trackless vehicle.

The following is a résumé of the principal facts about the Trackless Transportation Corporation's vehicle:

Seating capacity	29 passengers
Track of rear wheels	71 in.
Track of front wheels	66½ in.
Size of front tires	36x6 pneumatic
Size of rear tires	40x8 pneumatic
Height from ground to roof	8 ft. 2 in. pneumatic
Height from ground to floor (light)	27 in.
Height from ground to floor (loaded)	26½ in.
Inside width on seat line	82 in.
Inside length on seat line	20 ft., 5½ in.
Inside height from floor to ceiling	6 ft. 5 in.
Height from ground to step	16 in.
(10-in. riser on step—one-step and in.	
Chassis interchangeable for gas or electric drive.	
Lighting 6-volt storage battery charged by automobile type generator belted to driving motors.	
Window posts, centers	29 in.
Width of seats	33 in.
Lights	Seven flush receptacles, step light destination light—tail light—two headlights.
Curtains	Standard Curtain Supply Company
Buzzer	Signal system standard.
Fare box	Standard



Views of Some of the Details of Detroit's New Trolley Bus

At left, right-hand side of the front with the hood removed, showing the method of arranging the contactors. The two GE-258, 600-volt railway motors in tandem can be seen immediately under the contactor hood. In center, left side of the front with the hood removed, showing the connections of the contactors, and the method of arranging the conductors in the small space allowed. At right, view of driver's seat, showing also the location of the controller and other operating apparatus.

Letters to the Editors

FOLLOWING *are given two further comments on the proposed reorganization of the American Electric Railway Association, which will be considered at the coming convention:*

Mr. Shannahan Recommends Open Field

PECK-SHANNAHAN-CHERRY INC.
HAMPTON, VA., Sept. 14, 1921.

To the Editors:

I have read with interest the letter of J. D. Mortimer regarding the proposed changes in the constitution and by-laws of the American Electric Railway Association, in which he states that the success of the association will depend rather upon the substance of its leadership than upon its form of organization.

It strikes me that it is entirely possible that the substance of its leadership will depend to a considerable extent on its form of organization, or, at least, upon the method pursued in creating the leadership. It is comparatively easy for the nominating committee to select a fourth vice-president for the ensuing year, but it is a more difficult matter for it to select a man to be president four years hence, which is exactly what is proposed to be done by the section of the constitution providing for the election of officers. It may be argued that the constitution as written does not necessitate the automatic promotion of the vice-presidents, but every one familiar with the facts knows that it has been the custom so to do, and frequently custom provides a more rigid law than the written statute. More than once during the past decade this custom has given difficulty, and why it should be perpetuated, rather than leaving the nominating committee free to select the man who at the moment most nearly meets the exigencies of the hour, is difficult to say.

Is it not a fact that striking the shackles from the nominating committee might result in the kind of leadership which would develop the forward looking policies which may so materially assist in the rehabilitation of the electric railway industry?

J. N. SHANNAHAN.

Comments from Mr. Shoup

SOUTHERN PACIFIC COMPANY
SAN FRANCISCO, Sept. 13, 1921.

To the Editors:

You ask me for some comments on the proposed A. E. R. A. constitution.

The changes in the constitution are of minor importance. Whether the association succeeds or fails depends upon the energy and thought its members put into the work, and particularly the officers who accept the direction of its affairs. If it is a constructive policy worth while, then the association is worth while and not otherwise. The form through which it operates, if practicable, is quite secondary to the operation itself.

It seems to me that the executive committee is too large. The privilege of a member of the executive committee to send a substitute is a doubtful one. A man is selected for such work because of his personal qualifications. His company is not elected. Would it not be better to have a smaller committee which carried the full responsibility and would be present at nearly all meetings?

The provision with respect to membership for trackless transportation companies ought to be carefully worded. If it should mean the admission of motor buses, I suspect that there will be trouble out our way.

The various changes that make for systematic and regular consideration of the problems confronting the industry are very good.

PAUL SHOUP,
Vice-President.

Railways Must Take Up Buses Now

MOUNT VERNON, N. Y., Sept. 15, 1921.

To the Editors:

Having returned from a couple of months study of the enormous development of the motor bus in Great Britain—from London's 2,700 working vehicles a day to the humblest countryside service—I find it harder than ever to understand those who vainly believe that in this country the motor bus is not going to get beyond the anarchistic jitney stage. It is true that electric railways will never be supplanted by this catch-as-catch-can or go-as-we-please service of the individual operator, although they can be and have been ruined by such competition. Yet there is no reason to suppose that the motor bus will always remain in the ragamuffin stage, for even the worst enemy of the electric railway recognizes that that stage must not be allowed to continue.

It does not seem that we will have to wait much longer for the motor bus to appear in much more dangerous form. Hitherto, when an electric railway has "downed tools" it has been able to fold arms calmly while a host of irresponsibles tried to fulfill its functions. Sooner or later an influential part of the public has seen the point and asked the electric railway to resume. But in several recent cases, a new phenomenon has appeared. Motor-bus projectors have definitely offered to replace all of the electric railway service at a fare below that which the electric railway management insists it must have. It is not my purpose here to analyze their figures, but simply to point out the appearance of a new and more dangerous competitor.

The electric railways must not be led astray by the fact that the operating expenses of a car-seat mile are, for so large a portion of the output, less than those of a bus-seat mile. The real question is: Can the financially unencumbered motor bus offer a lower rate of fare than an electric railway which is trying to carry the accumulated overhead and taxes of one or two generations? Apparently a well-organized bus system will be able to do so in many of the top-fare communities where the average length of ride is between 1 and 2 miles.

At least one thing is clear: Electric railways must hasten to secure all the bus rights possible before jitneys have been operating long enough to secure a vested interest in local mass transportation. The recent New Jersey bus measure which specifically exempts pre-existent operators from seeking a certificate of public necessity and convenience illustrates what I mean by "vested interest." The right to run motor buses should not be confined to cross-town connections and extensions, but should be of such breadth that the electric railway system will be able to say truthfully that it is prepared to give any kind of mass transportation that can be obtained by either joint or separate operation of trackways and buses.

WALTER JACKSON.

Iowa Operating Men Meet

Claims Work from Legal Standpoint and Great Need for Co-operation of All Departments Discussed—Track and Equipment Men Talk About Their Problems and Bring Out Experience of General Interest

TRACKWORK, motor maintenance, problems of the transportation department and co-operation between all departments and the claims department were the subjects considered and freely discussed by the regular meeting of the Iowa Electric Railway Association held at Waterloo, Iowa, Sept. 15 and 16, and devoted exclusively to the operating men. Two papers dealing with the topics named appear elsewhere in this issue. The meeting was presided over by R. J. Smith, Davenport, on Thursday, in the absence of Chairman John Sutherland, Davenport, who, however, was present and presided Friday. At the conclusion of the convention Mr. Sutherland was unanimously elected to act again next year as chairman of the operating men's meeting for the third time.

M. A. Welsh, superintendent of transportation, Waterloo, Cedar Falls & Northern Railway, read a paper in which many aspects of the general transportation situation were reviewed.

In discussing Mr. Welsh's paper C. M. Feist, Sioux City, made the point, in relating the experience of his company with safety cars, that if a company can afford to buy standard Birney cars, this is the thing to do rather than to attempt to substitute rebuilt old type cars. He said that the additional cost of operating the rebuilt type in one year would go a long way toward purchasing the standard car. T. E. Woods, Omaha, Neb., said that the Omaha & Council Bluffs Street Railway now has in operation five standard safety cars which are used on five runs from 5 a.m. to midnight, so that the only chance the equipment department has to inspect them and maintain them is during the night, and the results have been very satisfactory.

Mr. Welsh reviewed the history of the difficulties in securing permission to operate one-man cars in Waterloo. One-man operation was finally made possible by an injunction secured against the newspapers preventing them from publishing an ordinance prohibiting the operation of such cars, an Iowa law providing that no ordinance shall become effective until published. The ordinance has never been published. The company operated remodeled cars with one man for six years prior to the purchase of standard Birney cars, with which the Waterloo city lines are now 100 per cent equipped. Later, a committee of the City Council went all over the country to take depositions on this subject, and after this study was made the City Council avoided responsibility by placing the matter directly to a popular vote, which overwhelmingly approved the one-man cars. Mr. Welsh made the comment that he believed that whatever sentiment was manifest against the one-man operation was largely manufactured by city officials and was not real or spontaneous, and that this applied not only to Waterloo but to many other cities. Mr. Welsh declared that the best defense against any claim is to prevent the accident, and that the safety car goes a long way toward doing this.

DISCUSSION OF CLAIMS WORK

In discussing the paper on co-operation between the claims department and other company departments by H. J. Connell, W. P. Thomas, Omaha, Neb., told of the experience of the Omaha company in endeavoring to impress the claims work upon student trainmen. He said they had formerly tried to teach the duties in this connection to the men during the period they spent in a training school, but that while the company had a competent instructor, the trainmen were more interested in learning the operating side of the business and they did not absorb a great deal of the claims side. The plan followed now is to have a representative from the claims department ride on the cars with the trainmen and go over actual cases with them to teach them wherein they should have done differently and to outline the various phases of this work, as well as to emphasize the method of avoiding accidents. Mr. Thomas said that this system of instruction on the claims work has been found to be much more successful than the instruction of the men in training school or in holding smokers or meetings at which these things are discussed. It was also brought out that the Omaha company had had good success in collecting damages from automobilists who had run into and damaged street railway property. Such cases had been undertaken only where the company had a clear case, and the outcome in every one has thus far been successful.

TRACK MAINTENANCE WORK

T. E. Rust, Waterloo, in discussing the paper on track maintenance by R. J. Smith, said that in maintaining the city lines in Waterloo the street railway had been largely in the position of having to wear out the cast-off equipment of the interurban system operated by the same company. He said that he was swinging back to the use of bolted work for railroad crossings and getting away from manganese special trackwork for the reason that, while the latter is good, it goes to pieces all at once when it has reached its life, while a bolted intersection can always be repaired and its life extended in emergency. In purchasing special trackwork the Waterloo company follows the practice of supplying two sets of drawings to the manufacturer, who is required to return one set with all of the drilling dimensions and locations marked on it, and this is then kept for the company's permanent record. Thereafter, when it is necessary to renew any piece, the drilling measurements are taken off the drawings, thus avoiding the necessity to make bolt-hole measurements in the field, which is very difficult to do. Mr. Smith raised the question whether any difficulty was found in following this practice, due to worn bolt holes and creeping of the rail with which the new piece must be connected. Mr. Rust explained that no particular difficulties of this nature had been found. He added that the greatest weakness in railroad crossing trackwork is in the bolts and that he uses nothing smaller than 1¼-in. treated bolts.

In building city track on gravel ballast Mr. Rust follows a plan of keeping the track open for about two weeks after it is constructed in order to permit the ballast and roadbed to settle. This is done mainly because of the fact that the company has no tamper. During this period while the track is kept open it is gone over to keep it to grade and alignment. This plan results in practically avoiding any settling of the pavement when the track is closed in. He said, however, that the use of a tamper is a better practice if one is available. Sometimes a heavily loaded car is run over this open track repeatedly to hammer it down and cause as much settling as possible before paving.

Mr. Feist brought up the question as to the cause of a number of broken rails which had been experienced in Sioux City in new track built with 80-lb. T-rail on steel ties and set in concrete, with the joints welded with a resistance type arc welder. Eight cases of broken rail occurred in the first eight months, the break taking place about 8 in. from the joint. Mr. Smith pointed out that this might be due to defective welding which altered the structure of the metal and made it unable to withstand the very high internal stresses set up in rail concreted in.

Turning to the subject of interurban track maintenance, Mr. Smith told of his experience with the use of weed killers. He said he had followed the theory of the manufacturers of the chemical, of using a heavy treatment the first year, a lighter treatment the second year, still lighter the third year, skip the fourth year, and then a light treatment each year, but this plan had not worked out satisfactorily. He though the results obtained depended much on the type of ballast and kind of weed, etc. The weather has been said to have a good deal of influence also on the effectiveness of the killer. Some contend that it should be applied after a long dry spell when the weeds are dry and will drink in the chemical. Others claim that it is better to apply the chemical in wet weather so that it soaks into the roots. Mr. Smith said he had come to the conclusion that it was very difficult to say which was the better plan, but that he was convinced that it is worth while to use the weed killer and that it saves a substantial amount of money as compared to the cost of removing the weeds by hand. His thought is that the labor that is used in weeding the line could thus be released for use in other much needed trackwork. He said that his company had skipped one season in using the killer and had regretted it.

As to the method of applying the chemical, he thought the scheme of spraying under pressure was better than the gravity sprinkling. The base of the chemicals used is arsenic. It has been very difficult to determine whether any sterilization of the roadway is secured from the use of the weed killer. Sometimes, when one predominating weed is killed off, while it does not reappear, it is promptly succeeded by another kind of weed. He said he knew of a five-year test made by a manufacturer which did not sterilize the ground, but he was satisfied that even in the absence of sterilization it was worth while on account of the saving in labor made possible.

Mr. Rust explained that the 60-mile line from Waterloo to Cedar Rapids had been treated with weed killer on July 1 of this year, and that while the growth of weeds was very dense and rank, the roadbed was thoroughly cleaned up. However, a certain amount of regrowth was appearing by the end of August. None of those present who had had experience with weed killers could say that it had any bad effect on the ties.

DIPPING AND BAKING OF ARMATURES

Frank R. Grant of the Westinghouse Electric & Manufacturing Company, Des Moines, Iowa, presented a paper describing methods used and results obtained from dipping and baking railway motors.

Mr. Feist, in discussing Mr. Grant's paper, took the position that he was unable to see how dipping and baking of motors by the Sioux City Service Company would represent a saving. He cited a rather remarkable motor service record. The records of the company show that on ninety-six motors of one type in use for ten years a total of fifty-nine sets of coils have been used. On seventy-six motors of another type, also ten years old, nineteen sets of armature coils has been used. These two instances are at the rate of, respectively, six and two armature failures a year for ten years.

R. H. Llewellyn, general foreman in the shops of the Waterloo, Cedar Falls & Northern Railway, told of the experience he had in dipping and baking armatures during the last three years. Trouble was had at first when the armatures were dipped with the commutator end down, due to the hot varnish leaving pockets behind the risers, in which dirt and copper dust collected, forming a paste and causing trouble. The practice now followed is to dip with the pinion end down, a clamp for the commutator end having been made to handle armatures in this manner. During the baking process the armatures are rolled to prevent the varnish from running to one side. They are baked for thirty-six hours at 165 deg. C. and then painted with a light coat of varnish and baked twenty-four hours more. In the last three years six motors have failed because of loose connections at the risers and this difficulty has been eliminated by the use of a spongy compound furnished by the Westinghouse Electric & Manufacturing Company to pack in the leads. The practice followed by the Waterloo company is to wrap the armatures and bake them for twelve hours before banding. This is done to get the coils thoroughly moistened and flexible before the banding and final dipping. Another practice is to avoid soldering the clips on any one band consecutively. To do so causes the band to become too hot and expand, allowing a slippage of the coils. The practice followed is to solder a clip at a time on each band, giving the band a chance to cool off before the next clip is soldered on that band.

Mr. Llewellyn said that the Waterloo company is not having one-fifth the trouble with armatures now that it did before it began the practice of dipping and baking armatures. There is one bad feature that if a failure does occur it is necessary to rewind the whole armature on account of the stiffness and hardness of the coils. Another advantage of the process, however, is that the hard varnish prevents trouble when a flashover occurs between the commutator and case.

W. B. Brooks, Westinghouse Electric & Manufacturing Company, said that his company knew that the dipping and baking process is a success because of the material falling off in the sale of coils. A question had been raised by two members about the value of this process in eliminating moisture, they having stated that the dipping had a tendency to trap moisture and seal it in. Mr. Brooks replied that this was not a very pertinent point because the percentage of armatures lost because of moisture was very small. Motors in service will dry themselves out. He explained that the main object in dipping and baking is to do away with vibration, which is the big cause of trouble. The main reason for dipping as against rolling, painting or spraying is simply that it involves less labor cost. He also explained that the heat-radiating ability of a dipped and baked armature is much greater. Mr. Wood, Omaha, Neb., and Mr. Sutherland, Davenport, reported very good success with the dipping and baking practice. No one present was able to supply any good figures as to the cost of dipping and baking.

The delegates to the convention were the guests of C. D. Cass, general manager Waterloo, Cedar Falls & Northern Railway, for luncheon, and thereafter were taken on a special two-car train for a trip to Cedar Rapids and back over the company's 60-mile high-speed line. At Cedar Rapids the party visited the shops of the Cedar Rapids & Marion City Railway, and made a tour over several lines of the city property under escort of E. C. Allen, general manager. In the evening a banquet was held at the Russell-Lamson Hotel, Waterloo, at which entertainment was afforded by very splendid local talent.

The Relation of the Claim Department to Other Departments

BY H. J. CONNELL
Trial Attorney Omaha & Council Bluffs Street Railway

GIVEN the best organized street railway company conceivable, it goes without saying that there must, as a matter of necessity, exist between the claim department and each and every other department of the company a close inter-relation and interdependence. These characteristics may exist with little or no co-operation between the claim and other departments, but without some co-operation existing the organization is absolutely doomed, sooner or later, and generally quickly, to failure. It is an easy matter to say that co-operation is necessary. If I make no other point clear, let me drive home the proposition that two great factors, understanding and co-operation, are absolutely essential to the success and very life itself of the corporation's existence.

I have noted at different times in some organizations the existence of petty jealousies between different departments. Suggestions or recommendations from one department to another may be looked upon as interference with authority, and received, therefore, with disfavor and without the accomplishment of the good which the merit of the suggestion may justly deserve. This is not teamwork. The natural pride which the head of a department should have is to welcome any suggestion or plan which may improve the efficiency of his unit, even though the idea was born in the mind of a man not connected with his own organization.

It is just as important for the su-

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*Abstract of paper presented before Iowa Electric Railway Association at Waterloo, Iowa, Sept. 15, 1921.

perintendent of transportation to be an ideal claim man as it is for him to be an ideal operating manager. The claim and transportation departments are more closely identified than any two other departments. They should work hand in glove. The aim of one should be the aim of the other, the methods employed the same for both.

There is a question of whether the claim department or the transportation department should assume the task of instruction. In my opinion, the instructor should be a competent, trained man, taken directly from the ranks of practical operating men, knowing everything about a car and how to run the thing, and knowing also everything about accidents, how to prevent them as far as possible, and what to do after one has occurred. The instruction department should be under the direction not of the claim department, but of the operating or transportation department. But the claim department should be constantly consulted and should be constantly offering suggestions when new situations arise, so that the instructor can be kept up to the minute on every phase of accident work.

I have always advocated a follow-up system of instruction, under which the men at different intervals of time are taken off the cars for a freshening up on accident work. This can be done either by the original instructor or in talks to the men by someone connected either with the legal or claim department who is fully equipped for the task, and by regularly posted bulletins, keeping the men in touch on the bulletin board with new features arising in claim work. Our company had inaugurated, prior to the war, a system under which the men were brought in at intervals and polished up on their accident information. However, due to the emergency situation during the war, and the unsettled labor conditions following that period, this policy was necessarily abandoned, and at the present time we are somewhat weak along this line and are left again to another feature of co-operation between the claim and transportation departments.

Whenever an accident is reported inaccurately, or without sufficient detail, the matter is immediately referred to the transportation department, whereupon the erring employee is given a hearing by the superintendent. The same procedure is followed where it appears that the motorman or conductor were apparently negligent in an accident. In this way a constant check is kept on the men at large and it is seldom that a man is found wanting more than once in the same particular. Were the claim agent to sit back, satisfied in his false security, only to take care of the claims that come to his office, without turning a hand to remedy conditions requiring attention, or to co-operate with the transportation department in this check-up or follow-up system, he would not be fulfilling the ideals which should rightly belong to his office, and he would be working toward the injury, rather than the betterment of his employer. I think it very essential that a lively interest among the employees in accident prevention and in accident cure should constantly be maintained, and among the small companies the job is less difficult than where a large number of employees are on the pay roll. Every day new and different kinds of accidents are occurring which before had never been thought of by even the most experienced. Striking examples of such class of accidents brought to the attention of the men, with suggestions how they could have been avoided, tend toward the maintenance of a constant vigilance on their part, are very helpful and instructive and at the same time keep up the *esprit de corps* of the organization. The system just referred to requires the utmost co-operation between the two departments.

CO-OPERATION OF OTHER DEPARTMENTS NEEDED TOO

The same considerations that apply to the relation between the claim and operating departments apply with equal force and effect to the relationship of the claim department to the other departments enumerated in the subject of this discussion. An unsafe switch, wye or crossing, where cars have jumped the track, is first detected by reports received by the claim department of similar accidents occurring over a course of time at the same location. Without co-operation the track department might remain in total ignorance of the defective condition for a consideratble period of time. Accidents and claims otherwise avoidable would be multiplied.

Some accidents are unavoidable and cannot be anticipated or guarded against. An example of this occurs to my mind in the case of a pedestrian on the street crossing behind one of our cars just entering a curve. The trolley wheel jumped the wire, ran up over a trolley hanger, became fixed and lodged thereon, the trolley pole was wrenched free from the socket of the trolley base and fell to the street, striking the pedestrian upon the head and inflicting a very serious fracture of the skull. Claimant, of course was innocent and free from negligence. What was the cause of the accident? Was there negligence on the part of the company?

Investigation disclosed that had the trolley pole been more securely fastened in the socket the whole trolley base might have been wrenched from the car. We have had examples in our experience of this nature of accident. It was disclosed that the trolley pole was fastened securely enough to permit its use safely for all practical purposes. The overhead trolley construction did not give way, which might have been the case had the pole not been wrenched free. Then came the question as to the trolley frog and hanger involved in the accident, and it was developed that these two instrumentalities were of the latest improved type, both from a mechanical and safety standpoint. They were the best on the market and had been selected not only for their efficiency in operation but also from considerations of safety and accident prevention. Our superintendent of electric lines has been in close touch with accident work and with accident prevention, and the result of the trial of the case in question championed the cause of co-operation and proved that where it exists the company has but little to fear.

We brought into the courtroom every appliance on the car and in the overhead trolley system which was connected with this accident and exhibited them to the jury, explained their construction and the use to which they were put. The plaintiff had alleged defective and unsafe construction and when our evidence was complete was at a loss to find one point upon which to base an argument of negligence on the part of the company. Our offer to claimant before trial was in the sum of $7,500, for we realized the seriousness of the injury and feared the effect of sympathy and prejudice. The verdict of the jury, in the same amount as our offer, was the talk of court house attaches for several weeks. Needless to say, the amount of the judgment was paid into court within three days and the case disposed of. Had there been defective trolley construction, I have no doubt that the verdict would have reached the sum of $20,000 or more.

Closed doors on the rear and front platforms of all cars operated by the company have reduced to a minimum the boarding and alighting accidents, much dreaded in former years. The closed door construction has been the result of numerous conferences between the different departments and a strong advocacy in favor of their use by the legal and claim departments.

Not a long time ago headlights on the cars were insufficient on a dark night for the motorman to distinguish a vehicle stalled on or near the track within sufficient distance, in all cases, to stop the car and avert a collision. Improved headlights now in use have practically eliminated this class of accident and are the result of constant poundings on the part of the claim department. Examples of possible co-operation are legion. I cite these few merely to illustrate my point.

RELATIONS BETWEEN LEGAL AND CLAIM DEPATRMENTS

A modern lawyer who is equipped to handle for the company in court the damage suit, so full of possible traps and pitfalls for a corporate litigant, may, if he is not duly cautious, look upon himself as a sort of little tin god on wheels and become imbued with the idea that all information should be served to him on a silver platter, and that investigations of accidents are within the province only of the humble claim agents and their assistants. In the dignified isolation of such superiority he will sooner or later be confronted with a situation with which even his eminent learning and ability cannot cope. If you know any such fellow in your organization advise him to come off his perch. He must, in order to be fully armed, keep himself constantly in active touch with all the details and workings of the claim department. He is the surgeon called by the company to attend its case. He must look for his supply of medicines, dressings and surgical instruments to the claim department, which is the source. He must, for efficiency, be informed with the history of the case from the time the accident first occurred down to the last instruction to the jury, and exception taken. He cannot acquire this knowledge unless he is at all times within reach of the claim department. My experience has shown me that there is no measurement for the aid and assistance to the trial attorney which comes to him from knowing the nature and progress daily of the investigation of the individual accident. In every major or serious accident he should be on the ground before the debris has been cleared away. He should take note of all physical evidences remaining after the accident. He should immediately suggest to the claim department such lines of investigation as may occur to him to be proper for the preparation of a successful defense.

Only last week, in our city, an individual who had partaken in unsafe quantities of the "cup that cheers" attempted, while driving a flivver, to pass a street car going in the same direction, and in so doing struck an automobile parked at the curb, with the rather unexpected (to him) results that his automobile was overturned some one hundred feet further down the street, effecting, for other occupants of his flivver, a fractured skull, a broken back, a fractured arm and minor injuries. The police department informed our company of the accident immediately, for the reason that on more mature reflection the driver claimed in an incoherent fashion that the street car had run into him. Our claim department was already at work upon investigation, for the motorman had called the carhouse foreman, who had in turn immediately notified the claim department. It was disclosed that our company was neither directly nor indirectly involved and that the street car had not so much as touched the unfortunate flivver. Within three hours after the accident notice of the same was in the hands of the legal department and the writer personally called at the police station to interview the driver. He was still intoxicated, despite his vehement claims to the contrary and even went so far as to assert that he hadn't "had a drop." The day following the accident two suits, each for $50,000, were filed against this company.

Am I not better qualified, six months or so from this date, to defend successfully these cases, than I would be in the situation that immediately before trial the files were first presented to me and I noted from some written statements or memorandums, long since "cold," that probably the driver was drunk, and that at least one or two persons were of the opinion that he was drunk? I, the fellow upon whom will later devolve the task of proving it, know now, personally, he was intoxicated. From my personal observation and information derived from the investigation I know now just how the accident occurred.

We are all human, none of us perfect. The best that we can do is constantly to strive in our personal and business life toward perfection. If I could leave with you one thought the observance of which will tend toward the reduction of accidents, or the preparation of successful defenses thereon after they have occurred, I could originate no better slogan or standard than that contained in the following three words:

"Knowledge — understanding — co-operation."

Knowledge, thorough and complete, on every phase of the accident question; understanding, of what to do, when to act and where, before, if possible, if not, after, the accident has happened; co-operation between each and every department in the organization, co-operation which is unselfish, whole-hearted and without stint or compromise. If these qualities are instilled in every cog of our great machine from the president of the concern down to the lowliest messenger boy we shall soon find ourselves almost within reach of that enviable position of a certain claim agent whose motto, hung and emblazoned in large letters in his office, greeted the eye of every claimant calling there, and bespoke the following trite, concise and independent message, "Not a Damn Cent."

Track Maintenance and Construction Kinks*

By R. J. Smith

General Manager and Engineer of Way
Tri-City Railway, Davenport, Iowa

CONDITIONS prevalent in the street railway industry during the past five years have so reduced track forces that roadbed has been allowed to wear out faster than it could be maintained. Due to this fact, track forces have become little more than emergency gangs, temporarily repairing track which has caused derailment.

Various expedients have been employed in the Tri-Cities to effect economies in the maintenance of special trackwork. Last winter a tongue in an old Pennsylvania pinless switch broke about 6 in. from the heel. A pattern was made in our repair shop and taken to a local steel foundry, where a new tongue was cast of electric steel. Very little grinding was necessary on this casting. It was installed Jan. 6, 1921. Today it shows practically no wear. The pattern cost $13 and is available for future use at several other locations where the same type and size of tongue is in service. The casting cost $20, while a new manganese tongue would have cost $56.

A number of hard centers set in spelter with rapid renewable bolts in iron-bound manard construction special work became loose. They were repaired without spelter by shimming them to the proper level with triangular shims and tightening with new bolts. After the cars had run over them a few days they were again tightened and the holes filled with hot asphalt. After several months they still remained tight and are giving good service. In a few cases it has been necessary to replace the hard center. A ¾-in. plate the size of the old center was used, to which were riveted small pieces of ¾-in. plate in such a way as to make the throat-way for the wheel flanges. They were raised to the proper level by shimming in the manner described above and welded to the ends of the rail in the casting. This work cost $15 as compared with $50 for a new manganese center.

At several special work locations frogs have broken or worn out completely, and since no new ones were available it has been necessary to manufacture them in our own small construction shop. Such frogs were made of high T and girder-grooved rail. Accuracy in obtaining the proper curvature was secured by using a templet made of two strips of wood ½ in. thick, nailed together and sawed out to conform to the proper angle and curvature. Rails of correct length were bent and the top half of one rail and the lower half of the other rail cut out with a torch where they intersect. They were then welded to a base plate 24 in. x 36 in. x ¾ in. Plates were also welded to the web of the rail and the throat-way ground out with a track grinder. The total cost of these frogs was from $50 to $80, and they are giving very good service after a year's wear. Bolted T-rail frogs have been repaired at a cost of $20. For making these home-made frogs it is very desirable to have a plane table built of rail and concrete, but as yet we have not been able to construct such a bed and have contented ourselves with laying out some T rail at 14 in. centers upon a support of timbers about 30 in. high. A small swinging crane constructed of T rail was rigged up upon a post adjacent to this table.

Broken running and bearing rails on steam road crossings have been removed and new rails installed in their places. Until recently, bolt holes in the rails were burned in with an oxy-acetylene cutting torch. However, in the case of high-carbon open-hearth rails, this burning of holes is detrimental to the metal in the web, so that whenever the time permits we are drilling the holes in the repair shop on a press, the proper spacing being secured by the use of a templet.

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*Abstract of paper read before Iowa Electric Railway Association at Waterloo, Iowa, Sept. 16, 1921.

Very little construction or even reconstruction of track has been done on our properties in the last few years. Briefly, our practice is this: Standard construction consists of 7-in., 80-lb. T-rail laid on creosoted red oak ties, spaced 2-ft. centers with 8 in. of crushed stone under the ties. Where it is possible the subgrade is rolled with a 15-ton roller. A 6-in. layer of stone is laid and rolled, then the track constructed upon this ballast bed. After the track is spiked and the joints welded it is filled with stone to the top of the tie and then tamped to grade by a four-tool electrically driven air tamper. Before the track is concreted regular car service is permitted to operate over it for a period of two or more days, depending upon the frequency of service. Then the track is tamped a second time, which requires about half the time used in the first tamping. The paving base consists of a 5-in. layer of 1:3:6 mixture of concrete. Brick are laid on a 1-in. 1:4 grout bed and filled with a 1:2 grout. All paving is covered with sand to prevent too rapid drying of the filler, and vehicular traffic is not permitted on a newly grouted pavement for at least five days. Rail is hauled on the side of a differential dump car. This car has a hollow built-up bolster on each truck, which is larger than the standard tie. Two ties are cut to a 6-ft. length and inserted into these bolsters, projecting about 3 ft. from the side of the car. Five rail are laid upon these ties with a 5-ton electric crane and chained to the trucks.

Because of labor difficulty and expense, it has been our practice to use machinery wherever it was possible to finance its purchase. For instance, an excavator is used for trench work in city lines and ditching on the interurbans; a differential dump car is used for distributing rock ballast, hauling away dirt and delivering rail, sand and brick to the job; a 5-ton electric crane is used to unload rock ballast from steam equipment to stock piles or to our own work cars, also to handle special trackwork, and in some instances to excavate with clam shell; pneumatic machines tamp the track; resistance type electric welders weld the joints and cross bonds; wheel and reciprocating grinders are employed; tie-rod holes are either drilled with an electrically driven machine or cut with the oxyacetylene torch; electrically or gasoline driven concrete mixers place the paving base, grout bed and filler, and lastly, a conveyor is used to unload brick and cement from cars and to distribute brick from the side of the street to the track proper where the paving is being done.

As machinery is brought more into the practice of constructing and maintaining track, it is found necessary to vary the way organization to suit, and this variation tends toward high grade foremen, more specialty men and fewer assistants, who used to be carried as "straw bosses" or "pushers." These latter are largely replaced by men of similar ability who have, however, made a specialty of one or two operations, such as welding and grinding, torch work and the like. It has also been essential in addition to training the head foreman to understand, and even manipulate various mechanical devices, to carry on the payroll a man of foreman's rank who is an excellent mechanic and whose duties are very largely confined to keeping the equipment in condition. Furthermore, the ordinary laborer cannot, so much as formerly, be left to his own devices, but must be to a certain extent trained in the new methods. All of this change in organization and equipment means increased overhead expense, so that in times of retrenchment it is a real problem to retain the backbone of the organization. The only solution of this formidable problem, and that only partial, is to instill such a spirit throughout the backbone aforesaid that it will cheerfully bend itself to any work, however menial, even to the use of the shovel. In other words, we expect head foremen to become laborers upon occasion, and by this better spirit and their greater intelligence and training to compensate the company for the difference existing between their salaries and the wages of common

American Association News

Be On Time

PRESIDENT GADSDEN announces that the convention meetings will run on schedule. This is absolutely necessary in order that the amount of work planned can be transacted. He says that the American Association meetings will convene promptly at 9:30, regardless of the number in attendance.

Reduced Rates for Convention

IF 350 certificates are filed with the special railroad agent at Atlantic City by those attending the convention a reduced rate amounting to a fare and a half for the round trip will be granted by practically all of the railroads in the United States. The plan has been approved by the Trunk Line Association and by the New England, the Central, and Western Passenger Associations.

A certificate stating that the purchaser is planning to attend the Atlantic City convention should be requested when the regular one-way ticket is purchased, and this certificate should be filed on arrival at Atlantic City at the registration booth of the association. If the necessary number of certificates are filed at Atlantic City they will be validated and will entitle each person holding a certificate to a return ticket by the same route over which he came at one-half of the regular one-way adult fare from the place of meeting to the point at which the certificate was issued.

Convention Specials

The "Chicago Special" for the Atlantic City Convention will leave at 10:30 a.m. central time, Sunday, Oct. 2, over the Pennsylvania Railroad, arriving at Atlantic City at 10:10 a.m. on Monday. It is expected that two or more special cars will be attached to the Manhattan Limited and it is possible that the delegation from Denver and other western states will join the Chicago crowd. Persons in the Chicago territory are invited to make their arrangements through H. J. Kenfield, of *Electric Traction.*

The "St. Louis Special" will leave St. Louis at 12:02 p.m., Saturday, Oct. 1, over the Pennsylvania Railroad, arriving at Atlantic City at 2:06 p.m., Sunday, after a change to special parlor cars at North Philadelphia. Those in the St. Louis territory should make their arrangements through B. W. Frauenthal, general traffic agent of the United Railways Company, St. Louis.

Nominating Committee Activities

The Nominating Committee, J. H. Pardee, chairman, will not present its report until Monday or Tuesday of convention week. The committee was instructed to report as early as feasible, but at no particular date. Invitations have been sent to the entire membership to make suggestions to this committee and these will still be welcomed up to the final meeting of the committee on Monday, Oct. 3, at Atlantic City. Suggestions should be addressed to the chairman in care of J. W. Welsh, secretary, at association headquarters, New York.

Engineering Association Reports Discussed

THE committee on standards of the Engineering Association met at association headquarters on Sept. 15 to pass upon all features of committee reports coming under the committee's jurisdiction. Reports from the following committees were presented for consideration: Buildings and structures, stores accounting, wood preservation, power distribution, power generation, way matters and equipment.

In the main the recommendations of the committees were approved as incorporated in the reports which have been printed and distributed to the members of the association. A few apparent discrepancies were referred back for correction, and several recommendations were referred for action to the convention.

An interesting feature of the meeting was the discussion on standards to be submitted to the American Engineering Standards Committee for indorsement.

During the discussion the way committee was complimented on the form in which its recommendations were framed.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Vote on Ouster

People of Detroit Will Be Permitted to Say If Railway Shall Be Dispossessed

When confronted with petitions for a referendum on the ouster of the Detroit United Railway tracks from Fort Street and Woodward Avenue, the City Council decided to submit the question to the voters at the November election. The ordinance passed by the Council ordering the tracks removed from the streets in question where franchises have expired, will be held in abeyance to allow the vote since enough signatures were attached to the petitions to prevent the ordinance from going into effect. A direct vote will be taken and it must be decided by a majority of the people as to whether they desire the tracks of the Detroit United Railway removed.

The Council could of course have repealed the Castator Ordinance. This measure ordered the company off the streets within ninety days and would have gone into effect if the petitions had not been circulated. It was passed by the Council and approved by the Mayor after the company had refused the Street Railway Commission's offer of $388,000 for the tracks.

One other point in the controversy between the company and the city was settled when the Council approved an agreement reached by the company and the city providing for the centering of the company's tracks on Grand River Avenue from Joy Road to the City Limits. The contract for paving Grand River Avenue at that point has been let and it is expected work will be started immediately. The company will meet the cost of centering the tracks in the street and will do the work under city supervision so that the line will be in accordance with municipal ownership standards. When the franchise expires on that section of the line the city, according to the agreement, will buy the tracks from the company for $127,827, less depreciation. The city recently started court action to compel the company to remove the tracks from the side to the center of the street. Proceedings were stopped when the agreement was reached.

Ten miles more of municipal ownership lines are to be started in operation soon, being the double track Clairmount-Owen cross-town line, which extends for 5 miles from Grand River Avenue on the west to Milwaukee Avenue. Track construction is practically completed and the overhead is being placed. This line will not connect up immediately with other municipal railway lines but will be linked up with the main municipal system by the day-to-day lines when they are taken over by the city.

No further action has been taken by the Street Railway Commission with regard to acquiring trackless trolleys or trollibusses as part of the city equipment and further trials of these buses will probably be made in the near future. An amendment to the city charter will be voted on which provides for giving the Street Railway Commission authority to buy buses or other forms of transportation equipment which are deemed advisable for purchase. The Council members in voting for the amendment supported the provision that the Council reserve the right to reject or confirm contracts for the trollibuses.

Large New Power Plant for Winnipeg Property

Arrangements have been completed for the financing of a $10,000,000 power development project at Great Falls on the Winnipeg (Can.) River. A. W. McLimont, vice-president of the Winnipeg Electric Railway, has recently returned from a trip east where he was in consultation with the firm of Nesbit, Thomson & Company, Montreal, who will finance the undertaking.

When completed the plant will have a capacity of 168,000 hp. Work has begun and about 200 men are now employed. This force will later be increased to between 1,500 and 2,500 men, and the whole plant is expected to be finished in 1927.

The undertaking will be carried out under the charter of the Manitoba Power Company, Ltd., which is taking over the assets of the Winnipeg River Power Company. Sir Augustus Nanton, Winnipeg, who is also a director of the Winnipeg Electric Railway, will be president and A. W. McLimont will be vice-president, of the Manitoba Power Company, Ltd.

Trackless Trolley Considered in St. Louis

A proposal is before the St. Louis Board of Public Service and the Municipal Bridge Commission for permission to operate trackless trolleys around a down-town loop in St. Louis, across the free bridge and to a loop in East St. Louis. It is thought that the one-way fare will be 5 cents.

George H. Tontrup, president of the National Safety Car & Equipment Company, is back of the scheme and it is his desire to put the system into operation as soon as the cars are built and the trolleys erected which, he says, will take less than two months.

Mr. Tontrup estimates the cost at $10,000 per mile and he proposes to install the system on a trial basis preliminary to a permanent franchise.

Progress Reported

Prospects for Settlement at New Orleans Assuming Concrete Form

The solution of the problems confronting the New Orleans Railway & Light Company, New Orleans, La., suggested in the report of Commissioner Maloney of the Public Utilities department would appear now to be dependent upon action taken in New York City. Telegrams received at New Orleans on Sept. 10 from those in touch with the situation there, where a conference of the security holders of the company was begun on Sept. 8, indicate that the prospect for a settlement is now assuming concrete form.

The report, as a whole, while not approved editorially by the local papers, is conceded by them to present a tangible means of putting an end to conditions which must inevitably produce further discomforts to the public and retard the industrial growth of the city.

One of those pleased with the outlook is R. S. Hecht, president of the Hibernia Bank & Trust Company and chairman of the committee of forty. In discussing the matter on Sept. 10 Mr. Hecht announced that he had received word from New York which indicated that the eastern bondholders favored the so-called Maloney plan of settlement.

In support of this opinion he issued the following statement:

> Based on the information before us we feel justified in saying, however, that the general disposition of the security holders appears to be to meet the city in the same spirit of compromise which the Council has shown toward the company. While there seems to be a good deal of disappointment among them that the rate of return was not made 8 per cent, we are inclined to believe that both the valuation and the rate of return fixed in the city's proposal will be accepted.
>
> Everybody seems to be ready to admit now that the future operations of the company will be absolutely subject to the control of the Council through its regulatory powers, but there are some minor details which will no doubt require a thorough discussion between the Council and the representatives of the security holders before the matter can be finally settled.
>
> The security holders emphasize that they are exceedingly anxious to get the matter settled at the earliest possible moment, and they expect their representatives to be able to reach New Orleans within a week to bring their formal answer and their suggestions as to the best method of working out a reorganization plan which will be permanent and will make the future financing as inexpensive as possible. We feel very much encouraged over the outlook and believe that a satisfactory agreement will be reached.

Assistant Attorney General Luther Hall addressed a communication to the Commission Council on Sept. 7 warning that body that it is without authority to negotiate with the railway on any basis that will carry a higher fare than 5 cents, as provided in the franchise.

Des Moines Muddling Along

Disgust Is Increasing With Present Make-Shift Bus Transportation—Proposal from Mr. Fay

T. J. Fay, president of the Fay Motor Bus Company, Rockford, Ill., made a definite proposition to the City Council of Des Moines, Ia., on Sept. 16 for taking over the transportation problems of the city under a two-year franchise. Mr. Fay's proposal received no immediate attention from the Council. It was simply "received and filed." His offer provides for a 5-cent fare with universal transfers and eight tickets for a quarter for school children. Mr. Fay advised the Council that he could show ample financial backing and that if the franchise was granted to him he would guarantee to have 100 buses in operation within sixty days and sixty more in an additional thirty days.

According to Mr. Fay studies that he has made would tend to show that 160 buses are ample to handle the situation in Des Moines. This figure is based upon an average seating capacity of twenty with ten additional capacity without discomfort. According to Mr. Fay these figures were secured after his company has carried 10,000,000 passengers under conditions not widely different from those which prevail in Des Moines.

FAY OUTLINES HIS PLAN

The Fay proposal provides for the city being reimbursed for wear and tear on pavements by the payment of $25,000 a year by the bus company. City Councilmen expressed themselves as feeling that this figure is ridiculously low, considering the damage that has already been done to the paving in Des Moines by the buses.

Attorneys for the present bus operators have expressed themselves as being opposed to any amalgamation with the Fay interests. They contend that they made the first proposition to the Council and that they are entitled to the first consideration if a bus franchise is awarded by the Council.

The City Council took its first definite stand in the regulation of buses during the week ended Sept. 17 when it ordered buses placed on three lines now without service, and also demanded that two additional buses be placed on the Southwest Ninth Street line.

The proprietor of a truck sales company which has been supplying buses to some of the local operators made a statement in a daily newspaper last week that the buses could not operate successfully at a 5-cent fare and called attention to the fact that one of the customers of the company had pulled off three buses because they were not paying.

Ten additional buses arrived in Des Moines on Sept. 14, having been driven the entire distance from Connecticut. They were apportioned to various existing lines in the city.

There is every reason to believe that sentiment is steadily growing in favor of the railway as the people tire of the discomforts of the present makeshift bus transportation.

Corporation Counsel Miller made his preliminary report to the City Council on Sept. 19 upon certain features of the franchise submitted by the Harris interests in behalf of the Des Moines City Railway. It was expected that Judge Miller's final report would go to the Council on Sept. 23 or 24. The report submitted constituted only certain changes which Mr. Miller would recommend that the Council make before submitting the franchise to the city for a vote. Among the changes suggested by Judge Miller are the following:

> Complete change of labor arbitration clause and the substitution for three district judges provided in the original franchise members of the State Railway Commission acting as individuals.
>
> City car supervisor to be a graduate engineer of at least ten years' experience in electric railway operation to be elected by the City Council and responsible to it alone, although to be paid by the city. Under existing franchise supervisor is paid by the company.
>
> Definite sliding scale of fares to be contracted by the railway before franchise is submitted. Franchise should provide for satisfactory service and necessary repairs before payment of any dividends on common stock.
>
> Clause suggested by which company will agree to handle disputes with employees by arbitration.
>
> Question of extension should be arbitrable and company should not have the right to veto. Use of one-man cars recommended where practicable.

The bus owners made what is considered a good political move when on Sept. 21 they started service on Center Street, which formerly had no service. The line is in one of the best residential sections of the city located at a considerable distance from two existing car lines.

Saginaw Knows the Bus Won't Do

This is the seventh week that Saginaw and Bay City have been without electric railway service and nothing definite has been done to provide Saginaw with a form of transportation on which to build for the future. Even the friends of the buses are frank to admit they will not do and if the cities are not to have electric railway cars some other means must be provided to take care of the people. It is now well known that the jitneys, numbering about sixty-five and owned and operated by individuals, cannot be properly regulated. Many drivers do not appear on the streets until 6:30 or 7 o'clock and a majority are running on a go-as-you-please schedule. When business is quiet, they lay off, and only work during rush hours.

Members of the Council will attend the demonstration of the trackless trolley which will be given in Detroit the early part of next week, and it is expected that a representative of the Imperial Omnibus Company, New York, will come to Saginaw right afterward to survey the city's requirements and present a proposition to the people through the Council.

Members of the Council have been considering a regulatory ordinance regarding jitneys for several weeks past, but apparently are as far off from adopting it as when they first considered it. The matter of the owners furnishing a suitable indemnity bond has been the bone of contention. Every member of the Council has gone on record as favoring a large bond, but when the jitney men threatened to appeal to the people the Councilmen backed down and are about ready to agree on a $5,000 policy for one accident. They do not want to have the jitney men go through with their threat, and they are afraid if they fix the maximum at $5,000 the people will object. So in the meantime passengers ride at their own risk.

Otto Schupp, receiver for the railway, says the company is still working on the inventory and until it is completed and filed with the referee in bankruptcy he knows of no new developments.

Little Damage to San Antonio Utilities

Damage to the property of the San Antonio (Tex.) Public Service Company as a result of the flood on Saturday, Sept. 10, was slight. At the New York office of the American Light & Traction Company, which controls the electric light and power, street railway and gas utilities in San Antonio, it was stated that there was little or no physical damage to any of the company's property. Only one of the company's plants, a comparatively small one, known as Station B, was reached by flood water, and it was not believed that the total cost of clearing away débris and making necessary repairs would exceed $15,000 or $20 000. Electric service was interrupted shortly after the flood started, but was restored 8 o'clock in the evening of the same day. Traction service was resumed on Sunday morning. The gas service was affected the least.

Mr. Mitten Wants His Status Re-established

Thomas E. Mitten, chairman of the executive committee of the Philadelphia (Pa.) Rapid Transit Company, on Sept. 19 addressed the executive committee of the board of directors as follows:

> General supervision of P. R. T.'s rehabilitation and its operating organization has now been continuously under my direction for more than ten years; the extent of my obligation and compensation being established under an arrangement made with E. T. Stotesbury and approved by the board of directors.
>
> The scope of my duties and responsibilities, during this period, has been so changed and enlarged as to make a review of the whole matter desirable.
>
> With this in mind, I would request that the present agreement be considered as expiring March 31, 1922.

In commenting on Mr. Mitten's letter the Philadelphia *Ledger* says that it is generally believed that Mr. Mitten desires to step out of active charge of the company's affairs and place the details of running the road into the hands of a group of executives whom he has trained in the electric railway business and who are now identified with the Philadelphia Rapid Transit Company or allied lines.

Amalgamated Seeking to Save Albany Situation

In spite of the fact that the Amalgamated Association in convention in Georgia passed a resolution endorsing the 1,400 Albany and Troy strikers who "are on the firing line," and voted to assess each of the 132,000 members 50 cents with authority for a further assessment if required to keep up the struggle until an honorable settlement or adjustment can be reached between the company and its former employees, it is evident that the strike has been won by the United Traction Company.

On the Sunday before Labor Day, President Droogan of the Albany local came out in an open letter indorsing the independent candidacy of Patrick E. McCabe for Mayor of Albany, he being the only candidate who has made an issue of the strike and the only man seeking office who has espoused the cause of the laboring man. Mr. Droogan in a very stormy sessions of the Albany local was bitterly assailed for having dragged the union into politics, but he asserted he did it merely as a private citizen and not as the union head. Mr. Droogan attended the convention at Atlanta, but it is understood, he is to be asked to step down and out of the leadership on his return.

Should he do so much of the cause of difference between the United Tracttion Company and its former employees will have been eliminated, as the fight of the company to break the union was to a very considerable extent an effort to break Droogan, whose tactics of abuse of the company have for years been a source of rancor.

The immediate result of Mr. Droogan's letter espousing the candidacy of Mr. McCabe was the driving onto the cars of some 5,000 to 10,000 members of other unions who had refrained from riding all during the period of the strike. This was best evidenced that same day at the ball grounds, where the Sunday before only about a dozen passengers had been carried. The day Mr. Droogan's political statement appeared, fully 2,500 boarded the cars. While the strike is all over but the shouting, the remote possibility still exists that some eleventh-hour agreement may be patched up between now and the eve of election in order to gain votes.

Practically all of the former employees of the railway are working at occupations which from a salary standpoint are about as lucrative as their former jobs, according to reports.

Watchful Waiting in Connecticut

President Lucius S. Storrs of the Connecticut Company stated upon his return from California last week that there would be no fare decrease at present to meet the competition of the new motor bus business.

The trustees of the company held their regular meeting Sept. 3 but did not take up the fare question. Mr. Storrs pointed out that while the railway company was paying its way it has many obligations to meet and a fare decrease will have to wait for some time. A decrease will be granted, however, just as soon as conditions permit.

Mr. Storrs stated that he did not have knowledge of the full plans of the promoters of the Advertisers' Special Coach service but if the service is a jitney service proper steps will be taken to prevent any violation of existing laws.

Samuel Silvergilt, secretary of the motor bus interests, called a meeting of all drivers at 1 p.m., Sept. 8, in New Haven to outline plans and give out supplies for initiating the service on four local cross-town lines.

Orders Being Placed for Material for Running Change

Orders for new cross-overs and special work are being placed by the British Columbia Electric Railway, Vancouver, B. C., in connection with the changing of the rule of the road from left to right at the end of the present year. There are on the mainland system of the company thirty-three cross-overs which must be removed and replaced. Some of them may be taken up and no new cross-overs installed as the necessity has gone.

In New Westminster, new special work will be necessary at the interurban station. None of this will be installed before the change is made, but the intention is that cross-overs will be blocked up temporarily until the gangs can reach them. Electric switches, of which there are fifteen on the mainland, will be hand operated until the work of transferring them to the opposite tracks can be completed. Some work will also be necessary in readjusting the trolley wire alignment at curves.

The actual date of making the change has not been decided. It was proposed to make it on or about Jan. 1, 1922, but the possibility of snow at any time during the winter makes the change hazardous. The company has placed orders for new castings for two of its snow sweepers, leaving the others for left-hand operation in case snow should come before the change is made.

Trainmen Reduced Twelve Cents an Hour

By a recent decision of the arbitration board selected under the agreement of April 28, 1921, between the officials of the Auburn & Syracuse Electric Railroad, Auburn, N. Y., and the Amalgamated employees, wages prevailing for the year ended April 30, 1921, were reduced as follows:

	Cents per hour	
	Old	New
City trainmen	60	48
Interurban trainmen.........	62	48
Freight and express trainmen	65	50⅓

In the case of all other employees the decrease in the cost of living was applied to the rate in effect for the year ended April 30. The results arrived at were obtained on the basis of the reduction in cost of living in Auburn, which was found to be and agreed upon as 22.6 per cent.

The board consisted of Henry J. Barrette, president of the local division of the Amalgamated Association, who represented the men; Lawrence E. Lippitt, auditor-treasurer of the Auburn & Syracuse Electric Railroad, who represented the company, and Richard C. S. Drumond, former city attorney, who acted as the chairman of the board which passed upon the matter.

News Notes

Franchise Vote in October.—The date for the referendum election in Houston, Tex., on the new street railway franchise drawn in favor of the Houston Electric Company has been changed to Oct. 4. The City Council had previously set Sept. 27.

May Request Arbitration.—It is expected that employees of the Hull (Que.) Electric Railway will soon request an arbitration board for a settlement of negotiations over a 7-cent an hour reduction in wages proposed by the management. The new wage scale which would mean about a 20 per cent cut would bring the pay back to the 1920 level. Negotiations have been going on in a quiet way with the expectation that the men would accept the reduction.

Michigan Towns Test Rate Law—Avon township, which is in Oakland County, and the city of Pontiac have advised the Detroit United Railway that an appeal to the United States Supreme Court is being made against the decision of the Michigan Supreme Court, which in June sustained the D. U. R. in a case which had been started by Avon township and upheld the validity of the Smith rate law. Under the Smith rate law franchises between communities and electric railroads could be set aside and new rates fixed by the Michigan State Public Utility Commission. It is not expected that the case will come up for a hearing as to its final disposition before early next year.

Decides in Favor of Railway.—The judges of the State Supreme Court on appeal refused to grant an injunction upon petition of A. M. Scott and others against the Charleston (W. Va.) Interurban Railroad involving the use of Ruffner Avenue for railway purposes. This action of the Supreme Court removes the last obstacle to the new system of operating cars on Capitol Street and the east end. The proposal of the railway was fought from the beginning by residents of Ruffner Avenue and others. It is understood the new system, which will be started when a railway is built on Ruffner Avenue, will furnish three-minute service. Capitol Street would be made a one-way street for traction cars as well as Washington and Virginia Streets.

Financial and Corporate

$40,000,000 Fair Purchase Price

Engineer for City of San Francisco Fixes This Sum as Amount Municipality Should Pay for Market Street Railway

M. M. O'Shaughnessy, city engineer of San Francisco, Cal., has submitted to the Mayor and Board of Supervisors a valuation of the properties of the Market Street Railway in which he recommends $40,000,000 as the fair price which the city should pay for the property. He refers to the wide variation in values under previous valuations of the property and says that in his judgment it is conservative to state that the reproduction cost new less depreciation as of today cannot be less than $35,000,000.

THE report was made at the request of the Board of Supervisors and is believed to be preliminary to the adoption of an ordinance by the board calling for a referendum on the purchase of the properties. This, if done, would be under Charter Amendment No. 30, enabling the city to acquire public utility properties and pay for same out of earnings.

Vote in November Unlikely

When various civic organizations urged the submission of the purchase plan to the voters and an appropriation of $15,000 for a survey was made in the budget, it was expected that the question would come up at the municipal election next November. Officials doubt now whether this can be done, and say there is hardly time in which to pass the necessary ordinances even if the city and the corporation can come to an agreement upon the price.

Reports on valuation of the property had previously been made by the company's engineers and the California Railroad Commission. That of the latter, made in approving the reorganization plan which became operative last April, was $41,424,961, representing physical value only. The company's engineers, on the same basis, arrived at a valuation of $51,856,218.

In discussing the valuation of the Railroad Commission Mr. O'Shaughnessy states that the commission's valuation was consistent at the time it was made, the value being based on values in 1918, 1919 and 1920. The valuation arrived at by the city's engineer, however, covered a five-year period, from 1913 to 1917, this period having been selected as basic for the valuation which was based on labor and material costs in that period.

Mr. O'Shaughnessy Hopeful

The Market Street Railway was finally reorganized in April of this year from the old United Railroads of San Francisco. The new company has a total capitalization of $47,973,000 as compared with $82,411,600 par value of capitalization of the former company.

Mr. O'Shaughnessy estimates that the following economies will be obtained by municipal ownership:

Yearly saving in taxes..........	$551,000
Damages in operation reduced by automobile and jitney regulation	50,000
Adjustment of Market St. Ry. power contract	350,000
Adjustment of car schedules with non-competitive conditions	500,000
Combination of work in shops, etc.	70,000
Elimination of presidents and directors, and legal expense.....	275,000
Increase in receipts from elimination of competitive jitney operation	500,000
	$2,296,000

The Municipal Railway is now paying a greater wage to its employees than the private company and Mr. O'Shaughnessy has made a careful computation of the annual increase of wages to be incurred by placing those men on the municipal scale. On this point he says:

> This added expense would amount to $1,715,000. By deducting this from the savings of unified operation an annual increase of $575,000 in net earnings can be made. This amount with the net income from operation would at present more than meet interest at 5 per cent on the $40,000,000 valuation which I place on the property. If the unified holding is conducted as economically and safely as the municipal railway has heretofore been operated, there is no doubt that the proposed purchase will be an advantage to the city.

High Ideals Necessary

Many other changes suggest themselves to the city's engineer. Of some of them he says:

> Universal transfers could be adopted which would promote more car riding and increase revenues, and besides be a great convenience to the public in saving time in making trips from different portions of the city now served by the two lines. Conditions on Market Street could be improved by restricting rapid transit to the center tracks, with a longer distance between stops and confining the service to cars for the outside districts; the outer tracks on Market Street would be used for local shorter hauls and frequent stops would be made with greater safety and convenience to the public. Economies could be effected by discontinuing unnecessary car lines, as many of these now operated by the company are due to franchise requirements; new extensions of track could be made into districts now without service due to dual ownership which has heretofore restricted extensions; the jitneys should be absolutely forbidden to travel on streets now served by cars, as it is an economic waste to have a dual service for the same object.

Success of the unified ownership, says Mr. O'Shaughnessy, would, however, depend on conducting the system on the same high ideals and good business principles which have controlled the operation of the present Municipal Railway in the past nine years.

Toronto Arbitration Started

Present Value of $20,447,612 Placed on Road by Expert for Railway—Three Arbitrators Sitting

The board of arbitration which is to determine the amount that the city of Toronto, Ont., is to pay for the plant and properties of the Toronto Railway, taken over by the city upon the expiration of the franchise on Sept. 1 last, commenced taking evidence on Sept. 13.

The board of arbitration consists of Major Hume Cronyn, London, chairman; Sir Adam Beck representing the city of Toronto and Sir Thomas White representing the Toronto Railway. The fees of the members of the board of arbitration have been fixed not to exceed $250 per day.

Company Heard First

In opening N. W. Rowell, of counsel for the company, stated that a completed inventory of the properties and plant had been made. The railway was of the overhead trolley type, consisting of 139.03 miles of railway converted into single track, of which 129.58 were on public streets and 9.44 miles in carhouses. There were 152 special track intersections, 709 motor cars, made up of 475 double-truck cars, 253 single-truck and 251 P. A. Y. E. cars; there were also 121 trailers, 5 sprinklers, 19 sweepers and 26 repair and miscellaneous cars.

With respect to traffic 21,816,551 car miles were run in 1920; 307 cars were operated in minimum hours and 797 during maximum periods, while 197,346,726 passengers were carried and 77,911,713 transfers issued.

It was decided to limit the number of witnesses, including experts, to twenty-four for each side.

W. J. Hagenah, Chicago, specialist in the investigation of public utilities and formerly of the Wisconsin Railroad Commission, was the first witness for the company. He stated that he was given absolute charge to value the properties of the railway, employing in doing so, a staff of fifteen to twenty and going as high as forty. He stated that 19 miles should be taken up and replaced at once; 12 miles was in generally fair condition; 14 miles in better than 50 per cent condition and 45 miles in excellent condition.

Average Prices Used

The valuation was made on the basis of the average value of labor and material for the three years up to August, 1921, because it would take three years to build the system. Mr. Hagenah set down the present value of the entire system at $20,447,612, while the replacement value was considered at $27,161,649.

A full account of the taking over of the railway system by the Toronto Transportation Commission on behalf of the city corporation was published in the ELECTRIC RAILWAY JOURNAL for Sept. 10.

Boston's Industrial Slump Hit Elevated Hard

The revenue of the Boston (Mass.) Elevated Railway for July was $192,089 less than the same month last year. Expenses for the month exceeded receipts by $142,486. On July 1 there was a surplus of $131,985, which has since been changed to a deficit of $10,501.

In a statement dated Sept. 6 Edward Dana, general manager of the company, said that this was the result of country-wide conditions affecting the company's gross business as indicated by the decrease in revenue passengers in other large cities this year as compared with last year. The figures used by Mr. Dana follow:

	July, 1921	July, 1920
Interborough Rapid Transit	73,799,633	75,789,538
Philadelphia	54,031,261	63,089,650
Boston	25,279,587	26,640,614
Detroit	23,181,841	32,136,658
St. Louis	23,162,769	24,534,799
Cleveland	23,029,791	27,978,414
Pittsburgh	21,168,000	23,478,000
Baltimore	20,233,905	22,369,206
Minneapolis	18,207,344	19,882,822
Chicago Elevated	13,802,153	17,024,667
Cincinnati	8,632,780	10,175,578
Toledo	4,118,848	4,568,013

The accompanying table indicates the revenue and the division of expenses during the last four years.

REVENUE OF BOSTON ELEVATED RAILWAY

	Third Trustee Year Ended June 30, 1921	Second Trustee Year Ended June 30, 1920	First Trustee Year Ended June 30, 1919	Year Ended June 30, 1918
Revenue from fares	$33,122,199	$31,899,320	$24,472,429	$18,781,370
Revenue passengers	337,381,994	324,192,374	331,348,124	376,466,229
Rate of fare	10 cents	10 cents	5, 7, and 8 cents	5 cents

COMPARATIVE DIVISION OF EXPENSES

Wages	$16,753,667	$16,381,206	$13,554,684	$9,147,757
Materials and supplies	2,899,983	3,321,672	4,096,538	2,680,424
Injuries and damages	627,629	627,626	805,353	817,227
Depreciation	2,004,000	2,004,000	2,004,000	352,670
Fuel	2,399,277	1,996,717	1,901,597	1,381,957
Taxes	1,306,736	1,075,497	941,612	905,033
Rent of leased lines	2,673,166	2,607,565	2,587,129	2,547,421
Subway and tunnel rentals	1,947,963	1,591,324	1,491,999	991,551
Interest on borrowed money	1,483,625	1,593,258	1,423,142	1,238,374
Miscellaneous items	54,479	69,285	37,373	16,050
Dividends	1,523,367	1,403,970	1,360,220	None
Profit or	550,253	17,080	....	....
Loss	....	....	4,980,152	598,442
		Back pay	435,348	
			5,415,500	

Court Fixes Status of Claims Against Road Sold Under Foreclosure

The status of the various claims against the Springfield Railway, Terminal Power Company, Springfield, Ohio., and arrangements for completing the transfer of that concern to the bondholders, who have bid it in, are ruled upon by Judge Slater in the United States District Court at Cincinnati (Ohio).

To complete their purchase it is directed that the bondholders, in addition to the $25,000 which they already have paid and the $245,500 of the company's bonds which are to be applied as part of the purchase price, must also pay the further sum of $84,390, in installments of $28,126, in thirty, sixty and ninety days. The bid of W. P. Sturtevant, New York, for the bondholders' committee was $300,000.

The total bonded indebtedness was $250,000 and the bonds are to be accepted at 60 per cent of the face value on the purchase price. The court's costs, taxes, pay of Receiver George Whysall and the trustees of the road in the two years it has been in the hands of the receiver amount to approximately $17,500. These are declared to be entitled to priority over other claims. Other claims having preference as to their order made a total of $97,261.

Receiver Whysall has on hand cash and quick assets of the company to the amount of $12,880. The order of the court has been concurred in by all parties interested in the disposition of the road.

St. Joseph Valuation Case Not Carried Up

Events which followed the granting of the injunction of Judge Van Valkenburgh in the federal court at Kansas City, Mo., last fall, restraining the Public Service Commission from enforcing its order fixing fares on the railway lines of the St. Joseph Railway, Light, Heat & Power Company, led the commission not to perfect its appeal in the case. For one thing the company returned to the commission, and it became necessary to grant a rate higher than the one which formed the basis of the suit. That development, in connection with other considerations, led the commission to conclude that it would not appeal from the court decision.

The grounds of the court's opinion restraining the commission from enforcing its original fare order were the wrong methods used by the commission in valuation—specifically, the use of original cost figures, and standards of prices of a past period and of a pre-war period. At the time of the court decision, which was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Nov. 27, 1920, page 1122, members of the commission were quoted as saying that if the opinion was allowed to stand the whole system of rate making of the commission, affecting many utilities, would have to be made over.

In deciding the St. Joseph case the court went at length into a discussion of the "present fair value" as the correct basis for rate making and concluded that since present fair value was not sought by the commission its resulting computation necessarily reduced the total valuation so substantially as to make the rate based thereon inadequate and practically confiscatory. It is understood that in considering the second appeal of the company for relief the commission did allow due weight to some of the considerations in rate making outlined by the court in its original restraining order.

New Company at Toledo

Light and Power Interests in $25,000,000 Corporation Which Meets Mr. Doherty's Promises

The Toledo (Ohio) Edison Company, has been incorporated to take over the lighting and power business of the Toledo Railways & Light Company, the railway lines of which are included in the Community Traction Company, formed some time ago to take over the city railway lines at Toledo.

The new corporation is capitalized at $25,000,000. It will include the Acme Power Company, the Toledo Railways & Light Company, the Toledo Gas, Light & Heating Company, and several of the smaller Doherty subsidiaries at Toledo.

The Toledo & Western Railroad, the Maumee Valley Railway & Light Company, the Adrian Street Railway and other traction interests will be kept as separate companies.

The Public Utilities Commission has authorized the new company to issue $4,000,000 of preferred stock as provision for the permanent financing of its business in Toledo. Of this issue $2,500,000 will be first preferred 8 per cent cumulative stock and $1,500,000 will be 7 per cent cumulative preferred stock.

The commission has also authorized the company to issue $13,500,000 of first mortgage 7 per cent bonds. The proceeds of this issue will be used to refund the $12,000,000 issue of Toledo Traction, Light & Power bonds which are due in 1922. A portion of this issue will be used to remove the encumbrance from the railway property turned over to the Community Traction Company, last February.

Henry L. Doherty and the Cities Service Company guaranteed to the city of Toledo that the property now included in the system of the Community Traction Company would be freed of debt and liens before December of this year.

It is planned to unite the development of all the lighting, power, heating and artificial gas production under the new company and provide the means for extending service as the city grows.

Frank R. Coates, president of the Toledo Railways & Light Company, has sent out the call for a stockholders' meeting to be held Oct. 10 to approve of the change in name and the new financing of the company.

Traffic and Transportation

1,500,000 Fewer Passengers

Traffic Falling Off in Cincinnati Despite Recent Reduction in Fares

Despite the recent reduction in fares on the lines of the Cincinnati (Ohio) Traction Company, a preliminary report of the number of riders for the month of August shows a decrease of approximately 1,500,000 revenue passengers as compared with the same period last year. Figures as to the actual receipts and the exact amount of the deficit based upon the number of passengers will be ready within a short time.

Officers of the traction company, as well as William J. Kuertz, director of street railroads, appear to be sanguine that whatever deficit may have been incurred by reason of the falling off of passengers during August will be made up in September.

SATURDAY TRAVEL VERY LIGHT

The loss of revenue passengers during last month is attributed to the fact that large department stores were closed one-half day Saturdays during the summer months and also to the fact that factories shut down on Friday nights for the week-ends instead of reopening their plants for a half-day Saturdays. Records indicate the number of revenue passengers on Saturdays has been especially light.

The situation is being viewed with keen interest by the city officials, since it will have a decided bearing upon the fare in November, on the first day of which a further reduction in fares to 7½ cents is scheduled under the ordinance passed two months ago by the City Council, modifying the terms of the service-at-cost franchise under which the company is operating.

A reduction in fares to 8 cents was made possible only on Aug. 1, because the ordinance modifying the franchise provided that the payment of the annual franchise tax, to be paid by the company when earned for the current year and also for last year, was to be deferred until April 1, 1922. Furthermore this tax was not to be calculated as a deficit for rate-making purposes. This fact, together with a saving of several hundred thousand dollars by the company in the reduction of the wages of platform men, created a surplus sufficient for use to predicate a reduction in fares.

PRESENT RATE MAY CONTINUE

The modification ordinance provides in substance that unless the reductions are made on Aug. 1 and Nov. 1 the terms of the original service-at-cost franchise again become operative. In view of this situation, unless the receipts of the company during September are sufficient to take care of operating costs and also provide a surplus to wipe out the deficit for August, it is not improbable that the rate of fare will remain as it is, if it is not increased.

Commission Side Heard in New Jersey Case

L. Edward Herrmann, counsel for the Board of Public Utilities Commissioners of New Jersey, made a preliminary statement to the special statutory court consisting of Federal Judges Woolley, Rellstab and Davis on Sept. 14 before he started his argument against the Public Service Railway's appeal for an injunction which would prevent interference with the collection of a 10-cent fare.

Mr. Herrmann said:

> No increased fare is going to give relief. Much falling off in profits follows each increase, and much of it is brought about by similar vilifications. You have heard described the terrible nightmare of bankruptcy and disaster.
>
> There have been no deficits as claimed by the company. They (the Public Service) ingeniously tried to include in operating expenses interest on leases, rentals and also guaranteed dividends. Ratepayers can not be mulcted to pay these extravagant rentals or charges.
>
> A man can't be compelled to pay excessive rents for a house just because the owner has mortgaged it for twice as much as the property is worth. If the company goes into bankruptcy it will be through its own misdeeds. All it is entitled to is a fair return on a fair value. The Utilities Board is obligated only to see that it gets this fair return. The company can appropriate it to any channel it sees fit. This issue is not before the court.

The court announced at the outset of the hearing that no decision had been reached on the appeal of the municipalities for admission as defendants. The cities claim that a 10-cent fare will be confiscatory of the rights of the people.

The commission was not entirely successful in the other issue it raised before the court at the forenoon session, that of the introduction of the 13,000 pages of testimony taken in the rate cases before the board as evidence in this proceeding. An hour's deliberation by the three judges ended in the conclusion that only such parts of the record as were pertinent would be admitted.

Inquiry Planned Into Buffalo Fare Charges

Upon the recommendation of Public Affairs Commissioner Frank C. Perkins, the Socialist member of the Buffalo City Council, the Council adopted resolutions authorizing Corporation Counsel William S. Rann to examine the books of the International Railway to determine whether the city should ask the Public Service Commission to restore the 5-cent fare. The International now charges a 7-cent fare within the city, with four tokens for 25 cents.

Commissioner Perkins told the Council that the total operating revenue of the International Railway for the first six months of the year is greater than the operating revenue of the company for the corresponding period of last year. Wages have been reduced by the company and Commissioner Perkins declared that from $2,000,000 to $3,000,000 is now being used out of earnings to rehabilitate the system, which has been neglected since the early days of the war.

Youngstown Adopts Pass

Unlimited Weekly Rides for $1.25 as a Stimulant to Increase Business—Present Fare Nine Cents

Under the terms of an ordinance passed on Sept. 19 by the City Council of Youngstown, Ohio, supplementary to the service-at-cost ordinance under which the city street railway service is furnished, the way has been cleared for The Youngstown Municipal Railway, a subsidiary of The Pennsylvania-Ohio Electric Company, to make an eight-week trial use of the "weekly pass." If the plan proves successful in that pepiod it will be continued as a regular feature.

The date on which the use of the "weekly pass" will start has not been definitely decided, but it is planned by the company to begin the use of the pass on Monday, Oct. 3. The ordinance was passed unanimously by City Council, both city authorities and company officials being of the opinion that the innovation will act as a stimulant to traffic in the city.

The plan for the use of the pass in Youngstown is similar to that in vogue in Racine, Wis., and other cities. The pass will sell for $1.25 and will be good for an unlimited number of rides for the bearer within the period of a week, from Sunday midnight till midnight of the following Sunday. The passes will be good for any ride within the city fare limits at any time during the day or night, on exactly the same basis as a cash fare or the city tickets which are sold in strips of six. No transfers will, however, be issued to bearers of the passes, who, of course, will use their unlimited passes for any continuance of their rides.

The passes will be used as supplementary to the present rates of fare, which are 9 cents cash, six tickets for 50 cents and 1 cent additional for a transfer. The passes will be sold at the ticket offices of the company and on the cars by conductors and operators and will be placed on sale each week two or three days before the day on which their use will begin, so as to distribute the sale of the tickets over several days.

Street car riders and the public in general will be acquainted with the use and advantages of the "weekly pass" through newspaper advertising and street car window posters prior to and following the introduction of the use of this form of ticket.

Ten-Cent Fare Denied in Utica

Case There of Unusual Interest Because of Comment by Commission —First Important Fare Decision by New Body

Permission has been denied by the State Public Service Commission to the New York State Railways Company to increase fares in Utica from 6 cents to 10 cents. The opinion was prepared by Chairman William A. Prendergast. It was unanimously adopted by the entire commission and emphatically outlines the policy of the commission in similar cases. The ruling covers the first fare increase case of any importance to be decided by the new commission.

A STATEMENT of particular significance in the commission's opinion is as follows:

> Public utilities just as other departments of business must expect to cope with periods of depression and short earnings, just as at other times they enjoy periods of prosperity and full dividends. If the public is expected to make up every deficiency in order to give a utility a good round rate of earning power, then the public is entitled to the benefit of the surplus over the agreed earning rate in times of prosperity.

On Dec. 22, 1920, the company applied for permission to set up a new rate of at least 10 cents per passenger in the territory known as the Utica zone, described as "the lines operating in the city of Utica and between Utica and the villages of Whitesboro, New York Mills, New Hartford and Clinton." Approximately 60 miles of trackage are affected by this petition. Operation in this zone is conducted under a franchise from the city of Utica and other local authorities, on the basis of a fare per passenger of 5 cents. In 1918 in consideration of acute cost conditions due to the war, permission was granted by the local authorities to charge a fare of 6 cents, which has since been in effect.

On the opening of the fare proceedings before the commission the city entered an objection to the jurisdiction of the commission, on the ground of existing franchise relations between the city and the company. This objection was overruled by the presiding commissioner, Judge Kellogg. Subsequently the city sought court intervention to prevent action by the commission, but was unsuccessful. The hearing upon the petition then proceeded.

In support of its claim to a larger return the company submitted three distinct appraisals. These it described in its brief as follows:

An appraisal based on the trend and average prices of the years 1912, 1914 and 1916 known as the (1) prewar valuation. (2) An appraisal based on average prices from the years 1915 to 1919 inclusive. (3) An appraisal reflecting 1920 prices, known as the reproduction cost new or present-day valuation.

The commission points out that the company's proof was therefore confined to a single element of "fair value," namely, cost of reproduction, new, on the basis of (1) prices prevailing before the war, (2) prices in 1915-1919 and (3) prices in 1920. The results of the three valuations were as follows:

	Field Costs	Total Cost New
Pre-war prices	$3,977,700	$6,168,456
1915-1919 average	5,786,567	8,898,312
January 1, 1921	7,801,837	11,940,796

In commenting on these figures the commission says:

> In setting up these appraisals the company's expert, Mr. Campion, has apparently sought to establish a wholly theoretical estimate of value. The element of original cost seems to have been largely discarded. In addition to this the place of a depreciation account in the calculation of "fair value" has been entirely ignored. It is not going too far to say the company appears to have rested its case upon the foregoing claimed reproduction values. It cannot be presumed that the commission is confined to any one such type of valuation. The judgment of courts up to this time clearly states it is not. In addition, business experience and common justice to the public demand that it should not be. To reiterate an argument which has been used very frequently of late by regulatory bodies it would be grossly unfair to the public to use the extraordinary dislocation in prices due to a world war as the groundwork for the fixation of a proper rate base.
>
> The courts have repeatedly ruled that the estimated cost of reproduction is merely one method of reaching just decisions. It cannot be used without reason and its use in a period when prices have been subject to such violent fluctuations as have characterized the past five years would leave little of fairness in the term "fair value," which means essentially the just amount on which a public utility company is entitled to earn a return.

The commission regards the city's evidence on the question of the value of the property employed by the company to be of a much more definite character. On this point it says:

> In its computation the city has used the actual figures given by the company in years past in its sworn tax reports, figures used by it in reports filed with the Public Service Commission, and in addition has as to certain periods taken the exact cost figures as they appear upon the company's books. For these reasons the city's valuations are based upon determinable quantities. Through its experts it has submitted evidence of the actual cost of the railway property used in rendering service in the Utica district and proved that the normal reproduction cost (pre-war) would not exceed the actual cost. So far as the tangible property is concerned, there is no considerable difference between the city's figures and the company's pre-war field cost figures; but the company fails to make any deduction for depreciation or exhaustion of capacity for service of physical property, and it makes larger additions for intangible values, thus:

	City	Company
Road and equipment—cost	$3,500,472	3,695,077
Accrued depreciation	1,335,721	none
Present value	$2,164,751	$3,695,077
Materials and supplies	125,000	282,623
Cash—working capital	....	51,855
Interests during construction	80,000	546,303
Taxes during construction	10,000	82,134
Organization and development	40,000	....
Total	*$2,429,751	**$6,168,456

* Includes $10,000 added for bridge at final hearing.

** The total includes $121,779 for preliminary expenses, $254,942 for cost of financing and numerous other items, including $764,825 going concern value.

> The large "overheads" in the company's valuation are based on the theory that the property is to be constructed as a whole, whereas the city's overheads are based largely on the company's records, which show that the necessary engineering, law and administration services in connection with construction are furnished by the regular staff of the company whose salaries are charged to operating expenses. If they are now treated otherwise it would be necessary to revise the operating expense accounts by excluding a portion of the salaries of the officials concerned and such revision would produce larger net earnings. When a company has once charged off an item as expense it has been reimbursed by the public, which is under no obligations to pay interest upon the item perpetually on the impossible hypothesis that the property is to be reproduced at some one time.
>
> A point is made by counsel that owing to the inadequacy of rate of fare the company has not received a proportionate part of the cost of its property equal to the depreciation or exhaustion of capacity for service. The proof of this point is not convincing. From the exhibit filed by the company subsequent to the last hearing, it appears that the company's earnings were amply sufficient to provide for depreciation as well as an adequate return from 1907 to 1917, inclusive. This is not the case, however, since 1917, owing to the greatly increased cost of material and labor. Seven per cent on the original investment (1 per cent for sinking fund and 6 per cent for return) would amount to approximately $260,000 a year or $780,000 for three years, as compared with a stated income of $346,000 or a deficiency of $434,000. The war conditions of the year since April, 1917, are such as to require of the commission special consideration. The calamity of the war, the impossibility of obtaining labor and material of the proper character except at abnormally high prices, and a limited amount of such as it was possible to obtain, resulting in unusual burdens upon all enterprises of a business character, furnished a reason for assuming that this deficiency of $434,000 under such special circumstances should be regarded by the commission for the present proceedings as a part of the rate base which will then amount to $2,864,000, or 8 per cent on the amount $229,120, although it is not conceded that 8 per cent is an irreducable allowance.

REVENUES AND EXPENSES ALLOCATED

The company's allocation of revenues and expenses to the Utica 6-cent fare zone was as follows:

	1919	1920
Operating revenue	$1,200,335	$1,288,523
Operating expenses	1,029,334	1,169,034
Net operating revenue	$171,000	$119,489
Taxes	73,935	65,000
Operating income (available as return on investment)	$97,065	$54,489

The commission said that on the basis of the 1920 income the company would fall short of the amount required for an 8 per cent return on investment and adequate provision for depreciation by the sum of $196,631, as follows:

Return on investment 8% on $2,864,000		$229,120
Additional for depreciation		36,000
Total		$265,120
Operating income 1920	$54,489	
Adjustment	14,000	68,489
Net addition to be paid by passengers		$196,631

In this connection the commission said:

> It must be borne in mind that we are not dealing with the conditions of 1920, nor the previous abnormal years, but with the present period which is one of profound economical adjustment. It is with this pregnant fact before us that a decision in this and similar cases must be made. The fact is that the proceeds of revised wage relations has already reached this company.

In estimating reductions the commission said it considered only those which were applicable to personnel and did not take into account the reductions in the cost of supplies. As the commission sees it the situation resolves itself into this:

Net addition to be paid by passengers...		$196,631
Adjustment for payrolls of January-April, 1920		66,090
		$262,721
Less expenses which it is estimated will be saved:		
In wages (arbitration award	$74,000	
From one-man car operation	95,000	
On materials and supplies	35,000	
		$204,000
		$58,721

In conclusion the commission said in part:

It must be understood that even if the company should fail to make up this deficit of $58,721, it would still be earning at the 6-cent fare approximately 6 per cent of its investment and on previous deficiencies and earnings. In addition to the 6 per cent, the company would also be getting a further allowance of $36,000 for depreciation. Under these circumstances, there would be no justification for any increase in fare. Public utilities just as other departments of business must expect to cope with periods of depression and poor earnings just as at other times they enjoy periods of prosperity and full dividends.

If the public is expected to make up every deficiency in order to give a good round rate of earning power then the public is entitled to the benefits of surplus prosperity. While a franchise rate once fixed must not be presumed to me immutable, the reasons advanced for changing it should be of the most controlling character. In this case the local authorities have already conceded an advance in passenger fare from the original franchise rate from 5 cents to 6 cents. The local authorities, therefore, cannot be charged with failure to appreciate the additional revenue requirements of the railroad due to the war conditions.

With the subsidence of these conditions it is not in order for the railroad to be seeking further advances, especially in the form of its present utterly extravagant request for a 10-cent fare. On the other hand, it is the duty of the company so to administer its affairs through economies and improvements that the fare to be charged to the public will be at the lowest possible minimum consistent with good service and an adequate return to the investors.

Emergency Rate Case Hearing Postponed

Appeal proceedings by the city of Minneapolis from the order of the Minnesota Railroad & Warehouse Commission granting the Minneapolis Street Railway an emergency increase in fare from 6 cents to 7 cents have been postponed by Judge E. S. Montgomery of the District Court in Hennepin County to Oct. 24. The restraining order was issued by the court on Sept. 3.

Postponement was asked by the railway company to permit it to produce certain witnesses necessary to proper presentation of its case. The company suggested thirty to ninety days. The city will object to the introduction of figures and testimony at that time other than to show that the company cannot earn enough on the rate of 6 cents to keep up reasonable service and meet fixed charges. Other data will be for presentation before the state commission at a future hearing as to a permanent rate based on valuation of the company's property, a work on which experts for the city and railway company have been engaged for some time.

Interurban Fares Fixed Pending Valuation

An injunction has been issued by the Ingham Circuit Court restraining the Detroit (Mich.) United Railway from collecting more than 1½ cents a mile over four of its interurban lines. The action was taken under the so-called Glaspie bill, which supplants the Smith rate bill under which utilities had been operating in the State. The petition for the injunction came as a result of the company's failure to file a new rate schedule as demanded by the new law. Under the Glaspie bill the Detroit United Railway is not permitted to charge over 1½ cents a mile on its lines until such time as the Michigan Public Utilities Commission has had an opportunity to complete an inventory of its properties and business and fix a permanent rate of fare.

The Glaspie bill was framed and put through the last Legislature by Representative A. B. Glaspie, of Pontiac and Oxford. Representative Glaspie was assisted in the framing of the bill by Judge Glenn C. Gillespie, who has been actively engaged in the prosecuting of several cases against the Detroit United Railway to determine whether that corporation had the right to override existing franchises which were disregarded at the time the Smith rate law went into effect two years ago.

In explaining the changes in fares, Assistant General Manager E. J. Burdick is reported to have said:

The new rates on all the lines will differ materially from those that have been in effect through the so-called Smith bill, which is supplanted by the Glaspie measure. The Glaspie measure calls for a temporary reduction on all the Detroit United Lines, according to the utilities commission, to a rate of 1½ cents a mile instead of the 2-cent rate now being charged. While this will largely decrease the cost of riding on the interurban lines, there will, however, be some cases in which the cost of riding will be increased. These increases come through the abolition of the 5-mile zone around the several cities involved, this zone having been created by the Smith bill. In this zone the 2-cent rate was not permitted to apply, except on through fares, and original franchise fares prevailed. There is no zoning outside of the limits of city railway systems under the Glaspie bill.

In connection with this matter the Michigan State Public Utilities Commission has ordered a new appraisal of the properties of the railway for use as a basis of fixing fare rates on its interurban lines. The work will require about six months. Representatives of the company proposed that the commission use the Cooley appraisal but this was declined. Professor Cooley made first appraisal in 1915 and since then the orginal data was supplemented from time to time to make it an up-to-date report.

One-Man Cars for British Columbia

One-man cars will probably be installed in the Vancouver and Victoria systems of the British Columbia Electric Railway shortly. Ten one-man safety cars will probably be purchased to provide additional rolling stock while the rule of the road is being changed at the end of this year. At present it is proposed to operate one-man cars only on shuttle lines in Vancouver, but downtown lines in Victoria will probably be operated the same way at an early date. Representatives of the platform employees have approached the premier of the province, but it is not expected any difficulties will be placed in the way of the company from that source.

Fares Raised Again at Toledo

For the second time within six weeks the fare of the Community Traction Company, Toledo, Ohio, has been increased. Tickets will now sell at the rate of six for 40 cents, or 6⅔ cents each, as against a rate placed in effect on Aug. 1 of eight tickets for 50 cents, or 6¼ each. The cash fare of 7 cents and the 1-cent charge for transfers remains the same, to which point it was raised from 6 cents cash and 1 cent for transfers on Aug. 1.

The company can change its rate of fare every ten days if necessary. It is operated under an ordinance which provides for whatever rate of fare may be necessary to maintain funds for replacements, working capital and amortization and to pay interest charges on its bonds and dividends on its preferred stock. A committee, composed of city and company representatives, meets every ten days to see if the profits are large enough or too large and has full authority to change rates any time it sees fit.

Scenic Route Drops Trolley for the Bus

The Niagara Gorge Railway, Niagara Falls, N. Y., has discontinued its trolley service between Niagara Falls and Lewiston and between Lewiston, Fort Niagara and Fort Niagara Beach. Outstanding tickets, the company announces, will be accepted for passage on the Gray bus lines which are also operated by the Gorge Company. The buses will continue to operate during the fall and winter months on a two-hour schedule.

Explaining its action, the Niagara Gorge Railway says that increasing use of automobiles has reduced passenger traffic over its lines to such an extent that operation now is unprofitable. The company, however, will continue to operate the Niagara Gorge belt line service in co-operation with the Park and River division of the International Railway, Buffalo. On this portion of the line the difficulties of operation would be great during the winter while the tourist traffic would naturally be very light.

A franchise exists for the operation of the Lewiston-Youngstown division of the road which requires the operation of at least two cars a day. On the Lewiston-Falls division the franchise allows for a suspension of service between Oct. 1 and June 1.

Ten-Cent Fare Petition Renewed

The Helena Light & Railway Company, Helena, Mont., has renewed its application before the State Railroad Commission for a cash fare of 10 cents with tickets at 6¼ cent. The company claims that the 8-cent rate with tickets at 5 cents has failed to bring the revenues up to the expenses and further relief is needed.

When the company petitioned last May, the fare was 7 cents. At that time in its decision the commission ordered an 8-cent rate for a period of ninety days.

The proposed 10-cent cash fare applies to the city alone. To East Helena the proposed rate is 15 cents.

Reference to the 8-cent fare award was made in the ELECTRIC RAILWAY JOURNAL, issue of May 28.

Jitneys Appear in Cincinnati

A new bus line has made its appearance in Cincinnati. The "jitneys" are being operated by three local men from Rose Hill to the heart of the city. E. F. Hagaman, William Thompson and Fred Hershiar, after consulting with Mayor John Galvin and other city officials as to the legality of the procedure, made their appearance on Aug. 27 with three automobiles. The promoters disclaim any connection with the Detroit, Mich., promoter who recently received considerable publicity on a similar project, which never materialized.

Mr. Hagaman said the new interests intend to increase the service by the addition of more cars and new routes running over the other arteries of Cincinnati as soon as their business will permit them to do so. According to the present schedule the "jitneys" start at 7 o'clock in the morning and operate at twelve-minute intervals until midnight, Sundays included.

One-Man-Car Issue Before Commission

In a final effort to avert, if possible, the installation of one-man cars on the lines of the Tri-City Railway on the Illinois side of the Mississippi River, Mayor H. M. Schriver and City Attorney John L. Scott of Rock Island, Ill., have been in Chicago several days where they are fighting the case before the Illinois Public Utilities Commission. The officials of the Tri-City Railway are attempting to show that the installation of one-man cars is imperative if the Tri-City Railway is to operate on a profit. Some time ago the Mayor and the City Commission of Rock Island rejected the one-man car type which caused the company to take the case to the Illinois Public Utilities Commission. The company also asks permission to operate the same type of cars in Moline, East Moline, Silvis and Milan. Officials of these cities have joined the Rock Island mayor in the matter. The company first installed one-man cars on the Bridge Line and asked the Rock Island Commission to grant thirty days trial. The company then asked permission to extend the service on the Third Avenue and the Long View lines.

State Powerless Before Jitneys

There is no law for the regulation of rates and practices of jitneys operating between cities and towns of Oklahoma and the State Corporation Commission cannot control such carriers. This conclusion was recently reached after an investigation into the laws relating to transportation companies conducted by E. F. McKay of the commission.

The investigation was started at the behest of the mayors of Dewey and Bartlesville, who stated in their application that they were unable to control the buses operating between both cities and wanted the commission to fix rates and schedules. The matter was referred to in the ELECTRIC RAILWAY JOURNAL for Sept. 3.

Safety Cars for Peoria

Twenty standard Birney safety cars are to be installed by the Peoria Railway, a subsidiary of the Illinois Traction System, during September, for the complete equipment of three lines. These will be the first cars to be operated with one man in Peoria. The installation has been made possible only through a revision of the contract with the local union and an amendment to a city ordinance, both of which contained clauses requiring two-man operation of all street cars.

The new safety cars will be installed on the basis of an approximately 25 per cent increase in number of cars. The Illinois Traction System is now operating cars of the light weight safety type in Champaign and Decatur, Ill., Wichita and Topeka, Kan., and has one-man operation of older cars in a number of other towns.

Guaranteed 6 per Cent Looks Good to Them

The Cleveland (Ohio) Railway has accepted a new franchise for extending its lines on St. Clair Avenue from its present Nottingham Road terminus to Bliss Road, a distance of 1⅓ miles. Construction is to be begun during the next few months. Financing of this extension was a problem that looked to be unsolvable until owners of industrial plants in the territory touched by the extension stepped forward and agreed to buy the company's 6 per cent stock at par. The stock is now selling on the open market around 86, but provision in the company's grant forbids its sale by the company at any figure under par. As the people refused to sanction an increase in the dividend rate to 7 per cent, the company has been unable to finance any other extensions through the sale of stock.

Transportation News Notes

One-Man Cars Prohibited—The Macon Railway & Light Company, Macon, Ga., has been restrained from using one-man safety cars on lines of heavy travel. The City Council first authorized this method of transportation and later rescinded its order.

Fares Back to Five Cents—The City Council of Ironwood, Mich., has voted to reduce the fares on the lines of the Ironwood & Bessemer Railway & Lighting Company from 6 cents to 5 cents. This is the second reduction in three months. The fares were advanced to 7 cents last fall.

Ten Cents Cash Suggested.—The Tri-City Railway & Light Company is reported to have suggested to the city of Muscatine a fare of 10 cents, with books of tickets at 50 cents which would entitle the holder to a 5-cent fare. The effect would be to require the occasional rider to pay a rate commensurate with the service he received, while retaining to the regular patron the benefit of the low fare.

Seven Cents in Phillipsburg. — The Phillipsburg (N. J.) Transit Company has received an order from the Public Utility Commission allowing it to raise the fare from 5 to 7 cents within the town limits. The petition for increased fares was filed on May 4, 1920, and was opposed by the municipal authorities on the ground that the service given by the railway was not up to the standard called for under its franchise ordinance.

Tokens Replace Tickets—The Louisville (Ky) Railway has replaced its paper tickets with metal tokens about the size of a dime. The tickets were sold in strips of five with receipt attached for 35 cents. The tokens will be sold at the same rate while the envelope which contains them is a receipt for 35 cents, and can be used by the patron in the event that the city wins its 5-cent fare suit. In this case the company will have to refund 2 cents on each fare represented by the receipts.

Court Restrains Jitneys. — Electric railways cannot withstand the competition of the jitneys is the opinion of Justice Frank S. Katzenbach, of the New Jersey Supreme Court. The jurist made this anouncement during the mandamus proceedings involving ten jitneys operating between Salem and Pennsgrove. The Salem & Pennsgrove Traction Company brought about the proceedings. It claims that the jitney men had no licenses from the Board of Public Utility Commissioners. Justice Katzenbach upheld the railway and said that the jitneys would eventually drive the traction companies out of business. The jitney men must now suspend operating between the two towns until their applications are approved by the Board of Utility Commissioners.

Personal Mention

Heads Mexican Railroad

H. B. Titcomb, Vice-President of Pacific Electric, Is Chosen President to Succeed Col. Randolph

Herbert B. Titcomb, vice-president of the Pacific Electric Railway, Los Angeles, Cal., was chosen president and director of the Southern Pacific Railroad of Mexico, to fill the vacancy caused by the death of Col. Epes Randolph on Aug. 22, 1921. Mr. Titcomb will have headquarters at Tucson, Ariz., and at Empalme, Mexico. The Pacific Electric Railway is a Southern Pacific subsidiary.

Mr. Titcomb, who was elected vice-president of the Pacific Electric Railway, with headquarters at Los Angeles, but three years ago, has been the executive in charge of that property, for since his assuming this position President Paul Shoup has had his office in San Francisco as operating executive of the Pacific system of the Southern Pacific. Mr. Titcomb, in rising to occupy this important place in the transportation world, has earned his advancement step by step through his own individual effort and because of his thorough knowledge of every phase of railroading.

H. B. TITCOMB

There is a very large field for Mr. Titcomb in his new position with the Southern Pacific, as he is, with his vast experience, most capable to handle the new work before him. In his new capacity Mr. Titcomb is expected to build up the system which spreads its tentacles fan-wise through old Mexico—the system which was wrecked and nearly ruined by the Mexican revolution which preceded the Obregon administration. Countless miles of roadbed were destroyed and the work of rebuilding started by Colonel Randolph will be carried on. Service which became intermittent must be restored. These tasks lie within the keeping of the road's new chief executive, whose work in handling the Pacific Electric affairs during the three years at the head of its organization has been very commendable.

No one has at this time been appointed to the post vacated by Mr. Titcomb with the Pacific Electric lines.

Mr. Titcomb has spent thirty years of intensive service with the Southern Pacific Company. Graduating from Cogswell Polytechnic College in 1891 he entered the service of the Southern Pacific as a draftsman, working up from this position to assistant engineer of the construction division in 1898. He was appointed roadmaster of the Western division a year later and was successively roadmaster of the Shasta and Sacramento divisions from 1900 to 1904. After serving as assistant resident engineer he held a like position until 1906 at San Joaquin, and at Los Angeles from that time until 1909. Mr. Titcomb was then promoted to district engineer at Los Angeles, holding this position until 1914, when he was made maintenance of way assistant to the assistant chief engineer at San Francisco. In 1917 he became superintendent of the Stockton division, going from there to Los Angeles to become vice-president of the Pacific Electric.

Mr. Titcomb was born in Indianapolis, Ind., in 1871, but as a small boy he came to California and located on a farm with his parents in Modesco.

Mr. Smith Resigns from McGraw-Hill Company

F. E. Smith, having finished the work for which he was especially engaged about eighteen months ago by the McGraw-Hill Company, Inc., has resigned his office as controller of the company. He is returning to Fort Myers, Fla., where he has real estate interests and where he will resume his connection with the First National Bank of Fort Myers, which he gave up in 1918 to join the Emergency Fleet Corporation. Mr. Smith is a past president of the American Electric Railway Accountants' Association, and was for fifteen years auditor of the Chicago Union Traction Company and of its successor, the Chicago Railways. He resigned from the Chicago Railways in 1914 when he moved to Florida. Mr. Smith's special work with the McGraw-Hill Company, Inc., was to prepare and put into operation a system of accounts including monthly cost statements.

M. B. Baer, formerly chief clerk of the traffic department of the Bamberger Electric Railroad, Salt Lake City, Utah, has been appointed general soliciting agent for the road. Mr. Baer has been in the employ of the company for the past five years. The position of chief clerk will be filled by Loney Flint, a newly added member of the personnel.

Mr. Cooper Resigns

Has Been Secretary of Southwestern Electrical & Gas Association for Nine Years

H. S. Cooper, who has been secretary of the Southwestern Electrical & Gas Association for the past nine years and has also been a public utility advisory engineer in Dallas, has resigned his secretarial office. He is planning now to take a vacation to which he is undoubtedly entitled after thirty-five active years in the public utility business. Mr. Cooper was one of the organizers of the Southwestern Electrical & Gas Association and served a term as president before he became secretary in 1912.

Mr. Cooper is a native of the Isle of Wight in England, where he was born in 1856. In 1876, after he had moved to America, he began the manufacture of agricultural machinery and shortly thereafter entered the electrical field. In 1893 he was appointed general manager of the Schenectady properties of the Electrical Development Company, which consisted at that time of the electrical and gas lighting and the railway systems of Schenectady, all of which were then in the hands of a receiver. Later these properties were reorganized and placed on a paying basis by Mr. Cooper. Subsequently he directed the rehabilitation of the Ithaca (N. Y.) Railway, and later became connected with the Electrical Development Company in New York. In July, 1904, he accepted the position of general manager of the Galveston City Railway, and continued with that company and its successor, the Galveston Electric Company until 1910. About this time he was retained to supervise the design and construction of the new Hotel Galvez at Galveston. In 1912 he was elected secretary of the Southwestern Electrical & Gas Association.

H. S. COOPER

New York Commission Appoints Mr. Vanneman Chief Engineer

The New York Public Service Commission on Sept. 20 announced the appointment of Charles R. Vanneman as chief enginer of the commission. Mr. Vanneman was with the old Public

Service Commission of the Second District up to the time of the creation of the present commission. He was appointed in 1910 to the old commission as inspector of transportation. His new position as chief engineer places him in charge of engineering and inspection work for the commission of all steam railroads, street railroads, grade crossings and electric light, gas, telephone and telegraph companies throughout the state.

A Public-Spirited Service

Infrequently, indeed, are the virtues of the street railway manager extolled in the daily press. It might be claimed that they have none worthy of mention. Perhaps they haven't, but they just succeed without them. However, there is a little appreciative and sympathetic paragraph that appeared recently in the Boston *News-Bureau* showing that it has some realization of what transportation men have been confronted with during the past few years:

> There is a man in Boston who is doing valiant service in the public interest whose work is not receiving the praise it deserves. Reference is made to Homer Loring, who, for a paltry salary of $5,000 as trustee, is struggling to keep the Bay State Street Railway on its financial feet. The employees, the public and the security holders are quick to condemn him for any situation which doesn't happen to fit in with their own particular idea of how to run a street railway. Mr. Loring courageously sticks to his job and doesn't allow ignorant criticism to "get him." He did not accept the thankless task because he wanted it; he doesn't need the salary and he is on his third year of service, although he had agreed to accept but one. He will probably retire at the end of the current year and the road will lose one of its real assets. He has long been an advocate of "service at cost" and it is to be regretted that with the generally disturbed conditions of business since the property was reorganized, his theory has not had a fair chance to demonstrate its possibilities.

M. D. Payne, who has been superintendent of transportation in Gadsden division of the Alabama Power Company for several years, has been transferred to Duncan's Riffle, Ala., having been sent there to help in railway construction.

Charles L. Edgar, president of the Edison Electric Illuminating Company, Boston, has been elected president of the New England section of the N. E. L. A. Mr. Edgar has been prominently identified with N. E. L. A. work, both in the national and local organizations, for a number of years. He has served several times as vice-president of the N. E. L. A. and was president in 1903.

E. Arnold has been appointed master mechanic of the Cleveland Alliance & Mahoning Valley Railroad, Ravenna, Ohio. He is the successor to W. C. Carter, who recently resigned. Mr. Carter has not as yet accepted any other connection. Mr. Arnold was at one time connected with the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, having entered their employ in 1904. He remained there until September, 1919, when he resigned to go with the National Tube Company, Lorain, Ohio. It was the latter company that he has just left to become master mechanic of the Cleveland, Alliance & Mahoning Valley Railroad.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Cut in Cement Prices

Reduction Made of 30 Cents a Barrel—Production During August Increased

Announcement was made last week to the effect that manufacturers have taken off 30 cents a barrel on the price of cement. Although there had been reason to suspect that some price change might occur before the first of the year the trade had not been expecting it to come so suddenly nor with so much precision. It became effective simultaneously with the issuance of the announcement, first by the Atlas Portland Cement Company, and was immediately followed by similar price cuts by other cement manufacturers.

The dealers immediately followed suit with a reduction in price to their customers. Instead of the quoted price today being $3.00 to $3.20 a barrel, the dealers are now asking $2.90.

The reason for the price cut, it is said, is that important savings have been made by the Atlas Portland Cement Company in the cost of manufacturing its product. It has passed the benefit of these savings on to its customers. These savings have been effected by greater efficiency among the mill employees, resulting in lower costs of production. Coal and other raw materials are cheaper.

Some of the biggest buyers stated that as the new cut narrowed manufacturers' margins almost to the vanishing point, a condition of stabilization might soon be expected as far as prices were concerned. The prediction was made that by spring cement prices would rebound. In fact, the general trend of the market continues to be toward a higher price level in spite of the fact that normally prices begin to weaken at the approach of autumn.

Production and shipments of Portland cement in the United States continued to increase during August, 1921, and, according to available statistics, scored new high records for that month. The August production exceeded the average for August, 1917-1921, by about 15 per cent. Production for the first eight months of 1921 was about 99 per cent of the quantity produced during the corresponding period of 1920 and exceeded the average for the first eight months of 1917 to 1921 by about 8.5 per cent.

As is usual in summer, the August shipments exceeded production, and the total for the eight months just ended was equivalent to more than 99 per cent of the record quantity shipped in the first eight months of 1920. The average for the same period during the five years 1917-1921 was exceeded by about 9.5 per cent.

Stocks of finished cement at mills at the end of August were approximately 8,280,000 bbl., compared with 8,941,000 bbl. on Jan. 1, 1921, and with the average of about 9,600,000 bbl. for August during the last five years.

Higher Steel-Sheet Base Does Not Affect Electrical Sheets

Toward the end of last week most of the prominent independent manufacturers of sheets advanced their prices $5 per ton. Black sheets went from 2.75 cents to 3 cents, galvanized from 3.75 cents to 4 cents, and blue annealed from 2.25 cents to 2.5 cents per pound, Pittsburgh base. Considerable booking was done before the old price was cleared off the boards. At this time the leading sheet producer has not made any advance in price to the new bases taken by the independents.

As far as can be learned, there has been no advance in electrical steel sheets for magnetic use. This market is still quiet, although it is reported better than it was in the early summer. Under this condition it is considered unlikely that a higher price will be placed on it at this time unless it reacts in that direction through the influence of the general sheet market.

Gear Cases in Good Demand

Although one or two manufacturers of gear cases report that the demand for their product is still below the average and that electric railways seem to be making no attempt to provide for their winter needs, the majority of producers have found conditions considerably more favorable and are making what are considered good sales. As has been the rule in the electric railway industry for the past few years, their purchases have been only of sufficient volume to satisfy current needs. However, this volume of buying is said to represent a sizable total.

Under the present condition of the industry it appears as though activity in the gear-case line had come early. Undoubtedly it has to a certain extent and some give the explanation that requirements to replace those lost by breakage last winter were practically nothing, as track and roadway conditions were exceptionally favorable. Since this winter demand was almost negligible, and railways in most cases kept buying so close to actual needs that they were not left with heavy stocks; they are now obliged to replace much equipment that will not survive any longer. Also these advance orders indicate that some railways are in slightly better financial condition and that some money is being expended in anticipating the winter's needs, especially for equipment that has been neglected and is likely to be wanted on short notice.

A good volume of advance orders is yet expected from lines that have only covered their present needs, and with the raw material supply improving and a constantly better attitude on the part of labor it is hoped that prices may be reduced. Prices under present conditions, however, are as low as it is possible to make them, manufacturers state. Stocks are good on both sheet steel and malleable iron cases, consequently deliveries are not awaiting any manufacturing processes. The fact that numerous inquiries are incoming is certainly indicative of an ever improving market.

More Interest in Labor Saving Shop Tools

The fact that some dealers and manufacturers of labor saving tools and machinery such as coil winding, armature banding and commutator slotting machine report numerous inquiries for this type of shop equipment can be interrupted as indicating that whenever possible electric railways are anxious to provide themselves with such apparatus as will enable them to lessen maintenance and repair costs. The tendency, it is reported, is to purchase and install these labor saving devices because the beneficial effect of their use is quickly apparent in respect to their high quality of work, labor saving and the decreased time rolling equipment is out of service.

As far as manufacturing conditions are concerned, there have been no changes recently, although it is stated that readjustments will be made as soon as costs permit. Deliveries can be made in a reasonable time, since all raw material is readily obtainable. Plants turning out this sort of machinery are running at from one-third to one-half capacity.

Electrical Materials Little Affected by Higher Cotton Prices

With the higher cotton prices which have been holding quite steadily for the past two weeks at just under 20 cents a pound, there has been some inquiry as to whether or not certain electrical materials containing cotton have reacted to higher levels or are liable to go there in the near future. So far as can be learned, there has been no advance in general. The exceptions found are in flat insulations. Certain woven white tapes have been marked up 4 per cent, and one brand of sheet varnished cambric is reported 15 per cent higher. No change was noted in varnished cambric tape, insulated wires and cables or non-metallic flexible conduit. Local reports of higher prices on loom and insulated wire are undoubtedly the result of local conditions in distributing channels and not of the increase in raw material prices.

Rolling Stock

British Columbia Electric Railway, Vancouver, B. C., will probably purchase 10 one-man safety cars to provide additional rolling stock while the rule of the road is being changed at the end of the year from left-hand running to right-hand running.

Holyoke (Mass.) Street Railway states that it expects to purchase 2 motor buses in the near future. No information is given in regard to the type or seating capacity of the vehicles that it contemplates ordering nor is any mention made of the kind of service in which they will be employed.

Track and Roadway

Boston (Mass.) Elevated Railway has placed an order for 900 tons of girder rails, 200 tons of standard T rail and 1,250 pairs of rail joints. The Bethlehem Steel Company will supply this material.

Houston (Tex.) Electric Company will start on improving its lines if the new franchise is approved by the city at the election on Oct. 4. This statement was recently made by Luke C. Bradley, district manager of the Stone & Webster Company in Texas.

Tulsa (Okla.) Street Railway and the Oklahoma Union Railway will rearrange their routings so as to utilize the undergrade crossing at Quannah Avenue. This crossing was recently ordered constructed by the State Corporation Commission. The order required the City of Tulsa and the Missouri, Kansas & Texas Railway to join in the construction of two crossings over the Katy right of way in Tulsa.

Chattanooga Railway & Light Company, Chattanooga, Tenn., is rebuilding its Alton Park line from Main Street to Twenty-Eighth Street with 6-in. 100-lb. rail, which represents 4,981 ft. of single track and 286 ft. of double track. The East Chattanooga line is being rebuilt from Jefferson to Stewart Street with 4½-in. 70-lb. rail. It involves a length of 1,228 ft. of double track and 5,341 ft. of single track.

Portland Railway, Light & Power Company, Portland, Ore., recently completed reconstruction and improvement work on East Twelfth Street, and the intersections of East Eleventh and East Twelfth and Hawthorne Avenues, at a cost of $60,000. A number of carlines have been re-routed and in many cases the installation of new curves and other special work has eliminated the use of switches and cross-overs. The company also has under way other reconstruction work that will cost $36,000.

Columbus Railway, Power & Light Company, Columbus, Ohio, has contracted for and expended in general improvements $2,908,498 since the present fare ordinance became effective (April 3, 1920), according to a recent statement by C. L. Kurtz, president of the property. Doing away with overhead high-tension wires and substituting underground conduits in the downtown section have cost $650,000. An expenditure of $381,000 was made for repairs to the intersections of Chittenden Avenue, Naghten, Chestnut and Spring Streets with Fourth Street. Increasing the capacity of power stations has cost $1,315,000 and new substations have cost $450,000.

Power Houses, Shops and Buildings

Dallas (Tex.) Railway is installing new concrete pits in its repair beds at the East Dallas carhouse. These pits will greatly facilitate repair work.

Pacific Electric Railway, Los Angeles, Cal., proposes to build a freight house and station on Phi'adelphia Street just west of Whittier Avenue, Whittier.

Harrisburg (Pa.) Railways recently placed a contract for two Heine boilers of 600 h.p. equipped with Coxe stokers and also conduits for new coal bunker at central power station. These boilers are expected to be in service by Jan. 1, 1921.

New Orleans, La., H. K. Johnson, builder of the Orleans-Kenner interurban line has filed application with Commissioner Paul Maloney of the Department of Public Utilities for a franchise for an electric light and power plant in the city of New Orleans.

Boston (Mass.) Elevated Railway has applied to the Public Utilities Commission for permission to establish a station and shelter, with approaches, tracks, etc., adjoining Lechmere Square, Cambridge, for the convenient transfer of passengers between cars operating through the Boylston Street Subway, Tremont Street Subway and over the viaduct from the North Station in Boston to Lechmere Square in Cambridge.

Professional Notes

Coverdale & Colpitts, consulting engineers, 66 Broadway, New York, announce the engagement as a member of their staff of George W. Burpee, formerly managing engineer of Westinghouse, Church, Kerr & Company, and lately of its successor, Dwight P. Robinson & Company. Mr. Burpee is a member of the American Society of Civil Engineers and of the Engineering Institute of Canada.

F. H. Sauter, formerly associate editor of the Locomotive Dictionary, has accepted a position with Gibbs & Hill, consulting engineers, New York City. His work with this firm will have to do with the development of railway electrification. Mr. Sauter was connected with the General Electric Company from 1894 until 1903, when he joined the Schenectady Railway as assistant master mechanic. At one time he was also in the service of the American Locomotive Company, Schenectady, N. Y., where he held various positions including those of designer of steam and electric locomotives.

Trade Notes

George W. Thomas, president and co-founder of the R. Thomas & Sons Company, East Liverpool, Ohio, manufacturer of insulators, died on Aug. 7, 1921, at the age of seventy.

Automatic Reclosing Circuit Breaker Company of Columbus, Ohio, has announced the opening of a Philadelphia office at 1613 Chestnut Street, Philadelphia, Penn. H. A. Van Dyke has been placed in charge of this office.

Barney & Smith Car Company, Dayton, Ohio, has been recommended by its receiver, Valentine Winters, that further operations at the plant be discontinued and that the plant be sold. Mr. Winters informed the court that since the receivership was established the loss to the plant has been $157,330. What further action has been taken by the receivers has not yet become known.

U. T. Hungerford Brass & Copper Company, 510 Arch Street, Philadelphia, has purchased the merchandise stock of the A. P. Swoyer Company and has leased the premises formerly occupied by it at 17 North 7th Street, Philadelphia. Possession was taken by the Hungerford Company Sept. 1. It is intended to carry a full line of brass, copper, tobin bronze, nickel silver and monel metal products in sheets, rods, tubes, wires, etc.

Henry C. Esling, secretary of the J. G. Brill Company for the past thirteen years, died on Sept. 18, at his home in Philadelphia after a brief illness. He was fifty-eight years of age. Mr. Esling was a member of the Philadelphia bar and prior to his affiliation with the electric railway car-building industry was associated in the practice of law with Francis Rawle. He was a director of the Pennsylvania Manufacturers' Association Casualty Insurance Company and of the Beneficial Savings Fund Society of Philadelphia.

New Advertising Literature

Safety Limit Switch.—A new crane safety limit switch, known as type LC, has been put on the market by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Oil Circuit Breakers.—The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has issued special publication 1643, entitled "Application of Oil Circuit Breakers."

Motors.—The Mechanical Appliance Company, Milwaukee, has issued bulletins Nos. 401, 402, 403, 404 and 405, covering the "Watson" direct-current motors, alternating-current motors, multispeed motors, slip-ring and high-torque motors and ball bearing motors respectively.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative

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There Is a Good Program for Atlantic City Next Week

ALTHOUGH there will be no exhibits at the convention this year, the program of papers and reports to be presented is so attractive that a good attendance should be assured. A perusal of the reports and papers already issued in advance shows them to be of unusually high character and on subjects which are of the livest interest now in electric railway circles. While annual conventions in the past have always been accompanied by exhibits, the association has precedents for gatherings without that accompaniment in the midyear conferences and in the one-day annual meetings which were held during the war. That these meetings have been considered worth while by the membership at large has been attested by the good sized attendance. By so much more should electric railway men consider as worthy of their presence a four-day simultaneous meeting by five electric railway associations. All who can should be at Atlantic City next week.

Electric Railways' Interests in Reducing Unemployment

THE unemployment conference now being held in Washington is of interest to the electric railways in two ways. One is through their gross receipts. The man who is working has to travel to and from his place of occupation and usually uses the street car twice a day to do so. Moreover, he is earning money, and both he and his family are bound to spend some of it each day in electric railway travel. The second interest which the electric railway companies have in the unemployment conference is that they are large employers of labor. Even in present conditions they have many men on their payroll, but in more favorable circumstances—that is to say, if the electric railway industry had returned to normal—they would be the direct employers of many more, not only in transportation on additional cars but in track and car maintenance and to some extent, probably, in new construction. Moreover, they would be large purchasers of equipment and thus indirectly provide work for many more.

Undoubtedly there is much work in this country which was postponed during the war and is needed now to overcome the uncared for depreciation of the past five years and to make up for the work which was suspended while the energies of the nation were devoted to the manufacture of war material. The electric railway industry presents one example only. There are others, as in the steam railroad industry and housing. The problem is how to make this work available to the vast army of unemployed—estimated to number from three to five and one-half millions—and provide the money to remunerate them.

Obviously in commercial industries this work can be begun only if the whole enterprise will show a profit, and this after all will undoubtedly be found to be the reason for the delay in most of the instances cited. The high prices which are still charged for many materials and for labor have been a stumbling block. General Atterbury's statement which appeared in the daily press on Sept. 27 describes the situation succinctly so far as it concerns the railroads. How far the present unemployment situation will change this condition remains to be determined. The conference begins its work under good auspices, and it is to be hoped that a remedy will be found.

Association Standards and Standardization in General

THE complaint is often heard that association standards are not used as they should be. There is undoubtedly some basis for such a complaint, but it gives no reason for discouragement or reduction in the expenditure of time and effort in this work. The fact is that honest, earnest and intelligent effort directed toward standardization is never lost. It always produces some effect in raising practice to higher and higher levels.

That standardization effort is not lost can be seen from a definition of the term. No matter how the idea is stated the fundamental principle is substantially this: Standardization is the codifying of existing knowledge in such a way as to place within the reach of everybody the results of the best experience and thought of the leaders in practice and analysis. Obviously such work cannot be without result. Isn't this what every association committee is trying to do in its particular field? Isn't this what is needed to improve construction and operation on every electric railway property? Isn't this the principal reason for the existence of the association anyway? Certainly, yes. And even if every railway does not use the association standard rail or standard wheel, it does benefit from the codifying of information gathered and analyzed patiently year after year.

The purpose of standardization in all lines is to reduce effort and cost. Whenever a new installation is to be made or a new procedure inaugurated, the first step is to ascertain the best present practice in connection therewith. If any appropriate standards have been adopted by authoritative bodies, so much the better. The principle applies to even so simple a matter as the layout of a desk. Some desks would stand quite a little standardization. This, however, is a "touchy" matter and the illustration will be pushed no further. In the case of such important matters, however, as electric railway supplies, the advantages to be gained by the use of standards are so great that the latter should be used unless there is overwhelming reason to the contrary. The first advantage is in the assurance that the best known practice is being followed. Another is that the railway will ultimately reap the benefit of lower manufacturing costs. Still another is in securing the interchangeability of parts, and a fourth is that repair parts can be had more promptly than otherwise.

It is quite a job to utilize fully the standardization work of the association committees as it develops, but the job is worth while. Lack of familiarity with this work is one cause of failure to use it. A pressing problem before the association is to "sell" the standards to the membership. This ought not to be necessary, but unfortunately it is so. After the association has done its duty, it is up to every railway manager, in co-operation with his department heads, to see that the property is benefited to the utmost from the association work.

But even if the greatest possible use is not being made of association standards, great use is being made of them. The committees are building a valuable literature around electric railway practice. And the spirit with which the committees function every year, and in particular have functioned during the past year, shows that their members realize that they are making a real contribution to the good of the industry.

Why Railways Fail— Ordinary Selling Publicity Needed

ALTHOUGH, as a class, electric railways are giving more thought to publicity of their service than in past years, some still fail to realize how imperative such publicity has become since the advent of the jitney or the motor bus. It is in the transportation business now as it is in any other industry where there is competition—the least remissness or dozing is seized upon by the rival claimant to patronage. An account of an actual case will make the point clear.

For possibly fifteen years past it has been customary for the interurban cars of a certain route to run to a loop within a few hundred feet of an important steam railroad station in an Eastern city. Because of the greater frequency of the electric service between this city and the other terminus of the interurban, most strangers have favored the electric railway. These outsiders have always formed a respectable fraction of the total riding, so that one would expect that any radical change in routing would be brought to their attention. This has not been the case. In our innocence, one morning, we went to the loop from which we had taken this car dozens of times in past years and waited, and waited and waited. Every variety of interurban but the one that we wanted came by. Finally, one of a group of nearby jitney drivers asked where did we want to go? On our naming the town, he hee-hawed and said, "Them intaoibans only goes to the city line now. You'll nevuh git the nine-fifteen if yuh waits f'r a car, but my bus 'll git the connection O.K." So we foreswore our good resolutions and made the connection.

When one considers that a simple sidewalk sign or a piece of enameled tin suspended from a span wire would have apprised the prospective passenger of this change, it is inexplicable why nothing of the kind was done except to assume that the management expected the stranger to know, by intuition, the changes in service as minutely as itself. We know of one merchant who merely moved three or four numbers up the main street, but nevertheless kept advertising his removal for a year thereafter. Here was a man who knew better than to take chances with his clientele, and he was telling about it in paid newspaper space, too—not in cost-free signs. Better too much than too little publicity is a safe rule for the electric railway in these days when no one can stand at a corner very long without being solicited by taxi or jitney driver.

Beautifying Waste Ground Is a Paying Proposition

HAVE you any possibilities in the way of garden spots around your shops, carhouses, power houses, substations and miscellaneous buildings? If you have, now is a good time to plan and plant for next spring. There is an increasing appreciation of the practical benefits of simple but tasteful planting around electric railway buildings. Visitors to such properties as those in Portland, Ore.; Harrisburg, Pa.; Schenectady, N. Y., and many other cities carry away a pleasant impression of what they have seen, which is greatly enhanced by the surroundings of necessarily prosaic buildings. There are several reasons why these pay in dollars as well as esthetic satisfaction. Here are three of them.

In the first place men work with most satisfaction, and therefore best, in attractive surroundings. There are few who do not enjoy green foliage and bright blossoms, especially those engaged in manual work. Again, vines, shrubbery and flower beds around utilitarian buildings, such as shops and the like, will produce a general effect which could be had only at much greater cost by architectural embellishment. In addition to these considerations, if a shop or substation, for example, is located where it is seen by many patrons, its grounds, however small, offer a wonderful opportunity for some good publicity work. Attractiveness at this point is one of those superficial but important suggestions of good management.

Here, fortunately, is one place on an electric railway where big results can be secured at practically no cost. Plants can be had for little or nothing, and in many cases the men who are employed about the plant will gladly undertake to prepare the soil and tend the garden. All that is needed is some one imbued with the right idea and capable of exerting a little "punch" to put the thing over.

What Is the Answer?

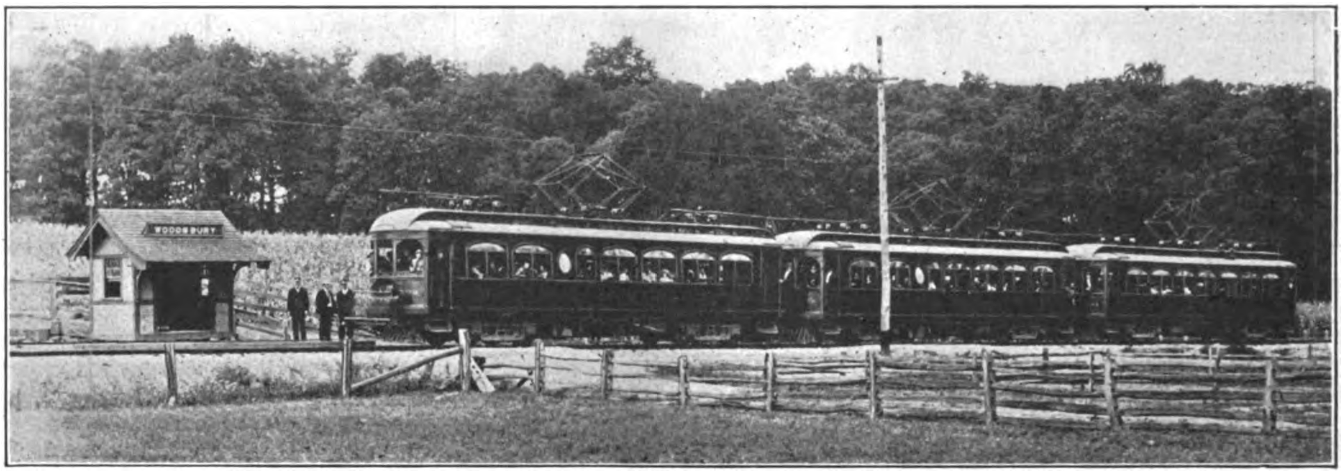
STATISTICS have the reputation of being dry, but the following indicate a problem in concrete form. In 1912 the steam railroads earned a return of about 5 per cent on their property investment; in 1920 they earned less than one-third of 1 per cent. In 1912 operating expenses took 70 cents out of every dollar of operating revenue; in 1920 they took 94 cents. In 1912 labor took 43 cents out of every dollar of operating revenue; in 1920 labor took 60 cents. Yet in 1920 with only 8 per cent more mileage and 30 per cent more investment the railroads were able to produce 58 per cent more ton-miles and 45 per cent more passenger-miles than in 1912. Operating revenue also increased 120 per cent in the same period, yet there was a decrease of 90 per cent in net operating income.

It is said that freight and passenger rates are at the economic peak, that wages must be maintained and that transportation is a necessity, yet these figures show that with splendid operating efficiency the railroads earn no return. Who takes the loss? Thousands of workers, banks and insurance companies who have invested their capital in railroads and who now say "no" to every request for more capital.

The same conditions prevail in general in the electric railway industry, and there are only two things to do to relieve the situation: cut down expenses and sell more transportation.

Single Phase Gives Way to the Automatic Substation

York Railways Discards 6,600-Volt Single Phase on the 18-Mile Hanover Interurban Line for Direct Current from Two 500-Kw. Automatic Substations—New Cars of Same Capacity Are Nearly 16 Tons Lighter than Those Replaced



A TRAIN OF THE OLD INTERURBAN CARS WHICH USED EITHER DIRECT OR ALTERNATING CURRENT

THAT portion of the York Railways high-speed interurban line between the York city limits and Hanover, Pa., after thirteen years operation at 6,600 volts single phase, has been converted to a direct-current system. The total length of the line from the center of York to its terminus in Hanover is 18.58 miles, 3 miles of which is within the city limits of York and Hanover, and, of course, was operated at 600 volts direct current. Two 500-kw. automatic substations now furnish the power to this newly changed-over section of the line which has been left insulated for the high potential. A much more satisfactory service is now being furnished with a type of car of the same seating capacity as the former car but weighing almost 16 tons less and having a total motor rating smaller by 40 hp.

There were many considerations which influenced the redesign of the line for entire direct-current operation. Needless to say, when direct current can be fed into the trolley with all the advantages of alternating-current transmission through the medium of the automatic substation, and when such a system allows an added flexibility in operating methods and a decreased complexity of equipment, high voltage single phase is placed at a distinct disadvantage. Particularly is this condition true when with a.c. operation the rolling stock must also be equipped to use current in either form.

All five of the original cars were each equipped with four Westinghouse 75-hp. 135-A motors, connected for multiple operation with the unit-switch pole system. The passenger cars, capable of seating fifty-two people, weighed 86,600 lb. They had a free running speed of about 45 m.p.h. As one of the illustration shows, the cars were equipped both with two trolleys and with a pantograph.

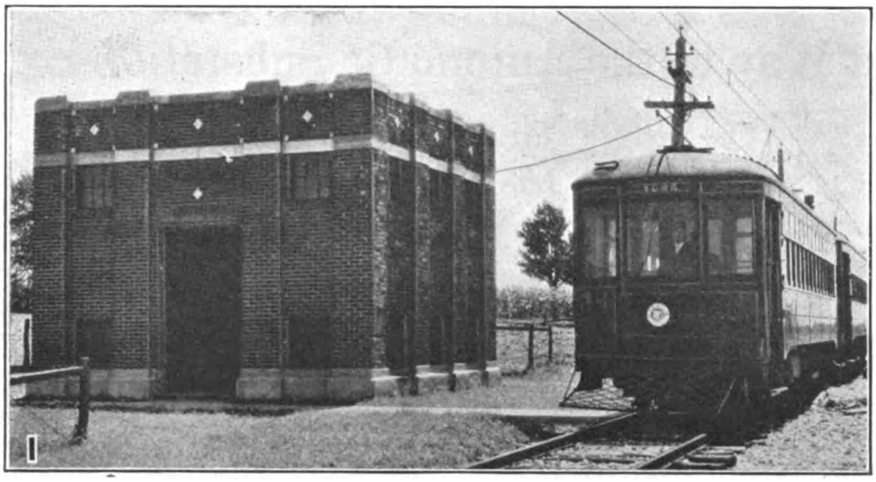
A weighty factor influencing the change was the high maintenance cost of these cars.

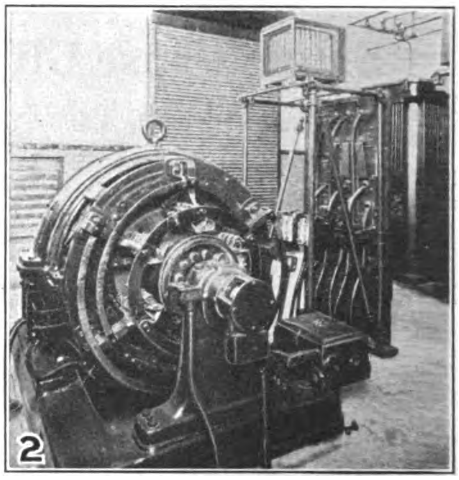
An added disadvantage that prompted the change was that the direct-current equipment on several other of the shorter interurban lines could not be used on this line. This meant a very severe handicap in the way of flexibility with the result that a larger number of cars must be kept available in operating condition for a given amount of service. The quality of service under these conditions was not up to the standard that the company wished to furnish.

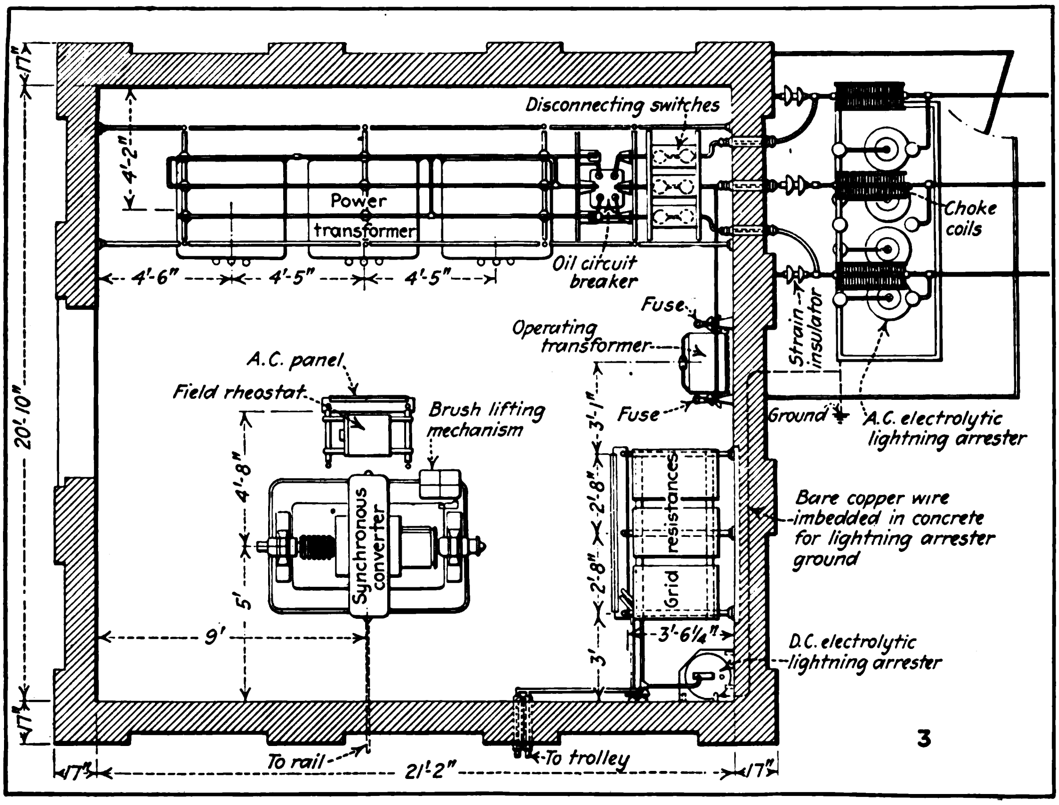
Six steel fifty-two passenger Brill cars now furnish transportation between York and Hanover. The two extra cars are available for service not only on this line, but on the other interurban lines. These cars weigh 55,200 lb. each. They are equipped with Brill MCB trucks and four Westinghouse 65-hp. CV-4 field-control motors using Westinghouse HL control. The brake equipments, together with the CP27-B air compressors, were furnished by the General Electric Company. These cars have a maximum speed of 45 m.p.h. and are run in two- or three-car trains, according to the volume of traffic. Hourly service is furnished in both directions, while there are two trips of the freight car per day. The actual running time is but fifty minutes.

Two 500-kw. substations were installed to furnish direct current to the old alternating-current section. One of these is 8 miles from York at Martin's Siding, and the other is 15.7 miles from York at Gitt's Run near the end of the line. Both of these stations, together with the automatic control equipment, were installed by the Westinghouse Electric & Manufacturing Company. How compact and attractive they are can be observed from the photographs reproduced. Operating results from these stations have been entirely satisfactory. Experiment has shown that the Martin's station is out twenty-eight minutes of every hour with normal service. Both stations have low direct-current output relays with a time setting of ten minutes, which is used because this is the interval of layover at the end of the line, thus eliminating an unnecessary shut down, followed immediately by a demand for power. Power is furnished to these stations through a new three-phase, 60-cycle, 11,000-volt line.

The question as to what to do with the overhead line was another problem. The overhead, as used for 6,600-volt operation, consisted of the Westinghouse






17"
4'-2"
Disconnecting switches
Power transformer
Choke coils
4'-6"
4'-5"
4'-5"
Oil circuit breaker
Fuse
Strain insulator
Operating transformer
A.C. panel
Field rheostat
Brush lifting mechanism
20'-10"
3'-1"
Fuse
Ground
A.C. electrolytic lightning arrester
4'-8"
2'-8"
Grid resistances
Synchronous converter
5'
2'-8"
Bare copper wire imbedded in concrete for lightning arrester ground
9'
3'-6¼"
3'
D.C. electrolytic lightning arrester
17"
To rail
21'-2"
To trolley
17"
3

Views of the Revamped Hanover Line Installation of the York (Pa.) Railway

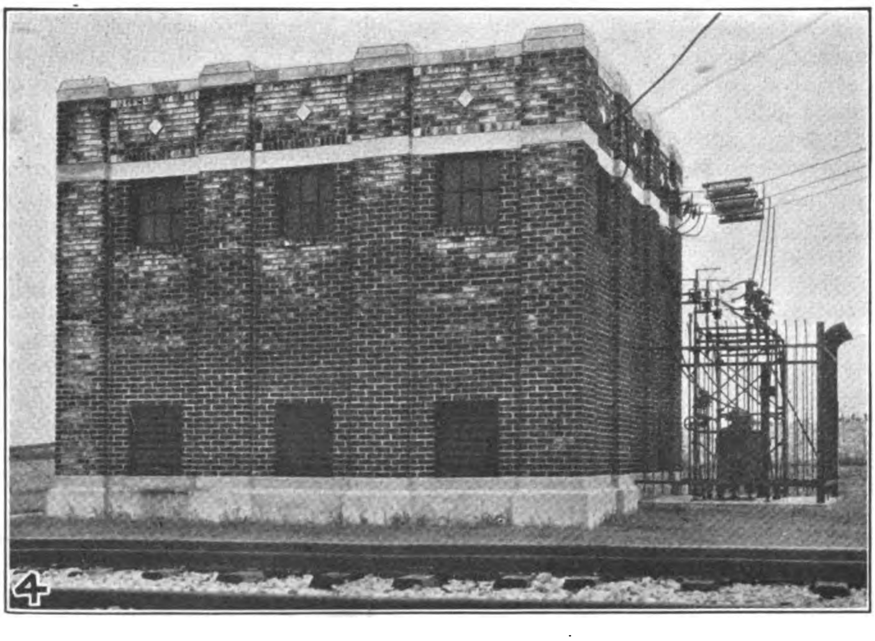
No. 1—Neat and compact 500-kw. substation at Martin's Siding.

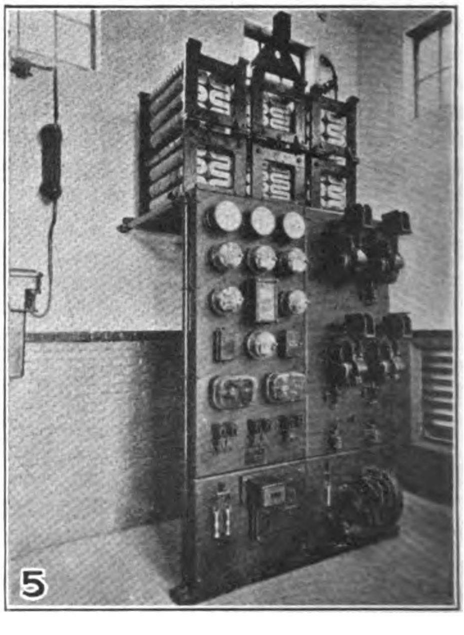
No. 2—500-kw. rotary, also showing brush lifting mechanism, alternating-current panel and one transformer.

No. 3—Plan of the latest thing in the design of small automatic inclosed substations for railway use.

No. 4—Lightning protection of Martin's substation.

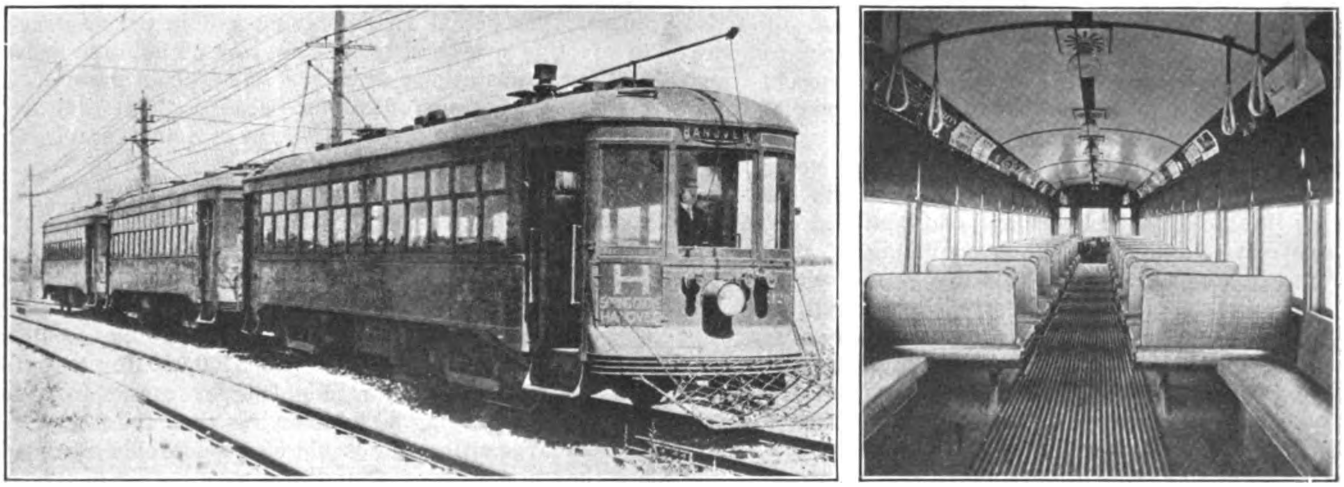
No. 5—Relay and direct-current panel with load-limiting resistors above.





design of 1907. This was a messenger which supported, at intervals of 10 ft., a No. 0000 copper running wire. This was afterward changed by the addition of a No. 0000 galvanized steel running wire which was supported by 2-in. clips under the copper wire. This construction was heavy and rigid, but during its use with the 6,600-volt pantograph collection, the line was remarkably free from breaks, or interruption of any kind due to overhead troubles.

Upon the installation of the 1,600-volt direct-current system it was decided to continue to use the No. 0000 steel running wire, but to remove the No. 0000 copper wire, and to cut the hangers down to two to a span, a spacing of approximately 50 ft. The condition of the old No. 0000 copper running wire was such that its use as a running wire was impractical, and, as the steel wire was in position but practically worthless if removed, it was decided to use it in connection with sliding contact shoes on the trolley poles on the cars. The old copper wire has been moved over to the line poles and used as a part of the direct-current line feeder system. The use of the steel messenger and steel trolley wire necessitates feed taps at every third pole. The construction described above provides an overhead which is sufficiently resilient and flexible to permit the pole safely to follow the wire without undue wear on either wire or shoe.



AT LEFT, THIS IS THE PRESENT TYPE OF EQUIPMENT WHICH IS GIVING SUCH SATISFACTORY SERVICE.
AT RIGHT, INTERIOR VIEW OF THE HANOVER LINE PASSENGER CARS

In changing to direct current, consideration was given to stripping the old cars of all their alternating-current equipment, leaving only the apparatus required for direct current. Even though this were done it was found that the cars so revamped would still be approximately 15,000 lb. heavier than new steel Brill cars. It is quickly seen that the energy saving alone would justify the purchase of the new lighter cars, since they have the same passenger carrying capacity and also are able to maintain a better schedule. The transmission has also eliminated the use in the power station of two 450-kw. Westinghouse frequency converters, each consisting of a 2,300-volt, three-phase synchronous motor driving a single-phase, 660-volt, 25-cycle generator.

Taking everything into consideration the installation of the automatic substation is looked upon as the correct solution for that particular property. Schedules have been very closely adhered to and no failures of equipment have occurred, although a few minor adjustments to be expected on any new installation have been made. Besides an increased satisfaction to the public because of a quality of service which has gained its confidence and support, many other benefits are being anticipated. They may be hard to detect at first but will bulk large over a period of several years. Track maintenance must necessarily demand less outlay and attention when the weight of the rolling stock is decreased by more than a third. A lighter car is also bound to have a subtractive effect on the power demand, a condition especially welcomed because the power taken to start the old cars on direct current was very great and the total amount taken within the city was considerable.

Improved Traffic Conditions in San Francisco

AN ACCOUNT was published on page 49 of the issue of this paper for July 9 of the routes on Market Street in San Francisco, on the lower end of which there are four tracks. Two of these belong to the Municipal Railway and two to the United Railroad. The accompanying table shows statistics of the cars and passengers carried during the rush hours on the six lines of the Municipal Railway which operate over this part of Market Street for a considerable distance. The reduction outbound in loading in July, 1921, is attributed, at least in part, to some rerouting carried out in February.

DAILY AVERAGES—SIX HEAVIEST LINES MUNICIPAL RAILWAY FROM MARKET STREET FERRY

Outbound 5 p.m. to 6 p.m.	Cars	Passengers	Average Pass. per Car
November, 1918	85	6,480	76.2
March, 1919	97	8,650	89.2
May, 1920	102	9,336	91.5
February, 1921	109	9,940	91.2
July, 1921	107	8,453	79.0
Inbound 7:35 a.m. to 9:15 a.m.			
October, 1919	139	11.221	80.7
May, 1920	160	11,327	70.8
February, 1921	161	12,001	74.5

Traffic west of the Twin Peaks district on the municipal railway has increased 24½ per cent in cars and 100½ per cent in passengers between March, 1919, and August, 1921. Part of this is due to discontinuance of bus operation and part to an extension of one of the lines.

The super-power report made under the direction of the U. S. Geological Survey now is in proof form and probably will be released for publication shortly.

The Urban Transportation Field Analyzed

The Trolley Bus, with Its Lower Investment and Corresponding Fixed Charges, Is Shown to Be the Most Economical Vehicle to Operate Except Where Heavy Rush-Hour Traffic Has to Be Handled or Where the All-Day Traffic Is Extremely Light

By J. C. Thirlwall
Railway Engineer General Electric Company, Schenectady, N. Y.

THE recent successful tests of the trackless trolley bus at the General Electric Company's works in Schenectady and on the lines of the Virginia Railway & Power Company at Richmond and Norfolk, Va., have created a demand by railway officials for accurate information as to the conditions under which such vehicles can be utilized to the best advantage and for a comparison of the relative operating costs of rail cars, gasoline motor buses and trolley buses taking electric power from a central station. Thoughout this article the term "motor bus" applies to the gasoline driven vehicle and the term "trolley bus" applies to the vehicle operating on the highway that takes power from overhead wires.

An attempt has been made to tabulate on a comparative basis the respective costs of all three types of transportation under varying conditions of load and frequency of service including fixed charges on the total investment required in each case. An attempt is also made to show the difference in annual costs between a new line or an extension built and equipped at today's construction costs and the re-equipping of an existing route in which the tracks and structures were built at pre-war costs, materially less than now prevail.

A summary of the calculations indicates that for traffic which in rush hours would require safety cars to operate on a three-minute headway or less rail-borne traffic is more economical than the rubber-tired bus, and for the property that has rails, overhead, stations and shops available, which were built at pre-war cost, the rail car can successfully compete with its pavement rivals up to about six-minute minimum headways.

Beyond this point the electric trolley bus appears to have the advantage, since its slightly higher cost of operation is more than offset by the saving in fixed charges on the investment required.

The motor bus, though carrying the smallest investment charges, regardless of traffic density, is inherently so much more expensive to operate that it does not become a competitor of the rail car until minimum rail headways of ten minutes are reached on new routes and of twenty minutes on existing rail lines.

As between the motor bus and the trolley bus, the latter is the more economical up to headways of sixty minutes or longer. Only with very infrequent service do the greater investment charges of the trackless trolley system (covering interest, etc., on the overhead line and stations) offset its lower operating cost.

Tabulated, these costs are as follows, the most economical type of vehicle being indicated for minimum headways:

Rail cars	3 minutes or less
Rail cars or trolley bus	3 to 6 minutes
Trolley bus	6 to 60 minutes
Motor bus	60 minutes or more

Of course, as the tabulations show, the difference in favor of the trolley bus as compared to the rail car operating on headways of seven and one-half or ten minutes to an existing route is too small to warrant even the suggestion that rails and equipment should be scrapped and replaced with the new form of transportation. It is not until minimum headways of fifteen or twenty minutes are reached that the estimated saving of the trolley bus over an existing rail route becomes sufficient to justify such a suggestion.

To illustrate these conclusions and to show the premises on which they are based a number of tables have been prepared and are here presented in which a direct comparison is made of the elements of investment cost for a rail system and for the two types of buses. The actual cost of laying rail in paved streets, of erecting overhead trolley lines or of building power stations, substations or shops varies considerably, of course, as between different localities, but the unit costs taken are believed to represent fair averages for present construction.

AVERAGE INVESTMENT COSTS ASSUMED

For instance, a figure of $60,000 per mile has been taken for single track with turnouts laid in a paved street, $75,000 for single track with more turnouts for shorter headways, $100,000 for a route-mile of light double track for safety cars and $120,000 for a route-mile of heavy track for double-truck cars. In some localities tracks may be laid for less than these figures; in most large cities they would be considerably exceeded, but they are believed to indicate with a fair degree of accuracy the magnitude of the biggest item of investment that can be saved by the use of the rubber-tired vehicle.

Overhead trolley lines using wooden poles with cross spans can be erected for about $5,000 a mile where only one trolley wire and no feeders are required, and for double track, with ordinary feeders, should not exceed $6,000 per route-mile. The double trolley required for the trolley buses costs about $500 per mile more than the ordinary type of construction, $1,000 more per mile when the line is run on both sides of the street. The transmission line is estimated at $3,500 per mile, and it is assumed that the length of the transmission system is one-half that of the distribution lines.

TABLE I—AVERAGE CONSTRUCTION COSTS

Single track per route-mile	$60,000	to	$75,000
Double track per route-mile	100,000	to	120,000
Trolley lines per route-mile	5,000	to	6,500
Transmission line per route-mile	1,800		
Generating station per maximum kilowatt output	125		
Substation (automatic), per maximum kilowatt output	40	to	50
Shops per car used	1,500	to	2,500
Double-truck cars	12,000		
Safety cars	6,300		
Trolley buses	8,000		
Motor buses	8,000		

Generating stations are estimated at $125 per kilowatt of capacity required by the maximum load, including electric heating of cars and automatic substations at $40 to $50 per kilowatt. Shop buildings and carhouses are figured at $2,500 per car for the large double-truck cars and at $1,500 per car for safeties and for buses.

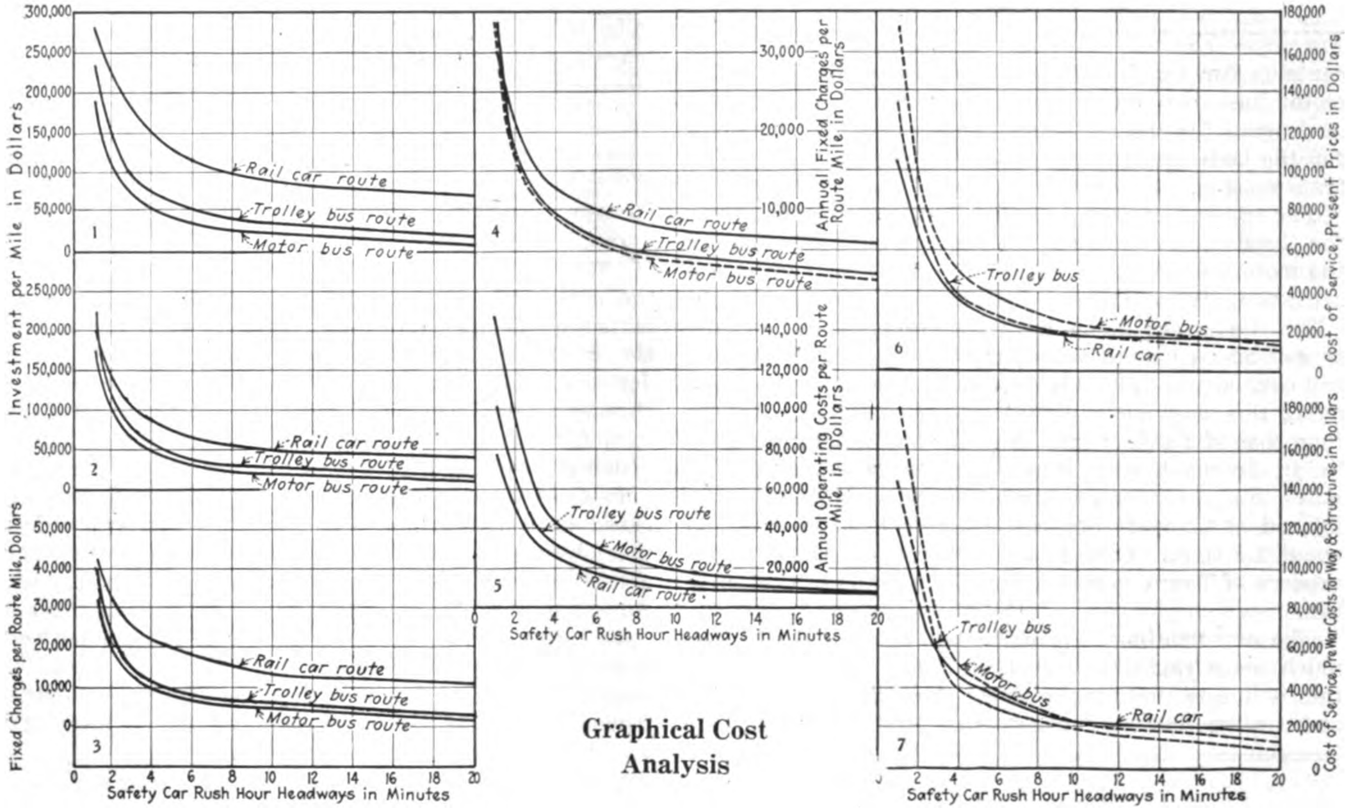
Double-truck cars are assumed to cost $12,000 each, safety cars $6,300 and thirty-passenger buses, either gas or electric, $8,000 apiece.

A summary of these unit cost figures is shown in Table I.

The rail car requires an investment in each of the foregoing items; the trolley bus dispenses with the track, but necessitates the use of all other details, while the motor bus requires only an investment in the vehicles themselves and in storage and shop facilities.

MOTOR BUS HAS SMALLEST INVESTMENT

On fairly long headways, *i.e.*, from eight to twenty minutes, the fixed charges on the rail route will exceed the operating costs, and even on a heavy traffic route they will amount to 40 per cent of the total costs of operating the line. The handicap of these heavy investment charges has given the motor bus its opportunity and enabled the jitneys in many instances to compete successfully with the established traction lines. The motor bus has a higher power bill and a higher maintenance cost than the safety car, and the depreciation of its driving equipment is decidedly more rapid than that of electric motors and control on the rail cars. But even so, for many conditions of traffic, it is the more economical of the two methods of transportation. Its proponents have frequently tried to force it into classes of service where its higher operating costs far outweigh its saving in fixed charges, but it can only continue to operate on selected short-haul routes and where it can evade the responsibilities of good service without attempting to provide the necessary extra equipment for properly handling the morning and night traffic peaks, for which every traction company is expected to equip itself.



Graphical Cost Analysis

Fig. 1—Present day investment per mile of route for rail service compared to investment for bus service of equal capacity.

Fig. 2—Investment per mile of route for rail service based on pre-war costs for track and structures and present costs for rolling stock compared to the investment per mile of route for bus service of equal capacity.

Fig. 3—Annual fixed charges per route-mile based on present construction costs.

Fig. 4—Annual fixed charges per route-mile based on pre-war costs for track and structures and present costs for rolling stock.

Fig. 5—Annual operating costs per route-mile for rush-hour rail service. Headways compared to bus service of equal capacity. Longer headways during normal hours.

Fig. 6—Total annual operating costs and fixed charges per mile of route based on present construction costs.

Fig. 7—Total annual operating costs and fixed charges per mile of route based on pre-war costs for way and structures and present costs for rolling stock.

OPERATING COSTS COMPARED

Table III is a comparison of operating costs per car-mile of four classes of cars. The rail car data are the average of the actual records of a number of companies using both safety cars and double-track cars; the gasoline bus costs are derived from the records of five representative bus companies shown in Table II. Three of these use small cars seating less than twenty-three passengers; for these the gas and oil costs have been adjusted to a weight of 10,000 lb. and for two companies corrections have been made on the basis of using solid instead of pneumatic tires.

In the case of the trolley bus, the allowances for transportation charges and general expenses are assumed to be the same as with the safety car and the gasoline bus; its maintenance of way and structure expense covers repairs and renewals on the overhead trolley lines only; its maintenance of equipment is based on the body and chassis and tire expense of the gasoline car, and motor and control maintenance of the safety car. For instance, safety cars, on an average, cost only 1.7 cents per car-mile to maintain, of which only about 0.6

TABLE II—OPERATING COSTS OF MOTOR BUSES—CENTS PER BUS-MILE

Maintenance	1	2	3	4	5	Average
Tire renewals	2.1	1.0	1.5	4.4	5.6	2.9
Body repairs	0.9	0.6	1.4	0.9	0.9	0.9
Engine, gearing and control	5.7	4.0	4.8	3.3	3.3	4.3
Shop and other expenses	1.9	1.2	1.6	1.0	1.0	1.3
Total maintenance	10.6	6.8	9.3	9.6	10.8	9.4
Gasoline	4.0	5.3	7.1	2.7	4.9	4.8
Lubricants	0.8	1.2	1.5	0.9	1.5	1.2
	4.8	6.5	8.6	3.6	6.4	6.0
All other operating expenses	17.3	19.8	15.9	12.2	10.6	15.2
Total operating costs	32.7	33.1	33.8	25.4	27.8	30.6
Depreciation	3.2	2.4	6.7	9.1	4.9	5.3
Total maintenance with solid tire cost, on four and five	10.6	6.8	9.3	7.7	7.5	8.4
Gasoline and oil corrected for 10,000 lb. wt. on 3, 4, 5	4.8	6.5	10.8	5.6	7.7	7.1
Other expenses corrected for one-man operation, 1 and 2	12.2	12.3	15.9	12.2	10.6	12.6
Total operating cost of 10,000-lb. bus with solid tires and one-man operation	27.6	25.6	36.0	25.5	25.8	28.1

NOTE:

1. Chicago Motor Bus Company	1919	10,000-lb. bus solid tires
2. Fifth Avenue Coach Company	1920	10,000-lb. bus solid tires
3. Baltimore Transit Company	1920	7,500-lb. bus solid tires
4. Fort Worth Auto Bus Company	1919	5,700-lb. bus solid rear tires
5. Goodyear Heights Bus line	1920	8,000-lb. bus pneumatic front tires

TABLE III—OPERATING COSTS—CENTS PER CAR-MILE

	Double-Truck Car	Single-Truck Safety Car	Trolley Bus	Motor Bus
Car capacity in passengers	52	32	30	30
Weight in pounds	36,000	16,000	10,000	10,000
Maintenance of way and structure	3.0	2.0	0.7	0.0
Maintenance of equipment	3.4	1.7	4.0	8.5
Power	5.9	2.5	2.3	7.0
All other expense	19.0	12.0	12.0	12.0
Total operating expense	31.3	18.2	19.0	27.5

cents is for repairs to the electrical equipment. The motor buses cost on an average 8.5 cents, of which 2.0 cents goes for the maintenance of solid tires, 1.5 cents for the body and truck and 5 cents for the engine and transmission.

The trolley bus would presumably have the same cost for tires, body and truck upkeep, but only 0.5 cent for the motors and control, making its total maintenance 4 cents per mile, or 4.5 cents less than the gasoline vehicle.

On the power account, due to higher friction, the trolley bus will take more power per ton-mile than the rail car, but its lighter weight will somewhat more than offset this and make its total power cost a trifle less than that of a safety car. A motor bus weighing 10,000 lb. in frequent stop service can make only about 4 miles to a gallon of gas, or 5.5 cents per mile if gas is figured at 22 cents per gallon, and oil and grease add about 1.5 cents to this; it has therefore a total power expense of 7 cents per mile, or 4.7 more than the electric bus.

The depreciation of a motor bus is recognized to be much more rapid than that of a rail car; apparently this is due to the comparatively short life of its engine and transmission. The economic life of a street car and its equipment is at least fifteen years. There is no reason to doubt that the body and truck of any well built bus should last that long. But from all records available, the gas engine and transmission have a life of not over four to five years, and since their first cost is about 25 per cent of the equipped bus, the total depreciation is considerably higher than for the electric car. We have taken them respectively at 4.6 per cent on the rail cars and on the trolley bus and at 8 per cent on the motor bus.

Total fixed charges on the rail system are assumed to be 15 per cent, 9 per cent for interest, 2.8 per cent for taxes and insurance and 3.2 per cent for depreciation on the entire physical property. Since the cost of cars, with their comparatively short life, is a bigger proportion of the total investment in a trolley bus installation, depreciation is figured at 3.7 per cent and total fixed charges at 15.5 per cent. For the motor bus installation, for the above reasons, total depreciation is figured at 6.9 per cent and total fixed charges at 18.7 per cent.

TABLE IV—FIXED CHARGES ON TOTAL INVESTMENT IN PER CENT

	Rail System	Trolley Bus	Motor Bus
Interest charges	9.0	9.0	9.0
Taxes and insurance	2.8	2.8	2.8
Depreciation (sinking fund)	3.2	3.7	6.9
Total	15.0	15.5	18.7

In the tabulation which follows the upper figures are based on entirely new construction at today's prices, the lower apply to the company which can use track, overhead, stations and shops constructed at pre-war values, assumed to be 50 per cent lower than at present.

In every case except that of "G," it is assumed that a greater number of buses than rail cars would be required for rush-hour service, on the basis that a modern double-truck street car can carry away 120

TABLE V—COSTS PER ROUTE-MILE FOR BUILDING AND EQUIPPING RAILWAY SYSTEM AND

	Case A—Light Traffic			Case B—Medium Traffic			Case C—Moderately Heavy Traffic			Case D—Heavy Traffic		
	Safety Car	Trolley Bus	Motor Bus	Safety Car	Trolley Bus	Motor Bus	Safety Car	Trolley Bus	Motor Bus	Safety Car	Trolley Bus	Motor Bus
Schedule speed (m.p.h.)	9	10	10	9	10	10	9	10	10	9	10	10
Normal headway—thirteen hours daily—(minutes)	15	15	15	10	10	10	7½	7½	7½	5	4.6	4.6
Rush hour headway—five hours daily—(minutes.)	10	6⅔	6⅔	7½	5	5	4	2.7	2.7	3	2.1	2.1
Seats furnished per hour, normal headway	128	120	120	192	180	180	256	240	240	384	390	390
Maximum rush hour carrying capacity	390	405	405	520	540	540	975	990	990	1,300	1,300	1,300
Cars required, including spares	1.56	2.00	2.20	2.00	3.10	3.33	3.80	5.00	5.40	5.10	6.60	7.00
Annual car or bus miles	58,500	68,200	68,200	84,800	97,600	97,600	127,000	148,800	148,800	182,000	220,600	220,600
Cost of Road and Equipment:												
Trackway—Single track	$60,000	....	....	$75,000	....	....	....	....	....	....	....	....
Trackway—Double track	....	....	....	....	....	....	$100,000	....	....	$100,000	....	....
Overhead system—trolley and transmission	6,700	$6,900	....	6,800	$6,900	....	7,000	$7,400	....	7,500	$7,900	....
Power station and substation	6,000	7,600	....	8,000	10,100	....	14,400	17,600	....	19,300	23,200	....
Shops or garages	2,300	3,000	$3,300	3,000	4,200	$4,500	5,600	7,500	$8,100	7,700	9,900	$10,500
Rolling stock	9,800	16,000	17,600	12,600	22,400	24,000	23,800	40,000	43,200	32,200	52,800	56,000
Total investment	$84,800	$33,500	$20,900	$105,400	$43,600	$28,500	$150,800	$72,500	$51,300	$166,700	$93,800	$66,500
Fixed charges (as in Table IV)	$12,700	$5,200	$3,900	$15,800	$6,800	$5,300	$22,600	$11,200	$9,600	$25,000	$14,500	$12,400
Operating costs (as in Table III)	10,600	13,000	18,800	15,400	18,500	26,800	23,100	28,300	41,100	33,000	42,100	60,800
Total costs per year	$23,300	$18,200	$22,700	$31,200	$25,300	$32,100	$45,700	$39,500	$50,700	$58,000	$56,600	$73,200
Cents per car-mile	40.0	26.7	33.3	36.7	25.8	32.8	36.0	26.5	34.0	31.8	25.5	33.1
On basis of track and structure costs—50 per cent of above.												
Total investment	$47,300	$24,800	$19,300	$58,900	$33,000	$26,300	$87,300	$56,300	$47,300	$99,500	$73,300	$61,200
Fixed charges	7,100	3,800	3,600	8,800	5,100	4,900	13,100	8,700	8,800	14,900	11,400	11,400
Operating costs	10,600	13,000	18,800	15,400	18,500	26,800	23,100	28,300	41,100	33,000	42,100	60,800
Total costs per year	$17,700	$16,800	$22,400	$24,200	$23,600	$31,700	$36,200	$37,000	$49,900	$47,900	$53,500	$72,200
Cents per car-mile	30.3	24.6	32.8	28.5	24.3	32.4	28.6	24.8	33.5	26.3	23.7	32.7

*Seats 52, has a maximum load of 120 passengers and weighs 36,000 lb. With one-man operation costs would be reduced $17,000 per year.

passengers without undue crowding, a safety car sixty-five and a thirty-passenger bus not over forty-five, if the buses are to be kept within the weight and price limits specified. A comparison based on a car for car replacement is obviously unfair, except where the maximum number of people to be carried is within the seating capacity of either type of vehicle.

A number of comparisons have been worked out for different densities of traffic from very light to extremely heavy, each based on a completely equipped line 4 to 5 miles long, and all costs reduced to the unit basis of a single route-mile.

With these prefatory statements, Table V is believed to be self-explanatory. It indicates clearly that the railway is still the most economical means of handling very dense traffic, and that for very short headways there is little to choose in first cost or operating charges between a comparatively small number of large-capacity double-truck cars of modern design and the larger number of safety cars required, as shown in case "E." To handle such traffic as this, headways with the comparatively small capacity buses become so short as to be prohibitive, and their higher operating costs far overbalance their savings in fixed charges.

But for many other conditions, particularly those which are typical of the majority of lines in medium sized cities, where the maximum traffic does not require headways of less than five or six minutes, the trolley bus should save enough in overhead charges to justify its use in preference to either rail car or motor bus.

CONCLUSIONS FROM ANALYSIS

For instance, Table V, Case "A" pictures a very common situation *i.e.*, a line on which an all-day headway of fifteen minutes with a medium sized railway car is sufficient, but on which the morning and evening loads require a ten-minute headway. We assume that safety cars would be used on the rail route and that they would maintain a schedule of 9 miles per hour. If buses were used, presumably they could run somewhat faster due to their ability to run past slower moving vehicles and because of their smaller load in rush hours. The figures are based on a 4.5-mile route, on which the safety cars require sixty minutes for the round trip and the buses fifty-four minutes. Even so, to carry away an equal number of passengers during the rush hours will require eight buses on a 6.75-minute headway as against six safeties, ten minutes apart. One spare car is allowed in the case of the safety car line and for the trolley bus route, and two spares if motor buses are used, because of the greater chance of failure with the gasoline engine.

Power requirements are based on the rail cars taking, at the car, 150 watt-hours per ton-mile, and the trolley bus taking 195 watt-hours per ton-mile, for all energy requirements except heat. These figures are increased 15 per cent for line losses and 25 per cent more for conversion. Heaters are assumed to take a continuous maximum input, on either vehicle, of 12 amp.

Of the total investment required for a new rail line, under these conditions, 60 per cent is saved by using the trolley bus and 75 per cent by equipping with motor buses, and the saving is very material even against the company using old rail and structures. The fixed charges are, therefore, distinctly lower for the bus systems, but the motor buses cost so much more to operate that the total annual cost of the line using them is practically the same as for the new rail road, and 30 per cent higher than for the existing rail system.

The operating cost of the trolley bus, however, is so little more than that of the rail route that it does not offset the savings in the fixed charges, and its total cost of service is the lowest of the three systems.

Another common traffic condition is shown in Case "B," a route that would be satisfactorily handled with safety cars on ten-minute normal and 7.5-minute rush hour headways, and where buses would have to run on a five-minute spacing to give equivalent rush-hour capacity.

Here again the use of the trolley bus is the cheapest way to equip a new line or to extend an old one; the motor bus is the most expensive means.

As the traffic grows more heavy, as in Case "C," the advantage of the trolley bus over the rail car diminishes, but its advantage over the motor bus continues in the same proportion as before. The figures indicate that to re-equip an existing line would show a total loss rather than a gain by abandoning rail operation.

With headways as short as shown in Case "D" rail operation is practically as cheap as trolley bus service,

FOR PROVIDING EQUIVALENT PASSENGER CAPACITY WITH TROLLEY BUSES OR MOTOR BUSES

Case E—Very Heavy Traffic				Case F—Very Light Traffic			Case G—Very Light Traffic			
Double Truck Car*	Safety Car	Trolley Bus	Motor Bus	Safety Car	Trolley Bus	Motor Bus	Safety Car	Trolley Bus	Motor Bus	
8.5	8.5	9.5	9.5	10	10	10	10	10	10	Schedule speed (m.p.h.)
4	2.4	2.15	2.15	20	20	20	30	30	30	Normal headway—thirteen hours daily—(minutes)
2	1.1	0.75	0.75	20	20	20	30	30	30	Rush hour headway—five hours daily—(minutes)
780	800	840	840	96	90	90	64	60	60	Seats furnished per hour, normal headway
3,600	3,580	3,600	3,600	195	135	135	130	90	90	Maximum rush hour carrying capacity
8	14.6	19.4	20.2	0.75	0.75	0.75	0.5	0.5	0.5	Cars required, including spares
243,000	423,000	530,000	530,000	39,300	39,300	39,300	·26,300	26,300	26,300	Annual car or bus miles
										Cost of Road and Equipment:
....	....	....	....	$55,000	....	....	$55,000	....	....	Trackway—Single track
$120,000	$110,000	....	....	....	....	....	....	....	....	Trackway—Double track
7,500	7,500	$8,000	....	6,700	$6,900	....	6,700	$6,900	....	Overhead system—trolley and transmission
.64,100	53,900	67,800	....	3,000	2,500	....	2,000	1,700	....	Power station and substation
20,000	21,900	29,100	$30,300	1,100	1,100	$1,100	800	800	$800	Shops or garages
95,900	91,500	154,700	161,700	4,700	6,000	6,000	3,100	4,000	4,000	Rolling stock
$307,500	$284,800	$259,600	$192,000	$70,500	$16,500	$7,100	$67,600	$13,400	$4,800	Total investment
$46,200	$42,700	$40,200	$35,900	$10,600	$2,150	$1,320	$10,100	$2,100	$900	Fixed charges (as in Table IV)
76,100	77,000	100,800	146,000	7,150	7,450	10,810	4,800	5,000	7,230	Operating costs (as in Table III)
$122,300	$119,700	$141,000	$181,900	$17,750	$9,600	$12,130	$14,900	$7,100	$8,130	Total costs per year
50.5	28.2	26.6	34.2	45.0	24.5	30.8	56.8	27.0	30.9	Cents per car-mile
										On basis of track and structure cost—50 per cent of above
$202,000	$198,000	$217,000	$177,000	$37,600	$11,250	$6,550	$35,400	$8,700	$4,400	Total investment
30,400	29,700	33,600	33,100	5,650	1,750	1,210	5,300	1,300	800	Fixed charges
76,100	76,900	100,800	146,000	7,150	7,450	10,810	4,800	5,00	7,230	Operating costs
$106,500	$106,600	$134,400	$179,100	$12,800	$9,200	$12,020	$10,100	$6,300	$8,030	Total costs per year
43.8	25.2	25.4	33.7	32.5	23.4	30.5	38.4	24.0	30.5	Cents per car-mile

even in the case of new construction; on the old rail, it is decidedly more economical.

Case "E" shows a very heavy traffic route, on which could be used large modern double-truck cars, of the Peter Witt type, on four-minute and two-minute headways. It might be practicable to use safety cars on such a route, though the rush-hour headways would be pretty short, but no real advantage would be gained, their total cost of service being practically equal to that of the large cars. If the Witt cars could be operated by one-man, as many operators are coming to believe they can, they will show by far the lowest cost of any vehicle that could be employed.

The enormous number of buses that would be required for this kind of traffic, necessitating headways of forty-five seconds, throws them out of the competition. Their use would not only tremendously increase street congestion but would very considerably increase the cost of service.

The only place where the gasoline motor bus can successfully compete with the rail system is where traffic is so light that headways of twenty minutes or longer afford sufficient service. In cases "F" and "G" the cost of service with the trolley bus and the motor bus on twenty- and thirty-minute all-day headways are compared with a safety car installation operating at the same speed and frequency. With twenty-minute service the old rail route about balances in total cost with the motor bus line; at today's construction expense, the motor bus is distinctly cheaper. At thirty minutes the advantage is decidedly in favor of the gas car. But at either headway the trolley bus will have the lowest total cost of the three, and calculations indicate that its advantage over the gasoline driven vehicle holds up to headways of one hour or longer.

ELECTRICALLY PROPELLED UNITS MOST ECONOMICAL

In conclusion, we believe that there is still a broad field of transportation on city streets for which the rail car is best suited and in which it is the most economical means of carrying passengers, but there is another and perhaps equally important field, in which the trackless trolley bus can furnish equivalent service at a lower cost than can the rail system. Even in comparison with the rail system, the field for the gasoline motor bus is very limited (on headways of twenty minutes or longer), while as compared with the trolley bus, it has no place in a city transportation system, except where it is impossible to erect an overhead trolley line.

But the possibility that the trolley bus holds out of enabling transportation companies to extend their lines into the suburbs or into new sections of a city, with an investment 60 per cent to 80 per cent less than is required for a track system, and to be able to operate cars over the new route for two-thirds of the cost of motor buses, means that an important contribution to the art of transportation has been effected. With these vehicles, it should be possible to extend very considerably the services of the city transportation companies and to benefit simultaneously the traveling public and the electric railway security holder.

[NOTE.—Mr. Thirlwall's article was received prior to the publication of the article on the same subject last week and represents an independent study on the same subject. Mr. Thirlwall has been asked to comment on last week's article and writes that he will do so at an early date.—EDS.]

The "Rail-less" Car

J. G. Brill Company Has Developed the "Rail-less" Car, Which Utilizes a Novel Current Collector—Foot-Operated Master Controller System Used

AFTER an exhaustive study of existing vehicles begun some months ago the officers of the Brill Company recently started experimenting for the purpose of developing a type of "rail-less" car which in their opinion would meet the requirements of American transit interests. These requirements called for furnishing economical transportation under more or less special conditions. A short 600-volt d.c. double-wire line was ultimately erected in the Philadelphia plant and an experimental vehicle constructed, the flexibility of which is shown in the accompanying illustrations, as well as the ease with which it can get around other automobiles and trucks on the street.

CURRENT COLLECTOR AND CONTROL SYSTEM

These experiments made it apparent that the success of the vehicle depended primarily on the overhead current collector and the control apparatus. Several different types of current collectors were tried but in each case were found unsuitable. The design of the collector last developed and which apparently will give the best results is shown in the accompanying illustration. An examination will show two under-wire sliding shoes with grooves which engage the two overhead wires when directly over the center of the car. This device ingeniously includes a series of pivots which facilitate action in every direction, longitudinal, vertical and horizontal, as the "rail-less" car deviates from a path directly under the wires. A wooden trolley pole 19 ft. long is used in conjunction with a standard trolley base arranged to exert a total spring pressure of 38 lb. on the two overhead wires. This pressure has been found to be sufficient to keep both shoes of the collector in position as long as the car is not more than 16 ft. off center.

POWER CURRENT OUTSIDE CAR BODY

All electrical equipment controlling the 600-volt power current is located underneath the car body. Therefore, in case of a blowout in the electrical equipment there is less liability of danger to passengers. The current relay contactor system which was designed by Cutler-Hammer Company is operated by a foot master controller, located on the floor in front of the driver's seat, and interlocked with a reversing switch.

Either one or two 25-hp. motors, connected in tandem, such as used on standard safety cars, may be used on this vehicle, as the contemplated service requires. Such motor equipment permits operation at a maximum speed of from 25 to 30 m.p.h. Motors are mounted directly

Length over all	22 ft. 0 in.
Outside width of body	7 ft. 6 in.
Amount of street space occupied per passenger seat	6.68 sq.ft.
Outside width of chassis	34 in.
Over-all height	9 ft. 6 in.
Height of bus floor from ground	33¾ in.
Tread of front wheels	60 in.
Tread of rear wheels (dual tires)	68 in.
Wheelbase of chassis	120 in.
Body overhang at rear	60 in.
Minimum turning radius (on a loop)	20 ft. 0 in.
Cross-seat centers	29 in.
Weight of body	2,800 lb.
Weight of chassis	3,750 lb.
Weight of electrical equipment	2,000 lb
Weight of accessories	750 lb.
Total weight	9,300 lb.
Weight per passenger seat	332 lb.
Per cent weight on rear wheels	55

on the chassis frame and drive the rear wheels through a propeller shaft. A Sheldon rear end worm drive is used.

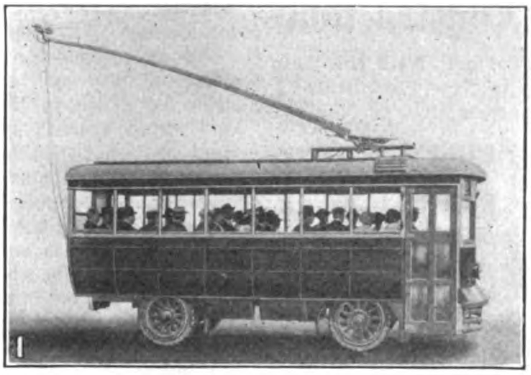
Overman cushion tires are used throughout. Those on the rear wheels are of the dual type. Both the service and emergency brakes are of the internal expanding type, the former being operated by a pedal under the driver's right foot and the latter by a brake handle near his right hand. The chassis and steering arrangement permit the turning of this car within a diameter of 40 ft. without disengaging the current collector from the wires.

In designing this "rail-less" car body particular attention was paid to developing one of substantial construction which would be suitable for rail-less service. A composite underframe was built with the side sills of yellow pine, the end sills of oak and the crossings of suitable steel channels securely tied together with steel angle brackets. This underframe is firmly attached to the chassis. The corner and side posts and the belt rail are of ash with poplar letter panels, all sheathed on the outside with No. 18 sheet steel.

The plain arch roof is supported on wooden rafters augmented by three steel rafters. Four Brill exhaust ventilators are mounted on the roof.

The two-leaf folding service door, 29 in. wide, on the forward right hand side is manually operated by a suitable handle near the driver's left hand. In opening, this door folds outwardly against the body corner post. Stationary double steps are provided at this door opening. An emergency door, 22 in. wide, is located in the center of the rear end of the body with a hinged step which drops into position when this door is opened. All side and rear windows are fitted with single sash which drop into pockets. This reduces the weight of the car at the roof and lowers the center of gravity.

Another innovation included in this "rail-less" car is a driver's seat, the back of which may be adjusted by means of a simple mechanism to suit the leg length of the operator. It may be set back approximately 3 in. if additional room is required for a tall man or half that distance if that is all that is desired. This seat is stationary and like all other seats is upholstered in Fabrikoid imitation leather. Seating accommodations for twenty-eight passengers are provided. A transverse seat extends completely across the rear end with a single movable section which folds up against the emergency door, a longitudinal seat along the two rear windows on each side of the aisle, four cross seats with 32-in. cushions, a longitudinal seat for two passengers on the right-hand side next to the door opening and a single longitudinal seat behind the driver, all of the stationary type. Figuring 2.5 sq.ft. per passenger the maximum capacity of the bus is fifty passengers. With twenty-eight seats this gives twenty-two standees. The aisle width between the cross seats is 17 in. Three pipe stanchions between the longitudinal seats at the rear are provided for the use of standing passengers.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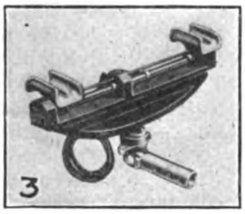
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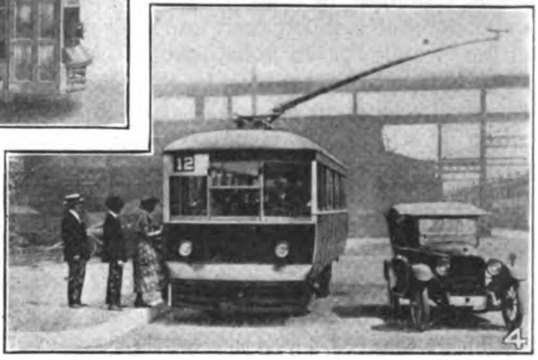
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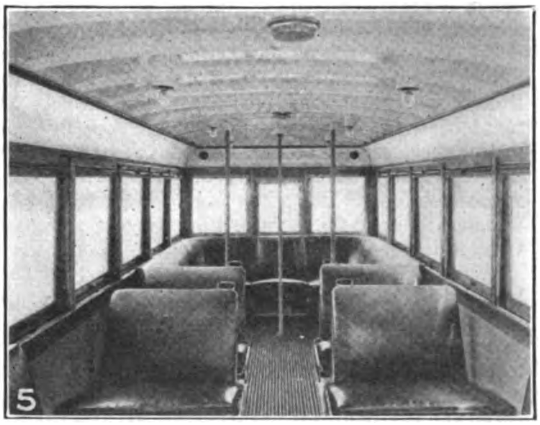
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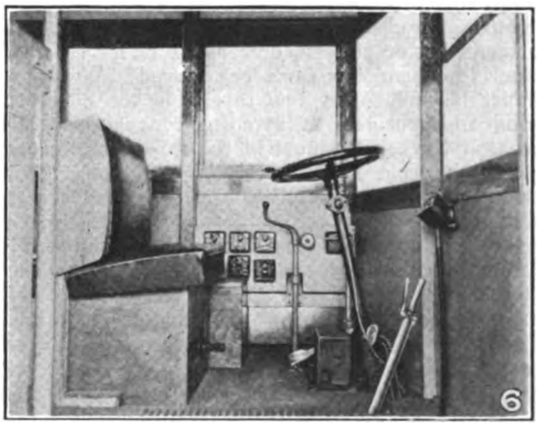
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THE "RAIL-LESS" CAR IN PICTURES

No. 1—Seating arrangement shown. Also note method of mounting trolley pole.
No. 2—How easy it is for a truck to pass one by on the road.
No. 3—Current collector for which patents have been applied for.
No. 4—Showing flexibility and ability to load at the curb even with center trolley construction.
No. 5—Interior arrangement. Note the luxurious seat upholstery.
No. 6—Interior at driver's seat. The left foot pedal operates the master controller in front of the steering wheel, the one on the right controls the service brake. The circuit breaker is under the seat.

The interior finish is of natural ash with agasote below the windows.

Current for electric lighting is generally obtained from the trolley circuit, but a storage battery is carried on the floor to the left of the driver's seat for use in case of emergency.

Other details are given in the table on page 550.

Taxation for Railway Construction

Low Street Railway Fares Can Be Provided With the Help of the Landlord—Ample Authority in New York State to Impose a Special Assessment

IN AN ARTICLE which he contributed to the ELECTRIC RAILWAY JOURNAL for Feb. 5, 1921, Louis B. Wehle, a member of the recent Federal Electric Railways Commission, said: "There are cities in which extensions of rapid transit and subway can be paid for, either wholly or in part, out of special assessments upon enhanced property values so that the car fares can remain low and so allow the cities to avoid congestion, while at the same time securing justice to the old investors in the property."

This suggestion attracted much attention, and on request Mr. Wehle has elaborated the idea in an article which appears in the current issue of the *National Municipal Review*. An abstract of this article is published below:

Nobody wants high street railway fares. The company managers are compelled to urge them only as a last resort. If they were sure of low costs, they would much prefer low fares, which mean better and steadier business.

The question is how can low fares be assured? We know that fares must be sufficiently low to enable the cities to follow a normal uniform growth, avoiding congestion. But we know, too, that the service must at the same time insure rapid transportation from home to office or work shop. This means, particularly in the large cities, a continual extension of the rapid transit facilities which do not operate on the street surface. Such facilities are very costly; they entail a high capitalization and have everywhere either caused or threatened to force higher fares. And higher fares can thwart the very purpose of rapid transit extensions, since they will tend to create the very congestion which those extensions are intended to prevent.

THE WAY OUT: ASSESS THE LANDOWNER FOR CONSTRUCTION

From this dilemma there is a plain, simple escape. Not a new remedy, but an old one which has been in use in connection with other public improvements for many years all over the United States, and resort to that remedy has since 1909 been permitted in connection with street railways by the laws of New York State. The question is, when will the American cities adopt it?

When a city builds a new street or a fire hydrant, the landowners along that street or in the vicinity of the hydrant are assessed by the city to pay for it. Public opinion and the courts have approved for generations this procedure with reference to these and other improvements, such as sidewalks, sewers, water systems, parks, and more recently also in connection with electric light systems; and the landowner is thoroughly in accord with it because his is the primary benefit of the improvement, while the benefit to the taxpayer is only a general and more remote one.

So let it be with the rapid transit lines of a large city. Take New York as an example. New York City has pledged its credit to the extent of more than $250,000,000 to build a vast subway system. The companies, in effect, operate the subways on a basis of rentals which pay for them at the end of a long term of years. The fares must be high enough to enable the companies (after first retaining certain earnings for their own account) to pay those rentals. In other words, the taxpayers' credit builds the subways and then these same taxpayers, as car riders, put up the money with which the subways are paid for.

THE FEDERAL ELECTRIC RAILWAYS COMMISSION ON THE LANDOWNERS

But, what of the landowner? He frequently pockets a profit of from one hundred to several hundred per cent on his investment, a profit which the taxpaying and riding public has donated to him. Please read what the Federal Electric Railways Commission said about the New York landowner in its report to the President in August, 1920:

"Your commission would urge that in every community, where and to such extent as may be practicable, consideration be given to the advisability of requiring extensions and rapid transit systems of subway and elevated to be paid for, not out of new capital invested through the medium of bonds or stocks, which means for all time an added burden upon the car rider, but from special taxes assessed against the owners of property in the district the value of which is enhanced by such extensions. The principle is peculiarly applicable to improvements of city transportation systems, because of the enormous increases in real estate values created when new extensions open up new territory or when the creation of rapid transit facilities make outlying territory more available. . . .

"That such a solution is just is rather significantly shown by the fact that in a number of cities, landowners in outlying districts have offered spontaneously to contribute large sums to the company to assist it in constructing certain extensions. The present predicament of the street railway companies is in many places partly due to overbuilding, a fault traceable to political or business pressures exerted by speculators in suburban lands who had little or no financial responsibility in connection with the street railway extensions, which they caused to be built for their immediate benefit. This action of the suburban landowners of certain cities, on the other hand, is a significant expression of enlightened self-interest and a sound, constructive recognition of a fundamental principle of justice. The establishment of that principle by law, whether by changes in city ordinances, state statutes, or state constitutions should, in our opinion, not be delayed. This thought is especially recommended to the attention of a number of communities which are now facing the necessity of extensions or rapid transit improvements."

When the Federal Commission points out that in a number of cities landowners have voluntarily offered to contribute large sums to the company to assist in constructing extensions, we see that the principle of assessing the landowner has developed spontaneously as a resultant of the economic forces involved. The next step is to give to that spontaneous resultant a legal status, so that an obligation to contribute shall bear equally upon all landowners. It will doubtless surprise many to learn that this step has already been taken in the city of New York.

NEW YORK CITY'S NEGLECTED LAW

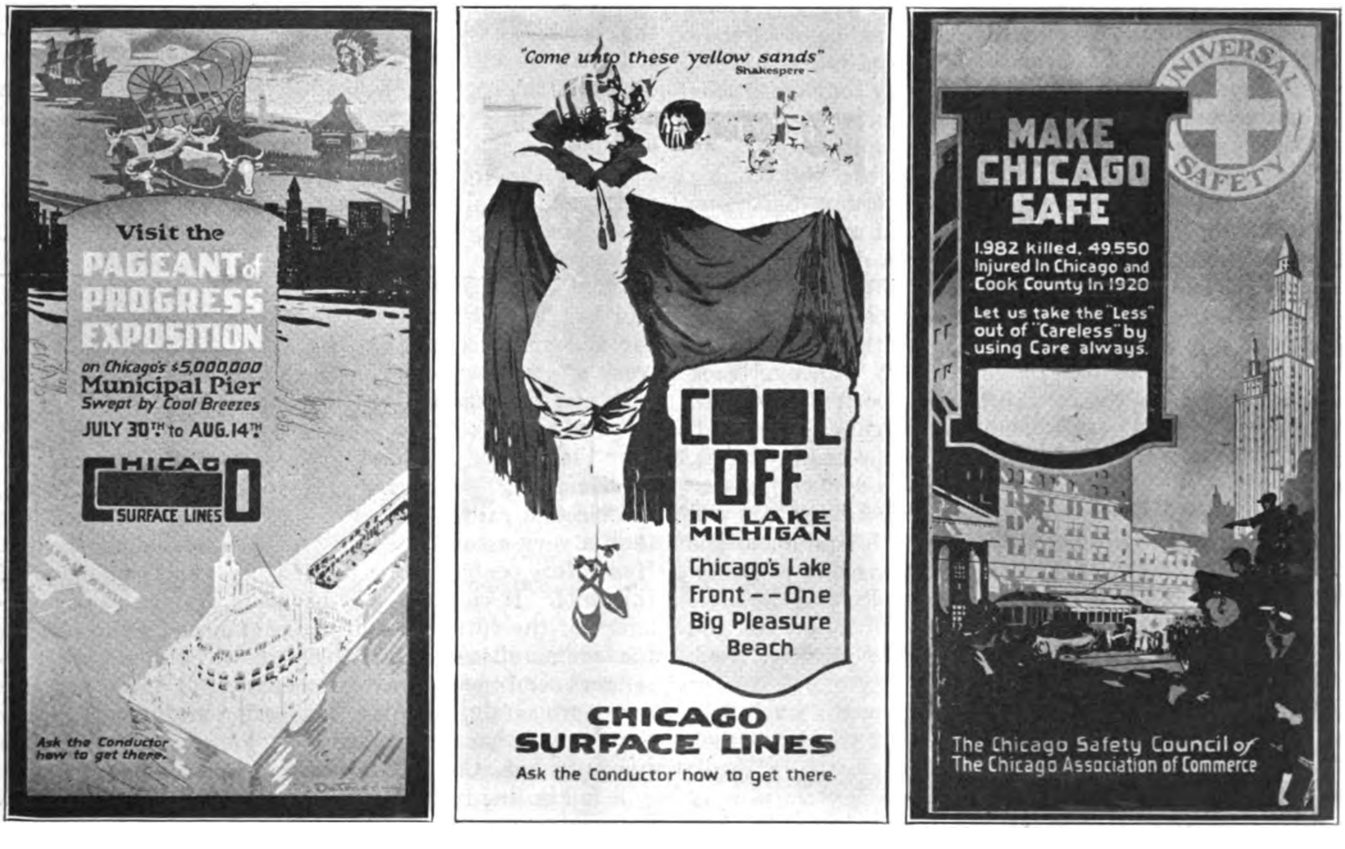
It seems to have been generally overlooked that the statutes of New York today provide in detail permissively for assessing landowners for the cost of street railway construction. The rapid transit act since its amendment in 1909 has provided that New York City may construct rapid transit railroads, paying for them with funds raised by the issuance of rapid transit bonds or of assessment bonds. Such line "shall be a local improvement the cost of bonds of which railroad may be met in whole or in part by assessment on the property benefited." It is then provided that the Public Service Commission, with the approval of the Board of Estimate and Apportionment or other analogous local body, "shall have power to determine whether all or any, and if any, what, portion of the cost and expense necessary to be incurred for any such road shall be assessed upon property benefited thereby," etc. The entire machinery for assessment is fully provided for, and the assessment and interest may be paid in installments over a period of nine years. But this permissive law has never been used. It seems to the writer that it might well be employed as it stands, but that if it were practicable to do so it should be made more just and therefore perhaps more readily acceptable by amending it to provide that the cost of construction be defrayed in the first instance out of a general city bond issue, the determination of benefits to the landowner, and the amount of his assessment being then postponed until some time after the construction of the railway, when the results are largely matters of actuality instead of prophecy.

Stop and consider what it would mean in the future development of New York City if the landowners were to contribute one-fifth of their new land value toward paying for the subway or elevated line which creates that new value. First it would mean a continuance of relatively low fares and even possibly, in the end, a reduction of fares. It would lessen the strain on the city's credit, and definitely eliminate the possibility of certain large tax burdens. Then it would mean an avoidance of congestion with its train of evil consequences and would permit long-range city planning for the public health and welfare.

The subway and elevated extensions needed in New York City today darkly threaten its taxpayers and are a grave challenge to its credit. Daniel L. Turner, at that time chief engineer in the office of the Transit Construction Commissioner, issued in 1920 a thorough analysis and survey of the present and future traction needs of Greater New York. If the extensions are to keep pace with the city's needs, then, according to Mr. Turner, about $250,000,000 of extensions must be built in the next twenty-five years. Even if we should proceed on a far more reduced basis, it seems certain that within the next ten years at least $30,000,000 will have to be spent alone for extensions into new territory on Long Island, where streets have today not even been laid out. Can there be any doubt whatever that the new land values which will be created in that undeveloped territory will be fully as great as those created in 1908 by the extension from 137th Street to Spuyten Duyvil of the Broadway Subway? An assessment system should be devised which will fix upon the landowner in the heart of the city the obligation to contribute by assessment to the construction costs, whether he be benefited by central improvement such as additional trunk-line tracks, or by a suburban extension, and which will fix upon the suburban owner liability not only for the cost of the extension which most obviously benefit his property, but also for the cost of the extra central tracks or tunnels made necessary in the heart of the city by such a suburban extension. It would be a difficult administrative and legal problem to work out the determination of benefits and assessments where so many intangible elements are to be dealt with. Yet scientific handling of the problem can doubtless evolve a system which would equitably place upon the land in the center of the city and upon the suburban owners in large part, if not entirely, the cost of all future main-line and outlying suburban construction. A lien of indeterminate amount would be automatically placed upon the land lying within a certain distance of the improvement; the amount of the actual increase in land value would be determined by appraisal some time after the construction; and the landowner would then be given the option to pay the assessment, if any, in installments over a period of years. "Assessment, *if any*," because in the case of central city property it frequently happens that a rapid transit improvement adds no value and sometimes even impairs value.

Attractive Car Posters for Selling Rides and Emphasizing Safety

During this summer the Chicago Surface Lines has utilized some unusually attractive three or more color car posters for calling attention in an inviting way to places of interest and events as a means of inducing car riding. Two of these posters were reproduced in the ELECTRIC RAILWAY JOURNAL for July 9, 1921, page 62, and two more are presented herewith, as well as a third having "safety first" as its theme. Just how many fares were secured as the result of the appeal of these attractive car cards is a matter of speculation, as there is no way to determine. But when one stops to think that approximately 3,000,000 people a day use the surface cars and are almost certain to see the poster, occupying as it does the prominent position in the front and rear bulkheads of every car directly in front of the aisle, the value of this adver-


Visit the
PAGEANT of PROGRESS EXPOSITION
on Chicago's $5,000,000 Municipal Pier
Swept by Cool Breezes
JULY 30TH to AUG. 14TH
CHICAGO SURFACE LINES
Ask the Conductor how to get there.
"Come unto these yellow sands"
Shakespere
COOL OFF
IN LAKE MICHIGAN
Chicago's Lake Front --One Big Pleasure Beach
CHICAGO SURFACE LINES
Ask the Conductor how to get there
UNIVERSAL SAFETY
MAKE CHICAGO SAFE
1.982 killed. 49.550 Injured In Chicago and Cook County In 1920
Let us take the "Less" out of "Careless" by using Care always.
The Chicago Safety Council of The Chicago Association of Commerce

THESE ATTRACTIVE POSTERS WERE ISSUED THIS SUMMER BY THE CHICAGO SURFACE LINES tising medium will be understood. These posters are so large (18 in. x 36 in.)and so well gotten up that their merchandising value would seem to be very high.

Incidentally, some trouble was had with the trainmen tearing off the lower part of the posters as it obstructed their view through the bulkhead windows into the car. So on each of the cards reproduced herewith holes were cut at a point in the design where they worked in well and at about the level of the conductor's eyes, so that he could see through. This seems to have overcome the objection of the trainmen.

The safety poster was produced by the Chicago Surface Lines in conjunction with the transportation committee of the Chicago Safety Council and was used by the elevated lines and the Chicago, North Shore & Milwaukee Railroad also. The design and art work of all these Chicago posters was done by Barron G. Collier, Inc.

The Electric Railway, Track and All

Sales Managers of the Future Will Make the Electric Railway a 100 per Cent Investment by Selling the Use of Idle Tracks and Equipment

By M. B. Lambert
Manager Railway Department, Westinghouse Electric & Manufacturing Company

THE auto truck and the auto bus and now the trackless trolley bus occupy the center of the stage in the technical and popular press, and hence also occupy much thought in the minds of those interested in their use and sale. This is quite natural and timely for two good reasons: First, these instruments of transportation have demonstrated their utility and economy in the transfer of passengers and goods from one place to another, within well-recognized limitations, and, second, far less invested capital is required for their use, largely because the "people" at large furnish the track and right-of-way almost free of charge. Time, of course, will adjust the latter; steps have already been taken in numerous communities and states toward levying additional taxes or fees on heavy tonnage trucks and auto buses operating regular passenger routes.

The time seems, therefore, very propitious to stop, look and listen and call attention to the old reliable electric railway, track and all, of yesterday, tomorrow and the future. What the auto bus and auto truck and the trackless trolley bus will do or can do is no longer in doubt; they have had a good running start and are well on their way, but the more a great many see of them the more firmly are they turning their heads back with favor on the old reliable street railway, track and all. Visualize the rehabilitated street railway, with light weight yet durable double-truck cars not exceeding 30,000 lb. each, and safety cars for many routes, and instead of the monster girder rails a much lighter construction replacing them, because the lighter cars will not require such heavy rails. With such equipment the operating cost will be far less. The all-around economy, safety, capacity for moving people rapidly and the logic of the whole proposition combined force one to the conclusion that the old reliable electric railway, track and all, is here to stay.

The electric railway, of course, will have a huge debt of gratitude to pay to the auto bus and the auto truck for forcing it to be up and doing its job. As a result of the auto bus and the auto truck, the electric railway will unquestionably take on new life and the development and improvements that it will undergo during the next few years will not only greatly benefit civilization and the electric railway itself, but will also greatly benefit the auto truck and auto bus by helping to create greater usefulness for these vehicles in their respective fields.

The expensive tracks of hundreds of interurban, suburban and city railways are laying idle many hours of the day and night patiently waiting for the transportation salesman to recognize their value and sell their use to the community twenty-four hours each day. The track says to the pavement, when the latter crunches and cracks under the heavily loaded trucks: "I wonder why the city authorities allow you to be broken up while I lie idle here and those heavy loads could roll along on me more silently and with far less cost." The pavement groans back and says: "Wait until next year and the people find out what their taxes are for paving, then perhaps they will realize more fully the economic value of the electric railway, track and all."

The manager in charge of transportation sales of the electric railway of the future will study the whole transportation game and will make the most of every dollar's worth of investment. He will utilize every economical instrument of transportation in its proper field of usefulness, namely, the auto bus, the auto truck, the trackless trolley bus and the old reliable electric railway, track and all. He will study the transportation requirements of the community he serves for both passengers and goods. He will know what the needs of the civic authorities are in the movement of garbage, street cleaning, snow, etc., and jointly with them will establish receiving stations and move these materials in bulk to the dumping place. He will know the traffic requirements of all business houses in the community and, in co-operation with the city authorities, will establish receiving and distributing stations at advantageous points about the city so that all freight will roll over the tracks to these places at night and will be distributed by auto trucks early in the forenoon of each day, and thus will he help the city authorities to solve one of their ever-increasing problems, the congestion of business and pleasure vehicles on city streets.

One of the first things the sales manager of the interurban and suburban line will do naturally is to sell the use of idle tracks and equipment by hauling freight and package goods. The automatic substation and the efficient field control motors on electric locomotives and baggage cars now make it possible and profitable for the management of such roads to make the road work while everybody sleeps so that they will wake up each morning and find their goods ready for use, having traveled two or three hundred miles during the night over the old reliable electric railway, track and all.

Visualizing the whole problem in one broad glance, the electric railway is, after all, nothing more nor less than a very essential and useful tool in community life. Heretofore, only a very limited use has been made of this tool. It can and will be made, by the sales managers of the future, a 100 per cent investment, serving the communities in hundreds of ways, handling passengers and goods more economically, more reliably and more safely, with less congestion and more rapidity than any other instrument of transportation. Then the auto bus, the auto truck and the trackless trolley will fall in line in their proper place, merely as adjuncts or serving tenders to the old reliable electric railway, track and all.

Letters to the Editors

Annual Convention Issue

AMERICAN ELECTRIC RAILWAY ASSOCIATION
NEW YORK CITY, Sept. 26, 1921.

To the Editors:

I wish to extend to you my very sincere congratulations on the annual convention issue of the JOURNAL. I recognize in the keynote of "Salesmanship" the development of an idea expressed by Mr. McGraw in an interview early in the spring.

I think you have done a real job in presenting such a complete picture of the possibilities of merchandising transportation in every department of electric railway operation.

I am sure this will be of great value to the industry generally. It is full of optimism and should be an inspiration to electric railway managers throughout the country.

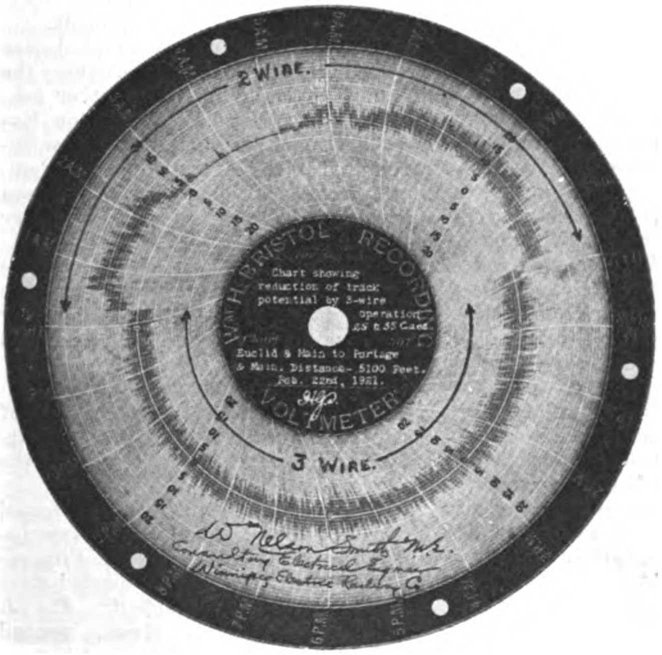
JAMES W. WELSH,
Secretary.

Track Voltage with Three-Wire System

WINNIPEG ELECTRIC RAILWAY COMPANY
WINNIPEG, CANADA, Sept. 10, 1921.

To the Editors:

The accompanying chart may be of interest to some of your readers as showing the value of the three-wire system for reducing track potentials and the stray currents assumed to result therefrom in underground structures adjacent to electric railways. This chart was taken last February at a time when railway loads are usually heavier on account of the severe weather, and the resistance of the earth is at a maximum by reason of its frozen condition, thus diverting less stray current than usual from the rails, and causing the latter to carry more current than during the summer months, thus causing a maximum fall of potential from point to point in the track. It covers about a mile of track carrying the heaviest traffic on the principal business street of Winnipeg.



TRACK POTENTIAL ON MILE SECTION IN WINNIPEG, USING TWO-WIRE AND THREE-WIRE SYSTEM

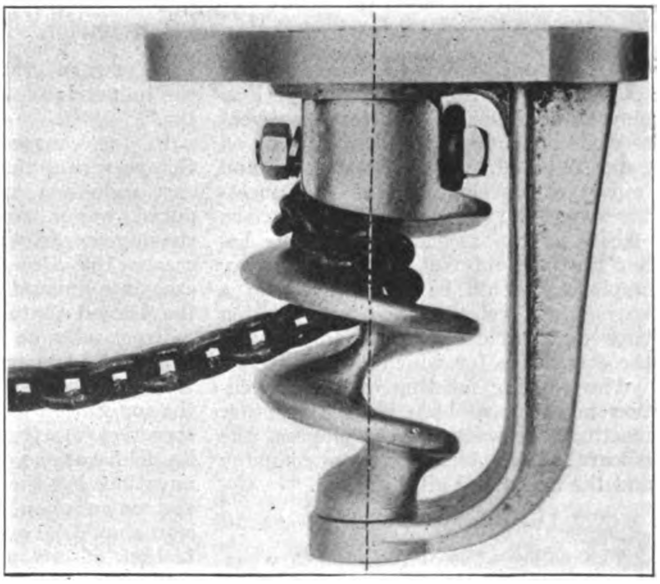
You will notice that during the morning peak, the average track potential drop is 10 volts. During the period of three-wire operation the average is practically zero, and the evening peak is almost imperceptible.

Our system is now completed and we are getting practically this same result over almost the entire city, even to the outskirts.

W. NELSON SMITH,
Consulting Electrical Engineer.

New High-Power Staff Brake

THE Ackley Brake & Supply Corporation, New York City, has developed a high-power gearless staff brake for electric railway service. This is the invention of Lars G. Nilson, and is called the Volute brake. It consists of a grooved winding drum designed for attachment to the lower end of a winding staff. The winding radius of this drum is large at the upper end to provide for quick take-up of the brake chain and tapers irregularly to the lower end. At a point about midway on the drum the effective winding radius passes through zero and the remaining portion of the groove has a slightly negative radius relation.



NEW TYPE OF HIGH-POWER GEARLESS STAFF BRAKE

For any given pull exerted on the brake handle, the tension of the brake chain in winding depends inversely upon the distance of the center of the chain from the center of the staff. With the usual plain winding staff this center to center distance is about 1¼ in. With the Volute design this distance is ½ in. in the brake application range. The Volute drum thus provides a multiplying power of about two and one-half times that of the plain staff brake. This has been demonstrated by both dynamometer tests and in operating service.

The Volute drum is made of cast steel and the deep flanges bounding the chain winding groove provide the necessary strength and thickness and serve to prevent the chain overlapping. The head of the drum is cored out to receive the squared end of the staff and a hole through the head and the squared staff provides for chain attachment. The frame for the drum is also made of cast steel in one piece. The upper top surface is corrugated to provide extra security against slipping when this is bolted to the car platform. The drum is locked in the frame by means of a rust-proof bearing of brass at the top, which fits into the bearing well of the frame and is held by cupping over the well at several points. Slots are cut into the frame portion surrounding the well to shed dirt and keep water away from the bearing.

This type of winding drum provides for graduating both the application and the release of the brake. Following the take-up the chain is on the minimum radius of the drum and therefore the brake handle or wheel moves through a relatively large arc in applying the brake shoe pressure. This graduating feature is also of advantage in preventing wheel locking and facilitating proper coasting.

Some of the advantages claimed for this new type of brake are its simplicity and ruggedness, as there are but three essential parts, the drum, frame and bearing. This design of brake can be adapted to all types and sizes of cars and is the equivalent of a geared brake with a ratio of more than 3 to 1. The weight and cost are much less than that of the geared type of brake as the complete brake with frame weighs less than one-half of the geared type. This type of brake takes very little more space than the plain staff brake and much less than any geared brake, and it can be readily installed without changes in the brake leverage system.

Among other applications of this brake the Atlantic City & Shore Railroad is equipping eighty cars with this type.

Graham Chassis Used in Danbury

THROUGH a misinterpretation of telegrams the type of motor-bus chassis shown in Fig. 3 on page 516 of the ELECTRIC RAILWAY JOURNAL for Sept. 24, 1921, was erroneously credited to the Reo Motor Car Company. The motor-bus body illustrated was built by the Paterson Vehicle Company and mounted on 1½-ton Graham truck chassis, giving very satisfactory service.

Bus Operators Admitted by Amalgamated

81,777 New Members Enrolled Since Last Meeting—351 Written Contracts—Constructive Spirit Evidenced Throughout at Atlanta Convention

THE Amalgamated Association of Street & Electric Railway Employees of America met for its seventeenth convention in Atlanta, Ga., on Sept. 12 to 20. The most striking and important development of this meeting was the expression by various officers of the association of their belief that the interest of street railway employees would be best served by a harmonious relation and co-operation between electric railway employees and the companies for which they work.

The opening meeting of the convention might have been a "get together meeting" between the employees, the officers of the local traction company and the State and city officials.

MEDIATION URGED

The policy of avoiding strikes wherever possible and of accepting mediation and arbitration before resorting to extreme measures was firmly maintained by the association. The association followed recommendations of International President W. D. Mahon, Detroit, and of the general executive board, and sustained very conservative policies regarding disputes with employing companies.

The association voted to urge that provisions for six-day working weeks and eight-hour days be incorporated in future proposed contracts between the organization and employing companies. The importance of educational work both inside and outside the association as a means for improving working conditions and of securing favorable legislation was stressed throughout the convention.

Samuel Gompers, president of the American Federation of Labor, was a visitor to the convention and spoke twice to the delegates. He urged them to keep up their courage during "the present period of industrial stagnation," and during their trials to "hold themselves in leash and move onward and forward gradually and steadily in the industrial development of the country."

In the course of his remarks Mr. Gompers said that union men opposed any reduction in wages because reduced wages result in reduced purchasing power, which in turn would increase the already alarming and increasing amount of unemployment in the United States.

Practically no changes in the major policies and principles of the organization were made at the meeting, and the convention was featured by the constructive spirit evidenced throughout its deliberations. A very important innovation by the association was the recommendation that an old-age pension should be established, for the protection of union members who have retired after twenty-five years of service in the union. Under the recommendations, which will be voted on by the local unions, those entitled to the old-age benefit will receive $800 a year when they retire from active work.

A motion to establish a greater defense fund for use in strikes was defeated, although the association considered the strike of the Troy and Albany traction employees as being just and voted to levy an assessment of 50 cents per member toward a fund to assist these two locals.

Reports showed that the association has enrolled 81,777 new members since the 1919 convention, and that there are now 351 written contracts between employers and affiliated locals. The audit committee announced that there was now a balance of $1,031,535 in the association treasury. The total membership of the organization was reported as about 150,000.

MOTOR BUS OPERATORS ADMITTED

The one-man car question was debated with much interest. The association voted that one-man cars should be fairly and legitimately opposed wherever possible, in order to promote the safety of the public. It was stated that one-man cars are already being abandoned in many cities, and are being replaced by motor buses. A motion to admit to membership street motor-bus operators was carried. The association went on record as advocating the passage of state laws making drivers of vehicles stop, look and listen before crossing interurban roads.

Full approval of the North Dakota State bond issue for co-operative state-owned enterprises was given by the association, and it was recommended that locals and individuals lend their financial support to the movement.

Among the resolutions adopted was one asking that Congress recognize the "republic of Ireland," and another asking President Harding to pardon Eugene V. Debs, socialist leader now incarcerated in the Atlanta Federal Penitentiary. Resolutions were also passed requesting Congress to pass a soldier bonus law.

All business sessions of the convention were closed to the public and the press, a guard being kept at the door at all times. There were 297 delegates present.

The Georgia Railway & Power Company, which operates the street cars of Atlanta, co-operated with the local association members in entertaining the visitors.

W. D. Mahon, Detroit, was re-elected international president for the twenty-ninth consecutive time. W. B. Fitzgerald, Troy, N. Y., was re-elected first international vice-president; P. J. O'Brien, Springfield, Mass., second vice-president; L. D. Bland, Chicago, treasurer, and R. L. Reeves, Chicago, secretary. J. B. Lawson, Shreveport, La., was re-elected chairman of the general executive board at the post-convention session of that body. Delegates to the American Federation of Labor elected were: William Quinlan, Chicago; Fred Schultz, Cleveland, Ohio; James Rogers, New Orleans, La., and A. Conn, Toronto, Ont.

Oakland, Cal., will be the meeting place of the 1923 convention.

Radical Readjustment Proposed in New York City

Transit Commission Suggests, Among Other Things, Unification of Entire Transit System, Ownership by City, Operation by Three Operating Companies Under Management of One Holding Company, Surrender of All Existing Franchises of Whatever Nature

RECOMMENDING municipal ownership of all New York City's transportation agencies but at the same time recommending private operation, the New York Transit Commission has filed its plan of readjustment for New York City street railroads, the report being given to newspapers at 5 p.m., Thursday, Sept. 29, for Friday morning publication. The commission consists of George McAneny, chairman; LeRoy T. Harkness and John F. O'Ryan, appointed by Governor Miller under authority of an act passed by the New York State Legislature last spring. (See ELECTRIC RAILWAY JOURNAL, issues of April 2, 16 and 23.)

Ever since its appointment the commission has been making studies of the situation and the present report has been awaited with keen interest, particularly in New York City, where the traction situation is apparently the principal political issue.

The commission has stated its conclusions of the principles upon which any satisfactory solution to the New York situation can be based under fourteen headings. These are given in the panel on page 560.

The Transit Commission was organized the early part of this year and succeeded to the powers and duties of the former Transit Construction Commissioner. Within a week of taking office, it organized a bureau of valuation and through its bureau of accounts has made a comprehensive analysis of the finances of the operating measures of each of the roads. It will hold a series of public hearings at an early date to determine in particular the attitude of the companies toward the plan proposed, and opportunity will be afforded for criticism and constructive suggestion.

THE SITUATION DESCRIBED

The early part of the report of the commission describes the situation of the transportation lines in New York City, as well as the financial condition of the companies. It declares that on June 30, 1920, the aggregate of the net assets of all the companies was $55,908,893 while the aggregate of the current liabilities was $111,044,653. These included arrears of taxes unpaid, interest on underlying bonds, rentals overdue, and accounts and bills payable. The report says that the spectacle of the city depending on the present embarrassed and generally ill-equipped agencies for a service essential to its daily existence is a sorry one. Moreover, if the roads were fully restored tomorrow, there would be no promise against a recurrence of the conditions of today.

In the judgment of the commission a complete change both in the organization and in the methods of financing the system, as well as its relation to the public, must be effected. To bring about such a change was frankly the purpose of the legislation under which the commission is acting.

NO CHANGE IN FARE

It is the further conclusion of the commission that until there has been ample demonstration of the general results of operation of the new plan and until the changes and economies the plan has in view are tested fully, there should be no change in the present rate of fare. The commission will require, therefore, that the rate for the first year following the initiation of the plan shall remain at 5 cents.

In any consideration of the rate of fare to be charged there should be taken into account the fact that one result of the past three years' policy of inaction has been to hide a substantial increased fare in the present disintegrated and depreciated service. Through the doubling of fares and the elimination of free transfers the net return per ride for each passenger carried on the surface lines in Manhattan and the Bronx has been increased from 3.674 cents in 1918 to 4.342 cents in 1921; in Brooklyn the average of 3.341 cents in 1918 has been increased to 4.415 cents in 1921. In other words, the surface lines in Manhattan, Brooklyn and the Bronx are already receiving a net increase of about one cent per passenger over the net return of 1918.

There has been no such direct increase upon the subway and elevated lines where continuous rides are the rule. There the added cost to the passenger has been in discomfort and loss of time. But even there the payment of the city's deficits through taxation is adding almost exactly one cent to the subway fare. In short, increased fares have not been avoided. They have been secured through indirection.

The commission appreciates that if proper and necessary service is to be restored, and the revenues gained through charging of double fares and the cutting out of transfers given up, this hidden increase must be first absorbed. In other words, savings must be effected that will offset the hidden rate. The commission appreciates as well that various fixed charges must be eliminated, and many costs reduced, to offset further burdens placed upon the present system.

If the present situation were accepted as the basis of fare fixing—a solution the commission declines to consider—without allowance for profits of any nature, preferential or otherwise, the following deficiencies would have to be overcome:

(a) The gross revenues of the operating companies for the year ended June 30, 1921, was in round numbers $133,000,000, and the costs of operation, taxes, rentals and interest, $150,000,000. The deficits, heretofore cited, are therefore........	$17,000,000
(b) The deficits in the interest and sinking fund account of the city which in 1921 amounted to $9,500,000 will advance in 1922 to approximately $10,000,000; the total to be provided from revenue for the city's account, therefore, will be	10,000,000
(c) The cost of eliminating double fares, and of restoring free transfers upon the surface lines will be for each year not less than	9,000,000
(d) And one-third of the cost of neglected repair work and incidental rehabilitation, if this expense can be spread over three years, would add not less than..	5,000,000
The total thus required (without allowance for the cost of restoring full train and car service, which cannot be estimated with any exactness, and without provision for the full replacement of worn-out and obsolete equipment) would be	$41,000,000

Against this sum there may be counted a reduction of $5,000,000 to be secured through the wage adjustments of a month ago. This will bring the net additional indicated need on the present basis approximately to $36,000,000.

$36,000,000 OBSTACLE

It is true that the above figures are based upon the present accounts and financing of the companies. In a rate case the intensive scrutiny of accounts undoubtedly would result in heavy cuts. But the net figure of $36,000,000 indicates the size of the obstacle to be overcome—after three years' policy of drift—to re-establish and maintain the 5-cent fare.

It will appear that if the only method of relief was upon the basis of present organization and financial structure, the prospect for maintaining the 5-cent fare would not be hopeful.

But it is the opinion of the commission that if the reorganization plan it presents be adopted, with (*a*) the rearrangement and more effective co-ordination of the transit system, (*b*) the reduction of rentals and interest charges that it has in view, (*c*) the elimination of taxes and other public charges, from which the municipalized lines naturally would be free, (*d*) the reductions of cost effected through consolidation of power plants and of other facilities used in common, and (*e*) the material savings that will occur in the reduction of overhead and operating charges, the indicated deficiencies may be substantially overcome and the 5-cent fare continued beyond the year of trial.

While naturally every endeavor will be made to attain this end, the question finally can be determined only by a demonstration of the results of operation of the consolidated system such as the plan proposes.

The commission thinks that the enforcement of a plan based upon the principles cited, beyond securing the economies and benefits of consolidation and ending a condition of financial chaos and paralysis, will clean out the separate, special, private interests with their persistent friction and conflicting policies and substitute a new basic organization in which the interests of the city and of private investors would be common. If these principles be recognized and given effect, it will follow that while opportunities for the making of money through the speculative manipulation of transit securities will cease, *bona fide* investors, on the other hand, assured of adequate protection, should not hesitate to lend as further funds are required. The advantages that will flow to the traveling public from the plan are obvious. Nor does the commission see in it any unfairness either to the operating companies or to the present owners of their securities.

In readjusting securities on the basis of honest value which the commission has in view, it declares it will insist upon the elimination of "water" of every description and the frank recognition of a depreciation that investors have long since discounted. In requiring that existing "preferentials" be given up, as a part return for the stability the plan would give to real investment, the commission says it again seeks to cut out whatever has become unstable or artificial in transit finance. Preferential allowances held to be fair and necessary when the dual contracts were negotiated ten years ago are not fair under the conditions of today. If the subway operators argue that their preferentials should be continued, and that a fare should be fixed sufficient to cover them, they would claim in effect that they alone are entitled to 100 per cent protection against the losses and shrinkages of the war, while the city, the private investors and every other party to the old agreements have been required to carry very substantial losses, direct and indirect.

The elimination of inter-company leases will put an end to another form of abuse in transit finance and avoid the continuance of undue favor to any particular class of security holders. Under the plan all such leases would be discontinued and the lines of lessor companies merged with the unified system upon the same terms as to the recognition of actual value and the allotment of interest-bearing securities that apply to all others.

In accordance with the foregoing findings the commission submits the following general outline of its plan and of the mechanism through which it is to be put into effect:

THE PLAN

GENERAL SCOPE AND OBJECT

The plan provides for the valuation, consolidation and municipal ownership of all transportation facilities deemed by the transit commission to be useful and essential. Such facilities are to be acquired without cost to the city by amortizing out of earnings the valuations fixed by the Transit Commission. All existing corporations and their franchises, inter-leases and securities are gradually to be eliminated or extinguished, except such underlying liens carrying a low rate of interest as the commission deems it advisable not to disturb. Existing securities, with such exceptions, are to be replaced by an issue of bonds of a consolidated company representing a fair and honest valuation of the properties. Payment of these bonds with interest, and a sinking fund charge sufficient to retire them within a reasonable period, which will be less than the term of the present subway leases, is to be secured by a purchase money mortgage and assured by a rate of fare based on cost, automatically determined by the condition of a contingent reserve or barometer fund.

Valuations according to existing security issues and present capitalization will be disregarded and the entire financial structure of the consolidated company will be based upon a new valuation, which, under the rapid transit legislation of this year, is rapidly being completed. By this means the "water" in present financing and capitalization will be eliminated and the new valuation will represent the real values in the transportation properties.

In view of the large investment of the city in and its ownership of the existing subway lines, the benefits of a unified system can best be secured through the immediate municipal ownership of all transportation facilities deemed useful and essential in a comprehensive system, and their operation, under effective public control by company agencies to be created for the purpose. If the city authorities shall oppose immediate municipal ownership of the transit system, with its present opportunity to reform completely the existing situation, the commission is prepared to consider the alternative course of vesting title to all properties not now owned by the city, including the subway leases, in the consolidated company, with provision for deferred ownership by the city. Such a course will permit the general features of the plan to be carried out, but will add to the difficulties and tend to impose a higher fare.

CONSOLIDATION

Under the plan, ownership will be acquired by the city without financial outlay on its part. Existing companies will turn in to the consolidated company, and through it to the city, all properties and rights in return for new leases which will provide for amortization out of the earnings of the consolidated system of the valuation fixed by the commission.

The existing, separate systems to be consolidated at the start into three new operating groups to be made up as follows:

Group No. 1: The subway and elevated railroads now operated by the Interborough Rapid Transit Company and leased by it from the city and the Manhattan Railway Company.

Group No. 2: The subway, elevated and surface railroads now or formerly in the Brooklyn Rapid Transit system.

Group No. 3: The surface railroads of the Boroughs of Manhattan and the Bronx.

The surface railroads in Queens and Richmond, in whole or in part, to be allocated to Group No. 2 or Group No. 3, as may be determined.

Bus lines necessary for the logical development of the unified system to be created and allocated as feeders to the foregoing group. Where necessary or desirable, some of the existing surface lines may be transformed into bus lines.

All existing power facilities to be consolidated and operated for the common benefit of the entire system.

To pave the way for the eventual, complete consolidation into one system, and to secure the benefits of private operation under public control, the Transit Commission will cause to be organized four corporations—"A," "B," "C" and "D" companies—each with a nominal number of capital shares.

"A" company will be the controlling and financial company, and general supervisor of the affairs of "B," "C" and "D" companies, which will be exclusively operating companies. The shares of stock of the operating companies will be owned by "A" company, whose shares in turn will be held in trust by the Transit Commission, or by whatever body may succeed it.

"B" Company will operate under lease the properties embraced in Group No. 1, "C" Company the properties embraced in Group No. 2 and "D" Company the properties embraced in Group No. 3.

General financial control and supervision of the entire system will be lodged in a board of control, which will also constitute the directorate of "A" Company. It will consist of seven members, to be chosen as follows: One each by the board of directors of the three operating companies, "B," "C" and "D," three by the Mayor of the city, and the seventh member by vote of the other six, or, in the event of their inability to agree, then by the Transit Commission or by whatever body may succeed it.

The powers of the board of control are to be those of a financial nature, as above indicated, together with such other powers of supervision and direction as may properly be conferred upon it by the contracts to be entered into. It will be responsible for the distribution and management of all the surplus revenues of the operating companies after payment of their own operating expenses, will have sole charge of the issuing of all securities, will make all payments for interest, and have the custody and management of the amortization, contingent reserve, and other funds.

The functions of the Transit Commission in respect to construction should be vested in the board of control, and from time to time, as experience warrants, all the remaining functions of the Transit Commission, except those involving exercise of the police power, to which the Public Service Commission will succeed, should be vested in the board of control, permitting the abolition of the Transit Commission. Legislation to this end will be recommended by the commission.

THE OPERATING COMPANIES

To provide for the eventual consolidation into one operating company, the board of control will have the power, after a specified number of years, to consolidate further the groups and operating companies provided for under this plan into one or two operating companies, as it may deem best.

It may be noted not only that this control differs from past methods, in that it is placed where it can be exercised most efficiently and economically, but that the city's participation is placed on an equality with that of the private investors, giving the city for the first time real and substantially complete home rule with respect to transit.

If, as expected under the plan, selfish and antagonistic interests are eliminated, and the interests of the city and the company investors made common, it should be possible to have a large part of the detail work now done by the staff of the Transit Commission performed by the staffs of the operating companies, and thus cut down the large force of public employees necessary under present conditions. In view of the base of the interests of the city and the company investors being common, the expenses of the board of control should be treated as an operating expense and paid out of railroad earnings.

The operating management of "B," "C" and "D" companies shall be vested in their respective boards of directors under the terms of their leases. The board of directors of "B" Company shall be elected by the holders of the bonds issued in exchange for the securities and properties constituting Group No. 1. Similarly, the directors of "C" and "D" companies will be elected by the holders of the bonds issued in exchange for the securities and properties constituting Group No. 2 and Group No. 3 respectively. Management will thus represent investment instead of speculation

MECHANISM OF TRANSFER OF PROPERTIES TO THE CITY

The present subway leases to be reformed or superseded by agreement, so as to abolish all preferential payments and place company and city investments on a parity. Ownership of all subway equipment not already owned by the city to be vested in the city without outlay by the city in return for a new lease.

The reformed subway leases, comprising the Interborough System, together with the lines constituting the Manhattan Elevated Railroad System, to be assigned and transferred, with the consent of stockholders, or, failing that, by means of foreclosure sale, to "A" Company in exchange for "A" Company bonds, equal in amount to the valuation of the properties of the Interborough and Manhattan Companies, made by the Transit Commission pursuant to Chapters 134 and 335 of the laws of 1921.

These bonds to be exchanged for outstanding securities issued against the properties transferred on terms to be fixed in the final statutory plan and contract, reached if possible by agreement between protective committees of security holders, but otherwise to be determined by the Transit Commission.

Pursuant to the terms of the final statutory plan and contract, "A" Company will forthwith, by appropriate instrument, vest in the city all of its right, title and interest in and to the properties acquired, in return for a lease of the properties transferred, comprising Group No. 1, to "B" Company for operation, under the general terms hereinafter stated.

The bonds of "A" Company, issued in exchange for the properties transferred to it and by it vested in the city, shall be secured by a purchase money mortgage which shall be a specific lien upon the properties transferred and a general lien upon all of the property of "A" Company, including its interest in the leases to the operating companies. These bonds shall bear interest at the rate of five per cent per annum, with an additional one per cent set aside to amortize the valuation as fixed by the Transit Commission. The bonds will be further secured by provision in the final statutory plan and contract for the maintenance of a rate of fare automatically determined to meet at all times cost of operation, bond interest, and one per cent for amortization.

Under conditions hereinafter stated, in order to provide an incentive to efficient and economical management, it will be possible for the bonds to earn an additional one and one-half per cent of interest.

In similar manner the lines now or formerly comprising the Brooklyn Rapid Transit System, surface, subway and elevated (and if it is finally deemed best, the surface lines in Queens and Richmond), will be transferred to "A" Company in exchange for its bonds, equal in amount to the valuation of said properties, as determined by the Transit Commission, which properties shall be by "A" Company vested in the city in return for a lease to "C" operating company upon terms similar to those provided in the case of "B" Company.

In a similar manner the lines now comprising the various surface lines in Manhattan and the Bronx, or such of them as shall be deemed by the Transit Commission to be useful and essential, shall be transferred to "A" Company in exchange for its bonds equal in amount to the valuation of said properties as determined by the Transit Commission, which properties shall be by "A" Company vested in the city in return for a lease thereof to "D" operating company, upon terms similar to those provided in the case of "B" and "C" Companies.

Upon the completion of the amortization period of the purchase money bonds issued by "A" Company, the city's title to all the transit lines will be free and clear of such liens, but the city shall have the right to extinguish the bonds underlying any line or lines at any time after ten years, upon payment of the then unamortized portion of the bonds.

"A" Company shall raise by the issue of notes, or other form of short term securities, sufficient funds for financing the unified system and providing necessary working capital during the early period of its development. Such funds shall be utilized, among other things, for the establishment of the contingent reserve or barometer fund hereinafter provided for. Such additional capital as may be needed for transit construction or equipment, other than that furnished by the city, shall be raised by the sale of new bonds to be issued by "A" Company, as may be determined upon by the board of control.

RATE OF FARE

There shall be no increase in the 5-cent rate of fare, unless, after one year's demonstration of the results of operation of the consolidated system, with its new and many opportunities for substantial economies, an increase is demonstrated to be necessary. Then and at the conclusion of each succeeding fiscal year the rate of fare will be determined automatically by the status of the contingent reserve or "barometer" fund, and shall be put into effect by the board of control. During each year of operation under the plan the rate of fare shall be adequate to provide for cost of operation and interest and sinking fund upon the bonds and other current obligations of the consolidated system, including provision for the maintenance of the contingent reserve or barometer fund.

This will operate as follows:

After payment of operating expenses and fixed charges (the fairness of the amounts of which is insured by the valuation of the properties by the Transit Commission and the control over expenditures by the board of control), the surplus moneys are to be paid into a contingent reserve or barometer fund. If the available surplus keeps this fund above a specified maximum, the fare is to be automatically lowered; if the fund falls below a specified minimum, the fare is to be automatically increased until the reserve is restored.

EXAMPLES CITED

For example: Assume that the normal amount of the barometer fund is fixed at $25,000,000. If it rises to $35,000,000, the fare is to be decreased; if it falls to $15,000,000, the fare is to be increased.

In short, the purpose of this is, after fixing the base of proper valuation and determining the operating expenses and fixed charges, to make the decision as to the rate of fare as automatic as is humanly possible. Upon the new basis the public can be assured that all money expended is properly expended for necessary cost, and the rate of fare, therefore, will reflect the actual and necessary cost of the transportation that the public gets, uninfluenced by any opportunity of private gain based upon stock ownership.

Transfers on all of the lines of each of the three operating systems will be established at proper points as rapidly as financial conditions will permit.

Each operating company will pay its own operating expense and retain its own maintenance and depreciation reserve as authorized by the terms of its lease, and turn over all surplus funds to "A" Company. "A" Company will pool the moneys so received and distribute same as follows:

(a) It shall pay to the holders of its securities the fixed return prescribed, and to the city the interest upon its rapid transit investment.

(b) It shall pay into an amortization fund the specified rate for the amortization of its bonds, and to the Comptroller of the city of New York a specified rate for the amortization of the corporate stock of the city issued for rapid transit construction.

(c) It shall make good any deficit in the cost of operation in any preceding year sustained by any one of the three operating companies.

(d) It shall out of the remaining surplus maintain the above mentioned contingent reserve or barometer fund.

INCENTIVE FOR EFFICIENT SERVICE

In order to provide an incentive for efficient and economical management, there shall be set aside each year by the board of control out of the surplus earnings of the unified system, after the payment of all obligations and the maintenance of the barometer fund, a sum to be distributed or used for the joint benefit of the operating personnel of the unified system and the holders of the consolidated company's bonds. This fund, within the limits of the available surplus, shall, for the purpose of computing allotments prescribed, equal three per cent interest on the purchase money bonds issued by the consolidated company. When the amount so available has been determined by the board of control it shall be allocated, one-half for the benefit of the operating personnel as hereinafter indicated, and one-half for the payment of additional interest upon the outstanding purchase money bonds, but subject to the condition that with any increase or decrease of fare above or below the rate of 5 cents, such funds shall be decreased or increased, as the case may be, on the basis of one per cent interest on the bonds with each cent of fare variation.

In similar manner, out of the remaining one-half of the fund referred to, there shall be allocated under the contingencies mentioned a like amount for the benefit of the operating personnel of the unified system, which allocated sum shall be expended under the direction of the board of control for the collective benefit of the operating personnel.

If, however, the board of control so determines, the said sum may be expended under the direction of the board of control to provide benefits, such as insurance and pensions, for the operating personnel and to reward employees who in various groups have, during the preceding year, rendered conspicuously efficient service.

There will be included in the contracts for the transfer of the several lines to the consolidated company provision for obligations to contract and to creditors and to holders of receivers' certificates of indebtedness, employing for this purpose, so far as can be agreed upon, the bonds and short term securities of the consolidated company, due allowance therefor being made in the price at which the respective properties are to be taken over.

TERM OF LEASES AND AMORTIZATION

The term of the leases shall be for so long as is necessary to amortize the valuation as fixed by the Transit Commission.

All leases to be subject to extinguishment or recapture by the city at the end of ten years upon payment of the then unamortized part of the valuation of the leased properties.

As the amortization funds will be managed by the board of control, on which the city will be adequately represented, their proper and conservative management in the city's interest will be assured. In order, however, to meet the objections to the past management of sinking funds, the final statutory plan and contract will require the adoption of the more clean-cut method of buying or calling in each year a part of the outstanding securities and canceling them. This will wipe out a definite part of the debt each year and, although its cost is somewhat greater than on the compound interest basis, the commission believes that it possesses many advantages. After some years the debt should sufficiently be reduced to ease greatly the cost of meeting fixed charges and thereby pave the way for bettered service or possibly decreased fares.

Fourteen Conclusions of Analysis of Transit Commission on Which Readjustment Plan Is Based

It is the conclusion of the commission that the plan of reorganization should be based upon the following principles:

1. That all existing lines—subway, elevated and surface—should be unified for purposes of future operation, and placed under control of a single supervisory authority in which the operating companies and the city shall participate upon equal terms.

2. That the railway properties still held in private ownership, whether under direct title, franchises, contracts or leases, should, so far as required for the purposes of the unified system, be transferred to the city, their owners receiving in return new securities, based upon the actual value of the lines for operating purposes.

3. That the continued possession of any of the roads for purposes of operation be conditioned upon the acceptance from the city of new leases, granted for restricted periods, and that the revenue derived from such operation be used only for the payment of actual operating costs and the interest and sinking fund charges upon the new securities—plus certain limited percentages of profit allowed when earned as an incentive to good management.

4. That the new securities be amortized in favor of the city, subject to the right of the city to retake any specified one of the lines upon the payment of any then unamortized proportion of the securities.

5. That provision be also made from the revenue of the roads for payment in each year of the interest and sinking fund charges upon the city's investment in the dual subways; as well as upon all subsequent rapid transit investments of the city.

6. That as a condition precedent to participation in the proposed reorganization the preferential allowance of profits granted to any one of the companies as a consideration for rights yielded under previous contracts or leases, as well as any claims based upon the unpaid accumulation of such preferential profits, be given up; and that all inter-company leases or other undertakings covering the use either of lines or equipment be canceled.

7. That the lines retained in the reorganized system be arranged so as to eliminate gradually all duplication of service so that the rapid transit roads will serve the long hauls and the surface cars—or buses—the local and connecting hauls.

8. That only such lines as in the judgment of the commission are adaptable to such a system be acquired, or accorded any value for purposes of such acquisition.

9. That as rapidly as may be possible financially, full and continuous service be restored upon all of the lines, free transfers re-established and postponed repairs given proper attention.

10. That all train and car schedules be so arranged as to provide adequately for the comfort and convenient service of the traveling public at all hours of the day.

11. That in order further to relieve present conditions, and to provide for the great increases of traffic certain to develop in the near future, immediate provision be made for the planning and building of additional new subways.

12. That provision be made for winding up the affairs of the present operating companies at the earliest practicable time upon the basis of the adjustment suggested, for the satisfactory settlement by them of their current liabilities before transfer of their lines to the city and for the termination of all receiverships.

13. That in order to preserve a unified rate of fare on all the lines, all surplus earnings be pooled and that a proper fund be established, to consist of such surplus earnings and such temporary borrowings as may be necessary, to cover current contingent needs.

14. That the rate of fare shall not be fixed, in any discretionary sense, either by the commission, or by any other authority but that it shall be determined from year to year automatically according to the actual costs of operation.

Recent Happenings in Great Britain

British Railways Returned by Government to Owners—Wages Being Reduced—Motor Bus Trip of 300 Miles

(From Our Regular Correspondent)

The period of control by the government of British railways came to an end on Aug. 15. As noted in my last article the companies anticipated the change by restoring many pre-war facilities. On Aug. 19 the long and complicated railways bill, which has been before Parliament since last May, received Royal assent and became an act of Parliament. It has little or no bearing, however, on street tramways. One of the clauses authorizes the Minister of Transport to grant orders to railway companies for the requisition by the latter of light railways, but by an amendment which was adopted tramways are specifically excluded from the provision of the clause.

THIS year, like last, the government has failed to carry out its promise to pass into law the electricity supply bill, the plea being want of time. The promise now is to try to pass the measure next year. In this bill the owners of electric traction undertakings have considerable interest. The electricity supply act of 1919 is intended to develop the production and use of electricity for all purposes. Under its powers the Electricity Commissioners have delimited large supply districts and the work is still going on. The scheme provides for the formation of a joint electricity authority for each district, consisting of representatives both of public bodies and of private enterprise. The act, however, was passed in a truncated form, and it contains no powers for the electricity authorities to raise capital for the purpose of developing supply. To remedy this defect the present bill was introduced last year and again this year, but the ordinary parliamentary session of 1921 has come to an end without anything further being done. Until a bill of the sort is passed the act of 1919 will remain a dead letter for practical purposes. A great deal of opposition was aroused to the bill apparently because many representatives of private enterprise think that it will increase the present bureaucracy.

Under the sliding scale agreed on some time ago the first reduction of tramwaymen's wages, amounting to 3s. a week, came into operation during August. This was because the official index figure of the cost of living for July had fallen to 119 per cent above the August, 1914, level. The datum line figure is 135 per cent, and there is a reduction of 1s. a week in wages for every five points of a fall. The latest return shows that the index figure has ceased to fall, but it may resume its downward tendency before the next quarterly revision of wages in November.

The advisory committee of the electrification of railways (appointed by the Minister of Transport) has issued its final report. It confirms and supplements the interim report of July last year. The committee does not seek any hard and fast standardization of plant or equipment, but within limits leaves the railway companies to do what they consider best, subject to the approval of the Minister. Regulations will be issued providing generally for a standard system of three-phase alternating current generation and of direct-current distribution at 1,500 volts from substations, with liberty to use a multiple or sub-multiple of 1,500.

Collection can be either by conductor rail or overhead wire. If a conductor rail is used, it may be either of the top contact or under contact type, and it is to be located 1 ft. 4 in. from the gage-line of the nearest track rail. In the case of the overhead wire conductor its normal situation will be over the center of the track at a height of 3 ft. above the maximum load gage and at a maximum height of 20 ft. above track rail level. No restrictions are placed on the drop in potential in earthed return conductors.

The London street traction authorities, both municipal and company, have succeeded in inducing the Commissioner of Metropolitan Police to reverse his decision that from Oct. 1 no excess passengers would be allowed in tramcars and omnibuses. The police proposal was to go back to pre-war regulations, in spite of the fact that long before the war such regulations had been abolished in most towns in Britain. They are a relic of the horse traction days when cruelty to animals had to be taken into consideration.

A deputation representing both company and municipal undertakings interviewed the assistant commissioner of police in the end of August and pointed out that it is absolutely impossible to run a sufficient number of cars and buses during the morning and evening rush hours to provide seating accommodation for all who want to travel. Some must stand inside or be left behind. It was also shown that the travel habit in London has so grown that it is now the greatest in any city in the world. Moreover, the police have no control as to overcrowding on the underground railways, so that restriction on the tramcars and buses would be unfair. The police promised to give further consideration to the matter and on Sept. 6 the commissioner announced that "straphanging" would be allowed to continue until a sufficient number of vehicles to meet the needs of the public were provided. Probably that means a long time, as it is not difficult to show that the police idea is impracticable. Even if the thing could be done, it would be ruinous financially, as great numbers of vehicles would be idle except during the rush hours.

During the past session of Parliament a number of applications were made by local authorities to enable them to run motor omnibuses both inside and outside their areas. In a number of cases in the past municipalities have been empowered to work omnibuses outside their boundaries. The local legislation committee of the House of Commons, considering schemes of the kind this year, took into consultation representatives of the Ministry of Transport, and the result has been, as shown in a report by the committee, that it has limited the power granted outside a council's area to such routes as would be extensions of or in connection with existing omnibus routes. The Ministry of Transport is to decide on any claims against the municipalities for reconstruction or adoption of roads in the outside areas.

The extent of the development of the motor omnibus in England, during the summer time at any rate, is evidenced by the fact that the correspondent of a daily newspaper has succeeded in traveling all the way from Dover in the southeast of England to Blackpool in the northwest of the country by motor bus, with the exception of fourteen miles which were covered by tramcar. The journey occupied six days and the aggregate of fares was £2 16s.-6d. The distance in a straight line is nearly 300 miles.

A strong effort is being made by Railless, Ltd., for the extension of the use of the system of trackless trolley cars. In the end of August a representative party inspected the installation at York which has been in operation for about a year. One-man cars are used and the service is highly efficient. The system has worked successfully in a few other towns for some ten years, but has not been widely adopted. The York installation, being so recent, is of the most improved type. I mentioned some time ago that the Birmingham City Council is adopting the trackless system on a tramway route which requires reconstruction.

The *in situ* treatment of the tread of tramway rails has been adopted successfully in various places in England, but has not been found to be of much benefit on the London County Council Tramways. It may be recalled that by the alternate application of heat by a flame and of cold by water the tread of the rail is hardened, so that it wears longer. As neither rail nor paving has to be disturbed, the process has been called the *in situ* treatment. The London tramway undertaking differs from most others in the fact that the magnetic track brake is used as a service brake. The result is that at stopping places where there is a frequent service of cars the rail-tread becomes sufficiently heated by the track brakes to destroy the special tempering produced by the *in situ* process, so that the metal in the top of the rail reverts to something like the temper it would have if not so treated at all.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Elevated Road Urged

Proposal at Detroit Referred by Council to Its Street Railway Commission —Trackless Trolley Tested

The City Council of Detroit, Mich., has decided to submit the proposition of the Michigan Elevated Railway to the Street Railway Commission for a decision as to the feasibility of the plan and a possible route, with a view to making the elevated line part of the municipal system eventually.

The president of the elevated company appeared before the City Council asking permission to erect an elevated line on Elizabeth Street from the Michigan Central Depot to Woodland Avenue, a distance of about 1½ miles. It was claimed that cars could be operated over the distance proposed in four minutes and that the elevated company could operate on less than a 5-cent fare.

Members of the Council cited the fact that that body was without authority to grant permission for the construction of the elevated line since the city is empowered to build only surface lines. The matter will be cleared up somewhat at the November election since the proposed charter amendment if passed will give the city power to engage in transportation by methods other than surface lines. It was further cited that inasmuch as sooner or later the city railway system will be entirely controlled by the city, it would be better to await the result of the vote on the charter amendment to make sure that the city will have power to acquire the elevated system before granting the permission. The Mayor had decided to abide by the decision of the Council if the plan was approved.

The village of Ford, one of Detroit's down-river suburbs, is without street car service to Detroit, the Detroit United Railway having stopped operating its cars through the village at midnight, Sept. 22. The company's franchise in the village expired last March and when the company failed to grant the demands of the village for more frequent car service, an injunction was obtained restraining the company from operating through the village. Service was stopped by the company before the injunction went into effect. Officials of the village stated that since Detroit would sooner or later have municipal ownership, they did not want to be involved with a thirty-year franchise granted to the company while Detroit is willing to take over the system. If some satisfactory arrangement is not reached by the company and the village by Oct. 13, the company will be required to remove its tracks.

In a statement attributed to E. J. Burdick, assistant general manager of the Detroit United Railway, it was pointed out that the company had endeavored to reach an amicable settlement, and in good faith offered to operate according to the village's demand for the period of one month, during which time the traffic might be checked. This offer was rejected by the village. The company feels that the village's action is not in accord with the wishes of the majority of citizens.

A new type of trackless trolley has been tried out on a stretch of the muncipal line on Harper Avenue in Detroit for municipal street railway officials. It was demonstrated by the Trackless Transportation Company, New York, and known as the Imperial Omnibus.

Arbiters Uphold 60-Cent Rate

Employees of the Schenectady (N. Y.) Railway were upheld in their wage contention when former Mayor J. Teller Schoolcraft, chairman of the board of arbitration, announced on Sept. 22 the board had decided upon a wage of 60 cents an hour—the scale before the company put into effect, on June 1, a 25 per cent cut.

The decision holds that the 60-cent rate shall prevail in Schenectady as long as the company receives a 7-cent fare. Under the decision of the arbitrators, nothing but a reduction in the company's revenue through lowering of the fare would justify a wage cut.

The men submitted the wage question to arbitration last June, accepting the decreased rate of 45 cents an hour with the understanding that if they should be granted more than 45 cents, the award should date back to June 1. About 600 employees are affected. It is said the back pay will amount to more than $75,000.

The decision is based wholly upon a letter which former General Manager James P. Barnes, vice-president of the Louisville (Ky.) Railroad, is said to have submitted to union officials in May, 1920, guaranteeing 60 cents an hour in consideration of the increase in fares to 7 cents on Schenectady lines. This letter was introduced in evidence at the hearing and was held valid. The majority of the arbitrators held the agreement should be binding upon the company until rescinded.

It is apparent from the decision and opinion of the majority that no weight was given to other evidence introduced, such as living costs and increased costs of operation and maintenance. Both sides agreed to abide by the decision at the time the question was submitted.

The scale on the United Traction Company's lines in Albany, Troy, Watervliet, Cohoes and Green Island now is 45 cents.

Philadelphia Wages Cut

Present Reduction One Cent an Hour—This and Previous Cut Save Company Large Sum

The employees of the Philadelphia Rapid Transit Company agreed on Sept. 24 to accept a reduction in wages of 1 cent an hour. The cut will become effective on Oct. 1. The Co-operative Welfare Association, the employees' organization, computed the amount of the drop and fixed the effective date.

This is the second wage cut accepted by the employees in five months. On May 1 they agreed to a reduction from 72½ cents an hour to 65 cents. The last drop represents an 8-cent decline in the hourly rate from the peak wage standard set in the post-war period. The cut now about to go into effect was delayed from Aug. 15 to Oct. 1 to compensate for the delay in the wage adjustment upward occurring at the time of the earlier advances in the war-time period.

An official statement made by the company says:

> The Buffalo wage adjustment was in general 5 cents an hour for all hourly rate occupations. Under the four-city average a reduction of 5 cents per hour in one city would represent a reduction of 1¼ cents applied to Philadelphia, but as we have not observed the fraction of ¼ cent an hour in our rates of pay, the reduction in Philadelphia on account of a 5 cent reduction in one of the four cities would be made 1 cent per hour.
>
> In the monthly rate clerical occupations in the general offices and also in the clerical and supervisory monthly rate occupations at the depots, shops, yards, etc., in Buffalo these occupations did not participate equally with the trainmen and other operating department occupations in the war-time wage increases, so that the adjustment at this time in these rates in Buffalo is less than the reduction in the hourly rate occupations and was fixed generally at $5 or $2.50 per month.
>
> Reductions of $5 or $2.50 a month in one of the four cities would, under the four-city average, produce a monthly reduction in Philadelphia of $1.25, or 62½ cents respectively. P. R. T. adjustments in monthly rate occupations have been made by the $5 unit, and while it may at any time be decided that a smaller unit, say $2.50, would be proper, yet in this instance where the monthly reduction would be but $1.25 or 62½ cents, the clerical and supervisory monthly rate occupations should not at this time be reduced as a result of the recent Buffalo wage reduction.
>
> Resolved, That in accordance with the wage reduction of 5 cents an hour made effective in Buffalo on Aug. 15, 1921, the hourly rate occupations in Philadelphia be reduced 1 cent an hour, effective on Oct. 1, 1921.

The rate of wages in Philadelphia is governed by the standard in four other cities—Buffalo, Cleveland, Detroit and Chicago. The average in those cities fixes the wage paid in Philadelphia.

Trackless Trolley for Windsor.—The Hydro-Electric Power Commission of Ontario, in response to a demand for extensions to the electric railway system at Windsor, Ont., purchased two years ago from the Detroit United Railway, has decided to try out the trackless trolley.

Women Demand Settlement

Insist That Electric Railway Service Shall Be Restored in Des Moines at Once

Business women in Des Moines, Iowa, took a hand in the railway muddle during the week ended Sept. 24, when a group of them went before the City Council with a demand that the Council take some action to relieve the situation at once. The delegation representing the ladies had more than 5,000 signed ballots expressing the wishes of that number of business women and school teachers as to the settlement of the traction problem.

The ballots asked for an expression on four different phases of the transportation question in a canvas lasting two days, 5,538 ballots were secured, and of this number all but nineteen voted for the re-establishment of electric railway service. Only sixty-six voted for buses as against street cars and 238 expressed themselves as being against an immediate 8-cent fare. As to the question of the immediate re-establishment of electric railway service 99 were opposed while the remainder felt that the need was critical.

Miss Luella Clark, spokeswoman for the delegation, told the Council that Des Moines "is facing its most critical situation now." She said:

> We have been exposed to unusual and extraordinary risks until we are tired of it. The buses are inadequate. What we women want is adequate and decent transportation at once regardless of any desire of Mr. Harris to make us wait, or of any group of business men to teach us a lesson.
>
> We have believed that you were not certain of the feeling of the majority of persons who were dependent upon city transportation, and that is the reason that this vote has been taken. Ballots were distributed to women who work downtown and to school teachers to secure tangible expressions as to the feeling of the women.

At the conclusion of the address to the Council by Miss Clark she and the twenty-five women who accompanied her were told that a determined effort would be made to start cars as soon as the franchise has been voted upon by the Council. It was the opinion of the Council that there were possibilities of appealing to Judge Wade to order restoration of service at the time the Council acted upon the franchise.

Corporation Counsel Miller was called out of a sick bed to attend the Council meeting. He told of a three-hour conference attended by M. Haddon McLean, president of the Des Moines City Railway; J. G. Gamble, attorney for the company, and himself, at which the financial provisions of the proposed franchise were discussed.

Judge Miller outlined to the Council and the business women the franchise situation as it exists today and stated that it will require $1,500,000 available immediately to place the company in a position to restore service in full at once. Judge Miller also called the attention of the delegation to the fact that without an order from Judge Wade of the Federal Court the Council was powerless to restore service.

After waiting upon the Council the delegation of women visited F. C. Chambers, general manager of the railway, and placed their case before him. Mr. Chambers was unable to give the women any definite encouragement as to restoration of service before the franchise difficulties were ironed out.

Union employees of the company indicated that they would contest certain provisions of the franchise suggestions made by Corporation Counsel Miller, particularly the arbitration clause and the one-man-car clause. Objection filed with the City Council by C. C. Putnam, attorney for the executive committee, proposed that the old arbitration clause be inserted in the new grant or that acceptance of the current contract between the company and the men, be made a condition of the franchise.

United Traction Strikers Appeal Contempt Judgment

John F. and William H. Murray have taken an appeal to the Appellate Division from the decision of Justice Charles E. Nichols adjudging Henry Carrigan and John Carr, former employees of the United Traction Company, Albany, N. Y., guilty of contempt of court. They were charged by the company with wilfully disobeying the injunction order granted by Justice Harold J. Hinman forbidding striking employees from interfering with the present workers, patrons or property of the company.

It was alleged they assaulted one of the men who has been on strike after he returned to work in Cohoes. The case was heard by Justice Nichols in Schoharie County. Carrigan was fined $100 and Carr $50, each to serve thirty days in jail if the fines were not paid. The Appellate Division expected to adjourn on Sept. 27 and it is improbable the appeal can be heard at this term.

Stone & Webster Approve Franchise

The proposed franchise for the Houston (Tex.) Electric Company meets with the approval of the Stone & Webster management and if the people should approve of it at the coming election on Oct. 4, the company will immediately begin improvements to the system amounting to $1,000,000.

This statement was recently made by Luke C. Bradley, district manager at Houston. Mr. Bradley said that though there was financial depression he believed that the company could borrow the necessary money and that securities would be offered for sale which would establish co-operation between the people of Houston and the city in the development of its electric railway.

As referred to in the ELECTRIC RAILWAY JOURNAL of Aug. 27 the new franchise provides for certain changes and an extension of fifteen years from 1935. Valuation of the property of the Houston Electric Company has been placed at $6,000,000 plus any capital expenditures since March, 1920. The new franchise provides for earnings of 8 per cent on agreed valuation.

Disagreement Delays Franchise Settlement

While the possibility still exists that some way will be found to get the Grand Rapids (Mich.) Railway out of the difficulties that beset it, the Council and the company appeared on Sept. 22 to be deadlocked over the matter of the valuation to be included in the new franchise for the company first taken up for consideration last February.

The city persists in sticking to a historical valuation of $4,634,757 with enough additional as going value to bring the total amount up to $5,076,000. This figure the company considers wholly inadequate. In a spirit of helpfulness the railway pruned its original figure to $6,500,000 and then to $6,270,000 as a final value. Thus the city and the company are still more than $1,000,000 apart. The alternative has been proposed of submitting the matter to the Railroad Commission for decision, but the need for immediate action would seem to preclude this proposal being accepted, particularly as the commission would probably have to go over the whole case.

L. J. De Lamater, vice-president and general manager of the company, insists that the railway shall be allowed a valuation that will at least cover the bonded indebtedness. If the company is granted a new franchise it will agree to pay no dividends on its common stock for three years. It is now behind $350,000 in the payment of dividends on the preferred stock. As to the financing necessary at the present time, the company is willing to submit its financial program to the city for approval.

The suggestion has even been made by Mr. De Lamater that the city purchase the road or that it take over the property, operate it at a 5-cent fare and make up any deficit in expenses by a charge against the taxpayers as a whole.

The City Commissioners ignored this proposal at the session of that body at which it was made. Mr. De Lamater said he realized that the proposal was an unusual one, but that "looking on it in a business way it is after all a practical idea."

Wage Conference Suggested at Richmond

Thomas S. Wheelwright, president of the Virginia Railway & Power Company, Richmond, Va., has addressed a letter to the members of local Amalgamated Association notifying them that he could not obligate his corporation to continue the present wage scale agreement for another year and suggesting that they appoint a committee to confer with him regarding a new contract.

The company now pays conductors and motormen from 43 to 47½ cents an hour on cars requiring both a conductor and a motorman, and 52½ cents an hour to the operator of a one-man car. A beginner gets 43 cents an hour and 47½ cents after he has been in the employ of the company one year.

Transportation Costs Sought

Massachusetts Body Inquiring Into Matter Under Instructions From Last Legislature

In its effort to determine the comparative cost of different methods of transportation of passengers over the public highways, which the Legislature has instructed it to investigate, the Massachusetts Department of Public Utilities held its first public hearing at Boston, Mass., on Sept. 22. The hearing went into generalities, in which the Public Utilities Department itself and the electric railways were charged with having stifled the jitney service.

The principal aggressor was Senator Gardner W. Pearson, Lowell, who contended that the Public Utilities Department was responsible for "the breaking down of the street railway system in Massachusetts." Chairman Henry C. Attwill of the Commission sought in vain to draw some supporting specifications from the speaker.

Only one witness dealt with facts and figures, and after he had spoken the commission closed the hearing, without announcing what form its investigation will take in the future.

The expert testimony offered was by Clarence W. Kellogg, Stone & Webster Company. He discussed mainly the question of safety cars and pictured the different situations which call for various forms of transportation, such as the rapid transit system, the electric railway, the trolley bus and the motor bus, or jitney. His principal point was to show that in its proper place the one-man safety car, shows relatively fewer accidents and a lower cost of settling accidents than the average two-man car. The decrease in accidents per 10,000 miles amounts, he said, to 31.7 per cent.

Mr. Kellogg said that from a study made of seventeen companies carrying 240,642,000 passengers in eleven States, where there were almost as many miles operated by one-man cars as by two-man cars, the number of accidents per 10,000 miles was 3.69 on the one-man cars and 5.40 on the two-man cars. The average accident cost per 1,000 miles on the one-man cars was $14.77 as against $16.06 on the two-man type.

These figures on safety seem contrary to the prevailing general idea of the one-man car, and contrary to the argument which operators have used on various occasions against the car. Mr. Kellogg explained that it was but natural to expect more safety on the one-man type car because all the responsibility is thrown upon the operator. There is no opportunity then for divided responsibility, as is the case with two men, where one neglects a detail because he relies upon the other to attend to it. In addition to this the one-man car cannot start before the door is closed, and the door of the car cannot be opened before the car has stopped.

As to cost Mr. Kellogg explained that rapid transit must be provided, with its necessary heavy cost of construction, where the traffic density is great, 65,000 passengers going each way hourly, as in New York. On the other hand the motor bus is the best out in the suburban section where there are only a few passengers to move, because the initial cost of the motor bus is small and the flexibility of the service permits of its use elsewhere between the traffic peaks.

Kind of Passenger Traffic		Can *Only* Be Handled Economically by	Is *Best* handled by	Can Also Be Handled Economically by
Description	Passengers One Way Per Maximum Hour			
Very light	Up to 3,000	Motor bus	Motor bus	....
Light	3,000 to 5,000	....	Motor bus	Street car
Medium	5,000 to 8,500	....	Street car	Motor bus
Heavy	8,500 to 12,000	Street car or train	....	....
Very heavy	Above 12,000	Train	Train	....

Between these extremes there is room for the regular electric railway and the trolley bus and it might be to the advantage of the street railway to use the several types in order that they may be co-ordinated for an economic handling of all the traffic.

Mr. Kellogg presented the accompanying tabulation, which are British conclusions as to the best vehicle for different kinds of traffic. It is based upon extensive studies in England.

Lower Wages in Effect

Wages of the trainmen of the Indiana Service Corporation, Fort Wayne, Ind., were reduced on Sept. 16 as recorded in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 17.

The new scale in cents per hour for two-man and one-man car operators on the city lines is as follows:

First six months	41
Second six months	43
Second year	45
Third year	48
Fourth year	50

This new scale is 100 per cent greater than was in effect in 1914. The maximum pay for the interurban trainmen will be 48 cents over a spread of three years. The accompanying table gives a tabulation of wages in cents per hour paid to Fort Wayne city operators from 1914 to date.

FORT WAYNE CITY LINES

Two-Man Cars

	1914	1916	1917	1918	1919	1920
First six months	19	21	23	30	33	46
Second six months	20	21	23	31	34	48
Second year	21	22	24	33	36	50
Third year	22	23	25	34	37½	53
Fourth year	23	24	26	..	..	55
Fifth year	24	25	27	..	..	..

One-Man Cars

	1917	1918	1919	1920
First six months	25	33	36	46
Second six months	25	34	37	48
Second year	26	36	39	50
Third year	27	37	40½	53
Fourth year	28	..	..	55
Fifth year	29	..	..	..

Pay of Laborers Cut

The wages of 300 common laborers employed by the Portland Railway, Light & Power Company, Portland, Ore., were reduced approximately 20 per cent recently, when an arbitration board of three, appointed to settle a dispute between the employees and the company, made a report. The old maximum wage was $4.40 a day or 55 cents an hour for an eight-hour day. Under the new schedule, 47½ cents an hour will be paid to employees who have been in the service one year or more; 45 cents will be the maximum wage for men in service of the company six months; and 40 cents an hour will be the wage of those in service less than six months.

The board of arbitration requested, however, that all men now employed as common laborers who had been in the employ of the company less than six months be placed in the 45-cents-an-hour class. The majority report said:

> The continuance of wages on a war-time schedule unquestionably produces unemployment. This fact was among those considered in arriving at a decision. The majority members of the board believe that general prosperity cannot return until general liquidation has been accomplished and wages, foodstuffs, merchandise, rents and all other basic elements have readjusted themselves to their proper relations. This readjustment must be world-wide.

Suburban Buses Must Serve

By a vote of 4 to 1, the head of the street department alone dissenting, the City Council of Lincoln, Neb., voted Sept. 5 in favor of a suburban bus ordinance which carried as a principal provision the rule that if a bus owner professes to serve he must actually do so. The Council attempts in this ordinance to classify the suburban bus as against the bus running to far-away points and the bus running wholly within the city. There is an ordinance already on the books pertaining to the city buses and there is no attempt to interfere with those coming in from far distant points.

The ordinance provides that suburban bus owners shall apply to the city for a license. They shall answer certain questions and pay a filing fee of $5. If the Council grants the application, the operator shall give eight consecutive hours of service on seven days of the week if the suburban point is within 10 miles of the city. The ordinance will not take effect for fifteen days. This means that the suburban buses now in operation between Lincoln and Havelock and Lincoln and College View may operate through Fair Week.

Wages and Fares Coupled

Mobile Company and Employees Will Put Both Questions Up to Commission in Future

Another railway company—this time one in the far Southern State of Alabama—has found a means of putting squarely up to the public regulating authorities the necessity and responsibility for recognizing the wage problem in connection with a determination of rates. The Mobile Light & Railroad Company, through its president, J. Howard Wilson, has recently concluded a new temporary wage agreement with its union employees, which agreement contemplates a future wage adjustment by the Alabama Public Service Commission, at the same time that body undertakes to fix a new rate of fare.

TEMPORARY SEVEN-CENT FARE

The Mobile Company is at present operating on a temporary 7-cent cash-fare basis, with tickets at 6 cents. This rate was granted for two years, which period will expire on April 14, 1922. At that time it will devolve on the commission to fix a new fare. The law of Alabama requires that rates so fixed shall be sufficient to permit the utility to furnish adequate service, to maintain its plant, facilities and equipment in good order, and to enable it, in addition to other legitimate expenses, "to earn a fair net return on the reasonable value of its property devoted to the public service."

The new temporary wage agreement just consummated, effective from Sept. 1, provides for a reduction in the wage scale of 41, 43 and 48 cents an hour, for first, second and third year platform men, respectively. The previous rate was 43, 45 and 50 cents. The differential for operators of one-man cars was reduced from 5 to 4 cents an hour. Carpenters, machinists and blacksmiths were reduced 6 cents an hour. This scale is to continue in effect until April 15, 1922.

NEW RATE TO BE SOUGHT IN APRIL

Meanwhile, as provided in the new agreement, the railway is to request the commission to fix the new rate of fare to succeed the present one after the middle of April, while the employees are to place their wage question before the same body, requesting it to fix a scale of pay which "will be fair, just and impartial to the company and its employees, as well as to the riding public."

The commission will be asked to give due consideration to the cost of living, and to wage scales in effect in other cities for electric railway employees, and both the company and the employees have agreed to be bound by whatever decision the commission shall arrive at, and for whatever period the commission shall determine.

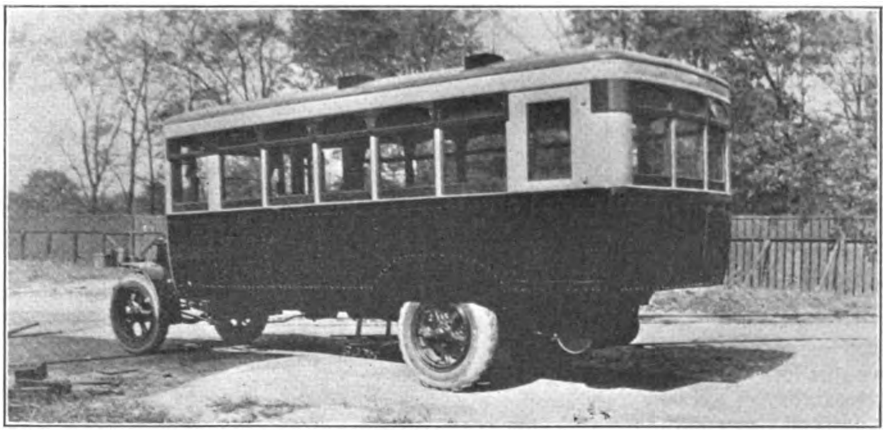
It is understood that if the Alabama Public Service Commission agrees to undertake the responsibility of fixing a wage scale in this instance, it will be through voluntary action on its part, for there is no provision in the law for such procedure.

Auxiliary Motor Bus Lines to Akron Railway

Announcement is made by A. C. Blinn, vice-president and general manager of the Northern Ohio Traction & Light Company, Akron, Ohio, that auxiliary bus lines are to be established by the company in Akron within a short time. An initial order for three closed steel motor bus bodies has been placed with the G. C. Kuhlman Car Company, Cleveland, Ohio.

It is expected that additional buses will be purchased by the company as rapidly as traffic demands. It is also probable they will be utilized in Canton and Massillon, where the company has side lines connecting with its interurban lines between Uhrichsville and Cleveland.

The buses will seat twenty-five passengers and in addition will have room for ten or fifteen standees. The entrance is on the right hand side at the front. Folding doors and steps are a part of the equipment. The buses are to be lighted by electricity. There will also be a buzzer system with push buttons at each side post. They are equipped with regulation heaters, and fare boxes will be established at the right of the driver against the railing. The color is to be of a maroon with the name of the company in gold letters on each side.



PACKARD-KUHLMAN BUS TO BE USED IN AKRON

The seats are to be upholstered in leather of a dark green color; floors are to be covered with linoleum. Window screens are attached to the bottom of the side and rear windows, all windows having inside curtains. Both cross and longitudinal seats are to be used.

The chassis is made by the Packard Motor Car Company, is to be equipped with approved type of wheels and pneumatic tires. The drive will be left hand. The springs are to be of longer and easier riding construction than used in ordinary commercial service. The cost of the new bus complete is approximately $8,000.

First delivery of three buses is promised by the Kuhlman Car Company within eight or ten weeks.

Omaha Wages Cut

Trainmen Reduced About 12 per Cent Following Suggestion of Railway Commission

The Omaha & Council Bluffs Street Railway, Omaha, Neb., announced a reduction of approximately 12 per cent in the wages of trainmen, effective on Oct. 1. The scale which has been in effect is 53 cents an hour for the first three months of service; 55 cents, next nine months; 57 cents after first year of service. The new scale will reduce those rates per hour to 46, 48 and 50 cents, respectively.

This action by the company is pursuant to a recent recommendation by the Nebraska State Railway Commission. Other reductions will be made in the various departments, with the exception of the clerical staff, whose pay was not materially increased during the period of the war. The company said:

> The Nebraska State Railway Commission suggested, in view of the company's falling off of revenues during the last year, on account of business depression and unemployment, and resulting in a decline of passenger traffic, as an alternative instead of decreased fares at this time, a policy of economy, the prime factor of which is a reduction of wages.
>
> The directors recognized instantly, of course, the force and logic of the commission's utterances, and naturally had not, therefore, been unmindful of what you and everyone has known, that wages everywhere are being reduced from the abnormal war standards.
>
> The reduction is in line with the suggestion of the State Railway Commission, and is based upon the average reduction found reasonable for steam railway employees by the United States Railroad Labor board.
>
> It is a smaller reduction than the average reduction brought about last spring for packing house employees. It is likewise a much smaller per cent of decrease than taken by other employees of Omaha generally and employees generally throughout the industries of the nation.
>
> Compared with reductions in the pay of street railway employees in other cities the reduction made by this company is less than the average reduction, which average, in these other cities is about 15 per cent. In some of the cities street car employees' wages have been reduced as much as 20 to 28 per cent.

Shortly before the war the Omaha company increased the scale for carmen from 28-33 cents an hour to 33-35 cents an hour. Then a further increase was made to 35-40 cents, following which occurred a strike a year ago last winter. Negotiations resulted in another increase to 51-55 cents and a year ago the scale of 53-57 cents was established.

$15,000,000 Development Awaits Change in Public Sentiment

The Virginia Railway & Power Company has begun work on a new dam in the Appomattox River at Petersburg, replacing a very old dam which was abandoned some years ago and increasing the amount of power available in the Petersburg industrial district. This district includes the wonder city of Hopewell, built by the DuPonts during the war. Although Hopewell was a "war baby" it now gives promise of permanent manufacturing stability. The new installation will cost about $75,000.

Some years ago elaborate plans were prepared for the development of the water power in the Appomattox River. It was then proposed to acquire more than 30,000 acres of land to protect the riparian rights, and build one or more large dams some distance above the city, the work to cost in all more than $2,000,000. These plans were held in abeyance during the way period and may be abandoned because the cost of capital to carry out the undertaking is considered prohibitive. To finance the extension now being made it has been necessary to borrow money at 10 per cent, although the success of the undertaking is assured in advance.

Thomas S. Wheelwright, president of the Virginia Railway & Power Company, said on Sept. 27 that the company has for some years had in mind a general plan for the development of water power in the Rappahannock River at Fredericksburg, the James River at Richmond, the Appomattox at Petersburg and the Roanoke at Roanoke Rapids, N. C. Surveys were made of the watersheds of these four rivers to ascertain the average volume of water and the extent of the fall. Preliminary estimates were that the whole cost would be in the neighborhood of $15,000,000, an amount impossible to raise, according to Mr. Wheelwright, until times change and until there is a decidedly different attitude on the part of the law-making and regulatory authorities toward such investments.

Pretentious Bus Proposal Made in New York

A description of 100 bus routes to cover all five boroughs of New York City and over which it is proposed to operate 2,000 buses has been sent to the Board of Estimate by Benjamin Shepard, an attorney, of 154 Nassau Street, acting for Austin P. Fox of the City Transit Company. The company made application for franchises several months ago, and was asked for more specific information as to the routes and the type of bus.

In a letter accompanying the description of the routes Mr. Shepard says the buses can be put in operation within thirty days after approval of the franchise by installing from 100 to 500 buses, and a like number every thirty days thereafter. The fare would be 5 cents on the main lines, with transfer privileges, and 1 cent on each of the four bridge local lines. The average cost of the buses, which would be of single and double deck types, would be $10,000, and the entire outlay for buses more than $20,000,000.

Mr. Shepard would not give the names of those who are to furnish capital for the enterprise.

Vancouver Residents Inconsistent

Following the rejection of a service-at-cost franchise by the City Council of Vancouver, B. C., petitions have been lodged with the Council by residents of various districts for extensions to the British Columbia Electric Railway's lines and improvements to service. The reply of W. G. Murrin, assistant general manager of the company, was that not a cent can be spent on improvements until the affairs of the company are so stabilized that it can raise money. The City Council threatens to put on motor buses. On one of the proposed lines, the first requirement of a motor bus or jitney service would be the paving of a mile of street, an expenditure which the city is not likely to incur at present.

Report of Traffic Survey Made in Nashville

The traffic survey report of Nashville, made by Ross W. Harris, consulting engineer at the instance of the Tennessee Public Service Commission jointly for the City of Nashville and the Nashville Railway & Light Company, has been submitted to these bodies with recommendations and suggestions for the elimination of vehicular and car congestion in the city.

Among the suggestions made were the shorter routing of cars on the longer lines, the elimination of parking of autos on certain narrow streets, the extension and opening of several of the business streets, the rerouting of cars on certain lines, new construction and transition of certain tracks. Mr. Harris said:

> The streets of Nashville in the downtown districts are extremely narrow and afford insufficient capacity to accommodate the traffic as now regulated. It is observed that the parking of automobiles on certain streets in the downtown district has been extensively practiced and thus valuable street capacity is utilized by stationary vehicles greatly to the interference of street car passage and other moving bodies.

Since the report has been submitted the City Council of Nashville has passed a bill prohibiting the parking of autos and other vehicles on certain downtown streets, except during early morning hours to 7 a.m. and late evening hours from 7 p.m. This has helped considerably in giving a freer flow of traffic, thereby enabling the electric railway cars to make routes on better schedule.

In regard to the central transfer station which is in use in Nashville, Mr. Harris points out its advantages, but reports it is inadequate in size properly to serve the public, its facilities having been exceeded by the traffic demands. At the present time all electric railways enter and leave this central station.

Montreal Wage Reduction Held Not Unreasonable

The wage reduction of 12½ per cent put into effect by the Montreal (Que.) Tramways in August is likely to remain in force without further protest from the employees, as the result of the award of a board of arbitrators announced on Sept. 24. The board was granted by the Dominion Department of Labor on the application of the union, the department naming a chairman, the men choosing a representative, and the department then nominating a representative for the company after the latter had failed to take any action to do so.

The hearings before the board consisted entirely of evidence submitted by the men in opposition to the reduction, the company not recogizing the existence of the board in any way.

A majority award made by the chairman, Judge Bazin, and the department-appointed representative of the company, A. P. Frigon, held that in view of lowered living costs the company's financial position and the existing industrial crisis, the reduction is not unreasonable.

A minority report by A. Brossard, K. C., the union's representative, dissented and recommended that the scale in force before Aug. 16 be restored.

Both reports were discussed at a meeting of the union, held after the announcement of the award, and although the men refused to accept the majority award and claimed to be victims of injustice, no definite steps were taken further to oppose the reductions. The prevailing opinion is that in view of depression and unemployment conditions, the operatives will decide to let matters rest as they are.

Insufficient Notice of Wage Reduction

The order of the receiver of United Railways, St. Louis, Mo., reducing the wages of about 125 electrical workers form 10 to 15 per cent below the existing scale of from 55¾ to 84¾ cents an hour, has been held up by Judge Lamm, special master in the United States District Court, who found that sufficient notice had not been given the employees.

It was held that the wage award made to the employees by the Missouri Public Service Commission, sitting as a board of arbitration and effective Sept. 1, 1919, was a contract and could not be terminated by either the receiver or the electrical workers without giving sufficient notice. The receiver had posted a notice in August that the new wage scale would go into effect on Sept. 1. The master held that if a new notice were posted before Oct. 1, the wage cut could become effective on Nov. 1. This notice has been posted.

The city of New York has announced a public demonstration of the trackless trolley between Meiers Corners and Linoleumville, Staten Island, Oct. 8.

Financial and Corporate

Drastic Reorganization

Stockholders and Unsecured Creditors of Interurban Railway Completely Wiped Out

Companies are being organized in both New York and Pennsylvania to take over the properties of the Western New York & Pennsylvania Traction Company sold under foreclosure some time ago. These companies will be merged into a single corporation under the name of the Olean, Bradford & Salamanca Railway. It is expected that the new securities will be available for distribution shortly after Oct. 1, but the plans for the reorganization are subject to approval by the Public Service Commissions of both New York and Pennsylvania.

The reorganization is a drastic one in the sense that if the plan now proposed is carried out, the stockholders and unsecured creditors of the old company will have no interest or share in the new corporation. The entire electric railway property will be owned by the depositing bondholders.

Under the new plan the fixed charges of the new corporation will be substantially reduced. It is proposed to raise $224,000 from the old first and refunding mortgage bondholders, or in the event of their failure to provide the necessary funds, it is intended to sell such securities on the same terms to an underwriting syndicate. The money will be used for such cash requirements as are necessary in connection with the purchase of the property.

As part of the foreclosure proceedings the property of the Western New York & Pennsylvania Traction Company in New York was purchased on behalf of the bondholders' committee at public sale on June 4, and the property in Pennsylvania was similarly purchased on June 15. Of the total of $2,240,000 of bonds outstanding $2,066,000 were deposited under the protective agreement.

The capitalization of the old company exclusive of $1,000,000 of common stock was $4,067,255, consisting of $92,000 of first mortgage bonds of the Olean Street Railway (Bolivar Extension), $136,000 of first mortgage bonds of the Olean Street Railway, $2,240,000 of first and refunding 5 per cent bonds, $599,355 of 6 per cent cumulative preferred stock, and $1,000,000 of 5 per cent non-cumulative second preferred stock.

The capitalization of the new company will total $4,260,000 consisting of $92,000 of first mortgage bonds of the Olean Street Railway (Bolivar Extension), $136,000 of first mortgage bonds of the Olean Street Railway, $224,000 of first and refunding mortgage 7 per cent bonds Series A, $1,120,000 of 7 per cent non-cumulative preferred stock, and $2,688,000 of common stock. Each depositor under the protective agreement dated April 19, 1920, for each $1,000 of bonds of the present company with all coupons attached since Jan. 1, 1920, is to receive $200 of common stock of the new corporation, whether or not the depositor has purchased the bonds and securities of the new corporation, and in addition to receiving the $200 of common stock each depositor is to be entitled on payment of $100 to purchase $100 of first and refunding mortgage 7 per cent bonds, series A; $500 of 7 per cent non-cumulative preferred stock, and $1,000 of common stock.

Toronto Purchase Arbitration Hearings Continued

W. J. Hagenah, Chicago, expert for the Toronto Railway, continued his evidence before the Board of Arbitration last week much along the same lines as the previous week's testimony. Dealing with the value of track and roadbed, Queen Street was given the general value of 70 per cent; the track on Ossington from Queen to Dundas was found to be perfect and set down at 98 per cent of original value, while the average came to 80 per cent. Front Street between Church and Sherbourne, however, was worth only about 20 per cent, from Church to Yonge 60 per cent and from Yonge to York where the track was new it was placed at 95 per cent.

The Gerrard Street line was stated to have a present value of $101,885, with a replacement value of $145,509; its condition was 71 per cent new. Harbord between Spadina Avenue and Bathurst was rated at 75 per cent and 70 per cent west of Bathurst. The whole of the King Street line was averaged at 67 per cent, with a present value of $102,658 and replacement value of $145,041.

At this juncture W. N. Tilley, K.C., one of the city's counsel, suggested that the city of Toronto was not going to accept the basis of cost of labor and material averaged over the last three years as shown in Mr. Hagenah's report. After some discussion between the Board of Arbitration and counsel no decision was reached. Mr. Hagenah resumed his evidence.

All other streets were treated along similar lines, showing a varying percentage from 55 per cent up to 90 per cent. The board then determined to hear argument as to whether or not the three-year basis of cost should be accepted as the manner of determining the value of the railway plant at the time of taking over by the city of Toronto.

The hearing was then adjourned until Tuesday of the following week.

Segregation Details

Toledo Stockholders to Vote on Oct. 10 on New Financial Plan Separating Properties

Facts additional to those noted in the ELECTRIC RAILWAY JOURNAL for Sept. 24 are now available about the plans which will come up for approval at the special meeting of stockholders of the Toledo Railways & Light Company called for Oct. 10 in Toledo to change the name of the corporation from the Toledo Railways & Light Company to the Toledo Edison Company. Since the segregation of the railway properties in Toledo under the name of the Community Traction Company, the Toledo Railways & Light Company has been solely a generating and distributing company for electric light and power and gas. In connection with the change of name the Acme Power Company, operating a large central generating station in Toledo, will be consolidated with the Toledo Edison Company.

The authorized capital stock of the new company will be $15,000,000 of common stock, $6,000,000 of prior preferred 8 per cent cumulative stock and $4,000,000 of preferred stock 7 per cent cumulative. In addition the company will have an authorized amount of $13,500,000 first mortgage 7 per cent bonds, due 1941, and the $1,875,400 of the Toledo Gas, Electric & Heating Company consolidated mortgage 5s, due 1935, will remain outstanding. Upon completion of the financing, the Toledo Edison Company will have outstanding only these two bond issues and will be well supplied with working capital.

Of the stocks of the Toledo Edison Company, the $12,904,000 par value of common stock, or approximately 93 per cent of the outstanding amount, will be owned by Toledo Traction, Light & Power Company, which also will own $1,500,000 par value of the Toledo Edison Company preference stock 7 per cent cumulative series A, $7,925,000, or 100 per cent, of the Community Traction Company first mortgage 6 per cent gold bonds and $500,000 par amount of the Community Traction Company 8 per cent cumulative preferred stock. Of the $6,661,675 par value of Toledo Traction, Light & Power Company preferred, $6,425,410 is owned by the Cities Service Company, and of the $7,966,250 of the Toledo Traction, Light & Power Company Common stock outstanding, 95.71 per cent or $7,624,500 is owned by the Cities Service Company. The Toledo Edison Company properties, as well as those of the Community Traction Company, are under the operating management of Henry L. Doherty & Company.

The Toledo Edison Company has sold to a banking syndicate headed by Harris, Forbes & Company, as syndicate managers, and the National City Company $13,500,000 of its first mortgage 7 per cent gold bonds of the series due in 1941. Those bankers offered the issue at 96½ and interest to yield about 7.33 per cent.

In connection with the financing of

the Toledo Edison Company, the National City Company, New York, and the Union Trust Company, Cleveland, Ohio, have purchased $2,500,000 of the Toledo Edison Company prior preferred 8 per cent cumulative stock, which is now being offered to investors.

Presentation of Reorganization Testimony Completed

Sanction is being sought from the Public Service Commission of Rhode Island to reorganize the Newport & Fall River Street Railway as the Newport Electric Corporation. The company operates the electric railways in Newport, Portsmouth, Middletown and Jamestown and furnishes electric light in these and other places. The petitioners contend that with the reduction in costs now apparent through the operation of one-man cars and as a result of other economies the new company should be able from the start to meet all the obligations imposed under the proposed plan for refinancing the properties.

Permission is being sought for approval of the issuance of $160,000 of 7 per cent notes, maturing as follows: $20,000 on Oct. 1, 1922; $20,000 on Oct. 1, 1923; $20,000 on Oct. 1, 1924, and $100,000 on Oct. 1, 1925, secured by the $240,000 bonds on deposit. Also an issue not to exceed $160,000 of 8 per cent notes maturing Oct. 1, 1927. Of this issue $40,000 is to be paid to the Newport County Electric Company for unpaid interest due on $240,000 of first mortgage bonds which matured on Aug. 1, 1918, and which are now held by the reorganization committee of the Bay State Street Railway. Of the issue $120,000 is to be offered to the stockholders at par in proportion of 10 per cent of their holdings and the proceeds up to $80,000 are to be used to make cash payment on the first mortgage bonds in the hands of the receivers of the Bay State Company.

Frank D. Lisle, president of the company, presented the case before the commission. He outlined in detail the history of the company and its connection with the Old Colony Street Railway and the incidents which led up to the appointment of the receiver of the Bay State Street Railway. He said that the petitioning corporation, the Newport County Electric Company, was the successor of the Newport & Fall River Street Railway, the change of name having been granted at the January session, 1920, of the Rhode Island General Assembly. Mr. Lisle said that under the proposed plan there would be an increase of only $80,000 in the capitalization notwithstanding that the petition called for the issuance of $320,000 in new bonds.

After Mr. Lisle had concluded his statement Chairman Bliss of the commission announced that the matter would be taken under consideration, and requested Mr. Lisle to file certain papers and figures concerning the capitalization and valuation of the corporation and its properties.

Syracuse Going Behind on an Eight-Cent Fare

Figures made public by B. E. Tilton, vice-president and general manager of the New York State Railways, Syracuse Lines, and summarizing operations for the four months ended Aug. 31, showed that the local lines during that period ran short $185,309 of earning surplus, contingencies and the 8 per cent return on valuation fixed by the Public Service Commission.

Total revenues aggregated $745,677, including $717,906 from transportation, and total operating expenses amounted to $648,254, with a net revenue from railway operations of $97,423. Offsetting this apparent revenue was an item of $46,058 for taxes assignable to railway operations, leaving an operating income of $51,365. To this was added the non-operating income of $1,184, bringing the gross income to $52,549.

Offsetting this gross income total is an item for $237,859, representing the amount which should be earned for surplus, contingencies and the 8 per cent return allowed by the commission on the valuation of $8,919,000, fixed by the commission's finding in the 8-cent fare decision April 19 last.

The gross income shown by the report ran short $185,309 of reaching the amount which should have been earned by the Syracuse lines during the four-month period.

This deficiency is charged by company officials to the slump in riding which followed the business and manufacturing depression during the same period.

The receipts for August were $15,111 less than the receipts for the same month last year, despite the 8-cent fare; the receipts for July $12,500 less than the same month last year, while the receipts for June and May of the current year were respectively $1,200 and $30,000 ahead of the receipts for the same month last year. The difference for May is not a fair comparison because during five days in May, 1920. the system was shut down by a strike.

New Jersey Consolidation Disapproved

The application for consolidation of the associated companies of the New Jersey and Pennsylvania Traction Company, operating in Trenton and Princeton, was disapproved on Sept. 24 by the State Public Utility Commission because of the method of the transfer of stock of the companies. The proposed merger included the New Jersey & Pennsylvania Traction Company, the Lawrenceville & Princeton Railroad, the Trenton, Lawrenceville & Princeton Extension Company and the Princeton Street Railway. The New Jersey & Pennsylvania Company is the owner of the other companies, and the consolidation was sought to expedite the handling of the financial and other affairs of the concerns. The parent company has a capitalization of $1,100,000.

The plan of the company in the proposed consolidation was to reduce its $500,000 stock outstanding to $350,000 at par; the outstanding stock of the Trenton, Lawrenceville & Princeton Company amounting to $200,000 to be reduced to $132,000; the outstanding stock of the Trenton, Lawrenceville & Princeton Extension Company amounting to $50,000 to be increased to $53,000; the $7,000 stock of the Princeton Street Railway to be reduced to $5,000.

In commenting on the project the utility board stated:

> This is a proceeding which has in the past met with the disapproval of this board. Where the securities of underlying companies are wholly owned by another company with which merger is to be effected, the only procedure necessary in such case is to cancel the stock of the underlying companies.

The board also maintained that where mergers are concerned and stocks are transferred, the securities of a company newly formed must bear a proper relation to the value of the property in the newly formed company after consolidation.

$71,194,759 Historical Reproduction Cost

Valuation of the properties of the Pacific Electric Railway, Los Angeles, Cal., is placed at $71,194,759 as representing historical reproduction cost undepreciated by Richard Sachse, chief engineer of the State Railroad Commission in a report made public on Sept. 19. The valuation is of Dec. 31, 1920. Operative property, which is the only part considered in rate making, is placed at $63,412,675 according to the historical reproduction method. The report consists of three large volumes and represents two years work of the engineering department.

The report will be submited in the hearing of the application of the Pacific Electric Railway for increase in rates set before the commission *en banc* for Oct. 11. It does not represent finding of value by the commission, it is pointed out, but will be considered together with such other exhibits as to valuation as may be presented at the hearing.

As is usual in those cases two other sets of valuations are made which, under the rulings of the courts, must be taken into consideration by the commission in arriving at present value. These are the historical reproduction cost less depreciation and cost new less depreciation. Historical reproduction cost less depreciation is placed at $56,372,096, operative property being set down at $50,752,455 and non-operative property at $5,619,641.

Reproduction cost new under a five-year period ended Dec. 31, 1920, of both operative and non-operative property is given at $103,600,000; less depreciation, $82,700,000. The operative property under reproduction cost new undepreciated is $92,400.000.

In addition to the valuation report there will be presented at the hearing by departments of the commission reports touching the financial, operating and traffic conditions of the company.

Receivers Seek Right to Abandon Part of Line

Harry A. Dunn and J. Frank Johnson, receivers for the Toledo & Western Railroad, Toledo, Ohio, has filed an application in federal court for instructions with respect to terminating a franchise for the operation of electric railway lines in Blissfield, Mich.

The action is being taken as the result of a movement to pave Adrian Street in Blissfield. The railway has a franchise to operate lines on Adrian Street and it is contended by the receivers that officials of the city are planning to require the company to pave its tracks and 3 ft. on each side of the tracks.

This improvement would cost $30,000, the petitioners aver, and the company cannot afford to pay it. The receivers declared they had been advised by their attorney that the franchise could be terminated and it is on this matter that a court ruling is sought.

Petition for Indiana Merger Denied

The Public Service Commission of Indiana has denied the petition of the Indiana Electric Corporation for authority to buy seven Indiana public utilities and for authority to issue a total of $12,100,000 of stocks, bonds and notes with which to finance the purchase and to assume a total of $8,962,000 liens against two of the selling companies.

In denying the petition the commission said that it is favorably inclined toward the petitioner's project proposing a centralized power plant in the heart of the Indiana coal field, if such a project could be made to provide low-cost current, but that it is of the opinion that such a project could not be carried out along the lines proposed by the petitioner.

Commissioner George M. Barnard, who had charge of the case for the State, wrote the order. He summarized in the following brief statement the reasons why the commission declined to grant the request:

> The commission is not unmindful of the possible benefits that might accrue to the citizens of the various communities through the establishment of a central generation plant, serving the consolidated properties. Under the law, however, any consolidation of utility properties must have a proper basis of value, a proper relation between value and securities and a sufficient annual income to carry proper capital charges. Permitting the consolidation on the basis proposed would have capitalized excessive values against the consumers. This, of course, is improper. The petition was, therefore, denied.

Valuation Hearing Postponed.—The hearing of the case of the valuation of United Railways, St. Louis, Mo., before the Missouri Public Service Commission, set originally for Sept. 27 at Jefferson City, has been postponed until Oct. 18, at St. Louis. Col. A. T. Perkins, manager for the receiver, and a staff of engineers, attorneys and accountants are completing the company's case to be presented to the commission.

Financial News Notes

Gold Notes Offered.—Stone & Webster, Inc., New York, N. Y., are offering at 96¾ and interest to yield about 8 per cent $750,000 7 per cent gold notes of the El Paso (Tex.) Electric Company. The due date is July 1, 1925.

Can't Suspend Service. — The Ohio State Utilities Commission recently refused the petition of the Ohio Service Company, Coshocton, Ohio, to abandon service at Uhrichsville and Dennison, Ohio. The railway claimed that jitneys were responsible for the loss in revenue suffered by the railway.

Refunding Bonds Offered.—Chandler & Company, Inc., New York, are offering for subscription $560,000 of Lexington (Ky.) Utilities first lien and refunding 6 per cent gold bonds, Series "B." The proceeds of the bonds are to be used to retire underlying bonds, for extensions and improvements and for other corporate purposes.

Income Considerably Reduced—For the seven months ended July, 1921, the Twin City Rapid Transit Company, Minneapolis, Minn., realized a net income of only $372,784 against a net of $643,670 for the same period a year ago. The gross revenues were $8,127,194 against $7,100,242 for the first seven months of 1920.

510,700 Fewer Passengers in Toledo.—The Community Traction Company, Toledo, Ohio, carried 510,700 fewer passengers in August of this year than in July. Street Railway Commissioner Wilfred E. Cann believes that the increased fares in effect since July will make a much better financial showing. He has decided to lay off forty-five platform men to economize on labor.

New Company Elects Officers.—The Savannah Electric & Power Company, Savannah, Ga., organized as the successor under foreclosure to the Savannah Electric Company, has elected officers as follows: President, A. A. Lawrence; vice-president, W. H. Bedgood; secretary, Thomas F. Kearns; treasurer, E. S. Abrahams; directors, A. A. Lawrence, E. S. Abrahams, Louis A. Mills, W. H. Bedgood and Thomas F. Kearns.

May Save Line. — Despite the fact that officials of the Asheville & East Tennessee Railroad, Asheville, N. C., recently announced that service would be suspended on Oct. 1, citizens of Asheville and Weaverville are starting a campaign to raise $5,000 for the continued operation of the line. One plan suggested is that the property owners along the line pay the railway a tax while others are asked to subscribe to stock.

Profit for Shore Line in July.—The Shore Line Electric Railway, Norwich, Conn., was operated at a profit of $7,439 during July, according to a report filed with the clerk of the Superior Court by Receiver Robert W. Perkins. This is the first month in 1921 that has shown a profit. All other months of the year show losses varying from $1,027 in June to $6,112 in February. The losses for the first six months were as follows: January, $3,749; February, $6,112; March, $3,264; April, $2,296; May, $1,411; June, $1,027.

Receiver Seeks Court's Instruction.—Application has been made for an order authorizing Rollo Wells, receiver of United Railways, St. Louis, Mo., to pay semi-annual interest due on Oct. 1 on $9,790,000 St. Louis Transit Company bonds. Interest amounts to $244,750. Application has also been made for extension of time within which to adopt or renounce contracts entered into between St. Louis Transit Company and Missouri Electric Railroad, Florissant Construction Company, Real Estate & Investment Company and Merchants Express Company.

Abandonment Announced in Spokane. Discontinuance of service on the Lidgerwood line and removal of its tracks was announced on Oct. 9 by the Washington Water Power Company, Spokane, in a letter filed with City Clerk Fred Kellam. This step, the company states, is taken as the result of the controversy over paving North Division Street, in which the city tried to force upon the company a large expenditure, chiefly for the benefit of its competitors, the jitneys. The abandonment of the Lidgerwood line is the most important step thus far resulting from the releasing of jitneys by the City Council last June.

Public Service Issues Equipment Trust Certificates.—Plympton, Gardiner & Company, New York, N. Y., and Cassatt & Company, Philadelphia, Pa., are offering, at 100 and accrued interest, to yield 7.25 per cent, $1,540,000 Public Service Railway 7¼ per cent equipment trust certificates, series E. The certificates are dated Aug. 2, 1920, and mature semi-annually until 1930. They are secured on the following equipment: 200 safety cars, 100 trail cars, 15 snow plows and 15 snow sweepers. The cost of this equipment was $2,434,400. The total cash paid was $894,000, or 36 per cent of the cost of the rolling stock.

Interurban Bondholders Organize.—Thomas H. Jones, Williamson Building, Cleveland, Ohio, is secretary of a committee headed by I. F. Freiberger, vice-president of the Cleveland Trust Company, Cleveland, Ohio, which has been requested by the holders of a large amount of the first mortgage 5 per cent gold bonds of the Western Ohio Railway, Lima, Ohio, to act as a committee for the protection of the bondholders. The bonds mature on Nov. 1, 1921, and the railway will not be able to pay them at maturity. A bondholders' protective agreement is in course of preparation under which the Union Trust Company, Cleveland, is designated as depositary. The bondholders are invited to forward their bonds for deposit with the May 1, 1921, and later coupons attached.

Traffic and Transportation

Jitney Problem Solved

Public at Springfield, Mo., Approves Plan of Buses Owned by Electric Railway

Through the persistent efforts of the electric railway management in Springfield, Mo., to provide adequate transportation facilities without the aid of the jitney as a competitor, the bus problem in this city has been solved.

Since 1914 constant effort had been made by the Springfield Traction Company to obtain relief from the unfair and destructive jitney competition, but city officials were reluctant to tackle the proposition. The buses were allowed to run promiscuously and at random at first. Then through an election, they were supposed to be placed under restriction which would confine them to territory not served by the railway. This plan would have produced fairly good results, but the terms of the ordinance adopted at the polls were not observed and as a result the railway was being seriously injured.

The company then endeavored to meet the situation by asking the city for permission to operate jitneys in place of cars on some of its weak lines, the company's buses to enjoy the same liberties as were accorded the privately-owned jitney buses. In this the privately-owned buses seemed to be favored.

As a last resort an initiative election was called in which the people of Springfield were asked to give the railway the exclusive right of operating buses on the streets of Springfield. The election was held on Aug. 2 and the result was a victory for the railway. This phase of the contest is especially of interest for the reason that the jitney bus owners recognized no union and their employees were not organized whereas the railway employees were all members of the railway union and gave their hearty support to the traction company in this election.

Following the election the traction company took over all buses and continued jitney service under the terms of the new ordinance adopted at the election and the plan now seems to be meeting with the general approval of the public.

The ordinance as passed by the people revokes all bus licenses in force prior to the passage of the ordinance and further provides that licenses to operate buses shall be issued only to a corporation duly incorporated under the laws of the State of Missouri relating to street railway companies which at the time of applying must be actually engaged in the operation of a railway system. However, no car lines now being operated shall be discontinued. The fare is 5 cents with regular transfer privileges.

Another important section of the ordinance states that no jitney bus route shall be established or operated in territory now or hereafter adequately served by a street car line, nor shall any jitney bus be required to operate in territory where there is not sufficient patronage reasonably to support it, after a fair trial.

Higher Court Will Decide Fare Issue

City Argues Fare Was Fixed by Contract—Receiver Contends Regulatory Authority Fixes Fare

Decision as to whether the present rates of fare charged by the Receiver of The Denver (Col.) Tramway Company are to be retained or whether the fare shall revert to the 6-cent rate formerly in effect now rests with the United States Circuit Court of Appeals of the Eighth District.

United States District Judge Robert E. Lewis, District of Colorado, on March 10, 1921, held that the 6-cent fare then in effect was confiscatory and isued an order authorizing the receiver to put into effect a fare not in excess of 8 cents cash and two tickets for 15 cents. The city of Denver was also enjoined from enforcing the collection of the 6-cent fare and from interfering with the collection of the higher rates. An appeal from the lower court's ruling in this case was taken by the City of Denver to the United States Circuit Court of Appeals and was argued orally on Sept. 13. John E. Carland, federal judge of Washington, D. C., presided and with him on the bench were Tillman Johnson, federal judge of Utah, and F. A. Youmans, federal judge of Arkansas.

The city of Denver in its brief filed with the higher court asked that the order of the lower court be reversed and that the entire case be dismissed, contending that the lower court had no jurisdiction in issuing the order inasmuch as the fare was fixed by contract and not in pursuance of regulatory authority and that therefore whether or not the 6-cent fare was confiscatory was immaterial and the injunction unwarranted.

The attorneys for the receiver contended that the fare was never fixed by contract but was fixed in the exercise of the regulatory powers of the city and that as a matter of law the city did not have the power or authority to fix a fare by contract but only to fix one by regulation. Furthermore that even conceding for the purpose of precedent that the fare was contractual and that the city had the power so to contract, nevertheless the contract, if ever there was one, was abrogated and superseded by the city when in the exercise of its police power to regulate it passed an initiated ordinance authorizing a 6-cent fare and thereby changed the rate of fare from the franchise rate.

The case was taken under advisement.

One-Man Car Approved

Operation Indorsed by Milwaukee Safety Commission—Municipalities Cited as Users of Cars

The Milwaukee Safety Commission has indorsed one-man safety car operation in the city of Milwaukee by The Milwaukee Electric Railway & Light Company. The report of the committee to this effect was transmitted to the committee on railroads of the Council on Sept. 2. The commission held that the design and special safety equipment of the 800-type cars, as the safety cars are known in Milwaukee, make them safe in operation, and that from a safety standpoint there could be no objection found to their use.

As reported in the ELECTRIC RAILWAY JOURNAL of Aug. 20, page 299, the commission was asked to investigate one-man safety car operation in Milwaukee following the introduction in the Common Council of a resolution calling upon the City Attorney to petition the Wisconsin Railroad Commission to prohibit this form of operation in the city. The investigation made by the commission was for the purpose of determining whether one-man safety cars and the method by which they are operated are safe for passengers, pedestrians and vehicles. The investigation was divided into three phases—the safety appliances of the car itself, the method of operation of the car, and the results of its operation in other cities.

The safety appliances of the safety car were described to the commission at two of its meetings by H. A. Mullett, assistant general manager of the company, and W. H. Beattys, Jr., of the Safety Car Devices Company. The commission, as an official body, also made two investigation trips on the type of car under discussion, during which the control and air brake equipment of the car was demonstrated by an expert operator. Both of these trips were made under regular traffic conditions.

In addition, individual members of the commission on safety rode the cars incognito under regular operating conditions on the Twenty-seventh and Thirty-fifth Street crosstown lines of the company where one-man safety car operation has been in effect for some weeks. As a result of this phase of the investigation the commission was of the opinion that "the standard (*sic*) safety car known in Milwaukee as the '800-type' embodies every feature that has up to the present time been devised and proved practicable to make street car operation safe."

In addition to the descriptions of safety appliances of the car and of its demonstration under actual operating conditions, there was submitted to the commission, on behalf of the company, a memorandum prepared by Alexander Shapiro, statistician, giving a survey of the one-man car operation on electric railways in the United States. The memorandum gave the origin and history, extent of past and present use, its advantages, refuted arguments which are as a rule made in attacking one-man safety car operation, and finally discussed the situation in Milwaukee. Stress was laid in this memorandum on the use of one-man safety cars by various municipal railways in the United States and on the favorable accident record of safety car operation. There was also submitted to the commission by The Safety Car Devices Company, a tabulation giving the accident record of safety cars on a number of electric railways in the United States as compiled by the American Electric Railway Association.

The second phase of the Safety Commission's investigation of safety car operation in Milwaukee concerned itself with the actual method of operation of the car. On this point its report says:

> Safe operation of all vehicles, to a certain extent, is contingent upon the mental alertness of the operator. This commission has been assured by the electric company that no men are chosen for duty on the one-man cars who have not been with the company at least two years, and in addition have passed special tests to measure their fitness for this particular work.
>
> As exceptional distractions to the operator of a one-man car should tend to increase the accident hazard, the commission made two requests of the electric company:
>
> 1. That motormen on these cars would not be permitted to collect fares while the cars were in motion. This guarantee has been given and the order is now in effect. It is the observation of the commission that the order is being strictly carried out by the operators of the cars. . . .
>
> 2. The company was asked if it intended to run the "800 type" car with less than two men on heavy traffic lines. Their reply was that most decidedly the cars would not be run with one man on the lines where it is apparent or could be shown that the safety or operation would be in any way inferior to that existing with the present equipment.
>
> With the pledges given by the electric company as outlined above, The Milwaukee Safety Commission believes the one-man standard safety car of the "800 type" to be a vehicle which will not tend to increase traffic accidents, but rather effect a reduction in them, particularly of the numerous so-called boarding and alighting type.

MAKE-UP OF COMMISSION

The Milwaukee Safety Commission is an official body appointed by the Mayor. Its membership consists of a number of local business men, representatives of various city departments such as the police, schools, etc., and representatives of various civic organizations. One of the members of the commission is John Anderson, chief engineer of power plants of The Milwaukee Electric Railway & Light Company.

The 800-type car referred to by the Milwaukee Safety Commission in its report is a double truck car seating approximately fifty-five people. It was especially designed for use in Milwaukee and may be operated by two men or one man. It is equipped with the standard Safety Car Devices Company control and air brake equipment for safety cars. It is an especially light, roomy and attractive car and has been very favorably received by the Milwaukee public.

Jitney Battled for Five Years

Seattle Finally Succeeds in Regulating Pirates Who Are Taking $350,000 a Year from Municipal Railway

Seattle has won its fight of five years to clear the jitneys from its streets. The possibility does remain of further appeal of the matter direct to the United States Supreme Court, but the decision by the State Supreme Court on Sept. 13 denying the petition of the jitney men for a review of the case by the higher court would appear to be final. Following the Supreme Court decision, the remittitur or final order vacating the McGlothern injunction, which has hitherto protected the buses of the Sound Transit Company, was forwarded to Major Carl B. Reeves, Superintendent of Public Utilities. He immediately notified the jitney drivers that they were to clear the streets of their cars. The order was compiled within an hour's time, and without demonstration or difficulty of any kind. As a result all jitneys have now been removed from city streets, except the six cars allowed to operate as feeders to the Seattle Municipal Railway.

THE only recourse that the jitney drivers now have is a direct appeal to the Supreme Court of the United States, petitioning for a writ of error. In the event the federal tribunal should grant the request for a review of the case, the bus owners might then apply to the State Supreme Court for a continuation of the McGlothern injunction, but would have to post a bond conditioning payment of the damages resulting to the railway from the operation of the jitneys during this delay.

In opposing the application for a writ of review before the State Supreme Court, Corporation Counsel Walter F. Meier demanded a bond for $300,000, while attorney for the jitneys asked that it be placed at not more than $5,000.

LOWER FARES IN SIGHT

Following the removal of jitneys, Chairman C. B. Fitzgerald of the finance committee of the City Council announced that he is working on a proposition to reduce fares on the Municipal Railway from 8⅓ to 6¼ or 5 cents. Mr. Fitzgerald is conferring with state accountants, estimating the cost of operating the railway, and projecting into the future possible savings that may be made. He states that the exact amount of revenues coming to the railways as a result of the ban on jitneys cannot be exactly stated until the receipts have been observed over a period of time, but he expresses the belief that these may be sufficient, with other savings, to make a reduction in fares possible.

Since it acquired the railway lines of the Puget Sound Traction, Light & Power Company on March 31, 1919, the city has been particularly energetic in its efforts to rid the municipal railway of jitney competition, which has bitten deeply into the earnings of the lines. D. W. Henderson, general superintendent of railways, on April 23 of this year, advised Mayor Hugh M. Caldwell that on the basis of jitney checks taken in January of this year, the municipal railways would have an increase of revenue amounting to $350,000, if they could handle all the passengers carried on jitneys for a year, at the 8⅓-cent fare prevailing.

The battle against the jitneys was started, however, on Sept. 21, 1916, when an ordinance regulating jitneys was introduced in the City Council. This ordinance authorized the Superintendent of Public Utilities to issue certificates expiring on the last day of each year, indicating the route, terminals and schedule of operation. Appeal from the decision of the Superintendent of Public Utilities was to the Board of Public Works, with further provision for appeal to the City Council. The rates of fare provided were: adult passengers, 10 cents; children under twelve years of age, 5 cents.

On May 11, 1920, an ordinance (No. 40886) was approved regulating jitneys which provided that applications for permits to operate should be investigated by the Superintendent of Public Utilities, who should submit report to the City Council, which, in turn, could either grant or deny the permit. The permits were to specify route, terminals, schedule and rate of fare and the maximum number of passengers allowed to be carried in the car for which permit was granted. Permits were to expire on the last day of the year in which issued.

PREVIOUS OPINION CITED

On June 9, 1920, the United States District Court for the Western District of Washington, Northern Division, in the case of Schoenfeld vs. The City of Seattle (Fed. 265-726) held that the operation of jitney buses on streets could be denied or restricted, on the theory that "the right to use the public streets of a city for the operation of jitney buses thereon as a private business is a matter of privilege, not of right, and can be prohibited by the city, or permitted, under such terms, including the regulation of fares, as the city may prescribe."

On July 6, 1920, there issued out of the Superior Court of King County in the case of H. P. McGlothern vs. The City of Seattle, Restraining Order and Order to Show Cause, which prevented the City of Seattle from enforcing the provisions of Ordinance No. 40886.

On July 6, 1920, the City Council of the City of Seattle adopted the report of its city utilities committee, reading as follows:

> Your committee on city utilities recommends: That all applications now pending be denied, and that the reports of the Superintendent of Public Utilities thereon be placed on file. That the Corporation Coun-

> sel be requested to prepare such ordinance as may be necessary to prohibit interurban buses from doing a local business within the city limits.
>
> The committee, in making the above recommendation that applications for jitney permits now pending be rejected, which applications were to serve sections of the city already supplied with adequate street car service, wishes it understood that bona fide applications for permits to serve districts now without street car facilities for the purpose of enabling the people of such districts to reach the cars of the Municipal Street Railway and be transported to and from their homes for a 10-cent fare, divided 50-50 between the jitneys and the street railway, will be considered by the committee on their merits when received, bearing in mind tentative routes as follows:
>
> From East Sixty-fifth Street and Ravenna Boulevard to connections with Cowen Park and Ravenna cars at Fourteenth Avenue N. E.; also from Fourteenth Avenue N. E. and East Fortieth Street to the Laurelhurst district; also from Beacon Avenue and Spokane Street to Beacon Avenue and Thirty-ninth Avenue S., and also on Beach Drive from Orleans Street to Bruce Street.

ROUTES OUTLINED AND THEN DROPPED

On July 19, 1920, temporary injunction was granted and order signed in the McGlothern case.

On Aug. 14, 1920, the Superintendent of Public Utilities, as a compromise with the jitney interests, submitted to the City Council various jitney routes, the main purpose of which was to keep them away from the street car lines, thus providing service where there seemed to be a public demand. Owing to the fact that the jitney interests could not come to any agreement among themselves as to the routings to be approved, the whole matter of routing was dropped by the City Council.

On Nov. 2, 1920, there was submitted to the electorate of the City of Seattle a measure initiated by the jitney interests, relating to the operation of jitneys which provided, in a mandatory way, for the issuance by the City Comptroller of permits immediately upon applications being filed and showing being made that surety bond required under Chapter 57 of the Laws of 1915, had been filed with the Secretary of State. The application was to specify the route, terminals and schedule. The vote on this initiative proposition was as follows: For, 24,915; against, 41,364.

On Nov. 17, 1920, the Superior Court disposed of the temporary injunction in the McGlothern case by the entry of a judgment denying a permanent injunction. By appeal to the Supreme Court the city was prevented from enforcing this ordinance.

On April 23, 1921, the general superintendent of the municipal railway advised the Mayor of the City of Seattle that on the basis of jitney checks taken on Jan. 26, 1921, if the street railway could handle all of the passengers carried on the jitneys for a year, at the 8⅓-cent fare, the railway would have an increase of revenue amounting to $350,000. The check of Jan. 26, 1921, as compared with the check of Oct. 14, 1920, showed the following:

	Jan, 26, 1921	Oct. 14, 1920
Cars in operation	119	90
Passengers carried	11,065	8,899
Number of trips	1,908	1,633

On April 23, 1921, the general superintendent of railways submitted to the Mayor a summary of jitney checks taken Saturday, April 16, 1921, and Tuesday, April 19, 1921, which showed 2,455 trips and 16,392 passengers carried.

STATE SUPREME COURT UPHELD CITY'S POWER OF REGULATION

On July 20, 1921, the Supreme Court of the State of Washington, in the McGlothern case, concurred in by five of the nine judges of the court, upheld the city's power to regulate jitneys under Ordinance No. 40886. In this case the Corporation Counsel secured an order in the Supreme Court modifying the terms of the temporary injunction so that there was no legal objection to the city's enforcement of the provisions of Ordinance No. 40886 as to all persons except McGlothern and the intervenors in his case.

On July 28, 1921, the Auto Drivers' Union, Local No. 234, the members of which were not covered by the McGlothern injunction, in a communication signed by its secretary, indicated its willingness to accept the routes and regulations agreed upon by the Superintendent of Public Utilities.

On Aug. 2, 1921, approximately 160 of the 220 jitneys operating in Seattle were advised by the city that they would not be allowed to operate after that date.

On Aug. 3, 1921, eighteen jitney drivers were arrested for operating without a permit and upon trial were fined $25 each.

On Aug. 3, 1921, the attorney representing the jitneys which had been excluded from the public highways, appeared before the Supreme Court of the State of Washington and endeavored to secure an order allowing them to intervene in the McGlothern case, but their petition as granted was construed by the Corporation Counsel only to allow them to intervene as "friends of the court" and not to grant intervenor's rights.

On Aug. 19, 1921, application for rehearing by the Supreme Court was filed by the plaintiffs in the McGlothern case. The result of the filing of this petition was to keep the temporary injunction in effect.

COMPLAINT MADE AGAINST NON-UNION BUSES

On Aug. 26, 1921, the secretary of the Central Labor Council of the City of Seattle, in a communication to the Mayor, City Councilmen, Superintendent of Public Utilities, Corporation Counsel for the City of Seattle and Prosecuting Attorney for King County, complained that "the union jitney buses were put off the streets while the non-union buses continued to operate unmolested."

The communication further advised:

> We feel that a great injustice is being done our members through this action and desire to request that you use your best offices to the end that a square deal may be given the union boys by allowing them to operate until such time as you are in a position to make the order prohibiting them from using the streets to apply to all alike, whether union or non-union.

Chicago Fare Case to Start on Oct. 3

Taking of evidence in the fare case against the Chicago Surface Lines will begin on Oct 3. Announcement to this effect was made by the Illinois Commerce Commission on Sept. 16 at the conclusion of arguments lasting three days. The companies, through Attorney Harry P. Weber, had contended that the commission had no right to disturb the present situation on petition of the city because of the pendency of appeals brought by the city against the existing fare order. Chairman Smith stated that the commission was not bound by strict rules of pleading observed in the courts. He said the essential issue is the reasonableness of rates of fare charged by the companies and it is the duty of the commission to determine this as soon as possible.

It is likely that the hearings before the new commission will be extensive. The former commission spent more than a year on the case which resulted in the fixing of an 8-cent fare on July 1, 1920, and a valuation last November. The new state and city administrations are pledged to give a 5-cent fare if possible and it has been claimed that this can be done by the institution of economies. The companies have shown by figures that a reduction of even 1 cent in the rate of fare would have to be accompanied by a large wage decrease and that a 6-cent or 5-cent fare is impossible.

Hearings on the question of reducing fares on the Chicago Elevated Railroads were started before the Illinois Commerce Commission on Sept. 27. The company was cited to appear before the commission. This was said to be a surprise to the city authorities who had been centering their attack on the Chicago Surface Lines. The elevated lines have had a 10-cent fare with four tickets for 35 cents since last August. According to President Britton I. Budd this is not an excessive charge and he recently gave out some figures that the company was earning only 3 per cent on the valuation of $86,250,000 fixed by the former commission.

The statement of President Budd showed that the earnings after operating charges were $2,590,804 for the year ended June 30. After taking out interest charges there remained only $102,016, compared with $97,817 for the previous year.

City Must Respect the Law

Supreme Court Justice Cropsey in Brooklyn has granted an injunction restraining George Cornell from operating a bus line to Far Rockaway from Rockaway, in competition with the Ocean Electric Railway. The court held the bus line is being operated without a proper franchise. Justice Cropsey said:

> There is no emergency shown here. It may be that more transit facilities are needed in the section in question, but if so the city should act in accordance with the law and have the service improved. The city cannot and should not proceed in an illegal manner.

Jersey Appeal Concluded

Argument Finished to Permit Railway to Charge Ten Cents Despite Commission Ruling

Decision has been reserved by Federal Judges Rellstab and Davis of the Trenton District and Federal Judge Victor Wooley of Delaware on the application of the Public Service Railway, Newark, N. J., to enjoin the Board of Public Utility Commissioners of New Jersey from interfering with the establishment by the company of a 10-cent fare. Argument was concluded at Trenton on Sept. 26, the case having been reopened to give interested municipalities a day in court as co-defendants.

CITIES ALLOWED TO INTERVENE

Argument in behalf of the municipalities generally was made by George L. Record and Frank H. Sommer. Mr. Record contended that the purpose of the company in the present proceedings is to establish, through the granting of a temporary injunction, a rate based upon the high prices and cost of operation prevailing during the war and the immediate post-war period. Final determination of the proceedings, he predicted, would consume three or four years, and in the meantime, if the company's application prevailed, the public will be compelled to pay exorbitant rates or will be forced to assume the burden of proof in a litigation to force a modification of rates.

E. G. C. Bleakley, as counsel for Camden, made the point that the practical effect of a 10-cent fare will be to decrease rather than to increase the gross receipts and that Camden, as well as other municipalities which tax the company on the basis of receipts, will be a consequent loser. Conceding for the purpose of argument that the company needs additional revenue, Mr. Bleakley said it is for the court to determine whether a 10-cent fare will accomplish that result. Another point urged by Mr. Bleakley was that any rate fixed should not be limited solely to cash fares, but that strip tickets should be issued at reduced rates. The practical effect of this, he said, would be to increase the number of riders and to lessen the delay of collecting fares, especially during rush hours.

At the hearing before the court on Sept. 15 argument by L. Edward Herrmann, counsel for the Public Service Commission, was concluded. He insisted, in short, that due consideration had been given by the commission to all the questions involved in the valuation. Mr. Herrmann sought to have admitted as evidence more than 13,000 pages of testimony taken by the board in the rate case and about 600 exhibits, but the court ruled that only such parts of this record as were pertinent would be admitted.

The methods used by Colonel Black in the so-called Ford, Bacon & Davis appraisal were attacked by the counsel for the commission, but Judge Wooley said that to his mind it did not make any difference how the board arrived at a valuation. If the valuation was right, it was right and the plaintiff was out of court. If it was wrong, there might be confiscation of property. That was the real question to be settled in the federal court. The issue turned between the valuation of the board and that of the company. Judge Wooley indicated that the desire of the court was to have the utility commission answer in detail the charges of the company.

Mr. Herrmann cited the opinion of Justice Hughes in the Minnesota rate case where it was held that valuation in abnormal times must be a matter of judgment and reason coupled with the cost to reproduce the property. He regarded it as unreasonable that the railway, which never paid a dividend in excess of 3 per cent, should now be seeking a return of 7 per cent.

Attorney-General McCran argued for the State. He contended that the court could not fix a rate, but that the state could. The court could only consider the question whether or not the utility commission had fixed a rate which was confiscatory. Mr. McCran insisted that there had been a return of 7 per cent to the company on stock if proper allowance were made for the rentals paid to the subsidiary companies. In short, he insisted that unless the court decided the members of the commission were incompetent, the court must accept their finding as competent and just.

COMPANY MUST HAVE RELIEF

Richard V. Lindabury concluded the argument for the company and closed the case. He said that the situation was such that unless the court granted relief the company must lose its properties, with great loss to stock and bondholders and inconvenience to riders. He declared it was a matter of mathematics. Prices of all things were more than double while the fare was but a little more. In detail he showed that the increase in the price of labor ordered by the War Labor Board resulted in doubling the wages the company was obliged to pay. He told of all materials increasing in price 200 to 300 per cent and went into the merits of all applications of the company to get "a just and equitable rate" from the utility board, and ended by declaring that the utility board had not risen to the full heights of its duty to protect the company. He defended the action of the company in appealing to the federal court to prevent the confiscation of the property by the rate fixed by the utility board.

The commission recently allowed the company an increase of from 1 to 2 cents on its transfers, but refused to allow more than a 7-cent fare. Instead of taking this ruling to the state courts, the company sought a preliminary injunction in the federal court, claiming the order violated the federal constitution in that it was confiscatory and if allowed to stand the company would be forced into bankruptcy.

Transportation News Notes

Fare Boxes Pay Big.—Fare boxes recently installed on cars of the Community Traction Company, Toledo, Ohio, cost $90,000 for the equipment and installation. They have paid for themselves twice over in three months, declares Street Railway Commissioner Wilfred E. Cann.

Tokens Will Replace Tickets—Metal tokens will replace paper tickets on the lines of the East St. Louis & Suburban Railway, East St. Louis, Ill., according to a recent announcement of W. H. Sawyer, president of the company. The tokens can be purchased at the rate of two for 15 cents, the cash fare remaining at 8 cents.

Uniform Stage Rate Authorized—On Sept. 7 the United States Stage Line, operating between Los Angeles and Imperial Valley points, was authorized by the California State Railroad Commission to place its rates on a uniform basis of 3½ cents a mile. This will result in sixty-three reductions and 21 increases in the stage company's rate schedule according to the announcement of the commission.

All One-Man Cars in St. Thomas.—The St. Thomas (Ont.) Municipal Street Railway has converted all cars for one-man operation. It is claimed that the change has resulted in improved service and financial advantage. Acting under recent provincial legislation the city started a Sunday service this year, but the railway committee has advised Council to discontinue Sunday operation as it is a losing venture.

Louisville Hearing in November—The City of Louisville, under the direction of City Attorney Joseph F. Lawton and his assistant, is busy preparing the city's side of the argument in the suit which is pending against the Louisville Railway, the city disputing the right of the defendant to charge a 7-cent fare, the collection of which was authorized by decision of Judge Evans of the Federal District Court. The case was carried to the United States Supreme Court and it is expected that a hearing will be set for some time in November.

Jitney Ordinance Upheld. — Judge Dew in the Circuit Court at Kansas City, Mo., on Sept. 17 upheld the city ordinance that requires jitney operators to secure the signatures of 51 per cent of property owners on street over which they operate. The court denied a restraining order that would have prevented the city from interfering with jitney operators under the ordinance and declared the city has full control over streets. Mayor Cowgill followed the ruling with an order to arrest all jitney men violating the ordinance, including those taking "gifts" for rides in cars labeled, "this ride is free."

Personal Mention

Mr. Brown Back in Buffalo

After Four Years in New Orleans He Becomes General Manager of Two Separate Properties

Nelson H. Brown has been appointed general manager of the Buffalo & Lackawanna Traction Company and also general manager of the Depew & Lancaster Railway Corporation, Buffalo, N. Y. These two companies are separate and distinct properties, the Buffalo & Lackawanna Traction Company being in charge of Harry Evers, while the Depew & Lancaster Railway is owned by local interests and has as its president John J. Lenahan, Buffalo, N. Y.

N. H. Brown

Prior to being identified with these two companies, Mr. Brown was for four years manager of the New Orleans Railway & Light Company, New Orleans, La., and before going there was for five years general superintendent of the International Railway, Buffalo, N. Y. In all, he has spent twenty-seven consecutive years in street railway work.

Mr. Brown is a native of Tennessee, where he remained until the age of eighteen, when he accepted a position with the New York Central Railroad in the mechanical department at Syracuse, N. Y., in 1891. He continued with the New York Central until 1894 when he entered the street railway field with the Syracuse Rapid Transit Railway as a conductor and motorman. He was subsequently promoted to the positions of station clerk, station foreman and supervisor, when in February, 1907, he resigned to become identified with the Worcester (Mass.) Consolidated Street Railway as general inspector for the purpose of making an investigation of the property.

In September of the same year Mr. Brown was made superintendent of the Worcester & South Bridge Street Railway, which controls several small companies radiating from Worcester. He held this position until September, 1912, when he resigned to accept the position of superintendent, claim agent and roadmaster of the Albany Southern Railway with headquarters at Rensselaer, N. Y.

Mr. Brown remained with the Albany Southern Railway until Jan. 1, 1913, when he was induced to accept a position as assistant superintendent of transportation of the International Railway, Buffalo, N. Y., on account of the broader field of opportunities which the position with that company opened to him. On Jan. 1 of the same year he was promoted to the position of superintendent of the Buffalo division and in November, 1915, was made general superintendent of the company. The International Railway operates all of the street railway lines in the cities of Buffalo, Niagara Falls and Lockport, including many interconnecting interurban lines. In 1917 Mr. Brown was transferred from this position to that of manager of the electric railway properties of the New Orleans Railway & Light Company, both of which are subsidiaries of the United Gas & Electric Corporation.

United Electric Official Resigns

Requesting that he be relieved of his duties not later than Oct. 1, Zenas W. Bliss, one of the state's representatives on the board of directors of the United Electric Railways, Providence, R. I., has resigned as president of the corporation. His resignation was received by the directors at their last meeting, but was then laid on the table for action at some future time.

Bank Commissioner George H. Newhall, the other representative of the state on the company's board of directors, was elected secretary and treasurer of the corporation when the temporary officers were chosen. Although he has not yet resigned from those posts, it was said that such action on his part would not come as a surprise.

Mr. Bliss was elected president of the company when the temporary officers were chosen and gives as the reason for his resignation at this time the fact that the affairs of the new organization are now in shape for the election of a permanent president. His letter to the directors is as follows:

> As one of the incorporators of United Electric Railways, chartered in 1919, I assisted in the steps taken preliminary to organization under the charter, and was made temporary president upon organization. Later permanent directors were chosen by the stockholders. I was appointed a director by the Governor under the charter provisions, and was retained as temporary president. Authorization for the issue of securities was duly obtained, the properties of the traction system were acquired, and subsequently the properties owned by the Rhode Island Company were purchased.
>
> As all things necessary to be done in connection with the organization and the transfer of the properties acquired have been accomplished, and the properties are now being operated by the company, it is apparent that the time has come for the election of a permanent president; and I, therefore, hereby tender my resignation of the office of president, to take effect at the pleasure of the board, but not later than Oct. 1, 1921.

Mr. Buchanan Resigns

Will Leave Richmond to Develop and Expand the Trackless Transportation Field

C. B. Buchanan resigned on Sept. 27 as vice-president and general manager in charge of operation of the Virginia Railway & Power Company, Richmond, Va. His resignation was accepted by the board of directors effective Oct. 1. He has been connected with the Virginia Railway & Power Company since its reorganization in 1909 and is known as an expert in railway transportation and operation.

C. B. Buchanan

Mr. Buchanan designed and drew the specifications for the Atlas-General Electric trolley bus which was recently given a demonstration in Richmond and Norfolk and which the Virginia Railway & Power Company expects to introduce there shortly as a commercial venture. He will go into business on his own account, opening an office in New York City for the development of the trackless trolley through the installation of trollibus lines and sales of cars.

Mr. Buchanan expressed the view recently that the trackless trolley was the coming thing in the electric transportation field and said he expected to handle the development of the trollibus throughout the country.

The board of directors of the Virginia Railway & Power Company abolished the office of vice-president in charge of operation, devolving the general duties of that office on the office of President Thomas S. Wheelwright. The office of general manager is divided. John E. Harvell was appointed general manager of the Richmond and Petersburg lines and T. Norman Jones, general manager of the Norfolk and Portsmouth lines.

Mr. Buchanan entered the electric railway field as treasurer and auditor of the Memphis & Raleigh Springs Railroad, Memphis, Tenn., in 1891. After the sale and consolidation of the city and suburban railways in Memphis two years later, he took up the construction and operation of railways and lighting plants throughout the State of Mississippi and later managed the railway and lighting plant at Meridian, Miss.

Leaving there in 1901, Mr. Buchanan accepted positions as division superintendent of the Richmond Passenger & Power Company and general agent of the Richmond & Petersburg Electric Railway. Subsequently he served the several consolidated companies in Richmond as superintendent of transportation.

MADE HEAD OF RAILWAY PROPERTIES

With the reorganization of the railway and lighting properties in Richmond, Manchester and Petersburg by the Virginia Railway & Power Company in July, 1909, the title of general manager was abolished and Mr. Buchanan was appointed operator of railways with the title of general superintendent of railways. In July, 1911, when the railway, lighting and gas properties of the Norfolk & Portsmouth Traction Company, operating in Norfolk, Portsmouth and Suffolk, were purchased by the Virginia Railway & Power Company, Mr. Buchanan was appointed general manager of the combined properties.

Harry C. Stevenson, assistant to the president, Public Service Railway, Newark, N. J., returned recently from Belmar where he has been recuperating all summer from an operation. His associates have missed him a great deal and are glad to have him back.

S. B. Irelan was recently appointed receiver and general manager of the Montgomery Light & Traction Company, Mantgomery, Ala., to succeed Ray Rushton, resigned. Until this appointment Mr. Irelan was vice-president and general manager of the Montgomery Light & Water Power Company to which office he was elected in 1917.

Elmer P. Haw, who occupies the position of superintendent of the street railway lines of the Panama Electric Company, Panama, is now in the United States visiting his brother in Davenport, Iowa. Mr. Haw is visiting in the states far the first time in ten years as he has lived in Central America since early manhood. He is by profession a civil engineer and has managed the street car lines of Panama City for the past 10 years. Twenty-five cars are operated in Panama City over 15 miles of track. Mr. Haw states that the citizens of Panama City are now considering the introducing of one-man cars. While in Davenport Mr. Haw intends to inspect the street car system there for suggestions in improving the line he superintends in Panama City.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Railway Equipment at a Level, Says W. H. Heulings, Jr.

Prices for electric railway equipment reached their peak in October, 1920, says W. H. Heulings, Jr., vice-president and general manager of sales of the J. G. Brill Company, writing in the September issue of *Aera*.

After October, 1920, there was a decided drop, he says, which by Jan. 1, 1921, was twenty-five per cent under the high peak. This was followed by an additional sixteen per cent by April 1.

Mr. Heulings believes a reduction in cost of labor and raw materials brought about this condition. He thinks prices for rolling stock, which have not varied for three or four months, will long continue at the present level.

Price adjustment, he says, will be gradual and take a long time. He believes some business can be done more advantageously now, as the return that new equipment will earn will be in excess of any reductions in initial cost that can be expected in the near future.

Price of Conduit Reduced Nearly 7 per Cent

Rigid iron conduit reacted to a further price drop on Sept. 16. Card 48 was issued as of that date, placing discounts four points higher. In carload lots ½-in. black now takes 45 per cent and ½-in. white takes 39 per cent discount. These figures are the same as those issued under date of Feb. 15, 1917, showing pipe to be back to where it was four and one-half years ago. Meanwhile the discounts have been reduced to a low figure of 21 per cent—a record high price in May, 1917, since which time they have tended upward to the present figure.

Department of Commerce to Publish Statistics on Wire

Representatives of thirty-four bare and insulated copper-wire manufacturers met at the Hotel Commodore, New York, on Sept. 13 to discuss the advisability of asking the Department of Commerce to include wire production statistics in its "Monthly Survey of Current Business." About two-thirds of those present voted to furnish the necessary figures, three objected, and the rest preferred to defer decision until they had had more time to consider the matter. There was every assurance at the meeting that, provided the Department of Commerce would collect, tabulate and print such wire statistics, at least 60 per cent of the copper-wire producers of the country would be represented at the outset.

W. M. Steuart, director of the Department of Commerce, who is director of the survey, was present and described the department's plan and method of working. Statistics are furnished at the department's request. These are tabulated and printed monthly, and individual reports are kept entirely confidential. The definite form of report which the manufacturers will recommend to the Department of Commerce is now under consideration by a committee.

Brazilian Market for Railway Equipment

Since 1914 new railway construction in Brazil has been limited and only restricted quantities of rolling stock purchased, with the result that the present mileage and somewhat deteriorated equipment are entirely inadequate for the growing needs of the country, according to the Bureau of Foreign and Domestic Commerce. A crisis has developed in the Rio Grande railway system where the farms of the interior have produced more than the carrying capacity of the railways. Similar troubles are experienced in other districts. More or less additional equipment is needed for all the lines, of which there is a total of 17,477 miles.

Both the Government and private railways are unable to purchase the rolling stock or make the extensions so urgently needed, although some new purchases are under consideration and a small amount of new construction in progress. This inability is due to reduced receipts, resulting from reduced foreign trade, and the fact that public sentiment opposes any increase in the rates, and the reduced value of the currency as compared with the pound or dollar.

Although the present market for rolling stock is obviously far below the actual needs of the country, it is still important. Approximately 50 steam and electric locomotives have recently been shipped from factories in the United States or are in course of construction here. Further electrification and more business are expected.

The market for rolling stock is at present largely limited to the Rio Grande system (government owned); the three lines of the State of Sao Paulo, viz., the Paulista, the Mogyana, and the Sorocabana; the Central of Brazil (government owned); and the Inspectoria Federal das Obras Contra as Seccas. The last-mentioned is the administrative bureau in charge of the reclamation projects being carried out in Ceare and the adjoining states. The Noroeste, the Oeste de Minas, the Viacao Bahiana, and the Ferrocarril de Goyaz have all had certain sums placed at their disposal from the Federal budget for the purchase of limited quantities of materials. Other business would develop rapidly if the financial and legal obstacles could be overcome.

The United States has long held an unusually strong position in the Brazilian market for rolling stock, due largely to the pioneering of some of our manufacturers of such equipment. Of the importations of rolling stock practically all during the years 1917 and 1918 was shipped from the United States.

Chilean Contract Awarded

Westinghouse Company Closes $7,000,000 Deal for Electrification of Chilean State Railway

Westinghouse Electric International Company has announced that it has received final confirmation of the contract to supply the equipment for electrifying the Chilean State Railway between Valparaiso and Santiago and to Los Andes.

The contract received from the Chilean Government through the company's Chilean agents, Errazuriz, Simpson & Company, associated with Spruille Braden, New York, covers the most important railway electrification since the beginning of the war and the largest ever undertaken by an American firm outside of the United States. The main line, which is 116 miles long and is now under steam operation, is the most important in Chile. It connects the leading seaport, Valparaiso, with the capital, while the line to Los Andes is 28 miles long and forms the Chilean end of the transcontinental line to Buenos Aires.

The contract, which has a total value of $7,000,000, was secured in spite of keen competition from German and other European concerns. The award was given to the American firm because of its more complete and accurate engineering analysis of the proposition as well as its lower price.

The equipment to be furnished consists of eleven passenger locomotives, fifteen road freight locomotives and seven switching locomotives, together with five 4,000-kw. substations. The 3,000-volt direct current system will be used and all standards will be strictly American in character. Capacity of this equipment will be 50 per cent greater than the present traffic demands, and the plans have been so drawn that an increase of traffic capacity to three times the present amount can be readily accommodated. Owing to the abundance of water power in Chile and the high price of fuel, all of the Chilean railways will eventually be electrified and the present project is the first step in this process.

This contract represents the third large order for electric railway supplies received by Westinghouse International Company from foreign countries in the past few months. The other two came from France and Japan. Errazuriz, Simpson & Company will build the overhead trolley construction.

Rolling Stock

Gadsden, Bellevue & Lookout Mountain Railway, Gadsden, Ala., expects to purchase in the near future two one-man cars.

Delta Light & Traction Company, Greenville, Miss., recently purchased from the American Car Company, St. Louis, Mo., two Birney safety cars.

Eastern Pennsylvania Railways, Pottsville, Pa., recently purchased a Russell 30-ft. combination car with B-6 trucks and with two steel single-track snow-plow noses.

Hutchinson (Kan.) Interurban Railway is at present in the market for sufficient car seats for five cars which are being overhauled and re-equipped.

Hull (Que.) Electric Company, according to G. Gordon Gale, vice-president and general manager, has recently placed an order with the Ottawa Car Manufacturing Company for 2 one-man safety car bodies.

Evansville, Suburban & Newburgh Railway, Evansville, Ind., is now in the market for from 15 to 25 used 80,000-lb. capacity flat-bottom gondola cars, according to information received from Gus Muhlhausen, president and general manager of the company.

Track and Roadway

Illinois Central Electric Railway, Canton, Ill., expects to build a switch to the Buckheart Coal Company in Fulton County, Ill.

Toronto (Ont.) Can., The Transportation Commission has bought land for a car line loop at the Bloor and Jane Streets Terminus.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has been granted permission by the Trenton City Commission to lay double tracks on Pennington Avenue, from North Warren to Willow Streets.

Eastern Massachusetts Street Railway, Boston, Mass., has started on an improvement in Central Street, Lowell. The work consists of the removal of old rails between Market Street and Towers Corner and the laying of new ones. The work will cost about $10,000 and will take about two months to complete.

Dallas-Terrell (Tex.) Interurban Railway, which is to be built by Strickland interests, may be extended from Terrell to Tyler. This extension, which would be nearly 100 miles long and would traverse a rich agricultural section of Texas, is being sought by residents of Canton and other cities and towns along the line of the proposed extension.

Pacific Electric Railway, Los Angeles, Cal., has been ordered to do repair work on the East Orange Grove and East Washington Street lines in Pasadena. On the East Orange Grove line the railway will repair its right-of-way between Hill Avenue and the east end of the line. On the East Washington Street line the work to be done will be between Los Robles Avenue and the east city limits.

Columbus (Ga.) Railroad has completed its paving along Hamilton Avenue. New rails and ties have also been put down. Work of paving between the tracks from Seventeenth to Thirtieth Street has also been completed, keeping pace with the work of paving done by the city on Second Avenue. It was stated recently that the city may extend its paving on Second Avenue from Thirtieth Street to Thirty-first Street, in which event the company would also pave along its tracks this additional distance—about 1,000 ft.

Power Houses, Shops and Buildings

Toronto (Ont.) Can., The Transportation Commission will build an automatic substation on Eglinton Avenue, North Toronto.

Gadsden, Bellevue & Lookout Mountain Railway, Gadsden, Ala., expects to build a 100 room club-hotel as a feeder for its line.

Kansas City, Lawrence & Topeka Electric Railroad, Kansas City, Mo., contemplates purchasing one 300-kw., 60-cycle rotary converter.

Public Service Railway, Camden, N. J., will abandon the present freight room at the Riverside carhouse and the storeroom of the electric company, which has a large platform, is to be utilized for a freight house. Also, the freight terminal at Public Service Junction will be abandoned and store house of the gas company at 347 Warren Street will be used. This location will be an advantage on account of having platform facilities and being nearly at the center of the city.

Trade Notes

Ernest E. Lee Company, 115 South Dearborn Street, Chicago, has recently become the district representative for the Northern Equipment Company, Erie. Penn., manufacturers of boiler feed regulators and pump governors.

F. V. Shannon, vice-president and secretary of the Massey Concrete Products Corporation, Peoples Gas Building, Chicago, has resigned to accept another position. G. H. Redding has been elected secretary of this and affiliated companies, the position of vice-president remaining vacant for the present. David A. Hultgren has been appointed resident manager at Chicago.

Triumph Electric Company, Cincinnati, Ohio, for nearly thirty years manufacturers of 40-deg. Triumph polyphase induction and direct-current motors, has again been forced to move its Philadelphia office into more spacious quarters to adequately take care of the increasing demand of its business in that section. The new quarters are at 709 Arch Street. This territory is under the direction of District Manager Arthur H. Allen.

R. I. Baird, from 1909 to 1917 connected with the sales department of the Electric Storage Battery Company, Philadelphia, Pa., has returned to the service of that company. He is now in charge in the western district of the sales of Exide batteries for railway car lighting, etc. Mr. Baird's headquarters will be at the Chicago office of the company. The railway signal work is in charge of H. B. Crantford, who was formerly in the service of the Chicago, Milwaukee & St. Paul Railroad.

The Morton Company, which will supply sales counsel in advertising and merchandising, has been organized in Cleveland with headquarters at the Finance Building, 750 Prospect Street, Cleveland. C. O. Morton is managing director and A. B. Cole, long with the publication department of the Westinghouse Electric & Manufacturing Company, is president. Mr. Cole made a special study, a few years ago, of electric railway freight transportation and contributed a series of articles on this topic in the ELECTRIC RAILWAY JOURNAL. Other officers of the company are Geo. W. Randall, secretary; Roy M. Brown, vice-president; R. S. Andrews, vice-president, and F. E. Crawford, treasurer.

New Advertising Literature

Spot Welder.—A new bench-type spot welder, the S-4-B, has been placed on the market by the Taylor Welder Company, Warren, Ohio.

Pyrometer.—The Brown Instrument Company, Philadelphia, has just made improvements in the automatic compensating features of its "Thermo-Electric" pyrometers.

Control Switch.—The South Bend Current Controller Company, South Bend, Ind., announces its new R-C-O-C remote-control switch for station control of outdoor lighting and other loads.

Fittings.—The Erie Electrical Equipment Company, Inc., Johnstown, Pa., has issued discount sheets dated July 15 and two new catalog sheets on split porcelain insulators and pipe-frame fittings and caps.

Air Brakes.—The Air Brake Association has just added to its list of educational air brake books one of the new Westinghouse U.C. equipment under the title of "Questions and Answers on the U.C. Equipment." The book is particularly intended for those men engaged in railroad service who desire to inform themselves to a varying degree on the construction, operation and function of the new U.C. passenger air brake equipment. A ready comprehension of the general principles is possible without any previous knowledge of certain details.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative

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A Spirit of Confidence Manifested at the Convention

LIKE a man rising from the ground after having been beaten down, battered and bruised by some combination of forces which he was powerless to resist, but surprisedly discovering himself whole, with no bones broken and with a tingle of internal energy which tells him that he still has power to conquer any mortal enemy, so the electric railway industry seems to feel its intrinsic soundness and strength necessary to meet today's problems even after the past six years of strife. This, if we have correctly sensed the feeling of the railway men, characterized the spirit of the annual convention of the association this week. The meetings were replete with discussion, all of which gave the impression that the speakers were more confident of ability to cope with the future, that a grasp is already had of many of the vexing situations which have caused so much discussion of late years, and that there is increasing stability in the industry as a whole. This does not minimize, nor indicate any forgetfulness of, the serious present-day problems yet to be solved. Rather it was the manner in which these problems were attacked, the assurance with which they were analyzed and examined, that gave the impression that the industry is more certain of itself than a year ago. Not only in the meetings but in the halls, on the Boardwalk, in all small groups and pairs of friends and acquaintances, one heard and felt optimism and assurance. There were no "rotten business" conversations, but constructive, "the-corner-is-turned," positive discussions of the situation.

With the foregoing as a somewhat figurative background or interpretation of the convention as a whole it is worth while pointing out some of the prominent features and accomplishments. Noticeable on account of their absence, and on account of the reduced attendance directly attributable thereto, were the exhibits of previous years. But there were many remarks that, while the exhibits were of interest and value, their absence this year, when constructive study in the sessions was so desirable, was probably conducive to the best results. At that, an attendance of more than twelve hundred, all present for serious business, was a worthwhile and commendable record.

Salesmanship, recognized as the principal element in the railway business; clean-cut financial reconstruction, and better business methods in general in the railway industry formed the keynote strain of the convention. It permeated most addresses and discussions, no matter on what nominal topic they started.

The group of addresses on finance presented at the Wednesday morning session of the American Association represents one of the really great and constructive pieces of work of the association. While not minimizing in the slightest any other effort at the convention, the address of F. E. Frothingham alone would have made the meeting an outstanding one for its value. This address is presented in full in this report number. It is a sample of the sort of financial leadership the ELECTRIC RAILWAY JOURNAL has called for from time to time; it is in full support of the sort of financial program which President Gadsden has so continuously recommended during his presidency of the association.

Another accomplishment was a clarifying, if not a definition, of the attitude of the industry as to the bus. This is referred to elsewhere in these columns. The strongly supported meeting of publicity men, attended by many leading executives, tended to emphasize the importance of this work and to put it on a higher plane. And finally, though it was one of the first things done, the changes in the constitution which, if carried out in spirit, will mean so much to the association were adopted after full discussion and with the evident whole-hearted desire on the part of every one to make the association more useful, more constructive, more virile in its activities.

No one can have attended this year's convention without being encouraged, without having gained an appreciation of the value of the association and its conventions and without having gained confidence in the eventual, if not early, return to complete vitality of the electric railway industry.

The New Administration of the American Association

ROBERT I. TODD, Indianapolis, takes up the reins of the American Electric Railway Association for the ensuing year. A modest, lovable, capable, experienced man, combining in one individual the dual association interests of urban and interurban transportation, he is an executive in whose hands the affairs of this great industry may well be intrusted. His forte is in quietly, carefully planning and executing the tasks confronted. It may therefore be expected that the work done by the association during the next year will be great, though there may be less evidence of it in public expression.

With the president, two of the vice-presidents and six of the twelve members of the executive committee elected at large located in the West, there can be no justification for the assertion this year that the association is run in the East. This is the opportunity for the West to make the association an instrumentality of greater usefulness to the great properties of this section and to shape its activities to reflect more completely the wishes of the entire industry, if there has been any provinciality in its functioning heretofore. It is up to the West, and particularly the Middle West, to make good its administrative opportunity.

Taken as a whole, the new executive committee is an exceptionally strong one and it would be hard to suggest wherein the nominating committee could have improved on its selections. It reflects the careful canvas of the field made and the value of appointing the nominating committee in advance of the convention as provided in the revised constitution.

No Bus Members for the Association

AFTER an extended but very satisfactory discussion of both sides of the proposal to revise the constitution so as to leave it to the discretion of the executive committee to admit bus companies to membership in the American Electric Railway Association the amendment was rejected by a decisive vote. The issue of the discussion was whether well-established, non-competitive bus companies should be taken in so that the association might benefit by their knowledge and experience or whether they should be kept out to avoid any possible distortion of publicity to indicate that the association had recognized or acknowledged that the electric railway was passing and was to be replaced by the automotive vehicle. There was plenty of feeling that to pass the amendment would seriously embarrass some companies in their local situation, and of course such a possibility, seeming real, was to be avoided. The basis for this feeling was the possibility that to recognize the non-competitive, responsible, well-managed bus company would be broadly interpreted in the public mind, perhaps aided by insidious propaganda, to include the irresponsible, unregulated jitney which in many places is seriously jeopardizing the investment in the electric railway and forming obviously unfair competition.

In refusing to admit bus members, however, it should be noted that this action was not in any sense a decision to refuse to recognize the bus as a type of vehicle that may be used profitably and properly by the present members of the association in providing transportation in certain locations or sections of a community, co-ordinating it with the present rail system. In fact, continued and more intensive study of the possibilities of utilizing the motor bus and trolley bus were urged even by those who were most insistent that bus companies should not be admitted to membership. The judgment was clearly that the electric railway companies should openmindedly consider where they can advantageously employ buses, and not that they should take the attitude that the bus as a tool of transportation is one to be scoffed at or ignored. Many of those who spoke on the subject stated concretely that they were now planning to introduce, or had already introduced, the bus for supplementary and complementary service to their present systems. If any vehicle of mass transportation offers a means of more economical service in any location, certainly the present transportation companies should welcome its advent and capitalize its advantages.

Engineers Again Boost Plan for American Committee on Electrification

AMONG the many items of vital interest which marked the second session of the Engineering Association convention none was more significant than the decision to start something in the direction of unity of action in heavy traction investigations. It will not appear invidious if special attention is directed to this matter, because duplication of work in this field on the part of several national associations is already becoming a serious matter. It is none too soon to plan for such co-operation as will insure accurate and complete data in regard to electrification.

The Engineering Association suggests the name "American Committee on Electrification" as an appropriate one for a joint committee representing all interests affected by the electrification of railroads. It is proposed that a joint committee, with this name or some other, be charged for the present simply with the responsibility of collecting and disseminating information with the least possible lost motion. That seems like a very simple proposition. There ought to be no opposition to it. The main trouble is to make a start.

It has been said that "the way to resume is to resume." So the way to have an "American Committee on Electrification" is to appoint an American committee on electrification and to tell it to do something. It does not matter which association starts this movement, just so that one of them does so. It is to be hoped that the executive committee of the Engineering Association will act favorably upon the resolution adopted at the convention, and invite the appropriate executive bodies in other national societies to appoint representatives on a joint committee.

The only possible objection to this plan is that it would add one more to the already many joint committees trying to facilitate progress in this or that direction. This objection is a valid one, but the subject of electrifying the steam railroads of the country is one of such moment and importance that the societies are certainly justified in adding this one to their multifarious activities. The fact is, they are already doing a lot of work along this line, and the purpose of the proposed committee is to reduce, rather than increase, the total amount of work by cutting out lost motion.

Salesmanship Beginning to Be Taken Seriously

ONE of the best products of the 1921 convention was the profound impression made as to the necessity for injecting salesmanship into the conduct of the electric railway business. President Gadsden took the delegates seriously to task for their neglect to take to heart the earnest suggestions made along this line heretofore. He attributed the present straits of the industry to its absolute disregard of the laws of economics and selling applied in every other commercial enterprise the world over. His address and the one by Mr. Goodwin made it pretty clear that for the present at least the problem of salesmanship transcends all others. Both were confident that proper attention to the commercialization of the business will transform the financial condition of the industry, and that failure to do so, particularly in view of the menacing competitive situation, will lead to the financial ruin of the enterprise as a private one.

While several expressions were heard on how to go about securing the proper application of salesmanship all through the business, there was found to be a common belief that the railway president with real sales instinct as one of his characteristics is the ideal man to direct the selling of the company's product. Where a railway is large enough, the officer who is directly in charge of the operating department may well be the man primarily intrusted with merchandising the service. This and the further development of the sales organization of an electric railway are well shown in the chart included in the article by Mr. Goodwin which appeared in the convention issue of the ELECTRIC RAILWAY JOURNAL, Sept. 24, 1921, page 472.

There is no doubt that the sales work must start at the top, including some sales attitude in the directorate as well as the chief executive. The president must infuse the whole organization with the spirit of selling transportation to the public. But he cannot enthuse his staff unless he himself is full of the spirit of salesmanship. For example, if courtesy is an essential of salesmanship, then courtesy must originate with the chief executive. It must permeate down through the organization and reach the car riders from their contact with the platform men. One good point touched on in the discussion of this subject was the recommendation that employees should be kept informed on the many problems confronting the company. They cannot explain to the public unless they are posted. They must understand the goods they have for sale. Mr. Goodwin stated that transportation ought to be the best advertised product in the world because it has hundreds of thousands of potential salesmen coming into daily contact with millions of customers. So it should, and through proper co-ordination the conductor and motorman will so carry out orders as to make more and more friends for the company and thus "put over" the service rendered in a way that should lead not only to good will but to prosperity.

Organization Changes Are Now in Effect

NOW that the proposed changes or revisions of the constitution and by-laws have become a fact, as modified and adopted by the convention, it is well to examine their purpose and probable effect upon the future activity and usefulness of the association.

Most important is the provision for active management of the association's affairs by the executive committee in monthly meetings. This provision, it should be noted, was understood and accepted by those who have consented to serve as officers during the next year, so that the provision will probably be carried out in the full spirit of its intention. This augurs well. It should result in a much higher standard of association activity than when all the responsibility must be shouldered by a secretary necessarily held close to the office, working under the advice of an overloaded president. The provision for the various standing committees is of course important and is a part of the better management machinery which the association has set up. Of course, the most important factor in the operation of the association is the men in charge of its affairs, yet the machinery provided should be made most fitting to assist them in their work.

But there were some matters of association policy originally proposed most of which fell by the wayside at this time, though it was recognized that at some future time action might be different in some cases. Thus, the proposal to change the terms of office of the vice-presidents was not revived, though there had been indication from several individuals that this was considered by them an important point. Transportation companies other than rail will not be admitted to membership, though this had been recommended by the executive committee. The proposal that municipal railways be admitted, made by the reorganization committee but vetoed by the executive committee, was not raised on the floor, and the attitude to be taken toward the individual municipal employee is still undecided. It was apparently the belief of the membership in these various cases that where some of the members thought the adoption of certain new policies might seriously injure them, the association should postpone action until time would develop a more nearly unanimous opinion in favor of the change.

This is undoubtedly for the best. The association will progress most rapidly when all work toward a common purpose with a common policy. At the end of the convention that common purpose and spirit seemed to be strongly in evidence.

Will a New Era Come in New York?

THE proposed reorganization plan of the electric railway systems in New York City offered by the Transit Commission on Sept. 30 is of a constructive nature. The prominent officials in the city administration, which has been hostile to the companies since it assumed office four years ago, claim to see in it an increase in fare to 8 or 10 cents. But this is not justified by any statements in the report, which advisedly declares in favor of a 5-cent fare if that is possible and guarantees that fare for at least a year after the plan goes into effect. It is hoped that before the rate of fare is definitely settled there will be a very careful consideration of the undoubtedly close relation between rates of fare and city planning and development. The principal railway officers have in general refrained from public comment, evidently desiring to know more in detail how the main principles laid down in the report are to be applied concretely.

In fact, the report is an outline only of a proposed plan and its effect on individual companies can be determined only when more information is available as to the way in which it is to be applied. Thus the plan contemplates the taking over of the properties to form the new system on a valuation, but does not explain the basis on which that valuation will be conducted. It also says that railways whose earning power is not sufficient will not be included in the proposed consolidated system. The security holders of those chosen will be awarded 5 per cent bonds up to the value of the property, and a bonus is mentioned as a reward for efficient management, with a barometer fund to determine the rate of fare.

These features show that the plan, broadly speaking, belongs to the service-at-cost class with the addition of an incentive clause, the nature of which is not very clear from the printed report and probably remains to be worked out. The promise is made, however, that those details will be taken up promptly. Hearings are to be conducted and the commission hopes that by next summer the consolidation will be effected and the new system will be functioning.

If the future conclusions of the commission are as wisely reasoned as those in its preliminary report and it has the ability to carry them out promptly the transit situation in New York will be greatly improved.

Every one has realized for a long time that something radical had to be done to bring the present chaotic condition to an end. The surface roads are in a particularly bad condition, especially those with the heavy investment charge of a conduit system. Many are not paying their fixed charges and none can be considered in a prosperous condition. The rapid transit lines are not much better off. The Brooklyn Rapid Transit is in the hands of a receiver, the question of an appointment of one for the Interborough is before the court and the stock of the Manhattan Railway, which under the present lease of that company to the Interborough Rapid Transit pays 7 per cent on par, is selling in the market for about 40.

Such a condition is not good for the companies or for the city. The new plan at least points a way out. It should be developed more fully.

Relation of the Electric Railway Industry to Industrial Efficiency*

By Herbert Hoover

Secretary of Commerce of the United States

Better Understanding of Importance of Electric Railways to the Community and to Industry and Employment Is Necessary in Order to Recover Economic Stability and Develop These Services—Ceaseless Public Education Essential

ONE of the outstanding results of the present unemployment conference has been to impress on every one the unlimited interdependency of our various industries. Not that the general fact was unknown or unexpected, but the conference has brought the fact forward with startling distinctness.

Your industry is no exception to this, but on the contrary is probably one of the most conspicuous examples. It would appear that the only thing which kept you going, as an industry, during some of the past years has been the very necessity of your service in order that the rest of the community could progress and function industrially and socially.

When I speak of "your industry" I mean and visualize the urban and interurban transportation business. For I assume at the outset that, except for the natural desire to protect your reasonable investment in railways as such, you recognize your responsibility to furnish to a community the transportation which is necessary for its development and success irrespective of what physical agency you may deem best to utilize for the purpose.

But, even with the necessity of your service recognized, you are, I understand, in a critical condition, though in a way which differs from the condition of other industries in many respects.

The condition of your industry is indeed critical in many aspects. The whole condition has arisen, at least in part, it seems to me, from a lack of appreciation, both on the part of the general public and on your own part, of the basic interdependence of your industry and the rest of the industries of the community and nation.

Some of the data which bear upon this are astonishing, and are conclusive of the point:

HERBERT HOOVER, SECRETARY OF COMMERCE

Thoroughly immersed in the unemployment conference and daily wearied by an endless chain of interviews on this subject, Mr. Hoover turns aside for a while to devote his attention to the electric railway industry, realizing its important function in the general industrial life of the community. *Copyright, Underwood & Underwood.*

You represent a fixed investment said to be about $6,000,000,000, upon which a great deal of industrial and other business credit is based.

You employ some 300,000 men in normal times.

You burn annually more than 16,000,000 tons of coal.

You have a gross income, estimated for 1920, of some $955,000,000, of which approximately 6 per cent, or nearly $60,000,000, is repaid to the communities in taxes, not to mention the paving maintenance which most of you carry.

You pay out more than $300,000,000 in wages, which is used principally for purchasing commodities and the products of other industries.

You buy directly supply material which costs another $300,000,000.

You buy, in normal times, another $200,000,000 worth for extensions, replacements, etc.

You transport, each year, from 12,000,000,000 to 15,000,000,000 passengers—twelve times as many as the steam railroads.

The very marshaling of these data indicates the close relation your industry has to other industries and its importance to the nation.

There is another element to your service, too, which must not be overlooked, and that is the housing situation—the adequate planning of community life. As you who have developed the industry realize, the only factor which makes possible a healthy expansion of housing facilities beyond the confines of congested city districts is adequate transportation.

I mention all these facts, most of them of every-day knowledge to you, for the purpose of emphasizing the close interdependence of your industry and the industrial life of the community.

The public, on its part, not only must recognize your service in relation to other industries and businesses, but must recognize you as an industry and a business subject to the impact of economic laws that dominate the other industries and businesses.

To be sure, the classification of your business as a public utility has entailed regulation of rates designed to take the place of competition which is in the main theoretically absent, and intelligent regulation realizes the necessity of proper return on actual capital invested if these services are to be extended and satisfactorily maintained.

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*Address delivered at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

There can be no question but that in the face of rising prices and wages, with at the same time a regulated income, both industry and service have suffered greatly during the past six years; falling prices and wages will of course improve this situation.

Beyond this, however, a better understanding is needed of the interrelation of these factors and of your importance to the community and to industry and employment as a whole if we are to recover economic stability and if these services are to develop.

I know of only one way to a full understanding of these matters—ceaseless public education on the elemental facts.

Put Business Common Sense Into Electric Railway Managing*

Thirty-three Years of Economic Errors Emphasize the Need of Instilling the Industry with the Commercial and Financial Instinct—Know the Unit Cost of Your Service—It Is Essential in Making Salesmen of Your Employees

By Philip H. Gadsden
President American Electric Railway Association

IN THE backwash of the great war through which we are now all passing we are conscious, if we think at all, of the movement of a great economic current whose meaning we do not as yet understand and the extent of whose operations we cannot grasp. We know, however, that every business enterprise recognizes the change in economic conditions and every business concern is giving its best thought and attention to changing and modifying the methods of conducting its business in order to adjust itself to these changed economic conditions.

So it is with us. We have been engaged ever since the war in an intensive study of the electric railway situation in this country, in the effort to adjust and modify our methods of transportation in accordance with the lessons drawn from that great struggle.

As I look back on the very short history of the electric railways in this country it seems to me that our whole pathway of thirty-three years has been strewn with economic and business errors. This industry of ours inherited bodily all of the traditions of the horse car. In those early days the entire thought and attention of the pioneers of electric railways in this country were concentrated on the development of the engineering and mechanical problems involved. We were so intent upon developing the electric traction that we entirely overlooked the commercial and the financial problems underlying our great industry.

PHILIP H. GADSDEN

What was the result? Without thought, without consideration, we took over the 5-cent fare without a question, simply because it had been the habit for people to travel on a horse car an average of not over 2 miles for a nickel.

What else could we do? Because the horse cars for that nickel carried people as far as their rails extended, a distance which rarely exceeded 2 or 3 miles, we also agreed to carry our patrons on the same basis for the same nickel, absolutely in violation of all business principles. As I look over the history of business in the world I can recall no other phase of human activity, no one else who had the monumental courage to attempt to conduct an industry like this in defiance of all laws of economics. Is it any wonder we find ourselves where we are?

RAILWAYS A BUSINESS FAILURE

What have we done? In the short space of thirty-three years we have built up a transportation industry which has 44,000 miles of track. It employs over 300,000 people and operates about 80,000 cars, which annually transport many times more passengers than all the steam railroads in this country combined. It is a wonderful achievement, but it is purely from an engineering and a scientific standpoint. From a business standpoint, tested by the rules of common sense and business, we have been a monumental failure.

Now that the haze of the conflict has gone and we are beginning to see the meaning of the struggle we have been through, what lessons shall be drawn? That the future problems of this industry are not engineering, are not scientific, but that the future salvation of the electric railways is in the hands of the commercial men of the industry.

In every business except our own there are two distinct branches. The first is the manufacturing, or production end; the second the commercial, or the sales end. Is there any such division of labor in the electric railways? You will find this commercial development in the steam railroads, in the gas business, in the textile mills and automobile factories. You find it developed in the highest possible character in the electric light and power business. In every line of human activity except ours this well-regulated attention to the commercial and economic ends of the business has been recognized as fundamental. Are we supermen? Can we succeed in defiance to all the laws of political economy? We see the answer in our trial balances tonight.

"TYRANNY OF THE BALANCE SHEET"

As I said on a previous occasion, the hard lesson which we have had to learn and the hard lesson which the public must be taught is that electric railways in this country, while their rates may be regulated by commissions, where other businesses are free to charge what they wish, while its service is dictated to it by a commission, when the service of every other business is governed by economic conditions, while we are hampered on every hand, we still enjoy in common with every other business in the world one privilege, and that is that we live under the tyranny of the balance sheet.

But from now on what I want to impress upon this industry is that the test of a successfully operated property is the same test which is applied to any other business; that is, have you a red or a black figure at the bottom of your balance sheet?

That means that in the future we must put less emphasis on our engineering problems and more and more emphasis on the commercial and financial problems.

What are the problems which are crowding upon us for solution? One is the unbridled and unregulated jitney bus competition, which is eating out our very vitals, while we are chained to the rock of commission regulation. That is a commercial problem which must be met as any other business would which is affected by lawless and unregulated competition.

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*Abstract of address presented at the banquet of the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

TAX-EXEMPT SECURITIES

We are faced at Washington with a great problem of taxation. The question of how it is going to be possible for the electric railways in the future to acquire sufficient new capital to provide for the betterments and improvements imperatively demanded by the various communities, of when and how can that capital be secured in competition with tax-exempt securities which are being issued by the millions by our city and state governments, is a problem which will require very grave study. Unless some remedy can be found for that situation of affairs there is no hope of financing this great industry for any extended period. It is up to you to sell to the Congress of the United States the idea that the electric railway is one of the essentials of human life, that here is an industry which lies at the very base of industrial life and is being throttled to death by unwise and impolitic fiscal policy on the part of our government.

In saying these things and in calling them to your attention, if you were the salesmen I wish you were you would go home and do something about it, but you don't. This question of taxing the securities has been fully ventilated and advertised in *Aera* and in ELECTRIC RAILWAY JOURNAL, by facts put there at my request in the hope that each one of you would take it up and sell the idea to your Representative and your Senator. Have you done it? I can answer for you—you have not! If you had been a salesman, if you had had the commercial instinct I am talking to you about, you would have done it. Why didn't you do it? Because you have been trained that service is the one thing to keep your mind on.

We have carried this idea of service to the *n*th degree. I am not at all minimizing the value of good service. I realize that none of these things can be brought about unless we do give good service, but what the electric railway industry is trying to do is to give service even if it cannot afford to give it. Does anybody else do it? No! We have got to change our viewpoint. How will you do it? We here cannot bring it about alone. This is a question of mental attitude, a question of viewpoint, and you must get this idea down through your entire organization and personnel.

ESTABLISH HUMAN RELATIONSHIP

We must as an industry, from the president to the platform man, realize from now on that we are like everybody else. We are not like the Jew in the temple who thanked God he was not like other men. We have been doing that for thirty-three years, thanking God that we did not have to conduct our business like any other business and that we were exempt from the laws of political economy. Now we want to imitate the other fellow who bowed his head in shame and asked that Providence be merciful to him a sinner. We are sinners. We have sinned against the laws of business common sense.

How are you going to get the motorman, conductor and your subordinates into this scheme? We have got to go back to the human relationship which we lost when the industry passed out of the horse-car days. We got so big and employed so many people that the presidents and general managers no longer knew the men on the platforms. We turned that over to somebody else and in that we missed our mark. This job of establishing personal relationship is not to be handed out to a car starter. It's a president's job. It is up to him to enthuse his organization with his own spirit.

One of the prime essentials of salesmanship is that the salesman shall know the value of the goods he is selling. The salesman knows the cost price of his goods, and therefore he is in a position to discuss intelligently with the customer whether the price he is asking is reasonable.

KNOW THE VALUE OF YOUR GOODS

How many men in our organization from the president down know today the value of the goods he sells? We must first have a value placed on our properties, one that the public recognizes and admits. If your motorman, conductor, cashier, collector and every other man in your organization is equipped with this information he has, at least, one of the essentials of salesmanship. He is in a position to say, "The service we are giving to you costs us so many millions of dollars."

A NEW ATTITUDE NECESSARY

I hope I have gone far enough to impress upon your minds what is perfectly clear to mine, namely, that the way out of the difficulties and trials and tribulations which surround us is to have an entire change of heart. We have the habit of laying all of our troubles upon the public. Most of our troubles, most of the abuses which are heaped upon us have been brought on by ourselves. We have invited them; it is our fault that we have a fixed 5-cent fare, not the fault of the public. It is our fault that we carry our riders 20, 30 or 40 miles for a nickel, not the fault of the public. If we tell the public that and admit that we made a mistake, we will have a better chance to preach this new gospel and this new evangel I am talking to you about, for the salvation of this industry depends upon the exercise of the principles of salesmanship.

The Future of Street Railway Financing*

Railways Are a Necessity and Means for Their Financing Should Be Provided—Proper Financial Organization for Service-at-Cost Franchises Is Outlined

By J. K. Newman

Isidore Newman & Sons, Bankers, New Orleans

THERE was a time when municipal ownership was advocated as a solution of the street railway problems, but the cities seem not to want the properties now. Furthermore, the bondholders don't want to foreclose and the equity holders are left with the burden. It is impossible at this time for any street railway to sell even first mortgage bonds, though the issue may be small and better protected than the best standards required in the past. There is no industry which has been hurt more and "hollered" less. The time has come to "holler" loud and continue to "holler" until the truth is known and then to "holler" some more lest the people forget. We have kept our troubles too much to ourselves and the effort to explain the facts has been spasmodic and not continuous.

An organization should be formed and supported by all street railways of the United States to give publicity to the facts. This organization should be organized as a corporation with a complete staff capable of telling the whole story to the public and persistently telling it by every means which seems effective, dignified and businesslike. The trackless trolley car has been shown in moving pictures throughout the country and the effect on the public mind is astonishing in the hope which it has instilled for a cheaper and better transportation. This fallacy must not go unchallenged. The street railway interest should counteract it by the best moving picture story which can be written to show the street railway side, and the picture should be made beautiful to the eye and illuminating to the brain. This is only a trivial suggestion compared to the many substantial things which can be done to counteract the demagogue, the dishonest politician and to educate the men who would really like to know, and, knowing, would be fair.

Municipal ownership would be a blessing to the owners of street railway securities; it may prove far less satisfactory to the public. But the cities won't buy. To their credit it must be said that there are many state commissions and many city authorities who are trying to do the square thing.

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*Abstract of paper presented at annual meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

Unfortunately, however, there are still some city or state authorities who have not the courage to advocate municipal ownership or to give relief by granting higher fares. They falsely fear it means political doom. This is notably and disgracefully true of New York City. But the street railway system is necessary for the life of the city. Hence the city should take over the property at a fair valuation and attempt to operate it in the interest of the people, or allow the owners to do so.

SERVICE-AT-COST FRANCHISES

If the city does not want municipal ownership, it must provide a rate of fare which will yield a fair return on a fair valuation. Many cities have recognized this policy and are adjusting the street railway problem fairly and squarely, but there are some holdouts. Again, argument is used that the street railways will become obsolete. This is an absurdity, not carefully analyzed, but used for the purpose of oppression, and unfortunately it has reached the banker and the investor. If the cities will not buy the street railway systems then service at cost must be granted to the companies. Without some incentive it is contrary to human nature for the management to exhaust its brains and energy on such a proposition. This incentive should be in several forms, as follows: (a) A premium on new capital raised either for extensions or betterments, if it means economy or improved service; (b) a higher return on a fixed valuation when there is a diminishing cost for the service rendered; (c) the right to earn an excess over the fixed return to create a stabilization fund to insure the fixed return continuously. The company should be permitted to invest such excess in property account, but no return should be allowed upon property acquired from such excess. This excess should be large enough to provide for junior financing as hereinafter referred to. (d) The city should recognize the value of expert advice in all branches of its service and permit the cost thereof to be charged as an operating expense. It is often true that a dollar paid for expert advice returns itself many times either in savings or in mistakes avoided. (e) Every effort should be made to reduce the taxes, and the franchise tax should be eliminated altogether.

With a service-at-cost plan in force, the companies must have a financial setup on a modern, comprehensive plan irrespective of what securities may be previously outstanding. Where the companies cannot comply with a standard or modern form of financing, they should find a way out even if they must resort to receivership to readjust the capitalization.

If properties under the service-at-cost plan are to be allowed only an 8 per cent return, the requirement that net earnings after deducting renewal and replacement charges shall show twice the interest on bonds outstanding would limit the outstanding bonds to 50 per cent of the value of the property, assuming that the bonds had to be sold on an 8 per cent basis. That, however, would leave too large a proportion of the cost of additions to be financed by junior securities. Therefore with the modern treatment of renewals and replacements, the bankers must recognize the fact that adequate provision for renewals and replacements protects the bondholders to the same extent as a corresponding surplus over bond interest did in the past when such provision was not made for renewals and replacements. The bondholders will be properly safeguarded in this particular if it is required that the net earnings when added to the renewal and replacement reserve set aside out of earnings shall aggregate twice the interest charge. In this case, such renewal and replacement reserve should be inviolably dedicated to renewals and no portion of such reserve should be available for dividends. Assuming such renewal and replacement charges to amount annually to 3 per cent of the recognized fair valuation, this would permit the issuance of 8 per cent bonds to the extent of about 70 per cent of the cost of the additions and still show twice the interest charges in net earnings and provisions for renewals.

SALE OF JUNIOR SECURITIES

With such a requirement from investment bankers, no street railway company should have first mortgage bonds outstanding in excess of 70 per cent of its valuation. The issue also should be unlimited in amount so that additional bonds can be issued from time to time without limiting the total amount ever to be outstanding, but restricted as to the conditions under which additional bonds may be issued. Under such a plan only 70 per cent of the money can be raised on first mortgage bonds, even after a financial reorganization has occurred either through voluntary process or receivership. How is the additional 30 per cent to be raised? It might come through any one or all of the following sources: (a) The company should be allowed to earn an excess over the fixed return to be invested in additional property as hereinbefore explained. (b) The cities must give such support to the companies that preferred stock can be sold to the patrons of the company. The city should lend its effort to insure stability of principal and continuity of dividends on this preferred stock by removing all obstacles in the way of profitable operation. This means the city should indorse one and only one system of transportation, thus enabling a monopoly, if you want to call it by this name, but a monopoly which never grows fat and lives on a mere skeleton diet. (c) When the preferred stock has thus been sold to the patrons of the company and where the first mortgage bonds outstanding are less than 70 per cent of the valuation a second mortgage issue will be safe and will appeal to certain classes of investors who need a larger return than is obtainable on absolutely first mortgage bonds. (d) Sale of common stock. Where the income return allowed by the regulatory bodies is sufficient to cover the average interest rate at which all the company's securities are sold, it will ordinarily be the case that the interest paid upon the first mortgage bonds or other prior lien securities is materially less than the average rate of return. Thus, the surplus net earnings available for the common stock will be materially in excess of the average rate. This should make it possible to sell common stock at par or better to such investors as are willing, in consideration of such increased income, to assume the larger risks of business going with the junior securities.

When the city authorities or state commissions have fixed a fair value on the property and have determined what is a fair return thereon, it is no longer their affair how the company capitalizes so long as the capitalization is such that additional securities can be sold to meet the cost of improvements and additions in the future. For instance, if a company had a valuation of $1,000,000 and was allowed an 8 per cent return thereon and if it could sell at par 6 per cent first mortgage bonds for 50 per cent of the cost of the property, the remaining 50 per cent would be capitalized in the form of common stock and the surplus available therefor would be 10 per cent. The higher yield on the common stock might make junior financing possible, and no interference should be offered by the city if the common stock should show 10 or even 12 per cent return, provided the total return on all securities did not exceed the fair return allowed on the agreed valuation. If the city and state authorities will learn this lesson it will be an important step forward in the financing of junior equities, and thus make street railway financing more feasible.

FRANCHISES AND INDETERMINATE PERMITS

There is nothing more destructive to street railway financing than short term franchises unless it is short term franchises which undertake to make rules, regulations and general conditions of operation in the distant future. Bankers will not recommend and investors will not buy bonds where the maturity thereof is beyond the maturity of the franchise. It is expensive to refund an issue of bonds, and no one advocates that street railway bonds should or could be paid at maturity without refunding. It makes a tremendous difference whether an issue runs for one hundred years or if it is refunded ten times during that period.

If first mortgage bonds on street railways were limited to a fair per cent of the fair value of the property and were properly protected by maintenance, renewal and replacement clauses and the many other good clauses which the usual mortgage now contains there would be no need for a maturity under one hundred years or more and no sinking fund would be required. However, there are many objectionable conditions which have crept into these mortgages and they must be eliminated, while on the other hand several new clauses should be inserted through which the conditions can be changed to meet conditions which will arise in the future. It would probably be hard at the beginning to have a condition in the mortgages that 50 per cent of the holders of the bonds issued could change practically any or all of the conditions of the mortgage, but if the street railway companies and the bankers will confer from time to time a broader understanding of proper financing will result and mortgages will be devised which will strengthen the companies instead of restricting them to the point where reorganizations are necessary.

The indeterminate franchise is necessary for proper rehabilitation of street railway financing. Such a permit should be exclusive; it should allow the fare to be flexible; it should insure against jitneys and buses which parallel; it should permit ample regulation, but regulation which will not confiscate. A co-operative effort should be made to get all states to adopt a fairly uniform indeterminate permit law. Progress has already been made in this direction, but strenuous efforts are necessary to make this theory a universal practice.

The Basis of Financial Recuperation*

Recognition of Fair Valuation as a Basis of Capitalization by the Railways and Recognition of Fair Rate of Return by the Public Are Necessary—A Simple Financial Structure, with Holding Companies the Exception, Is Also Good Policy

By Francis E. Frothingham

Vice-President Coffin & Burr, Inc., Boston, Mass.

OUT of the welter of discussion over the difficulties of our street railways, probably the nearest to a common opinion is that the street railway cannot be dispensed with in the larger communities and in their more densely populated tributary territory except by a dislocation of community habits and values not to be contemplated. Confidence that the industry is a permanent one will sooner or later beget success in restablishing it on a sound footing—but only, I am afraid, at the expense of much heart-burning and many losses.

In what I have to say I will not undertake to discuss any of the physical problems, interesting as they are, but will touch only on some of the more conspicuous general ones as they present themselves to the lender of money.

In the first place, it seems to me that the street railway business has not yet emerged from the cloud of public condemnation of past practices, and until this cloud has rolled by no just solution of the difficulties of the industry is possible. It is profitless to rake up the unpleasant past of overcapitalization, mismanagement and political corruption with which the history of the business is unfortunately too replete, unless it serves as a guide in the present. There is no way of allaying this lurking feeling of maltreatment except by persistent candor and patience on the part of the companies. Another handicap to developing local good feeling is, in many instances, the fact of foreign ownership or of distant control by absentee holding companies. The arguments in favor of the holding company are recognized, but I feel confident that in this particular the disadvantages of remote, I had almost said unsympathetic, banker control, in the case of the larger properties at any rate, outweigh the advantages. Absentee landlordism is bad in practice where it can be avoided and a community instinctively resents this sort of dictation in its affairs and not improperly demands a home discussion and solution of local needs. Surely such an interpretation of public hostility gives it a reasonableness that makes it curable.

GOOD WILL ENGENDERS FAIR PLAY

With public sympathly and good will once developed the instinctive human habit of fair play will surely be effective in securing for the struggling companies a fair return on a fair valuation, and more than this they have no right either to ask or expect. That is a very easy thing to say, but as the slang expression has it, "you have said a mouthful." But once this principle is established the problem becomes one of detail, however slow or harassing its solution may be. Cleveland, Dallas, Boston, to name a few conspicuous examples, are making different applications of ways and means to this general principle, and each is securing varying measures of success.

The search for a fair valuation means inevitably the abandonment of many preconceived ideas and a readiness to recognize the fact that existing capitalization is a factor in the search only in so far as it may help to show how much money has actually and legitimately gone into the service of the public. The public demands to know the amount of investment which is reasonably used and useful in its service, and it is increasingly apparent that any effort on the part of the companies to divert the search for that figure will but delay the reconstruction process. It is hopeless and unreasonable to expect support of capitalization which stands only for speculative anticipations, and the sooner the justice of this basic demand of the public is recognized will a great impediment to reconstruction be removed.

FAIR RETURN MUST BE ACCORDED

Search for the fair return on this fair value demands the recognition by the public of the fact that the cost of the commodity which the street railway sells varies as does the cost of any other commodity which it buys and which it expects to fluctuate from time to time. The 5-cent limitation which operators in the past gladly accepted because it seemed then so abundant has prejudiced the companies' case most unfortunately. The public mind should be cultivated to accept a cost of service, as it works out under varying operating conditions, as the fair commodity price, and it surely will when its confidence in the operators is restored and the necessities of its own best interests are fully realized. In other words, where a community is protected from selfish management by commission jurisdiction there need and should be no limitation on the rate of fare required to cover operating expenses, reserves for depreciation and cushion funds, and the agreed upon fair return on the fair valuation. No one can foresee the varying cost of operation, and a fixed limit either high or low in the fares which may be charged is both practically and theoretically a menace to continuity of credit and so to adequate public service, which depends on the existence of such credit. The Boston Elevated now charges a 10-cent fare and the public accepts it as a matter of course, having confidence in the disinterested and intelligent administration of the public board appointed by the Governor under the recent enabling legislation in Massachusetts.

In this connection the war was a ruthless teacher. Suddenly and conspicuously it made all the inherent and slumbering street railway difficulties loom large and destructive—the danger of motor-car competition, the inadequacy of provisions for depreciation, the vital menace of mounting costs of material and labor against a fixed cost of product. The war made the industry totter and left some ruins, but it showed up all the worst that there was to know, so that the salvaging efforts can now be concentrated on that which is worth saving.

THE PROBLEM OF THE BUS

In the jitney and bus service the street railways have been subjected to a very severe type of competition. They have had competition before, but usually in kind. This is a new kind of trackless enemy and the danger was, I think, very unhappily met, perhaps because of a certain tendency of unprogressiveness in the industry which in the past has made many advances in physical equipment and operating practices wait around, so to speak, for recognition. When the jitney came, the industry unfortunately only decried it as an unfair competitor. The effort was rather to eliminate it on the plea of unfairness than to insist upon its being made a fair competitor. Little or no effort was made to absorb the new agency and to co-ordinate to the public gain the trackless innovation with the tracked system. Thus public opposition was aroused when instead public sympathy and help might have been secured. I am aware that as yet, except on Fifth Avenue, that vertibrate avenue in a long densely populated island, that Arnold Bennett called the finest avenue in the world, there is no demonstrated success in jitney-bus service. Its potentialities are such, however, that it should be co-ordinated with the street railway service and competition, if such there must be, kept at the respectful distance that stimulates but does not kill.

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*Address presented at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

It is even open to discussion whether competition will secure the best rounded and most effective public service. Entire absorption of this new agency by the street railway has much to recommend it, if the companies would agree to put on such service where and when the utility commissions, after hearing, have found a need for it. The public has a clear right to the benefit of advanced practices, and any effort to deprive it of them will only prove a boomerang. Possibly trolley wires may still be used where it is too expensive to maintain the tracks under them, for of course the problem is with the trackless vehicle in general, and not the gasoline-propelled vehicle alone. If there must be competition it is absolutely important and fair that vehicles using the streets for the collection of fares shall equitably bear the costs of street improvement and maintenance. No jitney can permanently expect or should have free use of that portion of a street which a street railway company has built and in winter keeps clear of snow.

FRANCHISES—A QUESTION OF MEN

This brings us to the question of franchises, which have such a direct bearing on the dependability of a fair rate of return. A terminable grant under rigid conditions has no satisfactory basis for financial credit. The indeterminate permit coupled with some form of service at cost, with flexibility of rate adjustment, and the right of a municipality to purchase at an agreed-upon valuation, is the most encouraging type of grant so far developed. The monopoly feature and the equalization of street costs as just discussed are also very important.

Of course the human element in the administration of any type of franchise must always make its effectiveness more or less uncertain, for the administration of any plan can either make or break it, but that does not detract from the necessity for working toward such terms in a public grant as fundamentally seem the fairest and the soundest in principle. Those elements which inject selfish interest and opportunity for manipulation should be eliminated. In the long run it ought to be possible to find good men to do a good job for a fair wage, if their tenure of office is dependent only on the merit of their work. But these considerations only bring us back to the perpetual question of the right men. Just now, for instance, able men of high character are administering the Boston Elevated, under the enabling act referred to, most hopefully. Substitute a board of political henchmen and there will follow disaster under the identical act. So also with the new administration of the old Bay State Street Railway, where remarkable practical results are now being achieved with a very extensive urban and interurban mileage.

Public ownership and operation with its contaminating political influence under our form of government (and experiments in public ownership in Europe are chiefly danger signals) holds no prospect of improvement over private operation and should be turned to only in the event of outright failure of private effort under fair treatment. Should public ownership and operation be resorted to, the only hope of decent service lies in control by a long-time board beyond the reach of political influences. The present management of the Boston Elevated is a compromise plan being watched with much interest. But, as I see it, the burden of private ownership is to make a clear demonstration that it can meet the call upon it, and my personal belief is that it can win out in this effort if it will. But it must be prompt and energetic and ready to take losses in the process.

Recovery of credit also rests on some solution of the labor problem. If company and men can find no way of living together in peace, not by fits and starts, but continuously, money will be hard to find for capital expenditures. Cessation of operations and destruction of property breeds nothing but distrust of the business. The interest of all hands, public, employer and employee, demands a strenuous effort to devise some scheme of compromising differences without either strike or lockout. All three groups should rest their case for final decision and acceptance with some board of arbitration. Possibly the Philadelphia experiments may point a way. Some form of collective bargaining is of course essential, but the basic principle to be recognized is that no group of men in a public service has a moral right either to quit work or to lock out at its arbitrary pleasure, merely because it harbors a grievance, and so tie up a public service.

It is so easy to say these things and so difficult to find a way through that one feels almost ashamed to make what must sound like futilely trite remarks to you who are laboring so hard in the field, while I among others seemingly only lock on and say, bring us this thing on a silver platter and then we will help. But it is really not as bad as that on the banker's side. The banker does not buy to hold, he buys to sell, and he can only resell what his customers will buy. He must pass his purchase along, and he cannot do that to people who see street railways shut down over a franchise fight, or because of jitney competition, or of a strike or lockout, or who do not find net earnings coming through for return on their money.

The investor in street railways has been brought up to believe that it was a cash business payable in advance, that it needed little working capital, that the riding habit steadily increased, that he could see all the property and judge for himself if it was well maintained. So he bought and got hurt—and now wants the reasons why corrected before he lends again. All we can do is to keep on correcting the faults till his confidence is restored—and he wants, not unnaturally, an overfull measure of correction. So the industry must keep hammering away—and all I am trying to do is to emphasize some of the salient points at which the hammering must be concentrated, as we who must get the funds from the doubting public see it.

A SIMPLE, DIRECT FINANCIAL PLAN IS A FIRST ESSENTIAL

Looming large in the background of the present dark-colored picture is the financial plan, through which the direct appeal to the public for funds is made. Here, to my mind, three very important essentials stand out. A capitalization should be simple, it should be direct, and it should bear as nearly as possible a unit relationship to valuation. The financial structure should be as scientifically developed and adapted to the special case as is the physical structure to its environment and the service that is expected of it. Too frequently has it been a case of money needed somehow, and any available security marketed, until an almost unintelligible financial conglomerate has resulted. Sometimes the conglomerate has grown out of painstaking but mistaken effort. But however developed, these complicated financial structures should as rapidly as possible be abandoned, even if suffering comes to former investors. A piece of physical property is scrapped in the stride forward, but herculean efforts are made to save a financial plan equally faulty or outgrown. The desire to save innocent investors from loss is rightfully ever present, but it is a mistaken sense of justice to continue raising money on a plan that only multiplies the ultimate victims. The public utility runs on indefinitely, and the greatest good of the greatest number may demand a drastic course. That financial reorganization will be brought about on an extended scale to insure success is inevitable.

By a simple plan I mean, say, such a one as has raised money for the Detroit Edison Company through all sorts of market vagaries for years, and is still good, *i e.*, bonds directly secured by physical property, and common stock also secured by real values. Paying a good dividend as it does, money can be raised on this common stock in ordinary times and the bonds are always in the background, salable for lower-priced money or when stock money is not obtainable. The Commonwealth Edison Company also follows this simple plan with conspicuous success. Bonds and common stock, as nearly fifty-fifty as possible, is the simple, effective, sound plan. To refer to the Detroit case again, the company, in order to maintain the desirable relation of bonds to stock, issues debentures from time to time, convertible into common stock. Up to the strain of the war these debenture issues had been converted practically 100 per cent, so maintaining the essential bond-common stock basis. Some such simple plan should be the goal of every utility, as an aid to stand the storm of changing conditions.

I have deliberately deferred the mention of preferred stock, because I am inclined to feel that it is a security whose usefulness is perhaps overestimated. It is the intermediate security between the indenture-secured bond, with its right of foreclosure and nonparticipation in management, and common stock. It has a lien on earnings ahead of common stock dividends, and so makes an intermediate appeal in raising funds. Its use still leaves the financial plan very simple, but I think its very prevalent use is closely associated with the fact that as a rule too much of the needed funds have been raised on funded debt, and so sufficient margins have not been left to put common stock on a substantial dividend basis and so to make it a dependable financial medium.

Of course the increasing sale of any stocks tends, if the voting power is attached, as in my judgment it always should be, to distribute ownership, and there is often fear lest this process will divert control from a particular quarter. Control of the public services, however, should be allowed to go where it will and management should depend on the competence of its service for its retention. Fear of loss of control again arouses public suspicion, which is quieted the more nearly a given community owns or has the clear opportunity to own and manage its local services.

Here again the war comes in with its lessons. Its strain brought many situations to their knees because bond rates were limited in so many cases to 5 per cent or only a long-time bond was issuable, and no company could afford to sell them. So resort was had to bond-secured notes and every ingenuity of financial device. But the lesson was this: just as the service at cost plan depends on unlimited fare fluctuations to meet changing costs, so deeds of trust must provide for interest rates and maturities and other features such as call figures, tax provisions, etc., as will from time to time best meet changing or emergency market conditions. It will take great care to develop in deeds of trust offering these flexibilities the substantive features of security and equality of lien unimpaired, without which a bond becomes such in name only. It can and should be done, however. Similar flexibilities can also be applied to preferred stocks to advantage, while retaining equality of rank. Efforts have recently been made in both these directions and they are not only advantageous in themselves, but bring the great advantages of simplicity of capitalization within easier reach.

WEAKNESS OF HOLDING COMPANY FINANCING

Direct capitalization and the holding company security come into immediate conflict. The holding company security, supported by the pledge of the direct obligations of several operating properties, contains a diversity factor strength which has been strongly argued, and for certain purposes and in particular instances has its advantages. It is a fact that during the war the holding company in some cases facilitated the raising of money, but on the other hand there were many cases when the inter-relationship of indirect ownerships made a way out almost impossible. But as a permanent means of satisfactorily financing the important street railway companies of the country, it is difficult to find justification for it. It is fraught with possibilities of grave abuses, and for that reason and because the holding company is not subject to commission control it leads to strong local distrust and criticism. Then, too, its securities, in the case of the large property, are as a rule not so salable as the direct obligation of the operating company itself, provided the capitalization has a simple structure. In the case of smaller properties the benefits of the holding company are of course often many and real, and are locally appreciated, but there can be no doubt of the soundness of the practice of selling to the public the direct obligation of the larger operating properties themselves.

Over-capitalization still exists with many of our street railway systems. This fact, I think, cannot be gainsaid, and where it obtains cannot be set aside as irrelevant. I am afraid a great deal of effort will be yet wasted in attempts to preserve an unjustifiable set up in the hope that chance and returning general prosperity and the continued growth of the country will still take up the slack. These will in all probability be destructive rather than constructive efforts. It will be much better to make opportunity out of the present difficulty to get started right. It is often argued that the fixing of a fair return on a fair valuation reduces the amount of capitalization to relative unimportance, because the allowed return will go only so far as it will. If there is not enough to reach common stock dividends, for instance, they merely will not be paid. Non-readjustment of capitalization in such cases distorts the idea of real value and the conception of the proper relation between securities of different classes, and maintains public suspicion.

The man in the street will not let up his fight against a capitalization that bears no reasonable relation to valuation. The principle of an aggregate par value of securities to equal valuation must sooner or later be accepted, and the sooner the better. Massachusetts has been much laughed at in the past for its rigid capitalization statutes, yet the properties in the state have continued to grow, and now when the public good will means everything in the street railway struggle, the knowledge that everybody has, that capitalization equals valuation by the operation of law and public control over many years, and that the par of bonds does not exceed the par of stock outstanding, takes from public opposition to remedial legislation one of its great complaints.

It is hard to be drastic, but these are drastic days. Street railway financing today is almost non-existent. During the past year scarcely a dozen purely street railway companies in the United States have raised any money by the sale of securities, and even so each case has been in some way special. This condition cannot continue long and the street railway business as a private business survive.

There is no Moses to lead the industry out of the wilderness. There is no panacea for its ills. Each case is special unto itself and must be laboriously worked out. But a background of sound general principles remain and the more closely these can be followed, the sooner, I feel sure, will the credit of the street railway industry be restored. Credit canot be re-established without earning capacity and earning capacity cannot be achieved in the face of public distrust and opposition, the hydra-headed enemy of the industry.

Claims Association Elects Officers

AT THE FINAL meeting of the American Electric Railway Claims Association, the following officers were elected for the ensuing year:

President, C. G. Rice, superintendent claim department Pittsburgh Railways.

First vice-president, Wallace Muir, claim agent Kentucky Traction & Terminal Company, Lexington, Kentucky.

Second vice-president, W. H. Hyland, claim agent Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.

Third vice-president, Howard D. Briggs, assistant general claim agent Public Service Railway, Newark, N. J.

Secretary-treasurer, E. L. Lindemuth, claim agent Wilkes-Barre (Pa.) Railway.

Executive committee: G. B. Proctor, claim agent Memphis (Tenn.) Street Railway; W. G. Fitzpatrick, general claim attorney Detroit United Railway; T. B. Donnelly, claim agent West Penn Railways, Pittsburgh, Pa.; S. J. Harrell, claim agent Knoxville Railway & Light Company, Knoxville, Tenn.

Service-at-Cost Contract Franchise and State Regulation*

The Relative Merit of Each Depends Largely on Makeup of Public Bodies Involved, but with a Good Board, Service-at-Cost Contract Franchise Has Manifest Advantages

By Edward Dana

General Manager Boston Elevated Railway,
Boston, Mass.

STATE regulation has generally come to signify control through a state commission, of service to be rendered and rates charged therefor, and further a nearly absolute power over capital issues, whether of stocks, bonds or long-term notes. The fundamental feature of this plan and its greatest weakness is that it looks at only one side of the financial structure of the company, to wit, its receipts. It has no direct connection with or responsibility for expenditures. The commission suffers no loss and incurs no public odium if its decisions result in financial catastrophe for the company affected.

Service-at-cost franchises have taken several forms. Since I am associated with a company under one of these forms which was previously subject to state regulation, and can speak as to that from personal experience, I will take its features as the ones to be considered. Here we have a state board, just as in public regulation, but that commission is given absolute control over and responsibility for both sides of the ledger. It determines the service, prescribes the rates of fare and dictates the expenditures to be made. It is under a duty to see that receipts are sufficient to provide for operating expenses, meet interest on indebtedness and pay certain fixed dividends upon stock—and the state guarantees that its commission will accomplish this result. If the rates it establishes do not provide the necessary funds, the taxpayer in the district served through the state must make up the difference.

There are advantages and disadvantages in each of these plans of control. From the point of view of the stockholders in times of rising costs the advantages of service-at-cost are apparent. With receipts practically fixed and expenditures increasing, there is apt to come a time when dividends cease and even bond interest cannot be met. In such a time the service-at-cost stockholder is in a comfortable position. The return on his investment, while not large, is secure.

EDWARD DANA

Theoretically, public regulation should not and need not impair the return to the stockholder. The United States Constitution protects an investor in public service corporations in a fair return on his investment so far as state interference is concerned, and it is as much the sworn duty of public service commissioners as of a court to recognize this. Given a regulatory board, conscientious in its sense of duty to the investor as well as to the public and of sufficient courage, increases of fares would not lag behind the condition which made them necessary. Nevertheless, even with an ideal commission there will be, in periods of rising costs, a certain length of time between the moment when increased fares are necessary and the time when they can be put into effect. Evidence must be collected to prove that the increase is necessary, and this cannot well be done until the time of need has arrived. Public hearings must be had and delays of greater or less extent are sure to occur. Throughout this time of waiting a loss is being suffered, which with costs still rising is not likely ever to be made up, but, rather, goes on repeating itself.

Under our service-at-cost plan what the public does not pay in carfare it must make up in taxes. The tribunal controlling the fares is responsible for seeing that they produce enough revenue to meet the costs. It is in a position to act quickly and has the incentive for so doing. Accordingly, not only is the stockholder in better position, but the property has a better chance to be completely self-supporting.

In a falling market the position of the stockholder is reversed. The same sag between changes in carfares and financial condition which warrant them is almost certain to occur and tends to be more pronounced. In the falling market this time of sag between the decreased cost of operation and decrease in carfare furnishes an opportunity for profit to the stockholder and of increased dividends. I said the length of this sag was apt to be greater if anything. It is more difficult for outsiders to present evidence to a commission that carfares should be reduced than for a company, in possession of all the facts, to prove that they should be increased. Delays from litigation are apt to be longer, and the same opportunity for delay, which on a rising market may spell receivership for the company, now works to the advantage of the stockholder. The same thing would be true in a period of development in the industry when rapid improvements, new inventions or changed methods of operation reduced net costs even though general costs were increasing.

If, during the last twenty years, the purchasing power of the dollar had been steadily increasing instead of decreasing, we would probably not have heard much agitation over service at cost. Owners of properties would have preferred the speculative chance of making a profit over the security of a moderate but fixed return on capital. but so long as the value of the dollar is on the decline, I believe the advantages to the owners are in general the other way.

ADVANTAGES TO THE MANAGER

From the point of view of the operating manager, there are many advantages in our service-at-cost plan.

A regulatory commission cannot acquire the knowledge and understanding of the properties, needs and possibilities of a particular system that can be acquired by persons active in its management. The regulatory commission is apt to think that things which may appear desirable can be done without undue burden, although the commission does not know how. It is apt to take the position that the management can and will find a way if it is ordered to do so. It is apt to be suspicious of an honest exposition of a case because some other company has put something over in times past.

With service-at-cost, the public board of control is just as much, in fact more, interested in whether a suggested rerouting of cars, additional transfer privilege or construction of a new line is a sound business proposition as is the operating manager. Furthermore, as this board selects its manager, it naturally has confidence in him. If he does not merit such confidence, he ceases to be manager.

Operation under such a plan is therefore simpler than under a regulatory commission. Less time is wasted in unnecessary hearings on fantastic suggestions or ill-founded complaints. Changes in routings, time tables, transfers or rates of fare can be made when needed, instead of being made when permitted.

At the beginning of the third trustees' year in Boston, after a full year's operation on the 10-cent fare, operating costs faced a substantial increase due to a $3.56 increase in the price of coal and an advance of 16⅔ per cent in wages made by an arbitration board. It was estimated that by the end of the year this increase would amount to $3,000,000. The public board in control at once faced the situation. The manager was enabled to act immediately and institute economies so that the actual increase amounted to only $353,336.44.

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*Abstract of paper presented at the convention of the American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 3-6, 1921.

The efforts made to rearrange the service quickly, curtailing where possible without impairment of the service, resulted as follows:

52,000 less tons of coal were burned.

837 less accidents occurred.

817,299 less miles were operated.

757 less men each week on the payroll.

That this was not done by sacrificing the property is indicated by the fact that there was

31 per cent reduction in defective rolling stock.

23 miles of track were rebuilt or repaved.

113 new cars were added to the rolling stock.

$2,000,000 allowed for depreciation.

Four districts of local 5-cent fares established.

13,189,620 more revenue passengers transported.

No public hearings were caused and no hostile newspaper attacks made.

DEFICIT CHANGED TO SURPLUS

A unified and concentrated control of management resulted in men and management attacking the problem courageously and the car rider seemed to realize that it was his problem which was being solved. A deficit of $1,457,415.82 was changed to a surplus of $131,985.01 in nine months without sacrificing maintenance or proper allowance for depreciation and with no increase in carfare.

It is my opinion that, had such a situation existed under private management and state regulation, much of the management's time would have been required at public hearings listening to abuse and preparing elaborate defenses, instead of accomplishing the job of efficient and economical management to meet existing conditions of increased costs and arbitration awards, and that no decision would have been rendered in time to meet the situation.

NO ILLS FROM PUBLIC OPERATION

It is apparent that, during the period of operation referred to, the ills frequently said to accompany public operation did not exist under this plan. Some of these may be cited, such as the invariable increase in employees, the drop in morale and efficiency, camouflaged accounting, cost put on taxpayers to secure popular support through low rates, withdrawal of values from taxation. The payroll employees have been on a strictly business basis, the morale and co-operation of the force never better, the accounting exactly as prescribed and used by all street railways, the fare self-supporting, and cost not assessed on taxpayers, the amount paid in taxes greater in amount than previously, but on the same basis.

What I have just said is all based on the assumption of a board of control composed of able, honest, zealous men. If such a board were made the football of politics, composed of politicians holding the position merely for what each personally could get out of it, little of what I have said on this score would be true.

In such a case a manager might be ordered to put unnecessary men to work, to operate service when and where it was not needed, to do divers things, inefficient, wasteful and contrary to his sound judgment, and when the day of reckoning came find his reputation as a manager sacrificed for the political ambition of his board. From the manager's viewpoint, I should say that given an equally good board I would prefer the service-at-cost plan, but with an equally bad board, public regulation. The bad regulatory board could not do so much harm in so short a time.

ADVANTAGES TO PUBLIC OF EACH PLAN

What are the advantages of either plan to the public at large?

The answer must be much the same as from the manager's point of view, although the type of person who appears at hearings of public commissions, as self-styled representatives of the public, would probably not agree. That gentleman styles every increase in carfare as an outrage and robbery, every rush-hour train as cattle cars, and universal transfer as divine right.

In the long run it is better for the public to have its utilities operated efficiently with a fair return to the investor than to be carried for a time at a carfare too low or in a manner too elegant to pay costs. Any savings made by efficient management in the long run benefit the public, either by direct improvement in service or reduction in carfare. I believe that in Boston a great majority of the people accept this view. Increases in carfare from 5 to 7 to 8 to 10 cents within a period of twelve months were accepted with so little objection as to be negligible. In my opinion this was due to confidence in the personnel of the board of trustees and the realization that the management was conducted in the interest of the public, and that money paid in carfares only went to meet necessary costs and not to the advantage of private investors.

MAKEUP OF BOARD DECIDING FACTOR

From what I have said, you will gather that in my opinion the relative advantages of these two systems depend largely on the makeup of the public boards involved.

The Massachusetts plan attempts to insure the presence of a good board by providing a term of office of ten years. A long tenure gives the value of experience and the intimate knowledge acquired from year to year. It furnishes incentive to efficient management because any mistakes made, whether intentional or unintentional, are pretty sure to come home to roost before the term of office of the men responsible for them has elapsed. There is time in which to demonstrate ability, to disclose incompetency or dishonesty. It seems to me that the chance of having a board of the desired standard is much greater under such a plan than with the regulatory commission.

Men who would not be willing to serve on a regulatory commission because of the limited nature of its authority and the lengthy hearings to be attended are willing to give their time to a public service where they may really do things of benefit to their community and which they may view with just pride. The field of the regulatory board is limited to a wise, semi-judicial restriction of others. It is a highly important and honorable position. The service-at-cost board has the opportunity for large achievements and the satisfaction which comes from the accomplishing results, however great the obstacles. It is this joy in playing the game which keeps many a wealthy man in business after he has amassed all the wealth he can desire. This element in human nature will always assist in maintaining a high standard of capacity in a board managing for the public such a service as this in a large community. The larger the problem, the higher the caliber of men who will be willing to attack it, although the money compensation be little or nothing.

One other subject should be touched upon, "The financing of the company or raising new capital."

Any system in a growing community is constantly in need of capital for extensions and improvements. As the community spreads, lines must be extended and power plant enlarged. As it increases in population, more cars must be run.

Our experience with respect to new capital has not yet been encouraging. Investors have not as yet drawn the distinction between the condition of our company and that of the railways in general. It was thought at the time the Massachusetts act was passed that the guarantee of dividends would make the raising of capital easy, but a 6 per cent stock at par is not marketable and as yet we have not reached that maximum rate and since the present plan is only ten years' duration there is not the certainty which a gilt-edged bond possesses.

Under private management there is practically always some financial group in control which is interested in seeing that the company is properly financed. Under service-at-cost this assistance is lacking.

It remains to be seen whether, when the money market is more nearly normal and street railway securities are in better favor, the certainty of fixed return of the Massachusetts plan will compensate for the loss of speculative possibilities and the loss of financial backing of strong concerns.

Street railway investments have been hit so hard of late years that there is little market for anything that bears that label.

The operation of a street railway system is much before the public eye and the personnel is constantly in touch with the public at large. Such an organization cannot produce its best work if it is the football of the daily news, its management always defending itself before hearings, etc. No business can prosper when every one is operating it, much less a business on a fixed return with as small a margin as exists between income and outgo of a street railway.

Indeterminate Franchise Indorsed*

By R. I. Todd

President Terre Haute, Indianapolis & Eastern Traction Company

R. I. TODD

ONE of the most striking epigrams in Mr. Dana's paper is contained in the next to the last paragraph, *i.e.*, "You cannot regulate one-half of an industry with success." This terse statement presents in a nutshell one of the fundamental difficulties which practically all public utilities have been forced to operate under and which seems to be so little appreciated by the general public, or even by the majority of the best-informed business men. The public authorities who regulate the receipts of public utility corporations should also be held responsible for their operating expenses and net earnings so far as this is reasonably possible. The plan suggested by Mr. Dana, under which the Boston Elevated Railway system is now operating, seems to combine, in a most advantageous way, the control by public authorities of both the income and outgo of the company. Outside of the State of Massachusetts, however, no public utility operator has been able to convince the lawmakers that the operating deficit of a utility should be charged against the tax duplicate of the property owners, and even in Massachusetts, if I am correctly informed, the Boston Elevated Railway practically enjoys a monopoly of this most valuable feature of the service-at-cost legislation. In the Middle West it would be extremely difficult to get any legislation of this kind placed on the statute books.

With possibly the single exception of Massachusetts, the two most generally considered plans of utility control and of operation seem to be the service-at-cost plan and the indeterminate permit method of operation. Under the latter plan, in theory at least, a utility is practically assured by the State that it will be permitted to earn a reasonable return on all property used and useful for the public, but that the chance of speculative profit is practically given up.

The particularly advantageous feature of some of the so-called service-at-cost franchises is an automatic rate of fare, dependent solely upon the receipts and operating expenses of the company. When an increase in rates of fare with an indeterminate franchise becomes necessary, relief is usually not granted until the company has been seriously affected financially, and if further relief is required usually there is considerable additional delay.

However, outside of this advantage of an automatic fare adjustment, there are many disadvantageous features to service-at-cost franchises. One of these is the lack of incentive to the company to operate as efficiently and economically as under an ordinary franchise. Even the provision by which a greater rate of return is permitted to the company as rates are lowered does not thus far seem to have resulted in securing low rates of fare. A second objection is the extreme difficulty of securing a wage scale which is fair to the public, the utility company and the employees alike. Where unreasonable demands are made for increased wages and the fallacious argument is used that to grant them merely means the adding of half a cent or a cent to the fare, the company officials are placed in a disadvantageous position, and arbitrators in many cases grant an increased rate or make less of a proposed decrease in rates, where the expense is simply passed on to the public.

While no one will claim that an indeterminate permit plan is a complete solution of the franchise problem, of all the plans which have become effective it seems in general to be the most advantageous. Under this plan the rates of fare as well as the rates of return are directly under the control of the Public Service Commission, and the theory of operation is that as long as the corporation gives efficient and satisfactory service its franchise continues indefinitely and the state guarantees a fair rate of return on the money invested, or an investor can sell his stock or bonds to some other person at approximately the price which he paid for it. This form of permit also gives to the cities and towns what might be termed "home rule" for existing utilities, to the extent that they may pass any reasonable rules as to the quality of service to be furnished, with the direct right of appeal at all times to the courts.

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*Abstract of discussion on Mr. Dana's paper presented at the annual convention of the American Electric Railway Association, Atlantic City, Oct. 4, 1921.

Contrasted Advantages of Service-at-Cost Contract Franchises and State Regulation*

By S. B. Way

Vice-President Milwaukee Electric Railway & Light Company

S. B. WAY

THE purpose of regulation is to safeguard the public interest by securing good service at lowest cost. To fix standards which will insure good service and at the same time avoid waste requires the services of men experienced in the industry, possessing good judgment and removed from local political influence. State regulation makes possible the continuous employment by the state of the necessary high-grade, experienced specialists at not much, if any, in excess of the cost of the same service if procured singly by any individual municipality. Moreover, such people if employed by the state are less likely to be subject to local political influence than people depending upon local favor for their jobs.

State regulation, however, as practiced up to the present time has not been made automatic. Under present procedure it is necessary for the utility to establish a long record of inadequate earnings or even absolute insolvency before relief can be had. The framers of our laws might just as well have made a complete job by definitely requiring the commissions to function in limited time or even to establish automatic rates.

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*Abstract of discussion on Mr. Dana's paper, presented at the annual convention of the American Electric Railway Association, Atlantic City, Oct. 4, 1921.

Service-at-cost contracts are nominally automatic. As developed up to the present time they appear to have been conceived along rather too narrow lines. In some cases proper provision has not been made for future replacement of physical property or the conservation of the investment at the termination of the service-at-cost contract or a determinate franchise. They have not provided for necessary flexibility in rate of return to meet changing money market conditions. Unless these elements can be satisfactorily covered, such contracts are likely to result ultimately in service being given at less than cost.

State regulation being statewide can, of course, and in fact does, attempt to meet the problem of regulating utilities serving more than one municipality. This problem is particularly acute in the railway business, where poorly paying suburban lines serving communities contiguous to but beyond the corporate limits of the city must be supported by the city service. It would be difficult to negotiate a fair service-at-cost contract with a city which would recognize and compensate for the losses on lines serving suburbs from which the city receives no benefits in taxes, increase of population, etc. Theoretically this situation can be met with special legislation by some form of district organization, but such special governmental subdivisions appear to be more closely related to some form of public ownership and operation than to service-at-cost contracts which must depend upon obtaining a fair trade between privately owned utilities and the municipalities served.

Where state regulation is possible, the legal and economic advantages seem to lie with properly conceived and executed state regulation, while the political advantage seems to be with local service-at-cost contract franchises. Under such contracts the service may cease to be a political football, and definite bases can be established for promoting desirable co-operation on the part of the city in regulating street traffic, economical routing of cars, paving, saving needless litigations, and like matters.

Some attempt has been made under various forms of regulation to provide an incentive for privately owned and operated utilities to achieve maximum efficiency. Generally the plan adopted is not sufficiently comprehensive or is based upon negative rather than positive considerations. No examples are at hand of service-at-cost contracts embodying provisions for rewarding both the capital and labor employed in the industry for improved efficiency, as compared with some standard. No form of regulation will be wholly successful in producing the best service at the lowest cost which ignores the principle of a definite reward for unsual effort. Both service-at-cost contracts and state regulation offer ample opportunity for incorporating in their respective schemes adequate provision for inducing and rewarding the best service on the part of labor and rewarding capital for foresight and efficiency in management.

It is doubtful if there is any one solution or formula generally applicable as a cure for the present ills of our industry. It is certain there are great differences in local conditions, and each problem must receive special study and treatment.

Car Purchases May Be Financed Through Car Trusts*

S. M. CURWEN

One Car Company Alone Has Taken 3,000 Notes in Varying Amounts—No Defaults Have Been Made

By Samuel M. Curwen

President of the J. G. Brill Company,
Philadelphia, Pa.

MANUFACTURERS, as public spirited citizens, interested in civic affairs as well as in the need of transportation for their employees, should take a real interest in transportation matters in their respective localities and assist regulating bodies and railway managements in many ways which would tend toward more satisfactory transportation conditions. I believe if this were done many of the misunderstandings arising between the management of electric railways and the authorities in the community in which they operate would be obviated.

It has been suggested that it would be entirely proper in this paper to refer to the question of financing purchases of electric equipments and cars, as this phase of the industry also shows the interest of manufacturers in the electric railways.

In 1919 it became apparent that it would be difficult for railways requiring equipment, which they were unable to get during the war, to finance the purchase of it through the issue of bonds or the regular channels by which money heretofore had been available.

A plan was therefore devised for leasing cars under the car trust plan, not only to large roads, but to the small roads as well. The manufacturers of electric cars and their equipment found that bankers could be interested in the purchase of car trust securities and in their resale by them to the public even covering equipments for small roads if they could be offered in large enough amounts. Under this plan there was to be deposited a number of small groups of car trust obligations with a trust company as trustee, enabling the trustee to issue coupon certificates of interest against these purchasing company's notes held by them. These certificates of interest were issued in series from time to time and sold to bankers in Philadelphia, Chicago and Baltimore.

Thus the cars are leased to the railway company under an agreement providing for the payment of a certain cash rental upon shipment and for deferred rental represented by the notes or lease warrants of the railway company. The cash rental and the deferred rental represent the purchase price of the cars plus the interest on the deferred rental payments. The title to the cars is retained in the vendor or lessor and the lease or agreement is recorded in the proper office as prescribed by the specific statutes of the respective states. Nearly all the states now have special statutes providing for such conditional sales of railway equipment.

The agreements contain the provision that upon payment of all the lease warrants and covenants provided for in the agreement the title to the cars shall automatically vest in the railway company prior to which the title remains in the vendor.

This plan for the purchase of cars has been found very convenient by many electric railways, and the payments have been so arranged that the lease warrants mature monthly in small amounts, comparatively speaking, over a period of from thirty-six to sixty months, thereby enabling the railways to make their payments from increased earnings and economies derived from the use of new equipment, especially safety cars, of which large numbers have been sold on this plan.

This method of financing proved so satisfactory, both to the purchasers and to the manufacturers, that it seemed advisable to organize a financing company which would be larger in its scope than the method first used. With this in view, early in this year, a company known as the "Electric Railway Equipment Securities Corporation" was formed by the General Electric, Westinghouse and Brill companies, having a capital of $1,000,000. The purpose of this company is to buy from the manufacturer lease warrants or car trust notes taken by the said manufacturer from the railway in payment for the sale of their equipment. When a sufficient amount of these lease warrants accumulate they are deposited by the Electric Railway Equipment Securities Corporation with a trustee and the trustee issues against these lease warrants certificates of interest with coupons attached which are sold to bankers for distribution to the public. The certificates bear the guarantee of the Electric Railway Equipment Securities Corporation, covering the payment of principal and interest. This form of security is readily salable to investors.

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*Abstract of paper presented at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

This same method of selling cars has been carried on by one or two other car manufacturers in a manner I think entirely satisfactory to them, and to their bankers and customers.

The Brill Company alone has sold over one thousand cars on this plan, and has taken from the purchasers in the various transactions, covering the sale of these cars, more than three thousand notes or lease warrants of varying amounts. Many of these purchasers now practically own their cars and have been able to pay for them out of increased earnings, in this way requiring no long-time financing. I think it is a proud record for the railways to have attained when I say that of all the thousands of notes given no default has been made making it necessary for the trustee to repossess the cars. The manufacturers make no profit from this financing transaction, which clearly indicates their interest in the present electric railway crisis.

Terminal Service Possibilities of the Electric Railways*

The Opportunities of the Electric Roads to Supplement the Services of the Steam Trunk Lines in Freight Terminal Service Are Set Forth

By J. Rowland Bibbins

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J. R. BIBBINS

HAVE electric railways exhausted their earning power? From a national viewpoint this question must recur continually to the mind of every one sincerely interested in the great business of transportation. The answer seems today to encompass the hopes and fears of the entire industry, to the perfection of which so much energy and capital have been given during the last three decades. But have all the possibilities within our grasp been uncovered? Has development work come to its climax? And if so, what of the future?

The history of transportation development is a romance perhaps only half told, the story largely winding itself about strong personalities and to a large degree illustrating the theory of the "survival of the fittest." Systems have come and gone—toll roads, stage coaches, horse-drawn canal boats, the Mississippi River packet, the American clipper, railroads of hybrid gages, cable cars, storage battery cars, surface contact systems, etc.

Each new agency has developed its own peculiar service possibilities and operating methods. The economic acid test of all has been the ultimate ability of the industry to stand squarely on its own feet and perpetuate itself automatically through external and internal development. And the whole tendency of this development over the long period has been better and more service per unit of revenue, higher speed, improved efficiency and equipment, more stable employment of capital, greater dependence of the public upon the service rendered and a higher order of utilization of the operating man power. Shall this same acid test be applied in the future or have we a more refined formula?

The strangest aspect of this transport development is that the electric railways costing about $3 per dollar of annual gross revenue have confined themselves to passenger business alone, while steam railroads have reduced their costs to only $2.80 per dollar of revenue by developing both passenger and freight. On the steam railroads freight revenue is normally three times passenger revenue; it is only a negligible fraction of the gross revenue of the electric railways. The steam lines are available for practically continuous traffic; the electric lines are used to only one-fourth of their investment and capacity, lying idle during most of the twenty-four hours. It is a fair question whether this situation is either sensible or economic.

CITY DISTRIBUTION AND TERMINALS

Outside of the main-line mileage, steam railroads have perhaps half of their investment in terminals, sidings, yards and other trans-shipping facilities. These terminals are necessary in every city, large or small, and occupy widespread city areas of high land values, yet they have been acquired only by the mightiest efforts, at huge expense, and often under conditions of most bitter competition. The entire city terminal problem is today the most serious one confronting the nation's transportation systems, requiring the utmost co-operative effort to unravel. Electric lines have a large responsibility in this matter. They gridiron the entire areas of our cities and industrial centers in a manner utterly impossible for the steam lines. They have the same gage, with few exceptions; they intersect the steam lines at a thousand places; their roadbeds are usually more substantial; they reach every industry, very many of which are inaccessible to the steam lines except through long trucking hauls from the freight terminals. They reach literally millions of retailers whose enormous tonnage, in and out, moves likewise over the city streets.

The next question is one of what is best for the city. What is the cheapest, the quickest, the most convenient and the least unsightly method of transporting over our city streets from the railroad terminals perhaps 200,000,000 to 300,000,000 tons per year? Shall it be in combination with the broad network of electric railways already established in the cities and only used to one-quarter advantage? Will not future civic efficiency and welfare greatly depend upon the solution worked out for city terminal transport?

Very few American cities have downtown streets of adequate width and capacity for present needs, to say nothing of future needs. Sixty-five foot streets, more or less, are the rule, which width provides for only one line of vehicle traffic in each direction between car tracks and side parking. Nevertheless, general business in our large active cities is growing at such a rate as to double in eight to thirteen years, and the service of business largely centers around finance and transportation, both freight and passenger. How are we going to transport double the present traffic volume of our cities? Already the question has become so acute that a definite movement is on foot to develop future indutrial centers in widely distributed and relatively uncongested town units of small size. This means that the economic burden of the big city has become too great a drag on business and occasions too great a spread between basic production cost and selling price.

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*Abstract of paper presented at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

CO-ORDINATION—WHAT DOES IT MEAN

We talk glibly of conservation—making the best use of what we have, and developing our resources to their utmost. Quite as glibly we talk of "co-ordination of transportation facilities"—finding the best field for each agency, making them work together instead of at cross purposes, yet how little real co-ordination has been accomplished in the transportation field even during the war when the utmost team work was imperative.

It seems to me that a good chance to start this team work is in putting the electric railways—urban, interurban and rapid transit—to further use as terminal transport agencies, interchanging traffic in the most intimate fashion with the steam railroads and using motor transport for the final operation of delivery where direct delivery cannot be made as efficiently. This great city railway network should transport during off-peak hours much of the tonnage that now occupies the city streets in a vast multiplied fleet of unregulated, unstandardized, unorganized, and more or less unsuited vehicles, which vehicles contribute perhaps the majority of the congestion of which they themselves complain and which undeniably makes adequate passenger transportation of the cities' millions a difficult and in some cases an impossible problem. This is not alone a matter of corporate profit, but one of civic necessity—to make city life more endurable under growing traffic. This relief would automatically come through the consolidation of the tonnage into large units of rolling stock. The electric system could be used to best advantage between main downtown and outlying substations, the final delivery to be made more readily by lighter delivery motors.

At first there will be many difficulties to be overcome—trans-shipment facilities, routes, regulations, rolling stock, track gages in a few cases, franchise legislation and especially the opposition of railroads, trucking companies and a hostile public. Nevertheless, the true economic test should, and I believe will, ultimately prevail. The cost of extra handling might be very greatly reduced by the use of multiple-compartment cars loading directly at the railroad freight houses, moving to the substation and thence, without breaking bulk, by motor to the consignee, where large volume scheduled service is required. The problem of suitable rolling stock can be worked out by means of well-built, sightly express cars, which have been already developed on some interurban systems. These cars when well maintained should be no more unsightly or noisy nor contribute to congestion more than the miscellaneous fleet of motor vehicles now used at all times of the day in the same service over our city streets. In several cities it is already the practice to utilize the tracks in certain streets for hauling standard steam rolling stock from interchange or local yard to city destination. What is now needed is a more thorough development of the plant. The railroads are working on a "store-door delivery" plan, such as has been in use in Canada and England and formerly in Baltimore and Washington. If a universal store-door delivery plan is in fact developed which disregards the 45,000 miles of electric street railway track as an economic factor it will be unfortunate.

The greatest hope in such a co-ordinated plan of railroad-railway-motor terminal transport is the ultimate benefit to the whole people. Through consolidated loading the street congestion will be reduced. By the more intensive use of tracks already laid the investment will be put to more economic usage. Duplication in carrier equipment will be avoided. For the road vehicles the expensive delays and time-eating long hauls will be done away with and converted into faster short-haul runs and greater earning power. Roadways will be cleared for a better use of passenger transport, and a good part of the enormous city freight business will be done largely under cover.

But most important, the new economy will be clean cut. For the electric lines there would result new revenue, now utterly unobtainable, at no additional cost to the city or to the public, and little to the carriers. For the city there would result a large decrease in wear and tear on city streets; for the people, in addition to the improved service and the possibility of reduced delivery expenses, there would be the possibility of a relief from the necessity of boosting passenger fares; the new revenue from freight and express should become such an important factor in the total revenue as to bring about not only relief from the pressure for increased fares, but also the possibility of improved passenger service. It is needless to point out the important influence of such increased revenue upon the financial credit of the electric railway industry.

Considerations Affecting the Market for Street Railway Securities*

Customer Ownership of Securities Should Be Encouraged—Modern Experience in Public Utility Financing Should Be Studied by Railways—Tax Exempt Securities Impede Financial Progress

By H. M. Addinsell

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Investment Bankers' Association of America

A FEW weeks ago we were asked to consider the purchase of a substantial amount of bonds, the proceeds of which were to be used for the reconstruction of one of the French cities shattered during the war. The bonds were to be a direct, and the only, obligation of the city. It probably received about as continuous unfavorable financial publicity in the four years of the war as any city in the world has ever received. It was an almost constant mark for German shells, its industries were destroyed, a large proportion of its dwellings and many of its historical edifices were damaged, some of them hopelessly beyond repair. But a reconstructed and probably better and more sanitary city is arising, phoenix-like, on the ashes of the old city. The economic reason for the permanent existence of an important city at this point is unquestioned and from an intrinsic point of view there is probably little doubt that the bond issue referred to will make a perfectly safe investment. However, to be an attractive proposition to investment bankers a bond issue has to be not only safe but also salable.

The very mention of the name of the city arouses our sympathies, but by that same token it does not arouse a desire to loan funds to that city on an investment basis. If our sympathies were strong enough and our pocketbook permitted we would be glad to make a contribution toward its reconstruction as a charitable act, but these people do not want charity. After careful consideration we reluctantly came to the conclusion that the American market would not take these securities at this time on an investment basis; that is, on any reasonable terms that the city could afford to meet, and we were obliged to decline the business.

There is at least some parallel between the position of the French city referred to coming into this market for money and that of our own street railways at the present time.

If we are to deal constructively with the situation that confronts us we must face frankly the facts of that situation. One of the facts is a strong, definite and not unfounded prejudice in the minds of investors against street railway securities at the present time. I refer to the investing public as a class, for the situation intrinsically and fundamentally is not nearly so bad as the impression that has been created in the public mind. Those who really know the facts know that the answer to the constantly recurring question in investment circles, "Can street railways come back," is an affirmative one—they can, they will, and they are already on their way.

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*Abstract of address presented at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

We can base our discussion on the proposition that the street railway, as the Federal Electric Railways Commission notes, is "the most nearly adequate, reliable and satisfactory system available for transporting the maximum number of people through the streets of our cities with the least interference with the use of the streets for other purposes of public ways." Perhaps there may be isolated cases, especially in very small communities, where motor buses will serve the purpose, but we have already had a practical illustration of the essential nature of the street railway transportation in at least one large city.

If we are correct in our assumption that the street service is an essential and indispensable part of the machinery for conducting the business of a substantial community, we find there are still many other considerations that affect the market for the securities of the street railway companies. Already I have referred to the recent past history. In addition to the rise in costs, which precipitated the troubles in the immediate past, are a number of other conditions—franchise troubles, franchise abuses, honest and dishonest politicians, topheavy capitalizations, the jitney bus. Generally speaking, a given community has the idea that the street railway is a foreign corporation; that is, it is owned by outside capital, and generally speaking it is correct in that view. Of course in the last analysis the public owns the street railways as it does all the other utilities, and whether or not it realizes it it has a direct or indirect financial interest in the success of these enterprises. The most positive cure for the impression above referred to lies in the sale of stocks of these companies to the local public served; in other words, changing the status of the public from that of *customer only* to that of *customer owner*. This has perhaps not been possible in the past because of the difficulty of making attractive stock issues of the street railways.

A note of warning should be sounded in connection with sales of stocks to customers and employees. The customer should not be asked to pay more than the general market for the class of security offered him. The stock should be sold on a complete statement of the facts and weak securities should not be gilded over with generalities. Moral consideration should preclude these practices, but if indulged in the inevitable reaction will be disastrous to the future development of this important means of supplementary finance.

I have spoken of some points with which all of you are familiar and regarding which you all know a great deal more than I do. The elimination of the prejudice of investors against street railway bonds will take time and can only be accomplished by a persistent and thorough educational campaign on the part of your companies. You have nothing to hide, and if you had there would be no use in trying to hide it. The most you can expect and all you are entitled to receive is a fair deal from the point of view of the money legitimately invested in your enterprises. This you are entitled to, and enlightened self-interest on the part of the public will eventually result in your getting it. It is up to you to do the enlightening. You must demonstrate to the public that the service-at-cost franchise will make it possible for it to get the best service at the lowest cost and will give you a fair return on the money invested in your business.

New money cannot be attracted to your enterprises without a reasonably certain prospect of its receiving a fair return. Such service at-cost franchise should provide among other things for some reasonable premium on good and efficient management. Motor bus competition must be eliminated and the paving of streets recognized as a municipal function and not as a burden to be imposed on the street railways. Capitalization should be set up on sound and conservative financial principles. These things will take time and patience and they must be done in the open. Try to get the public served as financial partners in the enterprises, but at least make them partners to the extent of sharing your knowledge of the facts. These are merely signposts pointing the way in general to the restoration of street railway credit.

HOW TAXES AFFECT FINANCING

To these specific considerations with respect to the street railway industry, however, should be added another general consideration that applies to the raising of money by all private corporations in the United States. By private corporations I mean all the corporations other than those representing the state, city or other governmental subdivisions. For the purpose of this discussion I shall call the latter governmental corporations. These governmental corporations since the advent of the income tax have enjoyed an unwarranted advantage over the private corporations in the matter of raising money for carrying on their business. I refer to the fact that, generally speaking, the bonds of governmental corporations are exempt from all federal income taxes. The bonds of private corporations are not inherently exempt from any of these taxes, although by private contract a corporation sometimes agrees to pay the normal federal income tax up to a certain small percentage, but this is merely a private contract, and taxes so paid come out of the corporation and are such a small percentage of the total—they cannot exceed 4 per cent of the normal income tax of 8 per cent, disregarding the surtax entirely—that it does not come anywhere near curing the disparity between tax free and taxable securities.

Before the days of the federal income taxes there was about one point difference in yield between average good municipal bonds and average good public utility bonds, but today this is nearly 2 per cent, not because the difference in security has changed, but because, among other things, tax exemption of the governmental securities gives them a very decided artificial advantage, damming up the large reservoirs of capital from these corporations and, from the broader economic point of view, depriving the government of millions of dollars of taxes that it can ill afford to lose and from those who can best afford to pay. Of course there are many sides to this broad question and in the last analysis of course it must be recognized that it is not the exemption, *per se*, of governmental securities that has helped to make it difficult for private corporations to finance, but the confiscatory levels reached in taxing income and which could only be justified as a war emergency measure. That the government recognizes this fact is evidenced by the tax legislation now pending in Washington which will reduce the top rate normal and surtaxes to 40 per cent. If this can be followed by further reductions in the next two years so that the rates more nearly conform to the pre-war level the situation will readjust itself without regard to the United States constitutional amendment referred to.

PRESENT FINANCING DEVELOPMENTS

On talking some days ago with Mr. Mortimer, I told him that I didn't suppose you gentlemen would be especially interested in a discussion of modern developments in public utility financing, as you probably knew all about it. He pointed out that it was so long since the street railways had been able to do any financing that it would be practically a new subject, so I will take him at his word. The series mortgage and the no par value stock are the two outstanding recent developments along the lines of progress. The series mortgage gives flexibility from the point of view of enabling the company to issue its prime security with a maturity and an interest rate to meet existing market conditions. If conditions are such that short term, high rate obligations are the most salable they can be created, or if longer term, lower rate bonds can be sold to advantage they can be created, all having the equal security under the same mortgage.

An equal degree of flexibility to meet varying market conditions is afforded to stock financing by having the stocks issued with no par value. Assuming, for example, that a stock calls for an annual dividend of $6 a share and the market for that class of security calls for 7 per cent, the stock could be under above January, 1918. If a separation be made between the street railway and other utility securities used in preparing the index of utility bond prices, it is noted that whatever improvement has been made has not been due to street railway securities. There has, accordingly, been no betterment in the cost of money; in fact, conditions as represented by an analysis of the market would indicate that the credit of the industry has until quite recently been at a lower ebb than when the commission made its report.

THE PROGRESS IN APPLYING REMEDIES —INCREASED FARES

The principal recommendation of the commission was that emergency relief be provided through increase of fares. Such increases have been general and are still in process.

On Jan. 1, 1918, the highest rate of fare charged by street railways operating in cities of 25,000 population or over was 6 cents. Out of 300 operating systems, there were on that date twenty-five which were charging a 6-cent fare, five with zone systems of various kinds, and the balance, or 269, were operating with a fare of 5 cents or less. By Sept. 1, 1921, the number of 10-cent systems had increased to fifty-seven, the number of 9-cent systems to six, the number of 8-cent systems to thirty-six and the number of 7-cent systems to eighty, giving a total of 179 which were operating at fares greater than 6 cents as compared with 102 on Jan. 1, 1920, and none on Jan. 1, 1918. There were only forty-nine systems remaining out of the 300 which were operating at 5 cents as compared with 103 on Jan. 1, 1920, and 269 on Jan. 1, 1918.

The general tendency has apparently been to retain the existing flat fare system rather than to obtain relief by charges for transfers or by instituting a tariff based on distance traveled. The number of systems operating under a zone fare of any sort has only increased from five on Jan. 1, 1918, to fourteen on Sept. 1, 1921. This small net increase over the entire period is due in part to the fact that certain systems which at one time during the period were operating under zone fares of one sort or another have reverted to a flat fare.

An average street railway fare has been computed for all cities in the United States over 50,000, except New York City, weighted on the basis of population. On Jan. 1, 1918, this average was 4.92 cents per revenue passenger. At the same date in 1920 the average increased to 6.29 cents per passenger, and on Sept. 1, 1921, it had further increased to 7.25 cents per passenger.

These increases are so substantial that the question naturally arises as to why their effect has been so negligible upon the net income of the industry. One reason lies in the widespread depression of traffic; another in the sustained high levels of cost of operation, in which labor is so important an element. As of Sept. 1, 1921, wages show an average increase of 104 per cent since 1914; fares an average increase of 50 per cent.

ECONOMIES OF OPERATION AND PUBLIC CO-OPERATION

The commission recommends that the industry put into effect such economies of operation as will enable it to give good service at the lowest cost. Among these it enumerates the elimination of deadheads and other free service, the abandonment of non-profitable lines, substitution of one-man cars, modification of special taxes for paving and snow removal, the reduction of rentals and power rates as may on investigation prove excessive, the co-operation of the public in developing faster schedules and installing skip stops at convenient places, rerouting, use of trail cars, keeping car tracks clear of traffic, and the regulation of vehicular traffic. Many of these economies are beyond the control of the management, and the commission admits that in some cases they entail legislation and the co-operation of public authorities.

A survey of what has been accomplished along these lines discloses generally a record of economy and efficiency by the industry, but the record of public co-operation is disappointing.

No appreciable progress has been made in the elimination of free transportation service, principally because this is a franchise requirement. The one notable exception is the step made by Seattle upon the acquisition of the railway lines to charge for policemen and firemen.

Abandonment of non-profitable lines has as a rule been limited to sections of track in districts served by adjacent lines of the same company or by other forms of transportation. The most extensive abandonments for this cause have occurred in Massachusetts under trustee control and in New York City under receivership. In fact, much municipal commission and court action has been to restrain action on abandonment of non-paying lines on the general grounds that convenience and necessity of the public knows no economic law.

The use of one-man or safety cars has very largely increased. In some instances—as in Terre Haute—entire systems are now one-man operated. In the majority of cases, however, one-man cars of either the standard single-truck type or of larger types are being operated on lighter traffic lines to permit the furnishing of more frequent service at a lesser cost.

Of forty large companies where the skip stop was in use during the war, only sixteen companies still use it in regular service. In most cases it was adopted as an emergency measure to save fuel, and the selfish interests of the few people inconvenienced have in many cases convinced regulatory bodies that the need for such economy no longer existed, to the detriment of service and comfort of the large number of long-distance riders. Where the skip-stop scheme was installed after thorough study, and has been properly administered, it is in many cases still in effect.

The relief afforded to the industry as a whole by modifications of or relief from special taxes, paving obligations, sprinkling, etc., has been so meager as to be almost negligible. The association reports six companies which have been relieved of paving obligations under existing franchises. All of these are small companies, and in some of the cases the relief is not permitted, or is contingent upon special conditions. Out of twelve active or proposed service-at-cost franchises, only four make any concessions to the operating company relative to paving or sprinkling requirements. The most extensive and important remedial action is that recently taken by the Connecticut Legislature, whose action is a long step in the right direction, although it still leaves some things to be desired.

The problem of achieving operating economies and improving service by rerouting has perhaps received more attention than some of the other means suggested. Kansas City, Akron, Indianapolis, San Francisco and Milwaukee are among those cities where extensive changes in car routings have been made, and numerous other cities are working out the same problem.

Some advances have been made toward the extension of trailer operation. Chicago has recently joined the list of seventeen companies which were operating trailers in 1920 and prior years. Companies using trailers have generally appreciated their value in the economical handling of rush-hour crowds and have continued to increase the number in use.

The traffic regulation in large cities is gradually improving, and in many cases police departments are beginning to appreciate the advantages and importance of keeping street car tracks free from congestion. The general tendency has been to increase the restrictions on automobile parking in the downtown areas, and many cities now prohibit such parking on main thoroughfares. Chicago and Pittsburgh are recent examples of earnest efforts to speed up traffic in the congested districts.

As for the earnest suggestion of the commission that extensions should be paid for by assessments on outlying property benefited, no single instance is yet on record where this advice has been followed.

MOTOR COMPETITION

The commission expressed some concern for and recommended efficient regulation of jitney and motor bus competition.

Data before the commission showed a registration of 6,100,000 motor vehicles in the United States on Dec. 31, 1918. At the end of 1920 the registration shows an increase to 9,200,000 motor vehicles. The figures indicate a situation about 50 per cent more serious from a competitive standpoint than that to which the commission referred.

Such state regulatory measures as have been passed during the past, notably in New Jersey and Connecticut, do not seem to be working satisfactorily in practice. Proposed legislation in other states, notably California and Wisconsin, to regulate the business has failed of passage. Even in "service-at-cost" cities, like Toledo and Youngstown, jitney competition has been pronounced. In Kansas City a compromise was reached in March of this year by an ordinance which still permits jitneys to run on streets not occupied by car tracks. Jitneys were ruled off the streets of Seattle by the municipal railway over a year ago, but are reported as still operating.

While the motor bus has the advantage of low investment and small overhead expense, and greater speed and flexibility of operation, the operating cost of a motor bus per seat-mile is practically twice that of an electric car. It is not likely, therefore, seriously to menace the industry except during periods of unemployment. Where railways have been forced to wear the jitney out by competition, a scheme of fares which makes patrons regular customers, such as the dollar pass, and frequent service with one-man cars have been effective weapons. Many companies have met the problem by the operation of motor buses in effecting extensions of existing routes and in creating entirely new routes. The motor bus operated as a supplement to the railway service, or the trackless trolley with its combination of economy of operation and low investment cost, may yet be the method of relieving the electric railway from finding large amounts of new capital each year to finance extensions which will not be self-sustaining for some time.

DIFFERENTIAL FARES

The commission finds that the failure of the electric railways to vary flat rates of fare for transportation service based on the length of the ride is "one of the contributing factors to their present financial condition." It points out that the industry is the only public utility which has consistently adhered to a flat rate fare basis, but believes that the introduction of a zone system of fares is a matter which should be decided by the community itself because of the social problems involved.

The two major experiments with the zone type of differential fare which has been made in this country during the last four years are those of the Public Service Railway of New Jersey and of the Connecticut Company.

In spite of the failure of these two large companies successfully to institute and operate a differential fare, other smaller properties have met with better success. The San Diego Electric Railway of California installed on Jan. 1, 1920, a differential fare made up of two 5-cent zones with important ticket concessions. The result was that traffic increased and the company has been satisfied that it is getting the maximum revenue which any system of fares would produce, and this is being done with no attendant difficulties in fare collection. In Massachusetts the cities of Holyoke and Springfield have been operating with a differential fare for approximately three years. In Boston the flat fare is 10 cents, but the company has recently instituted 5-cent local fares in several of the outlying communities. The results of this experiment seem to indicate that the increase in local riding has justified the fare concession.

In Milwaukee the differential fare which has been in effect since 1914 is still operative with only minor modifications. The necessary revenue increase which the company needed, however, has been obtained by an increase in the flat fare charge in the central area rather than by retaining a low flat fare and increasing the number of zone fares in the outlying districts. New experiments in the way of differential fares have been tried in Racine and Kenosha, Wis., and in Racine and Iowa. In the first two of these cities an unlimited ride pass is sold for $1, which is good for transportation for one week. In Mason City it is possible to purchase a monthly ticket which entitles the holder to ride for 5 cents per trip instead of the regular fare of 10 cents.

With the return of normal traffic and decreasing costs, it seems certain that increased flat rate fare will tide the industry back to normal. High fares, however, will not stimulate the confidence of investors and some form of differential fare may be the means of meeting competition and improving revenues.

EXPERIENCE WITH SERVICE-AT-COST PLANS

The commission, to quote direct, "strongly recommends the principles of the service-at-cost contract not as the only solution but as one means of solving a very difficult problem." The survey of recent experience with service-at-cost plans discloses somewhat disappointing results. This is particularly true of those plans which incorporate a fixed fare policy with automatic variation in unit fares and a fixed upper limit.

Cleveland reached its maximum rate of fare under its service-at-cost plan of 6 cents cash, nine tickets for 50 cents and 1 cent for transfers, on Nov. 14, 1920. Despite a reduction of 10 per cent in wages of all officers and employees, except trainmen, on Feb. 1, 1921, and 20 per cent in trainmen's wages on May 1, the $500,000 interest fund by July, 1921, has dwindled to $139 000, less than nothing, and, due to insufficient operating allowances, maintenance and renewal reserve accounts disclose in addition a deficit of over $500,000. It is reported that service has been considerably curtailed, a five-day week has been established for shopmen, all but most vital maintenance work has been postponed, and further wage cuts are contemplated. Finally, because the company was unable to secure new capital under the restrictions imposed by the ordinance, the directors have authorized the officers to take the funds for all expenditures for new work from the maintenance allowance.

Cincinnati reached its maximum rate of fare of 9 cents cash and 8½-cent tickets on July 1, 1920. The increases have been made in ½-cent stages in accordance with the service-at-cost plan. A straight 9-cent fare contemplated on March 1, 1921, was enjoined by the city. Meanwhile the result of ensuing litigation has been a revision in the original contract whereby the company is temporarily relieved from the payment of the franchise tax and the accrual of certain reserves, in return for which fares have been reduced to 8 cents. The company's report for 1920 shows a deficit over the cost of operation of $665,000, and the total accrued deficit to April 30, 1921, was reported at over $806,000.

The Dallas service-at-cost agreement is based on a 7 per cent return on the agreed valuation of the property. Its 5-cent fare continued from the time the contract went into effect in 1917 until June 17, 1920, when the fare was increased to 6 cents. By Dec. 31, 1920, the deficit in the stipulated return on capital allowed by the ordinance was reported at $651,000. Application for a 7-cent fare was denied by the city on May 2, 1921. The company filed with the city commission a request to continue the 6-cent fare, this rate automatically expiring by limitation after one year's operation.

Under the service-at-cost franchise of the Montreal Tramways, 6 per cent was allowed on capital, 7 per cent on additions to capital and 6 per cent interest on working capital. At the end of the first year's operation, June 30, 1919, the receipts failed to meet cost of service by over a million dollars. By the end of the following fiscal year, June 30, 1920, the cumulative deficit had increased to $1,700,000, and by the fiscal year ended June 30, 1921, the cumulative deficit amounted to about $2,000,000, including payments due the city. In these years the company has been unable to make the annual half-million dollar payment to the city of Montreal for the use of streets as defined in the contract. The standard fare of 6 cents was raised in August, 1919, to 7 cents cash, four tickets for 25 cents and special tickets to workmen of five for 25 cents.

In Rochester a service-at-cost plan became effective in August, 1920, with a 7-cent fare. It has been necessary to draw upon a $300,000 balancing fund. By October 30, 1920, a cumulative deficit is reported in this fund of $106,000. No further figures have been issued.

In Toledo the community traction plan was inaugurated in February, 1921. The plan began with a cut in fare from 7 cents to 6 cents and transfer charges from 2 cents to 1 cent, with tickets of eight for 50 cents. In August of this year the ticket rate was increased to six for 40 cents, with no change in the cash rate. The stabilizing fund was reported in September as a "no par value" law at 85½ so as to net 7 per cent and thus meet the market, or if in the same case stock could be sold on a 5 per cent basis the price would be 120. This may sound very simple and easy, but of course a condition precedent to the sale of stock is the creation of values and earning capacity for such stock. This in many cases in your industry is neither simple nor easy; in some cases it will involve, among other things, financial reorganization.

In order to sell stocks you must create an investment position for them. This will necessitate in many cases a scaling down of capitalization, both bonds and stocks, so as to make your stocks represent actual investment in the property. No par value stock laws will not cure overcapitalization, for the units represented by no par value stocks of an overcapitalized company would represent such a small amount that they would not be readily salable. So the stocks must be brought down to a basis where the units thereof do represent a reasonable amount of investment upon which you will be entitled to earn a return. Then the stocks will be salable, and the bonds ahead of them even more salable. No prudent investment banker today will buy bonds of a company that has not a good practical vehicle for accomplishing its junior financing.

A public utility property cannot stand still; it must expand to meet the growing demand for extensions and service that is inevitable in our American cities. Though you may have ever so sound a bond situation theoretically, and perhaps only be able to issue your future bonds for, say, 75 per cent of the cost of future capital expenditures, if the means for providing the other 25 per cent is not in hand, then you and the investment banker who handles your bonds are headed for certain trouble. A good plan is to have two classes of stocks, preferred and common, then you have three strings to your financial bow—common stock, preferred stock and bonds.

I do not offer you any quack cures for your troubles. We all know the facts and we know that the situation intrinsically is not as bad as advertised. Do the right sort of high-class advertising to offset the bad advertising you have had. Take the public fully into your confidence and work to get your financial houses in order—by a major operation if necessary. Make the public you serve your partners. Above all, push on with this work, confident and determined to give to the American public the best kind of street railway service that is obtainable at the lowest practicable cost and to preserve for the owners the billions of dollars honestly invested in your great industry. To bring your companies from the clouds of uncertainty and depression to the sunny skies of merited prosperity is surely an undertaking worth while and one worthy of the steel of strong and courageous men.

The Underwriters' Laboratories and Its Work[*]

G. B. MULDAUR

Inspection of Devices with Respect to Fire Hazard Involved in Their Use Is the Function of This Organization, Founded in 1893 and Incorporated Twenty Years Ago

By George B. Muldaur

General Agent Underwriters' Laboratories, New York.

WE ARE destroying by fire alone every year $500,000,000 worth of property. This is exclusive of the cost of fire protection and insurance. We are having about fifteen hundred fires a day, or nearly one a minute. The United States Geological Survey has estimated that the amount of property destroyed in one year is equivalent to all the gold, silver, copper and petroleum produced during an equal time. Our per capita loss by fire is by far the greatest in the world. These statements are made simply to lay stress upon the value of any movement tending to decrease this waste of life and property and to lead up to a description of the activities of Underwriters' Laboratories, the technical member of the group of national organizations devoted to this important work.

Underwriters' Laboratories is unique in its organization, purpose and methods. Founded in 1893 by W. H. Merrill, its present president, it has built up in its twenty-eight years of life an unquestionable reputation for accuracy and integrity as the recognized authority on matters pertaining to all devices, appliances, machines and materials in respect to fire and life hazards, theft and accident prevention. In 1901 it was incorporated under the auspices of the National Board of Fire Underwriters, whose financial backing enabled the management to secure proper buildings, equipment and staff and to lay out a plan of action which has made it self-supporting.

The purpose of the laboratories is to diminish the enormous fire and accident loss by indicating those materials, apparatus, construction and installations representing practicable standards of excellence. Devices submitted to the laboratories for listing are first tested by the engineers in charge. If they attain to the standard already fixed, a favorable report is prepared. Should they fall below this standard, the manufacturer or inventor is called in conference and in many cases the assistance given him by the laboratories' engineers has resulted in correcting such features as were found to be substandard. When a favorable report has been rendered by the engineers of tests, it is passed upon by one of five councils, namely, fire, casualty, electrical, automobile and burglary. If the vote of the council is favorable the device passes into the class of listed articles. A summary of the report is printed on a card, which is filed according to classification, and cabinets containing these card systems are maintained in the offices of the principal boards of underwriters and inspection bureaus as well as by many public and private organizations and government, state and municipal departments. These are available to the public at large.

In order that any device once passed and listed shall be known to maintain the standard certified by the laboratories' favorable action, three forms of follow-up service have been adopted and may be used at the option of the submitter. The oldest of these, re-examination service, consists of tests made from time to time of samples obtained in the open market by the laboratories' representatives and without the knowledge of the manufacturer. The second, inspection service, comprises tests made by the laboratories' inspectors at factories during manufacture. The third follow-up plan is the label service. This, as its name implies, consists in affixing the laboratories' label at the factory to such goods as are shown to be standard by the tests of the laboratories' inspectors on the spot. In all three forms of follow-up service, should a device be found to be subnormal, the laboratories' approval is withheld until the original standard has been re-established.

The main plant of the laboratories in Chicago contains something over 50,000 sq.ft. of floor space. An electrical laboratory is also maintained in New York at 25 City Hall Place, under the charge of Dana Pierce, vice-president, and a special fuse-testing plant is in operation in Kingsbridge. In these laboratories, and especially in the main plant in Chicago, every conceivable variety of tests relating to fire and accident hazards is carried on. An idea of the importance and magnitude of some of the tests may be gathered by reference to the recently issued book on column tests which was made at the laboratories in co-operation with the Associated Factory Mutual Fire Insurance Companies, the National Board of Fire Underwriters and the Bureau of Standards. This report consists of 388 pages and took about five years to compile.

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[*] Abstract of paper presented at the annual convention of the American Electric Railway Engineering Association, Atlantic City, N. J., Oct. 3-6, 1921.

Arrangements have been made with the Bureau of Standards and the Bureau of Mines by which these bureaus act as arbitrators in case of a disagreement arising between the submitter of a device and the laboratories in regard to the excellence of such device. Such arbitration, invoked occasionally, has resulted satisfactorily.

The Traction Industry Today and Four Years Ago*

Various Causes Suggested by the Federal Electric Railways Commission for the Condition of the Electric Railways Analyzed to Determine How Far They Prevail Today

By Edwin Gruhl

Vice-President North American Company, New York

THE searching inquiry into the state of the industry by the Federal Electric Railways Commission indicated that its problems were not local, but national in scope. The experiences there recited were so common, the difficulties so similar and the opinions of witnesses on every side so nearly unanimous that no doubt remained that the welfare of the industry was dependent upon widespread economic conditions beyond the control of local managements. One company alone, the inevitable exception to the rule, protested that it had nothing the matter with it. History has since proved that this was not true. The malady was too deep-seated to be cured by faith.

The commission's report was issued in 1920. The picture it conveyed was an essential industry with credit impaired, facing a precarious struggle for existence and requiring emergency relief and co-operation of public and employees to avert a serious breakdown. The patient has been in a worse way since the commission voted its condition as acute, but it has met the crisis and is now on the road to convalescence.

A RESURVEY OF THE CAUSES

A somewhat detailed diagnosis was presented by the commission of the factors contributing to the industry's condition. The causes enumerated are fifteen in number. The first five of these relate to overcapitalization, neglect to amortize this excess capitalization, failure to amortize normal accrued depreciation, payment of unearned dividends and neglect of ordinary maintenance, and overbuilding. In the same group we may place the criticism of underlying companies and leased lines. These causes are historical, and there was no evidence before the commission to lead to the conclusion that they were general. They suggest the diagnostician's inquiry into heredity and youthful indiscretion. They have certainly not been relevant during the past fifteen years of commission regulation. Besides, the fact that roads in receivership or municipally owned are similarly afflicted would suggest these causes as secondary or remote. The contributing cause enumerated as holding companies and banker control falls in the same class. It suggests a reflection on the nurse without whose help, the commission concedes, "many of the operating companies would have gone under before Jan. 1, 1918." Concerning these seven causes no comment need be made in this discussion. If relevant, their present-time effect, though somewhat more removed, has sustained no perceptible change.

EDWIN GRUHL

Five additional causes enumerated as contract fares, limited franchises, special taxation and franchise obligations, use of regulatory power to compel more and better service, and in part automobile and jitney competition, relate to hardships and conditions imposed by the public authorities concerning which important recommendations were made. How these recommendations have been received and followed will be referred to later.

COST OF LABOR

Last mentioned are the economic causes enumerated as increasing demands of labor, the war and the dollar, and the cost of new money. These are, of course, immediate and controlling and merit close examination in the present discussion.

The wage bill represents about two-thirds of railway operating expenses. The average wage of motormen and conductors for companies operating 100 miles and over in 1917 was 31.5 cents per hour. On Jan. 1, 1919, it was 44.4 cents per hour. On Jan. 1, 1920, it was 52 cents and on Jan. 1, 1921, it was 60 cents an hour. A reduction is noted as of Aug. 31, 1921, to 57.6 cents. Out of the sixty-four companies included in this average, twenty-six have reduced wages since Jan. 1, 1921, the reduction in wages made by these companies averaging 10.7 per cent. Yet wages still show an increase of 83 per cent over wages for 1917 and are still 20 per cent beyond the War Labor Board standard.

COST OF MATERIAL AND EQUIPMENT

The commission's report refers to increases in material and equipment prices for the latter part of the year 1919 as compared with the year 1915. For electric railway equipment this increase averaged 64 per cent. For general supplies and raw materials it averaged 178 per cent. On Nov. 1, 1920, the increase in price of electric railway equipment over 1915 prices had grown from 64 per cent to 110 per cent, and a similar comparison as of the middle of 1921 showed a decline to 94 per cent. For the raw material, the increase for November, 1920, over 1915 is 288 per cent, and for the middle of 1921 is 174 per cent, as compared with 178 per cent in 1919.

These comparisons show that prices of raw materials on June 30 of this year are about on the same level as those referred to by the commission as reaching abnormal heights, while equipment prices were actually higher.

COST OF MONEY

About the same tendencies are noted in comparing the cost of money. The "bond index" of the *Wall Street Journal* includes ten utility bonds of which four are street railway bonds. Based on this index the average yield in 1918 for these utility bonds was 6.23 per cent. In January, 1920, the market price of these securities showed an increase in yield demand by investors to 7.17 per cent, or an increase of 15.2 per cent, and in August, 1920, the yield was 8.04 per cent. Since this low point the utility bond situation, as indicated by the index, has slightly improved, and in August, 1921, indicated a yield of 7.32 per cent, which is only 2 per cent above January, 1920, but still 17.5 per cent standing at $140,000, instead of $300,000. It must rise to $500,000 before a reduction in fares is possible. The published estimate in February indicated that the jitneys were taking at the rate of $425,000 a year in revenues from the company.

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*Abstract of a paper presented at the annual meeting of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

The report comes from Memphis, which is enjoying both service under a service-at-cost arrangement and a receivership, that deficits have been incurred of $200,000 by July 31, 1921. In August the company announced the discontinuance of ten tickets for 65 cents in favor of a straight 7-cent fare, with the prospect of an 8-cent cash and ten tickets for 70 cents rate if the drop in riding did not stop.

The Massachusetts service-at-cost plans appear to be operating more satisfactorily. Because of the strict and early regulation of securities, overcapitalization has not been possible. Nevertheless, the electric railways of that state appear to have been in no better position than those in other states of the Union. Of the thirty electric railways only five have earned and paid dividends in cash on their capital stock of at least 5 per cent each year for five consecutive preceding years without impairment of assets. In prewar years there have been as many as two dozen companies which have done this. It is significant that out of the five survivors, three are companies whose dividends are guaranteed by leasing companies.

Massachusetts street railways can be aided by contributions from public funds to an amount not exceeding $1 per $1,000 of assessed valuation in towns and 50 cents per $1,000 of assessed valuation in cities. The Massachusetts Department of Public Utilities in its report of April 1, 1921, points out that the amounts which can be so contributed under the statute are "so small a sum as to make the whole method practically valueless." It recommends that this "limit should be increased so that communities may be freer to contribute larger amounts for this purpose." The report shows that no action has been taken by the state along the lines recommended of remitting paving taxes. It shows for the 371 miles of track discontinued in the five years preceding April 1, 1921, that "nearly all of these lines served the convenience of their localities and helped in their growth and development." Auto bus transportation which has been substituted is reported as working well in some places and poorly in others.

The Massachusetts commission has apparently made a sincere effort to reach a solution of the traction problem. It is evident that it has not been possible under existing conditions to place its street railways upon a self-supporting basis, regardless of the rate of fare.

The two largest systems in the state, the Boston Elevated Railway and the Eastern Massachusetts Street Railway, are operating under special service-at-cost arrangements. The freedom of action allowed the trustees in fixing fares and levying upon the tax fund has permitted the uninterrupted working out of a five-year program of reconstruction. Important operating economies which would not have been possible except under public control have been inaugurated, and a trial has been made with the differential fare to encourage short-haul riding and the right secured to operate motor buses.

The Eastern Massachusetts Street Railway has also been under the control of a board of trustees since June 1, 1920. These trustees are also empowered to charge any rate of fare that will bring the maximum revenue necessary within each district, but they lack the Boston Elevated trustees' power of arbitrary pro rata assessment. The trustees have created sixteen operating districts, in each of which the cash fare was placed at 10 cents. Regular riders, however, were able to avail themselves of punch tickets at rates ranging from 6¼ to 8½ cents per ride. As a number of the operating districts failed to meet the cost of service, including 6 per cent on the valuation established by the Public Service Commission on the property operated, they have been given the alternative of contributing from taxation or losing the service. Two towns, Gloucester and Hull, which refused to make such contributions, have had service discontinued. Service has also been withdrawn from three additional towns, Woburn, Burlington and Billerica, for failure to curb jitney competition. Reports of the trustees show that for the six months ended June 30, 1921, the cost of service was earned by a slight margin, whereas there was a shortage to achieve the cost of service for the corresponding period in 1920 by $1,368,000. One-man cars are now reported as handling more than 80 per cent of the traffic. Non-paying lines have been ruthlessly abandoned, service on 123 miles of track having been discontinued.

It is apparent that the Massachusetts service-at-cost plan, with its greater flexibility, freedom of action to promote economies and power to compel co-operation by the municipalities served, has made further progress in solving the traction problem than other contractual arrangements.

MUNICIPAL OWNERSHIP

The commission does not recommend public ownership. It finds "that there has not been sufficient experience with public ownership and operation in this country to recommend it as a permanent solution." It points out, however, that the experiments being made in this direction will be watched with interest. This discussion would not be complete without a brief review of the more important changes in the municipal ownership field.

The Municipal Railway of San Francisco operates 68 miles of line selected with respect to greatest tributary traffic density. The fare has remained at 5 cents. Published reports show a deficit of $137,000 at the close of the fiscal year ended June 30, 1920, and the advance report for the fiscal year ended June 30, 1921, announces increases of over 6 per cent in operating revenues as against only 3 per cent in operating expenses, leaving net earnings which are declared to be more than sufficient to meet all overhead charges.

The Seattle Municipal Railway, according to the report for the first seven months of operation ended October 31, 1919, disclosed a profit, but according to the comptroller's analysis of the operations for the year 1919, there was a net loss of $517,000. In June, 1920, the fare was raised from 5 cents to 7 cents cash, with fifteen tickets for a dollar. In July of the same year the cash fare went to 10 cents, with tickets at the rate of four for 25 cents. As the increased revenue still fell short of meeting expenses, the ticket rate was increased to 8⅓ cents on Jan. 8, 1921. A great hindrance to the successful operation of the municipal lines has been the continuance of severe jitney competition, which became particularly noticable after the last increase in rates.

The creation of the Detroit Municipal Railway followed rejection by the people of that city of the purchase of Detroit United Railway and the voting of $15,000,000 of funds for construction and operation of a supplementary system. The city built 18 miles of track in 1920 and is reported to have under completion 83 miles in 1921. Negotiations have been opened for the purchase of tracks of the Detroit United Railways on which franchise rights have expired. Significant features of the Detroit situation are the operation of one-man cars and the impending purchase by the city of trackless trolley buses.

Late in 1920 the city of New York found it necessary to continue operation of the Staten Island Midland Railway, which had suspended for lack of funds. By arrangement with the receiver the city undertook to furnish seventy-one safety cars and to operate the property through its Department of Plant and Structures, and to share any net revenue with the owners of the railway. The report for the first seven months ended June 30, 1921, shows a final net balance after taxes and depreciation of $4,000 on total revenues of $25,000. The fare charged is 5 cents.

The city of Toronto on Sept. 1, 1921, took over the operation of the line of the Toronto Railway and merged these with the Toronto Civic Lines. The Toronto Railway served only the territory within the old municipal limits, so that the passengers from the Civic Lines in the suburban territory paid a second fare on a second car of 5 cents cash in the city and six tickets for 10 cents on a short suburban route. The Transportation Commission has announced that instead of a universal 5-cent fare the rate will be 7 cents cash for adults, or four tickets for 25 cents. It is significant that the jitneys were ordered off the streets at once.

Public ownership has become less popular only because more people think that it is likely to prove a losing venture. The early advocates of this principle have ceased to talk about profits and now openly advocate low fares with deficits supported by taxation. The opportunities under municipal ownership for lightening burdens to which the industry is still subjected are so substantial that it is entirely possible that the solution of the traction problem may be found along this line.

CONCLUSION

A review of the comparative position of the traction industry four years ago and today discloses that it has in the intervening period passed through the most critical period in its history. The financial condition actually became worse than pictured by the Federal Electric Railways Commission. Some of the solutions of the problems confronting the industry recommended by the commission have been availed of and produced results; others have not received appreciable recognition by public authorities and accordingly have been inoperative.

The difficulties confronting the industry are as acute today as they were at the beginning of the four-year period. We have made some progress in learning that some hoped-for solutions have proved ineffective.

ABNORMAL COSTS STILL PREVAIL

Recent months show some turn to better conditions. Perhaps it is because the turn has been so recent that there is yet so little indication of readjustment and satisfactory settlement. Unlike other industries, the street railway is still confronted with the abnormal costs which have been the aftermath of the war. But the problem of readjustment seems to be much bigger than the mere forcing of operating costs back to normal; the restoration of 1913 conditions of traffic, revenue and expenses would not produce a buoyant industry. A great deal of useful work of ultimate benefit to the industry has been done during the last four years, but it can be regarded only as preliminary to the final readjustments that must come if the business is to enjoy prosperity.

The Interest of the Manufacturer in the Electric Railway Industry*

Transportation Is Necessary to Manufacturers as Well as to Community Welfare—Various Ways in Which They Can Help the Railways Are Outlined

By E. F. Wickwire
Sales Manager Ohio Brass Company

IT HAS been said that a crisis must always be reached before a revolution can take place. It is not impossible that we are on the verge of a revolution in the electric railway industry.

And no doubt we will welcome it, if it can be brought about through the application of new ideas to existing facilities and the utilization of new methods to improve the present situation—all inspired by the conditions which have brought forcibly to us the realization of their need. Perhaps after all this is our opportunity, to which we must rise in order to advance. Nothing can stand still and progress—not even a trolley car.

The present difficulties of the electric railway industry are too well known to you to warrant my taking up time attempting to enumerate all of them. But, generally speaking, what is there back of most of these things that permits them to exist? Isn't it pretty largely a matter of public opinion, or, in other words, the average man's mental attitude toward the traction company?

Could many politicians and a certain class of newspapers continue to use the street railway as a football if the public generally understood the real motives back of their efforts—that the politician is simply after a job and the newspapers referred to are stirring up agitation for the sole purpose of promoting their circulation and not at all because of their love for the "dear people" whom they are fooling? Some one has said that "in our country most of our troubles are produced by those who do not produce much of anything else." People of that class, of course, do not want the street railway question settled. And perhaps we cannot hope for much from the fellow who likes to argue and will not listen to reason. You know some men like an argument so well that they will not even "eat anything that agrees with them."

A CONCERTED EFFORT IS NECESSARY

In other words, the problem resolves itself largely into a matter of education. And if we manufacturers and railway men do not make a concerted effort and carry on a vigorous campaign to educate the public and convince them of the fairness of our proposition, then who is going to make such an effort along the right lines? And if you do not realize just how difficult this matter of educating the public is, if you do not appreciate how unsophisticated some people really are, just keep your eyes and ears open all around you in your own home town and you will soon begin to realize it.

TRANSPORTATION NECESSARY TO MANUFACTURERS

We in the manufacturing business are keenly alive to the fact that electric transportation in, around and between cities is vital to the development and progress of any community. We know the value and importance of locating our plants adjacent to such transportation. A city otherwise desirable is comparatively unacceptable if workmen employed in the plant are deprived of trolley facilities for readily reaching their homes after the workday. And if every city were so interlaced with trolley service as to make shopping more accessible, I cannot but feel that trading would flow more evenly instead of intermittently.

One of the most forceful illustrations of the effect of lack of trolley transportation upon a community happened not long ago in a well known city in Ohio, where, after a long drawn out fight between the city officials and the railway company, the property was abandoned and the rails torn up. A short time afterward the town endeavored to induce an important manufacturing industry to locate there. The town was well situated, possessed good steam railroad facilities and many other advantages. But when the representatives of the industry referred to found that the town had no street car service, they refused absolutely to further consider the question of locating there and went to a neighboring town where the street car service was good.

TRACTION SERVICE A BIG ASSET

This is a significant indication that the mere fact of having street car service is a big asset to a community, to say nothing of the real benefits derived from the service. In other words, a town that has no electric railway service presents the appearance of a deserted village, and no amount of jitney buses can overcome that handicap. In the town I have referred to, if all the jitney buses in the State of Ohio had been assembled in that town, it would have failed to satisfy officials of the new industry that the trolley was not needed. Nothing has been developed that will adequately take the place of the trolley car, and the sooner people wake up to that fact the better it will be for the country and for all of us.

Some people who are in the habit of getting around in their own motor cars perhaps don't fully appreciate how useful the trolley car really is—unless perchance they become identified with a suburban real estate development, when they very quickly begin to realize what a fine old substantial asset a good electric railway system really is to a community, and how much it will add to the value of their property. Every live real estate man will tell you that if he can point to established electric railway service to his allotment, it is the very best selling argument that he has.

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*Abstract of paper presented at meeting of American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

Employees Can Be Educated

We can tackle this matter of educating the public in many ways, but to begin with, we can educate our own employees. I will venture to say that the large majority of employees (and I do not mean factory workmen alone) connected with industries whose welfare is largely dependent upon the prosperity of the traction companies and other public utilities have not the right mental attitude toward those public utilities from the public service standpoint. And these employees perhaps form a more influential part of the general public than we have realized. And most of them do not even connect the unjust criticisms that they hear and read against the traction companies with the fact that these criticisms are directed against the very industry upon which they are actually dependent for a livelihood. If we can awaken them to that fact alone, we will have accomplished a great deal in this campaign of public education. And I believe that we can go still further in that direction and educate our employees to a point where they will have a pretty fair general knowledge of the real electric railway situation, so that when they mingle with their friends and the general public they will take the trouble to defend the industry of which they are a part and perhaps even fight for a square deal for the electric railway.

We manufacturers can carry on this work in various ways. For instance, our company is running a series of educational articles in a little monthly publication that we distribute to all of our employees. We, of course, try to word these articles in simple, direct language that will be understood by the average workman in the factory, and we use some illustrations whenever possible to make the article look more attractive and to emphasize some point more clearly. We find that the employees usually take these little monthly publications home, which is also a good thing, as you will appreciate—especially where they have large families who read them.

A Slogan Might Help

We also supplement the printed articles by giving some short educational talks to the men at some of our factory employee association meetings. And we are even considering the advisability of using some attractive printed slogan or pointed comment on our pay envelopes. For instance, we might say:

> When the Trolley Cars Stop
> Our Pay Takes a Drop.
> When the Trolley Cars Run,
> Ain't We Got Fun.

Not dignified perhaps, but we are after results, not dignity.

Now is an exceptionally opportune time for the manufacturer to carry on this educational work with employees. There are very few workers who have jobs who cannot see general conditions around them and in turn appreciate more than ever what their own job really means to them. For instance, I recently heard of a case in one plant where a worker who a year ago was showing signs of radical tendencies, upon leaving the factory after a short day's run, met a factory staff member and asked him to tell the sales force to "get busy and get some more orders," because he and his family needed the money resulting from a full day's work. This fellow's mind right now is probably most receptive to the kind of educational work I have outlined, and you may be sure that in his predicament, if once awakened to the needs of the industry, he would lose no opportunity to carry the word along.

Again, what proportion of our employees riding by trolley each morning and home again each evening fully realize what the traction service really means to them, their work and their families. Perhaps a few do, but many take it as a matter of course, and here again we can teach our workers to "fight for the cause" if we educate them to look upon the traction companies as real benefactors.

Getting Back at the Councilman

There are many other ways in which the manufacturer can promote this work. For instance, a factory manager recently attended a Council meeting where one of the Councilmen—a merchant—started a tirade of abuse against the local traction company. The factory manager interrupted, asking, "What plants are running to any extent in this town? The match factory?" "No." "The rubber works?" "No." "The chemical plant?" "No." "Then what plants are running fairly well?" asked the factory manager. "Well," said the Councilman, "your plant seems to be running much better than the others." Then, said the factory manager, "Do you realize that we are running on business secured from public utilities, including the electric railways, and you, as a merchant, are getting the benefit through the trade that you secure from our employees? Then why assume such an unfair attitude toward an industry that is contributing largely to the business you have in your store?" And the merchant-Councilman modified his attitude when he found he had to reckon with the employees of the busiest factory in town, instead of playing the popular old game of knocking the railway. Although small in scope, this incident illustrates one of the many ways that we in the manufacturing business can use to further this educational work.

Another means by which the manufacturer can help this work along is by getting articles of an educational nature into the newspapers. Oftentimes a manufacturer can get a newspaper to publish such an article when it would be impossible for an electric railway company to do so. We have had articles of that nature sent to us, which we have been able to dress up with local color and have published in our newspapers.

Then, again, we manufacturers belong to Rotary and Kiwanis clubs, chambers of commerce, manufacturers' clubs, etc., in which we can very easily accomplish a great deal in getting people thinking along more liberal lines on this electric railway problem. Many of us also manufacture materials that are sold to other classes of trade than public utilities and we can spread the gospel in that direction in various ways, not forgetting to sow a little seed with those from whom we buy raw materials.

Another important phase of this subject that I would like to touch upon before closing is the fact that we manufacturers who are largely interested in making materials for electric railways and other public utilities have quite an army of employees that can be rallied to the support of the industry in legislative matters, if properly organized and directed. So far as my observations have gone, I do not believe that this association has really made a well-directed effort to enlist the support of the army of workers, and I am sure that they can be used by us as a strong influence in behalf of the industry in State and national legislative matters and perhaps even in municipal affairs.

I believe that this association has, in the field that I have outlined, a magnificent opportunity to enlarge the scope of its work and take more active steps in the direction of getting the tremendous advantage of the full strength and support of these workers back of our efforts to obtain a square deal for the electric railway industry. Our association might even exchange ammunition with the National Electric Light Association, or possibly combine forces with it in this work wherever we have interests in common.

Let's Have Unified Transportation

In closing, I would like to emphasize the fact that I believe we have arrived at that period when there must be more proper and more drastic regulation of the use of public thoroughfares for public transportation. In other words, jitney buses which come and go, and other means of hauling people which are competitors of the regular and the responsible systems, all tend to the depreciation of public service rather than to its betterment, and so I cannot but feel that the time has arrived when municipal administrations must be made to appreciate that one franchise, properly safeguarded for the public interest, must be granted, and confined to a single transportation company, which would furnish all transportation service which could be used to advantage in the community that it serves. Under this plan the transportation company can invest its money, earn a sufficient revenue to justify the investment and give the public the service that it must have.

Street Railways as an Investment*

Future for Urban Railways Assured as a Utility, but Pleasure Traffic Is Dead—Reduced Rate Tickets Are Useful—Rule for Prodigal's Return Home Is Given

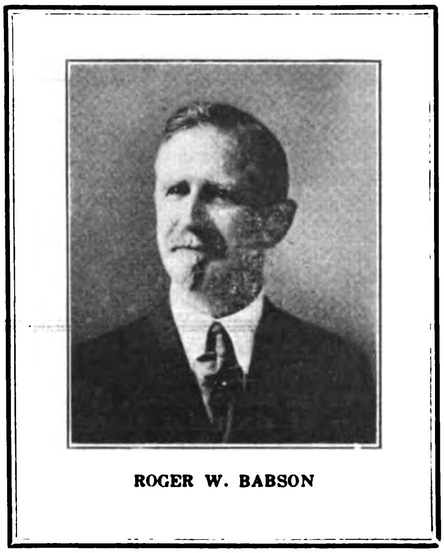
By Roger W. Babson
and Olin W. Hill

THE future of the street railway depends on its treatment from the proper standpoint—that of the public utility. It has ceased to be the public's plaything. Most of our street railway troubles come from the old idea that its principal reason for existence was to satisfy the—financial, political and literal—"joy rider."

In the readjustment of the last few years the street railway has but followed the history of all our other modes of transportation—the horse-drawn buggy, the roller skate, the bicycle, the automobile, and the jitney. Each in turn has had its day as a fad, followed by a reaction. Then, in the case of those for which a practical need had been found, there developed a substantial, steadily growing demand along staple lines, without any spectacular features. The readjustment has meant necessarily the elimination of large amounts of capital employed to satisfy a temporary and freakish demand.

The electric railway systems of this country comprise an industry involving over $5,000,000,000 capital with a gross business in excess of $1,000,000,000 a year. It falls within the group of less than a score of industries exceeding $1,000,000,000 gross and, by a curious coincidence, ranks next in size to another transportation industry, the boot and shoe business. In respect to percentage of gross income expended in pay rolls for labor—about 46 cents out of every dollar taken in—it outranks practically every other industry except watch making and the steam railroads. When we come to look at the net earnings, however, this great industry comes far down in the list, saving slightly less than 2 per cent of its gross for net. It has not the advantage, inherent to man industries, of a rapid turnover of its capital. There are comparatively few manufacturing concerns that can get along on a lower basis than gross turnover annually equal to the total capital devoted to the enterprise.

The street railways, with $5,000,000,000 capital and gross revenue of $1,000,000,000, are getting their money back at the rate of only once in five years. In the case of Boston Elevated, where the issue of securities has been so carefully supervised that no question of water in the capital has ever been raised, with a total funded debt direct or guaranteed of $44,000,000 and capital stock direct or guaranteed of $46,000,000 additional, making a total capital account in excess of $90,000,000, this system shows gross earnings, even with a 10-cent fare, of but little over $33,000,000 a year.



ROGER W. BABSON

In passing, take notice what the significance of this is as to the necessary charge-off for depreciation. If your plant, new, is reckoned good for thirty years, depreciation alone must eat up 15 per cent of gross earnings on the average, and 9 per cent to 10 per cent even in the case of Boston Elevated. How much of your plant is good for thirty years—and how many systems have made any such allowance for depreciation?

In analyzing an industry, two factors that must be borne in mind are, the fixed investment represented in plant for a given capacity of product, and the absolute limit at which price becomes prohibitive to the consumer. With the high plant cost to which this industry is subject, and the narrowly limited unit price for its product, we come then to the conclusion that only by the fullest and most constant utilization of plant can success be attained. This constant and full utilization is to be found in our large centers of population. There is no question about full traffic on almost any of the city lines.

We are led, then, to our first conclusion. The future of the street railway is found in the urban road; particularly, those lines which have some element of rapid transit combined and which, either by original supervision or through the fires of reorganization, have a fair capitalization. For the lines operating in congested centers the private automobile has little competition to offer. As a matter of fact, the greater the number of automobiles, the more indispensable is the city railway with its elevated or subway connections for convenience of getting about. We may run about the suburbs and small towns as we do with our automobiles, but when we are going in town we often park our car at the outskirts and complete the trip by street car—or else take a subway or elevated.

Our second conclusion is that the pleasure business of the street railway industry is dead. Whereas formerly the suburban lines catered to pleasure travel and looked for the biggest business on Sundays, the condition now is that Sunday travel is the smallest. There has been a large waste in the establishment of outlying pleasure parks and summer resorts as a street railway enterprise which may as well be regarded now as money thrown away. As far back as 1917 the total gross income of all the street railways of the country amounted to exactly 5⅜ cents per revenue passenger carried. Clearly the average rider is the short haul urban passenger, not the long haul pleasure tourist out into the country.

The jitney will never kill the street railways. But the operating expense account can, and will, unless it is carefully watched and studied. Gross earnings of the total street railway mileage of the country have in no single year shown a decrease, going back to 1904 and coming down through 1920. This fact may surprise even some of you. Neither can it be shown that there is any trend to a decline in the total number of revenue passengers carried per year. Statistics on this point have become less satisfactory with the introduction of the zone system and the cash fare box. So far as the lack has been supplied by estimates, however, the consensus of opinion is that the street railway is still carrying between 11,000,000,000 and 12,000,000,000 revenue passengers annually

In other words, ten times the number of passengers are being carried on the street railways as are carried on the steam roads. There are fluctuations in traffic, of course, following very closely the general prosperity or depression. There is a general tendency for the habit of car riding to increase. This is striking in the case of New York City, where the revenue rides represented 304 trips per capita in 1909, 370 in 1919 and 421 per capita in 1920. In Boston, on the contrary, the fare increase has diminished the habit. Taking the population of the city proper as a basis—which, of course, is not exact—revenue passengers represented 545 rides per capita at the peak of traffic in 1917 and only 430 rides per capita in 1920.

It is the net earnings line that has shown a constant tendency to decrease from about 1912 until well into 1920. The operating ratio of the street railway industry was 57.5 per cent in 1902, according to the census. The latest available figures for comparison indicate an operating ratio very close to 77 per cent.

In our study of fares, we find them ranging all the way from a maximum of 10 cents, the standard on Boston

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*Abstract of paper presented at the annual convention of the American Electric Railway Association, Atlantic City, N. J., Oct. 3-6, 1921.

Elevated, to a minimum of 5 cents on the New York railways. A deal of experimenting is being done. It is recognized that there is a point beyond which fares cannot go without loss of revenue. Most roads have reached this maximum and some are voluntarily reducing. Not only do higher fares discourage travel but they encourage demoralizing jitney competition.

The solution lies in a cash fare of 8 or 10 cents, with the sale of tickets at geatly reduced rates. One of the divisions of the Eastern Massachusetts, granted a 10-cent fare, first sold twelve tickets for a dollar, then fifteen for a dollar, then seventeen for a dollar, and this month is giving eighteen for a dollar, which is almost back to the old 5-cent fare. The headquarters for this division is Lynn. The statistics of fare reduction there make an interesting study for one interested in street railway transportation. Remember that the cash fare is 10 cents in Lynn today, but the man who rides every day can buy eighteen tickets for a dollar. Moreover, the first of next month the company will issue similar tickets, nine for 50 cents, purely with the idea of encouraging riding. It will still try to sell the man one dollar's worth of tickets, but they will be on two cards, so that two members of the family can each have a card with the same amount of family money invested.

Apparently pleasure riding is about over. The development of parks, white cities and playgrounds has become wholly a thing of the past. Where Sunday used to be the great day of the week, it now, on most roads, is one of the poorest days. We prophesy that the time will come when certain divisions will operate no more than a night schedule on Sunday, if at all. All of this, however, has a favorable side. It shows that the business today is necessary to travel, and tends to put the street railway business in a place with lighting and water—public utilities. The only fly in the ointment is the auto bus. We believe that the street railway business can be carried on more cheaply than auto bus transportation. Certainly this applies to heavy traffic and rapid transit. That is to say, the efficiently operated urban lines have nothing to fear from the auto buses. When it comes to the suburban lines, the auto bus may have a distinct opportunity and we still feel—as we have in the past—that the wise street railway company will give bus service where it can be most economically given. Many street railways would be better off to-day if they had turned some of their carhouses into garages instead of stubbornly putting their heads into the sand and refusing to see the handwriting on the wall.

The street railway is an ideal "cash and carry" business. Its entire factory product is sold out every twenty-four hours—and accounted for "C. O. D.," or rather "Pay-as-you-enter." It has no heavy merchandise inventories to carry over in a declining market. It has no bad accounts to charge off. The very conditions that place a staggering load on industry—and cause the investor to be wary of industrial offerings—will add to a continuing reduction of its operating costs and should make for increased operating efficiency. Its labor, where placed in full and true knowledge of operating conditions, has shown a disposition to be reasonable. Every new economy has proved itself and come to stay. On the lighter traveled routes, some almost miraculous results in turning costly "feeders" into revenue producing lines are, as yet, slightly appreciated. Fundamentally, conditions are right for attracting capital to the street railway as a medium of investment. The vital problem is to get right—and stay right—with the public.

The downfall of credit was due to neglect of the ethical factor. With the cheapness of electricity as compared with mule motive power, the idea was publicly accepted that you could carry "anybody, anywhere, any time for a nickel." Evidence of the spread of this is found in the repeated appearance before the Connecticut legislature of one Cowles with a bill to make a uniform 25-cent fare on steam railroads between intrastate points. The trolley promoter seized on this to sell the investor "capitalized hopes." When public regulation of capital was tried, as in Massachusetts, it was circumvented by the "holding company," or voluntary trust which could issue without limit.

The "construction company" graft was another method of fattening the promoters' pockets. Financing the entire cost by bond issues, sold to remote investors, with the resultant species of absentee landlordism and self-perpetuating management, was an attendant evil. Credit for these diluted issues was sustained by dividends paid out of maintenance. When the inevitable reorganization came the absentee bondholder was given securities based on "reproduction cost, new," for a property which was not new, but worn out. They capitalized not only "unexpired franchises" but city pavements, that belonged to the tax-payer and the constant repair of which was a liability.

When the remaining 90 per cent of the mileage is operated as efficiently as 10 per cent now is, street railway securities will come back to their own. Take, for instance, the use of the one-man car. In the case of the Eastern Massachusetts Street Railway system, which is now operating about 800 miles, 92 per cent of the cars are one-man cars; but hardly 5 per cent of the total street cars of the country are one-man cars. Street railway men who continue the two-men cars say that their situation is different from other situations and the one-man car is impossible. A close examination, however, shows that this is not the case. If the Eastern Massachusetts can operate 92 per cent as one-man cars, certainly the entire street railway system of the country can operate an average of 75 per cent instead of 5 per cent. The one-man car is not only a saving in labor but also a great saving in power and maintenance.

Great possibilities exist in connection with the revision of union rules on roads operated by union men. Such a revision is wholly possible if the men are approached in a proper way. The elimination of the seniority rule and the proper settlement of discipline cases adds greatly to efficiency and hence ultimately to income of the men and of the company. The wage paid is immaterial compared with the care taken by the men, their industry, honesty and desire to develop trade. Time is coming when every street railway company will have courses in salesmanship for their platform men. Many companies have done wonders in reducing operating expenses but there still are great opportunities in devising means of increasing traffic. The future of the business demands making every platform man a salesman. It may be feasible to pay platform men a commission on the business they do.

The old idea that track and equipment has a life of only ten or fifteen years is wrong. By the use of light cars, creosoting ties and poles and welding of joints this life is being extended for perhaps twenty-five or thirty years. We expect to see every street railway joint in this country welded. Yes, and we expect to live to see many other things done which we have for years been told were impossible.

Working under Chairman Loring of the board of trustees of the Eastern Massachusetts Street Railway Company is wonderful training for any man. He has done so many things and introduced so many economies which street railway experts claimed to be impossible that it has made us believe almost anything possible. As he says: "As we trustees had never been in the street railway business, we did not know enough not to try the 'impossible' things. As a result, we are spraying our cars with paint instead of using brushes, cleaning them with exhaust air instead of by hand work, and keeping accounts with but 20 per cent of the clerks we formerly had."

The right road for the street railway is the prodigal's road back home. As an investment, it is being, and will be, rehabilitated whenever and wherever it is operated as a local community enterprise for the public good—for service and not for promotion profits. It needs:

1. Service at cost—with the sliding scale of fares and, possibly, wages as related to dividends.
2. The local board of control with all books open to car rider and employee alike, showing the results of the local operating unit.
3. Customer ownership.
4. Increased stock equity.
5. Gradual amortization of debt—by reducing obligations at maturity, instead of refunding with an increase.
6. Willingness on the part of the management to do what the dyed-in-the-wool street railway expert has said is impossible.

Police Traffic Regulations of New York City*

Traffic Organization Outlined—Address Urges Standardization of Traffic Signs and Signals and Says Time Is Opportune for Co-operation in Highway Traffic Regulation

By John O'Brian

Inspector Traffic Division, Police Department, New York, N. Y.

OF ALL the varied problems confronting the civic authorities of congested centers the traffic problem is paramount. We meet it at every turn. It has become as inevitable as the tides, and with the natural growth and prosperity of the country it is ever increasing in volume and adding to its complexities.

It is of such importance that it affects directly taxation, real estate values, commercial enterprises and the welfare of the community. Its growth has been stupendous and efforts toward regulation and control have not been entirely effective, possibly because the problem has not received the attention and concerted action of the civic and commercial interests involved.

We all have our traffic problems back home and in many respects they are very similar. In the city of New York we also have our own traffic problems. They are not only unique in many respects but in volume are overwhelming.

ORGANIZATION OF TRAFFIC DIVISION

For the purpose of traffic regulation, there is in the Police Department a Traffic Division, which embraces the five city boroughs and includes all streets and highways, the East River bridges as well as Central and Prospect Parks.

The city is divided into precincts and subdivisions, each in command of a captain. At the present time there are 1,547 members of all ranks, including foot, mounted and motorcycle men, assigned to traffic duty.

The foot patrolmen are stationed at street intersections, bridge approaches, bridge roadways, ferries, pier entrances and in the vicinity of the railroad terminals and are used mostly to regulate and facilitate pedestrian traffic while in the roadway. Mounted patrolmen are used to regulate vehicular traffic at piers, and on streets or avenues where congestion exists in the middle of the block, thereby co-operating with the traffic foot patrolmen at the street intersections.

The motorcycle division is particularly effective in enforcing traffic regulations as to speed, lights, improper turns, signals, license plates, licensed operators and chauffeurs, etc. This squad, with a force of 114 patrolmen, during the year 1920 served 61,835 summonses for infractions of the regulations, and for these violations the offenders were fined $767,960. Of these summonses served, 16.94 per cent were upon operators of passenger vehicles, 26.98 per cent on commercial vehicles, 36.16 per cent on taxicabs, and 10.52 per cent on motorcycles.

During this period 294,137 motor vehicles of all kinds were registered in the metropolitan district, and I think the number of summonses served will indicate a fair percentage of activity.

In the city of New York there are more than 30,000 street intersections, but it is in the borough of Manhattan, which by reason of its layout, about 3 miles wide by 12 miles long, with its enormous permanent and transient population and its varied business interests, that the problem is most acute.

When it is considered that a single hour's delay in the movement of merchandise or of commodities essential to existence in every-day life results in an enormous financial loss and the inconvenience of thousands of citizens, the importance of traffic regulation is readily apparent.

During the past three years, the city has been most fortunate in having an administration which has taken a most active interest in traffic conditions. It has perfected and put into effect regulations which a few short years ago would have been considered too drastic to be contemplated. I refer particularly to the laying out of route streets; that is, setting aside certain streets exclusively for passenger vehicles and others exclusively for commercial vehicles. This regulation has greatly facilitated movement and given general satisfaction.

One-way streets where thoroughfares are parallel have also been found to be most effective in preventing congestion and minimizing fire hazards, though affording an unobstructed passage though these streets for fire apparatus.

MECHANICAL MEANS OF TRAFFIC CONTROL

Another innovation in traffic control to which I invite your attention on your next visit to New York is the mechanical control of traffic now in operation on Fifth Avenue between Twenty-third and Sixtieth Streets. This system of lights and signals was devised and installed by Special Deputy Commissioner John A. Harris. It is so positive in control and so readily understood and observed by pedestrians and operators of vehicles that it frequently happens that its control is almost perfect in operation during the absence of patrolmen assigned to duty at the various crossings. If this system of control was extended to other crossings it would obviate in many instances the necessity of assigning a patrolman to so many street crossings.

As the traffic problem is a universal one, its control will only be effective by a standardization of regulations and signals. A step in this direction was taken during the month of May, 1921, at the National Police Conference, at which were representatives of police departments of 325 important nationwide municipalities in forty-five states, convened in the city of New York. At this conference Richard E. Enright, Police Commissioner, New York, advocated that a national system of traffic control be worked out, that the co-operation of the states be solicited and that a uniform method of operation, speed and signals be agreed upon.

Traffic regulations to be effective must control. The control must be positive, and to permit any deviation, except in extreme emergencies, would be to nullify the regulation. Control is maintained by observance, admonition and penalties for infractions of the regulations.

When approaching a discussion of standardization of traffic regulation, it is well to keep in mind that what is wanted is to simplify and build up from a basic standard, so as to remove annoyance caused by a maze of regulations, often conflicting one with the other, with resultant confusion.

STANDARD SIGNS AND SIGNALS ESSENTIAL

All signs, stanchions and lights should likewise be standardized as to design, color and use. Methods of signaling should be uniform. The great need today is a standard regulation that will make clear to a driver what is expected of him. If we can make it easier to do the right thing than the wrong, the final solution of the traffic problem will be at hand. In the large cities traffic problems are practically alike, and there is little doubt that a standard system could be formulated.

In any discussion of the subject of standardization careful consideration must be given to the commercial vehicle. This type of vehicle is ever increasing in size and weight and some restriction will eventually have to be placed upon its size and weight.

From 1915 to 1919, inclusive, the State of New York expended $21,062,066 for construction and $25,231,314 for maintenance of state roads outside of New York City. This outlay of money, while well spent, and accruing to the benefit of all citizens, cannot continue to increase at the present ratio without resultant tax burdens. The matter of permissible wheel loads should be standardized in all states. As for the matter of size of commercial vehicles, this is of more particular importance to city authorities where thoroughfares laid out long before the motor vehicle was dreamed of simply cannot accommodate the enormous motor truck without congestion, inconvenience to pedestrians and to business interests.

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*Abstract of address presented at the annual convention of the American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 3-6, 1921.

The matter of safety is of first importance, and despite all the literature that has been printed and distributed and the warnings and devices that have been perfected to prevent accidents, the number of personal injuries and fatalities continues to increase year aftr year, until now it surpasses the fatalities occurring on the entire steam railroad service of the country. All blame, however, cannot be placed upon the vehicle operators. We cannot relieve the burden of caution from the pedestrian to exercise due care, and when the pedestrian is guilty of negligence accidents will occur, despite all precautionary measures taken by the operator. As to the reckless driver he can only be corrected by penalty, adequately and positively administered.

As children are most often involved in street accidents, they should receive first attention. Proper playgrounds and recreation centers must be provided for them. They must be taught the absolute necessity of caution when on the highways. They should be as familiar with the rules of the road and their own local traffic regulations as they are with the simple rules of hygiene which they are taught and so rapidly absorb. This task is not an impossible one and co-operation between departments of education, police departments and children's welfare organizations intelligently conducted will bring splendid results.

The time is now opportune for the better co-operation and co-ordination between the police departments of the various cities, the traction interests, the automobile interests and highway associations to bring about standardization of traffic rules and regulations. It is to such organizations as yours that police departments look to for co-operation and assistance in the solving of the various traffic problems as well as minimizing street accidents.

The results gained from experience by the Police Department of the City of New York is at the disposal of all interested persons. Advice will be freely given for the asking.

Correct Method of Purchasing Railway Supplies*

Definite Standards of Measurement by which Various Competing Articles Can Be Compared Will Simplify Purchase and Sale

By H. B. Doyle

Of Philip Kobbe Company, Inc.,
New York, N. Y.

H. B. DOYLE

THE electric railways buy enormous quantities of equipment each year. The salesmen of equipment and supply houses each year sell an equally large volume. From the salesman's point of view he has made a sale. From the point of view of the railway official he has made a purchase. Buying and selling are so closely linked together that it is often a problem whether the transaction has been a selling one or a buying one. All purchases of any kind are the result of comparing values and probably no two men compare values in the same manner, and no two salesmen offer their wares in the same manner.

Your committee has been good enough to ask me to talk on the subject of the K-V standards. These can be equally well called the K-V standards of selling, the K-V standards of buying, or the K-V standards of comparison, for their only purpose is to simplify a purchase or a sale by setting up a definite measuring block with which competing articles can be properly and fairly compared.

"K-V" is a name given to this method of buying and selling as a mark of identification. It is copyrighted by the company which I represent, and is only used by companies whose standards of comparison have been developed and worked out in conjunction with us. "K-V" is my company's guarantee that the standards are fair.

The care and exactness with which a comparison is made is in a direct ratio to the importance of the article under consideration and to the amount of money involved in its purchase. It is possible that in buying railway supplies and equipment, there is room for a more exact weighing of values *before* specifications are written. In any given field there cannot be more than one article or item which is actually the best (assuming of course that the conditions under which it is used are identical or similar) and yet, those of you who are operating traction companies under similar conditions are undoubtedly buying a given kind of product from many manufacturers. That is what makes competition possible. But it is also true that not all of you can possibly be buying *the best*.

DUTY OF THE MANUFACTURER

It is clearly the duty of the leading manufacturer of any given line of equipment to help you purchase intelligently and correctly. Not only is it his duty but it is to his advantage. And modern selling is all along the line of actual service to the purchaser. I think it is clearly the duty of the man who has something to sell to analyze the factors that go into his article and to impartially evolve a method of purchase which can be presented to you for your approval (or disapproval) before the actual article is submitted. In other words, until the manufacturer, as the seller, and you, as the buyer, agree on a fair method of comparison, both you and the manufacturer are at a disadvantage. Neither of you has established a preliminary measuring block by which values can be justly compared.

For instance, take bearings. There are many makers of armature and axle bearings but it is inconceivable that all these bearings are of equal value. And yet all of them have some recognition on your various roads. If there *is* one best bearing for a given purpose, there also must be one best way of comparing bearings so that the one which is actually the best will be clearly revealed. When we analyze this we find that you are really buying the service that the bearing will render at a given cost. Therefore, some of the factors to be considered in a comparison are factors invisible to the naked eye and not subject to a physical test.

The finest bearing in the world at the cheapest price is of no value until it is delivered. And unless the manufacturer is substantial and responsible there is no guarantee that you will continue to receive your bearings promptly on delivery dates over a long period of time. Another point, or let us say another "standard," might be the location of the manufacturer. It is possible that a manufacturer of even a better bearing might not be the best one to deal with if his plant were located so far away that orders and shipments were unduly delayed.

The composition of a bearing varies not only according to the specifications of a road but also according to the skill and honesty of the maker. As you well know, an alloy may contain scrap metal and probably will contain hard and soft spots as well as some particles of iron which result in the scoring of the axle.

Another consideration is that of taper. Does either outside or inside diameter vary at either end more than six-thousandths of an inch? It is basic that bearings should not taper, and yet they do. The manufacturer and the railway buyer should determine and agree upon a set of measurement standards which will take in not only the physical features of a bearing but all the other features which are represented by overhead and price. The argument which occurs between the salesman and the buyer should not be an argument on the merits of a given article but on the prime factors that enter into the article. When these factors are agreed upon, no competing manufacturer of merit need fear to have his product examined.

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*Abstract of address presented at the annual convention of the American Electric Railway Engineering Association, Atlantic City, N. J., Oct. 3-6, 1921.

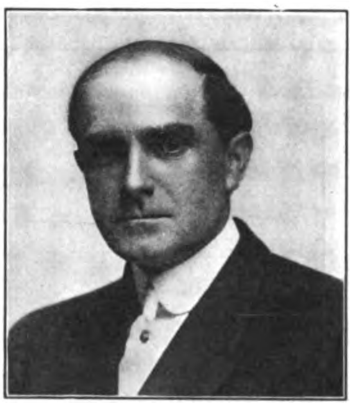
Several prominent railways have stated that they will give consideration to any equipment or supply house that is ready to discuss and agree upon a *set of standards* under which their product will be submitted and examined. We believe that any manufacturer offering his goods in such a manner should have consideration.

Make Your Safety Drive Continuous*

An Energetic and Systematic Public Safety Campaign Reduces Injuries, Increases Production by More Efficient Operation and Teaches the Great Value of Human Life

By Britton I. Budd

President Chicago, North Shore & Milwaukee Railroad



B. I. BUDD

IN INDUSTRY we find that a concentrated effort to reduce accidents keys up those concerned to the highest tension for the period and reduces the number of accidents materially. But does it pay? At the end of the drive the impressions gained wear off and we are again back in the old rut. If we can concentrate on safety for a short time and obtain results, why not make it a systematic and co-operative drive for 365 days in the year and obtain these results every week instead of for only one or two weeks of the year. It can be done; safety work in industry has proved it.

To educate the employee we find that we must first educate the employer, for in safety, as in other things, the attitude of the employee toward the work is dependent on the attitude of the employer. To accomplish this object the employer must show the employee that he is behind the safety movement heart and soul; that any recommendation that may be made by the employee tending to reduce or eliminate hazards and to establish safe working conditions is closely investigated and if found practicable is carried out. The employer must establish an efficient first aid system to care for employees who may become injured and must see that all injuries, no matter how slight, are given proper treatment immediately.

In an examination of the reports of the injured and killed we find that in 1920, out of 82,000 fatalities, 15,000 were children under fifteen years of age. What have we done to prevent the report for 1921 being a duplicate of that of 1920, or, in fact, what measures have we taken to prevent this list from being doubled this year? The number of autos on our streets has already increased 30 per cent over last year, and automobiles were the cause of a great number of these deaths. An energetic and systematic public safety campaign throughout the country is the only way we can accomplish our object. We must reach the public at home, on the streets and in business; in fact, the prevention of accidents must be brought home to the citizens of our country at every turn; they must not be allowed to forget it for an instant.

The establishment of safety instruction in our schools will give us a firm foundation which will not only bring results during the present generation but in the generations to come. The instruction of the children has begun on a small scale in many schools; in some it consists of periodical lectures and in others a half hour or an hour a day is being given over to this instruction. The older children have been given instruction in accident prevention at street crossings and in some cities have acted with the police department as traffic officers at the crossings during the hours that the children are going to and coming from school. In the instruction of children the effect of the word don't on the average ones results in their doing the very thing they have been warned against, while if they were told what they must do to accomplish a certain thing the result will be much more satisfactory.

The public safety work is in its infancy and to succeed must have the support of the management of the industrial plants who are experienced in safety work. It is just as much a part of their work in the upbuilding of the community to make it safe to walk the streets of their city as to make their shop or factory a safe place to work. With this support and with the chambers of commerce, clubs and civic organizations, police departments, boards of education, Boy Scouts and the general public, it is certain that we will make a material reduction in the list of preventable deaths and injuries.

SAFETY ORGANIZATION IN CHICAGO

The Chicago Safety Council operates as a department of the Chicago Association of Commerce, in conjunction with the National Safety Council. Its sole purpose is to make Chicago a safer city. Its activities are divided into four major divisions, known as public safety, industrial safety, railroads and public utilities and business administration.

The plan of the Public Safety Division, as shown in the progress report issued by the council, is as follows:

"1. On the committee composing the Public Safety Division are representatives of the homes, industries, churches, schools, women's clubs, civic bodies, city, county and state authorities, insurance companies, automobile clubs and all other organizations which have an interest either in the prevention of accidents or the education or prosecution of those who violate laws designed to safeguard vehicular traffic. This group of representative citizens, who have banded themselves together for the purpose of accident prevention, is already making its influence felt in an aroused public sentiment against the careless and many times inexcusable accidental deaths and injuries which occur altogether too frequently.

"2. Under this division there is a police and traffic committee, which is co-operating with the city and park police and the public generally in educating motorists in particular to have proper regard for enforcement of traffic laws and regulations. It is also developing plans for educating motorists in safe driving by means of bulletin boards installed at filling stations, garages, etc.; to conduct a school for chauffeurs and truck drivers, with a definite course of six lessons in safe driving, rules of the road, mechanical operation, etc., and to operate a school for women automobile drivers.

"3. The women, homes, churches, schools and colleges committee of the Public Safety Division has undertaken as its most constructive immediate function the matter of having safety instruction made a part of the curriculum in public schools and parochial schools.

"4. It also is preparing to carry on safety in the homes by means of distribution of illustrated bulletins describing the many home hazards. This subject is being presented to the women's organization of the city and it is contemplated that safety will be given due consideration by the clergy in their sermons from time to time.

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*Abstract of paper contributed to the discussion of the report of the joint committee on safety work at the annual convention of the Transportation & Traffic and Claims Associations, Atlantic City, N. J., Oct 3-6, 1921.

"5. Another arrangement about to be launched by the highway safety committee is one by which its reporting members will report to the safety council any dangerous practice or condition coming to their attention, including violation of laws and rules by motorists and others. These men will have neither insignia of any kind nor authority to stop or arrest violators, but reports made by them will be taken up with the offenders and an earnest appeal made for their assistance in the elimination of accidents. The plan provides for education and co-operation rather than prosecution, except that prosecution may be resorted to in extreme cases."

With the co-operation of the members of this association in a concentrated public safety campaign, along the lines of the National Safety Council's plan, the citizens of our great country will be brought to realize the value of human life and the necessity of exercising care and caution, which is a duty each and every individual owes to himself and to his fellow man.

Traffic Regulations and Safety Work*

Greater Responsibility Rests with the Driver of an Automobile than with the Pedestrian—Number of Persons Injured by Automobiles Appears Large, but It Is Very Small Considering Number of Machines

By J. M. Quigley
Chief of Police, Rochester, N. Y.

MY INFORMATION concerning automobile accidents has been gained from study of such occurrences which have happened on the streets of Rochester, N. Y., and whatever conclusions I have settled upon as to responsibility were reached after a careful and impartial study of the subject, with the object of finding out, if possible, a way to prevent accidents and make safe the streets of our city for all who may and have a right to travel them.

J. M. QUIGLEY

Webster defines an accident as that which happens without any known cause. According to that definition what proportion of automobile casualties can be classed as accidents. I will venture to say not more than 8 per cent. A careful investigation of such happenings invariably reveals a cause. An analysis of the cause of so-called accidents as revealed by the records kept in our office is as follows:

	Per Cent
Walking into side of, and running in front of automobiles	30
Reckless driving	10
Collisions	12
Crossing street not on crosswalk	8
Crossing street on crosswalk	6
Losing control of auto	5
Children playing in the street	3
Getting on and off street cars	3
Intoxicated persons	1½
Speeding	1
Collisions with street cars	2½
Defective brakes	2

None of these come about accidentally. If the working of the mind of the operators involved could be known, it would be discovered that a forewarning had preceded the occurrence, but haste and recklessness challenged and they proceeded and took a chance, with the usual result.

Safety of person is more important than commerce or rapid transportation and it must not be subordinated to either. The operator of an automobile on the highway has equal rights with those traveling on foot but each must observe reasonable care for the other's safety, determined from the extent of danger incident to the use by each respectively.

Xenophon P. Huddy, in his work "The Law of the Automobile," writes interestingly and logically on the relative danger of persons traveling on foot and those traveling in vehicles on the highways, as follows: "The pedestrian class is the weakest of all others which use the public streets and thoroughfares. Those who travel in vehicles are protected to a more or less extent against actual personal contact with other objects on the public thoroughfares. Consequently there is advantage taken of the inequality of the situation. Naturally a pedestrian will flee in order to avoid injury, no matter whether he had at the time a legal right to hold his ground.

If the drivers of automobiles and other vehicles fully realized the seriousness of their conduct when the right of way of the pedestrian is not respected, and if the common law would be enforced, there would be a marked decrease in the accidents which happen on the public highways."

The driver of a vehicle, whether it is an automobile or a horse-drawn carriage, if he is guilty of inattention to his duty, may be criminally responsible for any death which his vehicle may cause at the time. For example, if he is driving an automobile while holding conversation with a companion and not looking ahead to see who may be on the highway. Under such circumstances, if he should kill a child, he would be guilty of manslaughter.

From these opinions the conclusion can be drawn that the greater responsibility is upon the driver of a vehicle. Reverting to the causes of accidents in which persons were injured or killed, it will be observed that the large number were said to have walked into the side of or in front of the automobile, making it appear that the pedestrian was negligent in every instance. A careful scrutiny of the reports of the investigators of these occurrences, however, compels us to attribute the cause to carelessness on the part of the driver of the automobile for the reason that, moving quietly as it does without the noise which accompanies the movement of a street car or a horse-drawn vehicle, the pedestrian is unaware of its approach. He steps into the street and is struck; not because the pedestrian was careless or incautious, but for the reason that the automobilist did not exercise that caution necessary to be obtained when traveling a thoroughfare upon which he should reasonably be prepared to anticipate such an occurrence.

AUTOMOBILISTS ABUSE THEIR ADVANTAGE

An automobile traveling at the rate of twenty miles per hour moves seven times as fast as the average pedestrian, or in other words it will travel one hundred feet in the same space of time that a pedestrian will travel fourteen feet, or about one-third the width of the average city street, so that when the pedestrian stepped from the curb the automobilist was far enough away to warrant the foot traveler to believe that the driver, exercising due circumspection, would stop or slow down the movement of his vehicle and give way to the pedestrian. Anyone observing automobile travel will note that the driver of the vehicle almost invariably attempts to force the pedestrian to hasten out of his way.

During the year 1920 a total of 2,139 automobile accidents were reported to the police of Rochester. Of them, 812 were accidents in which 906 persons were injured and 21 killed. Of persons injured, 196 were passengers and 710 were pedestrians. Of the total number of accidents, the character of the vehicles involved were, pleasure cars 999; light deliveries, 168; trucks, 90; and taxicabs, 70. Of the accidents in which persons were injured, the character of the automobiles involved were, pleasure cars, 609; trucks, 100; delivery, 68; and taxicabs, 35.

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* Abstract of paper presented at the annual convention of the American Electric Railway Transportation & Traffic Association at Atlantic City, Oct. 3-6, 1921.

The locality in which these accidents occurred with relation to the center or congested section of the city, 144 occurred in the business or congested district; 301, outside the congested district but within the mile circle; and 461, outside the mile circle. Three of the fatal accidents occurred in the congested district, ten outside of the congested district but within the mile circle and eight occurred outside the mile circle. You will note that the greater number of accidents occurred at points remote from the congested district, which goes to show that they occurred where the drivers of vehicles and pedestrians also feel most secure from danger, and too, it indicates greater carelessness of both pedestrian and drivers in the outlying districts.

ACCIDENTS ARE FREQUENT AT INTERSECTIONS

Another important phase of the accident problem is the location on the street where they occur, of the 2,139 reported, 1,153 happened at street intersections, and 986 elsewhere. Four hundred and thirty-six persons were injured in accidents occurring at street intersections and 470 in those that happened elsewhere.

Though the automobile accidents are more numerous than they should be, yet, when we consider the number of automobiles traveling the streets daily the proportion of accidents to the number of automobiles is very small. There are 36,274 automobiles owned by persons living in Monroe County, N. Y., and all of these are operated on the streets of Rochester at one time or another. This being the fact, and, too that but 2,139 automobile accidents were reported, it is readily apparent that only a very small proportion of drivers are careless or reckless; to be specific, 6 per cent. This, in my judgment, is a very creditable showing, but we can and must make a better showing. We have by experiment and practice demonstrated that accidents can be prevented, and that by extending the preventive measures now used, their number can be further reduced.

Are we then going to permit this most useful vehicle because of its misuse by the few incompetent or reckless operators to become the modern "Juggernaut"?

Picking Men for Jobs in the Transportation Department*

Six Principles Based on Employment Practice in Other Fields Are Suggested as Useful in the Selection of Transportation Employees

By Henry H. Norris

Managing Editor
ELECTRIC RAILWAY JOURNAL

THE report of the committee on personnel and training of transportation department employees is to be commended from several considerations. In the first place, it has been prepared with definiteness of purpose, its scope is reasonable, and the committee has evidently had in mind the formulation of guiding principles rather than detail of practice. The second feature of this report is its brevity. In its few pages, however, there is condensed a wealth of suggestion. In the comments which follow the topic of the selection of employees will be considered from the analytical point of view. Having had no personal experience in employing men for the transportation department of the electric railway, the writer can give only the results of his observations, combining with these some suggestions based on a general study of modern methods of employment in other fields. The attempt has been made to formulate certain guiding principles, which will be phrased in concise form.

HENRY H. NORRIS

Principle I.—The selection of employees is so important a function that it should be intrusted only to the most competent man available.

This principle requires no argument. It has not always been recognized, however. In the manufacturing industries it is now being stressed mightily, the war having given the impetus to increase in production efficiency through skilled selection of workers.

In selecting employees the electric railway employment department has two things in mind, in addition to the desire to fit a good man to a good job. First there is the ambition to keep down the labor turnover. The second is the possibilities of the applicant as a transportation salesman. How quickly and completely will he come to be at ease in the performance of his duties? How promptly can he store his mind with the facts and principles of the business so that he will be able to give patrons the information which they desire? How quickly can he become skilled in that essential function of the modern platform man, "selling the service?"

These questions suggest the statement of another principle, namely:

Principle II—Selection of employees on the basis of quality is infinitely more important than the purchase of materials to specification.

There was a time a few years back when it was impossible to choose carefully among applicants because there were not enough applicants to go around. Now we can begin to look for this quality of salesmanship, regarding which so much has been said but so little done. Obviously merchandising transportation involves merchants, or salesmen, so that the following principle applies to this aspect of the electric railway business with great force:

Principle III.—The qualities which in other lines of business enable a salesman to sell are needed in the platform man, particularly the conductor.

These qualities are declared by the committee to include "personal appearance, bearing, manner of answering questions, and ability to carry out simple instructions promptly and correctly." A great deal can be learned by studying an applicant carefully with these points in mind. But in doing this it is not enough to look a man over and guess that he is all right or otherwise. If a quality is worth desiring it is worth testing as far as testing is practicable. This is all that the much advertised, and rightly advertised, intelligence tests do; that is they measure things that were formerly determined by guesswork. To put this more concretely:

Principle IV.—Snap judgment is not safe now, and never was safe, in the selection of employees.

Suppose the committee's suggestions as to rating considerations in elimination tests of electric railway transportation employees be listed, in the following manner:

1. Personality: (a) personal appearance, (b) bearing, (c) manner of answering questions.
2. Mentality: (a) Ability to execute simple instructions promptly and correctly, (b) mental alertness, (c) judgment.

The candidate cannot, of course, rate himself by answering questions, except as to matters of fact. Snap judgment by the employing officer is just as bad; but what is to take its place? This leads to:

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*Abstract of paper presented as part of the discussion on the report of the committee on personnel and training of transportation department employees at the convention of the American Electric Railway Transportation & Traffic Association, Atlantic City, N. J., Oct. 3 to 6, 1921.

Principle V—If personal and mental qualities are to be considered at all in selecting employees, some kind of objective analysis should be made.

No absolute scale of rating in the qualities listed is possible. On the other hand, some people undoubtedly answer questions better or carry themselves better than others. In other words, qualities can be compared with each other even when they cannot be compared with a standard. This is really what is needed, for the purpose is not to pick out paragons, but rather to select the best among a group of applicants. For example, as a test for rating personal appearance, the following is suggested:

Consider men in groups of ten at a time, including in each group say two employees who are satisfactory but not remarkable. Make a list of these men, arranged in order of merit. Get some one else to do the same independently. Compare notes. Repeat the process for the other qualities. Combine the results so as to get a general scale of rating for the group. An experienced personnel man believes that in such a rating scale the best man may easily be five times as good as the poorest.

To make the matter more specific, such questions as these should be kept in mind in rating for personal appearance: (a) Is the applicant well proportioned? (b) Has he the appearance of good character and habits? (c) Are his clothes carefully selected and neatly kept, and his shoes polished? (d) Does he show reasonable care in the preparation of his toilet; hair brushed, nails clean, face shaved, etc?

These questions are simply the application of the committee's suggestion that personal appearance be considered. If it is to be considered at all, it should by all means be considered in reasonable detail.

The questions which might be asked in connection with the bearing of the applicant would include: (a) Does he carry himself well? (b) Does his bearing suggest courtesy? (c) Is he pleasant without being servile? (d) Is he alert and active in manner? (e) Does he look like a real man's man?

As to the manner of answering questions, these queries may be suggestive: (a) Do his oral answers show thought? (b) Does he meet your eye in answering oral questions? (c) Are his oral answers complete but concise? (d) Is he reasonably quick in giving either kind of answer?

While these questions may seem trivial and unnecessary, are they not of the type that one unconsiously has in mind in judging the personality of another? If so, then they may well be formulated. This is what was done on such a large scale by the celebrated army tests, from which electric railway men can learn a lot that will help them in their business. In fact, it may properly be said here that:

Principle VI.—While freak "psychology" should be avoided in selecting employees, modern science should not be ignored.

The matter of personality has been gone into in some detail, to illustrate the principle of rating which is applicable to it. The subject of mentality, as broached by the committee, opens up a still wider field for comment. All that can be done here is to outline a few essential features. Mentality can be rated much more definitely than personality. Possibly the army tests, suitably modified, may be found useful in electric railway work. They are being applied in other branches of industry.

The committee's requirement of "ability to execute simple instructions promptly and correctly" lends itself to objective testing admirably. For example, it can be gaged by: (a) Manner of filling in the application form. (b) Manner of applying for the medical examination. (c) Manner of performing some elementary feats with the rule book.

Science has definitely proved that mental alertness can be tested with reasonable accuracy. At the same time the men should not be asked to do any "fool stunts" which would appear ridiculous to them.

In addition to mental alertness, the quality of judgment is also susceptible of rather accurate measurement, but for the present purposes it can be gaged fairly well from the data already gathered.

In the foregoing outline attempt has been made to apply the magnifying glass to a small but highly important section of the committee's report. To carry out the committee's suggestion to a logical application involves more study than has been given to the matter so far. With the approval of the executive committee it might be well for a future committee on this subject to investigate such matters as the following:

(a) To what extent are psychological tests being used in the transportation departments of electric railway properties, and with what results?

(b) In what ways might such tests profitably be used?

(c) What tests could the committee itself make along this line, and what records should be kept that would be of real value to the industry?

(d) What standards, if any, could be recommended, and what procedure might be followed in determining the personal and mental qualities which are desirable in employees of the transportation department?

Finally, the writer wishes to reiterate what he has said regarding the importance of intelligent selection in employment work, preferably with some kind of a rating scale. In going over this matter with a practical psychologist the writer was urged to stress this point in discussing the committee report.

He cited the case of an insurance company which was selecting a manager. One applicant was well known and well liked by the directors. A rating scale showed the directors and the applicant himself that he was not the man for the job.

There is another element in this careful rating of men. If a promising man turns out not to be fitted for the duties of the transportation department, he may be just the one for some other position in electric railway service. Some manufacturing concerns have a rule that when it is necessary to refuse employment to an applicant, the refusal shall take such form as to leave the man in a friendly frame of mind. Nothing will do this better than to show a helpful interest in finding him a place to which he is naturally adapted.

The Banquet

A DEPARTURE from recent custom was the banquet, which occurred Wednesday evening in the Renaissance Room of the Hotel Ambassador. About 800 in all were present, including many ladies.

After the dinner the first speaker was President Gadsden, whose topic was "Salesmanship in Transportation." An abstract of his remarks appears elsewhere in this issue.

The second speaker was Prof. J. Duncan Spaeth of the department of English at Princeton University and the coach of the varsity crew. After describing many of the advantages of electric railways as a transportation medium Professor Spaeth gave an inspirational address on the reasons for success in large undertakings. He urged the use of the law of things in dealing with equipment and the law of men in dealing with men. To secure service and power these two fundamental laws must be joined.

The dinner was followed by informal dancing and music in the Venetian Room at the Hotel Ambassador.

Election by Accountants

THE sessions of the American Electric Railway Accountants' Association will be reported in next week's issue. The following officers were elected for the ensuing year:

President, Frederick E. Webster, vice-president and treasurer Massachusetts Northeastern Street Railway, Haverhill, Mass.

First vice-president, W. G. Nicholson, secretary and auditor Omaha & Council Bluffs Street Railway, Omaha, Neb.

Second vice-president, E. M. White, treasurer Binghamton (N. Y.) Railway.

Third vice-president, W. A. Doty, auditor Denver & Intermountain Railroad, Denver, Col.

Secretary-Treasurer, F. J. Davis, auditor's department, Public Service Railway, Newark, N. J.

For members of the executive committee, J. J. Duck, general auditor Chicago Surface Lines; R. N. Stevenson, chief clerk to comptroller, the Connecticut Company, New Haven, Conn.; Wallace L. Davis, auditor Lehigh Valley Transit Company; G. H. Caskey, auditor Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.

Proceedings of the American Association

The Constitution Offered by the Executive Committee Was Adopted After a Few Changes Had Been Made—More than 1,200 Were Present—Exceptional Group of Financial Papers Presented—Hoover Sends Message on Interdependence of Railways and Other Industries.

THE first session of the American Electric Railway Association was called to order at 9:50 Tuesday morning by President Gadsden, who without further introduction gave the presidential address. He first told about the defalcation at the New York office and the action taken by the court in the case of the defaulter, Gibson. In this connection he said: "I want to take this opportunity to say that after the strictest investigation, the result of our consideration of this subject convinced me, and I am satisfied convinced the other members of the special committee in charge of the matter, that our ex-secretary, E. B. Burritt, was free from any moral complicity in that matter. In view of his long association with us and of the high esteem in which we held him I think it is due to him that I should make that statement to his friends here assembled." He also explained the arrangement made by the court by which the defaulter will endeavor to pay back the sum taken.

Continuing, President Gadsden said that when this situation became apparent, the executive committee, instead of making drastic reductions in the service of the association or cutting down the payroll, determined at first to make a thorough investigation of its own affairs. Some reductions were made in expenditures, but a more important step was the determination to consider whether the association as at present organized was the best possible fitted to solve the questions being thrust upon it. A reconstruction committee was appointed and made a most exhaustive and painstaking inquiry into every phase of the parent association and those affiliated with it to determine what steps should be taken for improved future conditions.

In the opinion of the speaker the fundamental weakness of the organization, as disclosed by the research of the reconstruction committee, was the fact that the association was not, in fact, being conducted by its officers, but the custom had grown up for the executive committee to meet only on the call of the president, and then only to consider some special or emergency matter. Hence the most important change in the proposed constitution is the provision that the board of directors—the executive committee—meet monthly. There has been some criticism of the provision that the association could not get the kind of men it wanted if they would be obligated to attend a meeting of the board once a month. The speaker's answer to that was that that is the practice followed in the two other public utilities associations, the gas and the electric associations. If a man can be made to feel in accepting a position on the board that he is actually taking part in the management of this great industry of ours the position will be sought after. In the judgment of the speaker as much depends upon the periodic monthly attention of the board as on anything else.

PHILIP H. GADSDEN
Retiring President

The speaker then discussed briefly a number of the questions which were to come up at the meeting, particularly in connection with the report of the reorganization committee. One of these was whether a municipally owned property should be eligible for membership. Another was a clause providing that the executive committe shall have power to admit to membership in the association transportation companies other than the electric railways, which include trackless trolleys and motor buses. The speaker said he hoped this topic would be thoroughly discussed. He also said he wished to emphasize another phase of the committee's report, namely, the question whether the work being performed by the magazine of the association, *Aera*, was essential or could not better be performed by the technical press. Statements, he said, have been made also that the advertisements in *Aera* were not obtained on their merits, but that they were largely influenced by friendship or by a mild species of sandbagging; that is to say, that the manufacturers were held up, and that, therefore, the money spent in advertising represented a duplicate expenditure on the part of the industry, unnecessary duplication, and therefore a waste which ought to be stopped.

Continuing, the speaker said that the question has sprung up perennially, and as it is obvious that the association cannot continue to run a magazine and make it effective as a magazine or successful financially if every year the question of its continued existence is brought up for serious debate and consideration, therefore the reorganization committee requested the *Aera* advisory committee to make a further report covering all phases of the question. The speaker said that he had approached this subject rather in sympathy with the view that *Aera* as now conducted was not justifying itself, but after careful consideration of the report of the advisory committee he became thoroughly convinced, as did, so far as he could recall, every member of the reorganization committee, that the magazine was performing a necessary and useful service to the industry. Moreover, to his surprise, the committee had statements made to it by numbers of manufacturers that so far from looking upon the advertisements of the magazine as a holdup, they considered it one of the best mediums for advertising that they knew of. Hence the committee recommended that the magazine should be continued and the speaker hoped that this would be considered final.

The speaker then took up matters external to the association and said that he would refer particularly to two phases of the problem. For over ten years, he said, the electric railway industry had been held in slavery to a fixed 5-cent fare. The public and the companies, ever since the establishment of the street railway industry, had been worshiping at the shrine of the nickel. But at last the industry, along with all other business in this country, has come to a point where it is recognized by the public that the price of the electric railway ride must bear a definite relation to the value of the service to the car rider. That is of tremendous importance to the industry. The roads, in some isolated cases, may go back to a 5-cent fare, but only because it is justified under the conditions which may exist at that time. The fetish of the 5-cent fare has gone forever in this country.

That is what has happened to one of the fixed ideas in the mind of the public. Another was that once a street railway was built and put into operation it could never cease to run. Once a railway, always a railway. The public recognized that if a textile, metal or a shoe factory or an automobile concern could not sell its goods at a profit it would close down, but in some mysterious way the public got an idea that the street railway was immune from the operation of economic laws and would keep on operating notwithstanding the fact that its cost increased and it was unable to get an adequate fare. The situation in Des Moines has destroyed that illusion. For more than thirty days a city of over 126,000 inhabitants has been without facilities of street railway service. The result is that at no time over 50 per cent of the travel that used to be handled by the electric railways has been handled by any system of transportation in the city of Des Moines except for a week when the fair was held, when the return to the company was guaranteed. The balance of the people either had to stay at home or walk. The result to the merchants of the town has been simply disastrous. Recognizing how important this demonstration at Des Moines was to this industry of ours, the association arranged that Mr. St. Clair should go to Des Moines, and he spent three weeks studying that situation and sent out from Des Moines re-

Secretary-Treasurer's Report

AMERICAN ELECTRIC RAILWAY ASSOCIATION
BALANCE SHEET, SEPT. 30, 1921

Cash	$15,800	
Investments	600	
Furniture and equipment	4,957	
Emblems	556	
Paper	651	
Petty cash at New York	750	
Petty cash at Washington	100	
Accounts receivable	9,979	
Public relations fund		$1,991
Committee on national relations		2,416
U. S. mail pay committee, 1920		*1,174
National committee on public utility conditions		*356
U. S. mail pay fund, 1921		1,162
Notes payable		15,000
Surplus		14,437
	$33,476	$33,476

*Deficit.

INCOME STATEMENT
Eleven Months Ended Sept. 30, 1921

REVENUES

Admission Fees		
Railway companies	$60	
Manufacturing companies	70	
		$130
Annual dues		
Railway companies	127,351	
Manufacturing companies	20,873	
Individuals	2,137	
		150,362
Miscellaneous income		
Interest on deposits	$463	
Interest on investments	31	
Sale of Year Book and Proceedings	82	
Sale of Engineering Manual and binder	322	
Sale of bibliography on valuation	....	
Sale of miscellaneous pamphlets	1,000	
Sale of service at cost	194	
Sale of dinner tickets	6,240	
Contribution from Hotel Men's Association	4,082	
Discount on purchases	149	
Convention dinner, 1921	1,572	14,139
		$164,631
Aera		
Advertising	$15,665	
Subscriptions, railway companies	4,120	
Subscriptions, manufacturing companies	1,353	
Subscriptions, individuals	1,448	
Subscriptions, company section members	1,726	
Paid subscriptions	434	
Sale of extra copies	64	
Sale of binders	76	
		24,899
Total revenues		$189,530

EXPENSES

American Association	$124,331
Engineering Association	4,271
Transportation & Traffic Association	1,109
Accountants Association	873
Claims Association	811
Aera Association	35,705
Total actual expenses	$167,101
Defalcation	73,017
Total expense as shown	$240,118

EXPENSES OF AMERICAN ASSOCIATION
Eleven Months Ended Sept. 30, 1921

Salaries of general office staff	$40,762
Rent of office and storerooms	5,237
Stationery and printing	22,067
Postage	3,045
Office supplies and expenses	1,271
Telephone, telegraph and messenger service	2,590
Express, freight and cartage	156
Traveling expenses of secretary and office staff	762
Expenses of standing committee of American and affiliated associations	148
Printing of association publications:	
A—Advance paper, proceedings, Year Books	2,029
B—Engineering Manual	....
C—Service-at-cost plans	....
D—	....
E—	....
F—Other publications	855
Miscellaneous association expenses	13,474
Expenses of mid-year dinner:	
A—Mid-year dinner expenses	7,060
B—Other mid-year meeting expenses	3,252
Expenses of annual convention (current year):	
A—Exhibit expenses	....
B—Entertainment and other convention committee expenses	20
C—General convention expenses	143
Expenses of annual convention (prior years):	
A—Exhibit expenses	....
B—Entertainment and other convention committee expenses	....
C—General convention expenses	10,004
Written off to profit and loss	....
Sundry adjustments to accounts receivable (uncollectible, etc.)	1,487
Total	$114,369
Salaries and expenses of Washington representatives:	
A—Salaries	5,608
B—Rent	1,414
C—Expenses	2,938
Total	$9,961
	$124,331

EXPENSES OF AFFILIATED ASSOCIATIONS
Eleven Months Ended Sept. 30, 1921

ENGINEERING

Printing of association publications:		
Advance papers, proceedings, Year Book	$3,549	
Engineering Manual	182	$3,731
Expenses of committees		524
Miscellaneous		15
		$4,271

TRANSPORTATION & TRAFFIC

Printing of Association publications:	
Advance papers, proceedings, Year Book	$978
Expenses of committees	95
Mid-year dinner expense	35
	$1,109

ACCOUNTANTS

Printing of association publications:	
Advance papers, proceedings, Year Book	$750
Mid-year meeting expense	123
	$873

CLAIMS

Printing of Association publications:	
Advance papers, proceedings, Year Book	$785
Expense of committees	15
Miscellaneous	10
	$811

SUMMARY OF ESTIMATED INCOME AND EXPENSES FOR YEAR ENDING OCTOBER 31, 1921

Surplus as of Sept. 30, 1921	$14,437
Estimated receipts for October	13,500
Total income for year	$27,937
Estimated expense for October	19,000
Estimated surplus at end of year	$8,937

EXPENSES OF *AERA*
Eleven Months Ended Sept. 30, 1920

Salaries of *Aera* staff	$10,475
Rent of office	678
Telegraph, telephone and messenger service	625
Postage and express, office	152
Traveling expenses of *Aera* staff	1,116
Miscellaneous *Aera* expenses	737
Magazine expenses:	
A—Cost of printing	18,506
B—Cost of paper	1,729
C—Cost of cuts	1,167
D—Mailing charges	449
E—Express, freight and cartage	....
F—Envelopes for mailing	67
Total	$35,705

ports to the various committees of publicity throughout the United States.

As long as the public was under the delusion that whatever happened, irrespective of the cost of operation, irrespective of the fact that platform wages had gone up 100 per cent, that taxes had gone up 40 and 50 per cent, in short, notwithstanding any abnormal increases of operation that might be laid upon a company it had to operate at a nickel, why should it be interested in solving the railway's problems? Street railway men must realize that some day, when conditions justify it, they will not be able to escape the demand for a decrease in the charge for transportation, but before serious consideration can be given to that proposition there must be a substantial liquidation in the cost of labor in the street railway industry.

In view of the community of interests which exists between the car rider and the companies the latter properly can call upon the communities which they serve to support them in a proper and legitimate effort to get this wage scale down to a point which will permit this industry to function.

The speaker then called attention to the activities of the Committee of One Hundred, whose work he considered as absolutely essential to the furtherance of the interests of the association. Yet the committee reports that only 56 per cent of the companies have responded favorably to the appeal of the committee for support. This indicated to the speaker that there must be something radically wrong with the viewpoint of some of the managers.

REPORTS OF EXECUTIVE COMMITTEE AND SECRETARY AND TREASURER

The report of the executive committee was then read. It was ordered filed.

Mr. Welsh then read the reports of the secretary and treasurer. The latter is given in the tables on page 610.

The secretary's report described the activities of the association and the work done at headquarters for the association year. The mid-year dinner and conference, held at Chicago on Feb. 10, 1921, was first mentioned, after which the defalcation which caused the resignation of the former secretary was taken up.

In the emergency which arose in view of the above disclosure, President Philip H. Gadsden gave his undivided attention to the work of the association for a considerable period and, together with the auditor, M. R. Boylan, actively directed the prosecution of the case and otherwise personally investigated the entire conduct of affairs at association headquarters. A number of meetings of the executive committee were held during this period for necessary authorizations in connection with these matters.

A committee on reorganization was authorized to study the association's form of organization, the methods prescribed for carrying on its various activities, a revision of the constitution and by-laws, the efficiency of the headquarters staff in executing the work of the association and to recommend a permanent secretary.

A sub-committee was appointed to redraft the constitution and by-laws, consisting of H. V. Bozell, Harlow C. Clark and the acting secretary. As a result, there will be presented to the convention a revised constitution and by-laws and a series of general recommendations on current matters. The reorganization committee also recommended the appointment of J. W. Welsh as secretary to be effective as of July 1, 1921, and this recommendation was later confirmed by the executive committee.

Attention was called to the work of the affiliated associations, particularly to that carried on by ~~the standing~~ committees of the engineering association. In the Transportation & Traffic Association will be found a series of reports bearing on the vital current problems of economic operation and service to the public.

The most notable activity of the association during the year was the formation of the advertising division of the bureau of information and service, under the direction of Labert St. Clair, who is well known to members of the association. This important work was made possible by the active financial campaign carried on under the auspices of the Committee of One Hundred.

The association has maintained during the year its Washington office under the direction of Charles L. Henry, chairman of the committee on national relations. Mr. Henry has found it necessary to devote considerable time to this work as numerous matters of national legislation have been pending.

The association has taken out membership in the National Safety Council and is co-operating with that organization, through its Transportation & Traffic Association, in the furtherance of safety work.

The association also continues to be a member of the National Industrial Conference Board and has furnished the membership with information relating to general industrial conditions, such as the cost of living, financial and labor statistics, etc., as compiled by that board.

Through its engineering association, the development of engineering standards in a national way is now proceeding under the auspices of the American Engineering Standards Committee. This work is carried on in connection with the principal national engineering societies of other industries, and as both the manufacturers, the consumers and disinterested engineers are represented on all committees, it is believed that the standards so effected will be both practical and acceptable to all concerned.

The association is also a member of the Federal Highway Council, which is considering broad questions of adequate facilities for highway transportation and suitable regulations for highway traffic.

As a result of approval by the executive committee at its Chicago meeting, the committee on mail pay was authorized to solicit the financial assistance of member companies handling mail and to exercise its judgment in the application for increased rate before the Interstate Commerce Commission. Funds have been solicited from member companies, and the report of the committee indicates that progress has been made.

The general publication policy of *Aera* has been maintained this year as heretofore. During the year there were published 108 special and contributed articles and 174 questions with 1,104 answers in the Question Box. The advisability of continuing the magazine was again suggested as a possible means of reducing expenses, but at the request of the president the *Aera* advisory committee submitted a further report on the subject, and as a result the reorganization committee recommended the continuation of the present policy to the executive committee.

One new company section has come into association membership. This is the Camden Section of the Public Service Railway. Special credit is due to Martin Schreiber, who was a most active supporter of this form of association membership.

The association's record for membership is most encouraging, there being a net loss of only two small railway companies. In the case of the manufacturer companies some of the smaller companies whose membership was largely due to the annual exhibit have been withdrawn. The net loss in this case is fourteen, making a total loss of sixteen companies during the year.

Unfortunately, the committee on membership has not been able to carry out the program which it planned after the mid-year conference, due largely to its desire to await the report of the reorganization committee before making an active campaign for membership. That the association has been able to hold its own under these trying circumstances is considered of especial significance and most encouraging for next year's prospects.

As a result of the loss of the association's funds and in response to an appeal from President Gadsden, a very drastic curtailment was made in the operating expenses of the association. Consideration, however, was given to the necessity for maintaining the essential functions of the association's service to its members, and the economies effected are believed to have been accomplished without any material abridgement in this respect. Briefly, these consisted in reducing the association's force, including the publicity department and the Washington office, from thirty-nine to thirty employees; abandonment of additional office space contracted for adjacent to the present quarters, as well as the abandonment of outside storehouse facilities, closer supervision in the use of office materials and supplies, reduction in the postage, telephone and telegraph accounts and the curtailment in the number of circular letters and questionnaires. In addition economies were effected in the publication of *Aera*, largely by a more efficient mechanical set-up.

The work of the bureau of information and service continued to increase even above the phenomenal record made last year. The average number of monthly requests for information was 810, as compared with 545 last year. This made a total of 9,718, as compared with 6,532 in 1920, an increase of 49 per cent.

DISCUSSION ON REVISED CONSTRUCTION

President Gadsden then said that the next order of business was a discussion of the proposed revised constitution and by-laws, and as he desired to enter into the discussion he asked Vice-President Todd to take the chair. At the request of Chairman Todd, Mr. Bozell of the reorganization committee then gave an account of the work of the reorganization committee and explained that the first clause of the constitution permitted members to make changes in the proposed constitution from the floor, this clause to become inoperative after the 1921 convention.

W. H. Sawyer, president East St. Louis & Suburban Railway, explained that during the revision of the constitution he had probably opposed more measures in the revised draft than any other three members of the committee. Nevertheless, he moved that the recommendations of the executive committee be adopted in their entirety. The association, he said, was faced with the necessity of adopting some constitution, and the executive committee had spent much time on this work. While he did not believe that the constitution was as good as it might possibly be made, it was a thoroughly workable constitution, and it permitted changes to be made in it without great difficulty. He believed it would simplify matters at the present meeting to adopt the constitution as drafted as many parts were correlated and it might be difficult to change one without affecting other parts.

A general discussion then followed as to the method of procedure to be followed and the plan was finally adopted that it would be acted upon clause by clause.

The most extended discussion related to whether carriers other than electric railway companies and electrified sections of steam roads should be admitted to membership. The argument in favor of this plan was principally that many railway companies were now considering the use of buses for auxiliary and supplemental service, and the admission of bus companies into membership would allow the association more fully to study the situation and bring to the membership at large all the information and experience available in this form of transit. The principal argument against the admission of such companies was that a wrong impression would be produced by the action, people thinking that the railway companies had lost faith in the value of the trolley car for urban and interurban service and were planning to abandon it in favor of the bus.

One speaker, arguing in favor of the second view, said that a bus manufacturer had recently sent out a circular descriptive of his bus and included the statement that "eminent authorities had agreed that electric railways had been relegated to the past." He thought that the proposed action by the association would confirm this impression. At the same time there was general agreement that the bus would be used by electric railway companies to a considerable extent in auxiliary and supplementary service and several speakers have declared that there are already plans for such use.

The decision finally reached was that such companies would not be eligible to membership, the point being brought out that this clause could be changed at any time in the future when a change seemed desirable.

Following the discussion on buses, the next point which was raised in modifying the proposed constitution was to eliminate the provision that an executive committee member could be represented by proxy and also the next provision that an executive committee member would automatically lose his office if absent for three consecutive meetings.

With these changes and with one or two slight corrections in wording the entire constitution and by-laws as revised were adopted.

The association also approved the recommendations of the reorganization committee as to certain questions of policy or practice. These were outlined in the ELECTRIC RAILWAY JOURNAL, July 16, page 105. In the same place and in the issue of Aug. 13, page 249, are outlined all the changes in the constitution which were considered, so that with the report above and these previous two reports a complete picture of the new constitution is had.

At this point President Gadsden announced certain committee appointments. As a substitute for P. S. Arkwright, Atlanta, Georgia, who was not present at the convention, Charles H. Harvey, Knoxville, Tenn., was appointed on the nominating committee. The committee on resolutions was named as follows: P. N. Jones, Pittsburgh, chairman; E. B. Wisner, St. Louis, Mo.; H. V. Bozell, New York; H. H. Aiken, Philadelphia, and B. J. Fallon, Chicago. The appointments on the committee on recommendations in the president's address were as follows: Edward Dana, Boston, chairman; G. W. Jones, Brooklyn, and Harlow C. Clark, Newark, N. J.

Following this the report of the *Aera* advisory committee was read by Charles L. Henry, chairman, and is abstracted herewith. The reaching of other committee reports scheduled for this session was dispensed with because of lack of time. This disposition included the reports of committees on membership, company sections.

AERA ADVISORY REPORT

The committee has found the year now closing a very busy one. Early in the year the apparent necessity for a reduction of expenses was brought before the committee by the president of the association with a request that so far as practicable, without injury to the magazine, the expenses of this publication be cut down. With a view to doing this various economies were instituted, resulting in a saving of approximately $700 per month. The necessity for an acute retrenchment referred to having passed, the convention number of *Aera* has resumed its former completeness.

After the executive committee had appointed what was afterward known as a reorganization committee, with a view to making recommendations regarding any changes in the management of the affairs of the association, this committee was asked to report to the reorganization committee its views regarding the publication of *Aera*. In compliance with that request, this committee made a full report to the reorganization committee concerning the publication of the magazine, of which the following quotation is a complete summary:

"We would make *Aera* a bigger and better magazine in every respect than it has ever been, understanding, of course, that this cannot be done between sun and sun, but must be done day by day, week by week and month by month."

Notice was taken of various suggestions made in different ways and at different times and by various persons concerning certain features of the publication of the magazine, none of which the committee deemed necessary to put in its report. The report was presented to the reorganization committee, which accepted the report as presented.

Notwithstanding the general business depression, the volume of advertising in the October issue of the magazine is the greatest it has ever had. The committee looks forward to the carrying out of the wish expressed in its report, and that with the help of all concerned this association will have a better and greater magazine. The report is signed by Charles L. Henry, chairman; Myles B. Lambert, Edwin C. Faber, Martin Schreiber, Charles C. Peirce, R. E. McDougall, A. M. Robinson and I. A. May.

SERVICE-AT-COST FRANCHISES

After the completion of the reading of this report Edward Dana presented a paper on "Contrasted Advantages of Service-at-Cost Contract Franchise and State Regulation," which was followed by formal discussion by Robert I. Todd and S. B. Way. These are published elsewhere in this issue.

In the discussion Walter Jackson reviewed the principal features of two new contracts entered into during the past year in Paris. The first of these involved the purchase and consolidation of seven or eight systems purchased by the Department of the Seine, giving public ownership, but turning the operation over to a private managing association. The credit of the companies was so bad that money needed for improvements was to be raised by the state. The state was also to assume any deficit from operation. The Department of the Seine exercises a most minute control of all the details to insure adequate service and proper expenditure of funds. Incentive to the management was provided in the form of a percentage of any savings effected not resulting from a lowering in the standard of service or the number of passengers carried. No such saving has been shared to date.

The other franchise referred to covered the underground railways, and this provided that the operating company should receive so much per passenger carried, thus providing a direct reward for the usefulness of the railway.

In this case also the state would make up any deficit and a reward to the management for making any saving in operation was provided, though none as yet has been shared. In this case the employees derive about 4 per cent of the earnings, which is divided so that the trainmen get twice as large a proportion as the employees not in contact with the public.

The meeting was then adjourned.

Wednesday's Session

The second session of the American Association was called to order, with President Gadsden in the chair, at 9:40 Wednesday morning. The first order of business was the report of the mail pay committee, which is published in abstract below:

MAIL PAY

Early in the year the committee requested and received from the executive committee authority to proceed with a new application to the Interstate Commerce Commission for further adjustments in the rates paid electric railways for handling United States mail. Preparations to this end were made and W. H. Maltbie of Baltimore was engaged as counsel.

Shortly after the new Postmaster-General was appointed we got in touch with Second Assistant Postmaster-General Shaughnessy and were assured of the co-operation of the department in preparing our case, to the end that if we could prove our rates were not justly compensatory, the matter could be submitted to the Interstate Commerce Commission for a decision. The department has agreed to co-operate with the committee in obtaining information by means of a joint data sheet and the submission to the commission of agreed facts, which should prevent the necessity for long hearings or the need of sending a committee around the country to take evidence.

We have submitted a proposed data sheet to the Post Office Department, and after going over it it in turn submitted to us a number of forms calling for the information it felt was necessary.

At the present time we have up with the department the welding of these suggestions into a joint data sheet, and as soon as agreed upon it will be sent out with a request for prompt attention on the part of electric railway companies.

The committee in presenting the previous case to the Interstate Commission requested, first, that electric railway mail carriers be relieved of side and terminal service and, second, that the actual carriage of the mail be compensated for on a count basis. The Post Office Department, on the other hand, requested the commission to place compensation upon a weight basis, to be determined by periodic weighings.

ROBERT I. TODD
Newly Elected President

The commission in its final decision relieved the roads of side and terminal service or, in cases where this was not entirely practicable, provided compensation therefor, although at a rate not entirely satisfactory to the committee, but rejected both the request of the committee for a count basis and the request of the Post Office Department for a weight basis and adjusted the compensation for electric railway mail carrying on a space basis, using 30 cu.ft. as a unit space excepting in independent cars, R. P. O. cars and R. P. O. apartments, in which the linear car-foot was adopted as the unit.

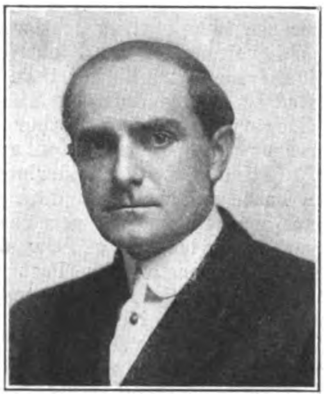
The committee has made no effort either in the evidence or on brief to present an independent study of the cost of rendering the service, both in view of the complexity of the problem and the very great difficulty, if not impossibility, of securing such data as would make an accurate cost determination possible. In lieu of such a determination we assumed as reasonable the prior rate at the time when it was first promulgated by the Post Office Department, and then pointed out both the increase in operating cost and the increased volume of mail carried as fully justifying rates higher than those requested by the committee. The Post Office Department, on the other hand, did present to the commission a brief study of the cost of rendering this service based upon certain data as to average operating costs per car-mile and average car length, resulting finally in the conclusion of the Post Office Department that the average cost per linear car-foot-mile, including all operating expenses and a return on property invested, was 7.66 mills.

This study, corrected at certain points where the commission considered the figures too low and translated from linear car-foot-miles into cubic foot-miles, formed the basis of the commission's final determination of costs.

Inasmuch as the theory of the Post Office Department, apparently accepted by the commission, fixed as fair compensation per linear car-foot-mile the cost of producing the linear car-foot-mile, it is equivalent to the assumption that all linear car-foot-miles produced are marketed, since otherwise compensation should be determined by distributing the cost of production over the portion of the product finally marketed. The committee has therefore been engaged in the collection of data on the subject of the ratio of passenger-miles to seat-miles and believes that it will be possible to establish before the Interstate Commerce Commission the fact that at the maximum the number of seat-miles marketed for the industry as a whole does not exceed 50 per cent of the seat-miles produced, or, in other words, that if pouch mail is to be treated as taking the place of passengers and paying upon the same scale as the passengers the price for linear car-foot-miles used should be at least double the cost of producing a linear car-foot-mile. This, and the increase of operating costs since the collection of the data submitted to the commission in the previous case, constitute the major points upon which the new case is to be based.

The committee has recently asked for definite authority from the individual electric railway companies, so that we can go before the commission as representing the industry specifically as well as at large. During the winter, a request was made upon companies handling mail to underwrite the expenses of the new case to the extent of 4 per cent of their mail revenue. The response to this request was not particularly encouraging. However, sufficient funds were guaranteed to enable the committee to go ahead with its work, and we anticipate that the total cost of our case will be met by contributions from those companies which have agreed to contribute, plus such aid as the association itself can extend.

Perhaps it is unnecessary to say that if, as a result of our further studies and investigations, we had not felt that



BRITTON I. BUDD
First Vice-President

there was a reasonable possibility of proving our right to an increase, the case would not have been reopened. The report was signed by L. H. Palmer, chairman; Gordon Campbell, Charles L. Henry, G. K. Jeffries, R. A. Leussler, Samuel Riddle, W. S. Rodger and C. L. S. Tingley.

The report of the publicity committee was next presented by Barron G. Collier, chairman.

PUBLICITY

The work of this committee during the past year consisted largely in organizing and directing the work of the advertising section of the division of information and service, created Jan. 1, 1921, by the Committee of One Hundred. The work of this section has been in the immediate charge of Labert St. Clair, a former newspaper and advertising man of wide experience, who handled the publicity of the Federal Electric Railways Commission hearings at Washington.

The broad general functions of the advertising section as determined upon at the outset were these:

To offer free suggestion, advice and counsel to all electric railway companies on their advertising and publicity problems.

To prepare and distribute to local companies car cards, leaflets, booklets, newspaper advertisements and other advertising material. (This material is so prepared that it may be altered to meet any local situation.)

To prepare varied series of bulletins on the electric railway situation for the use of speakers before chambers of commerce, rotary clubs and similar organizations; for distribution by bond houses, investment bankers and other institutions engaged in the sale of electric railway securities, and for utility managers to use as a means of promoting good will.

To issue press statements, news stories, speeches and articles of interest regarding the industry to the daily press, magazines and other publications.

To co-operate with state and national public utility information committees.

To act as a general clearing house between electric railway companies for the distribution of all advertising and publicity material which will be of mutual aid.

To make engagements for widely known speakers before national conventions and other large gatherings for the discussion of electric railway problems, and to co-operate with these speakers in seeing that they obtain facts upon which to base their addresses and that their remarks receive proper distribution.

To study the motion picture field in an effort to see what can be done to adapt it to use as an electric railway advertising medium.

During the first month of the section's life it was somewhat hampered by lack of funds, but this obstacle has now been overcome.

The section has been frank in its dealings with the press and has emphasized its desire to be of service to newspapers and periodicals. Whenever news of the industry arises a new story or statement is prepared in a form likely to meet the needs of the press associations and it is distributed by the director of the section. The committee reported a number of examples of important news stories prepared and handled by the section.

C. D. EMMONS
Second Vice-President

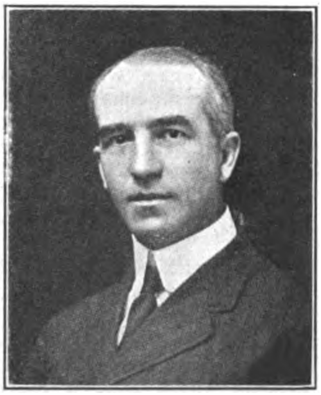
A noteworthy feature of the year's work was the inauguration of "Electric Railway Day." This was successful despite the fact that less than four weeks' notice of the proposed celebration, on May 4, was given the companies. It is hoped that this day, the anniversary of the inauguration of electric railway service in Richmond thirty-three years ago, may be the occasion of an annual celebration, locally if not nationally.

The section has also distributed, under the committee's direction, a large number of leaflets, suggested window signs, newspaper advertisements, and other forms of advertising. An advertising textbook entitled "Getting the Public Eye and Ear" was also prepared and distributed. Numerous other items of activity were listed in the report.

In conclusion, the continuation of the work of the advertising section was urged, special stress being laid on the financial needs of the industry. Co-operation was urged with state committees and local companies in an effort to get more public speakers to put the industry's message before the peo-

BARRON G. COLLIER
Treasurer

PAUL SHOUP
Operating Member-at-Large



P. S. ARKWRIGHT
Operating Member-at-Large

H. E. CHUBBUCK
Operating Member-at-Large

J. N. SHANNAHAN
Third Vice-President

ple and with the companies and the company section committee in preparing material for the education of employees.

The report was signed by Barron Collier, chairman; C. B. Buchanan, Britton I. Budd, W. A. Draper, C. D. Emmons, S. W. Huff, Horace Lowry and Lucius S. Storrs.

NOMINATIONS AND ELECTION

Following the receipt of this report, the nominating committee made its report through its chairman, John H. Pardee. The committee prefaced its actual nominations with a statement acknowledging the receipt of most useful suggestions from some of the members with reference to desirable candidates for office. The committee recommended that in future years, when the newly adopted provisions for the nominating committee are operating, all members should help the committee by making constructive suggestions, as is the intention.

The committee then presented the following nominations for office:

President: Robert I. Todd, president Indianapolis Street Railway and the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

First vice-president: Britton I. Budd, president Chicago elevated railways, president Chicago, North Shore & Milwaukee Railroad and president the Chicago Interurban Traction Company, Chicago, Ill.

Second vice-president: C. D. Emmons, president United Railways & Electric Company, Baltimore, Md.

Third vice-president: J. N. Shannahan, president Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

Fourth vice-president: Frank R. Coates, president Community Traction Company, Toledo, Ohio.

Treasurer: Barron G. Collier, president Barron G. Collier, Inc., New York, N. Y.

Operating Members-at-Large: Terms to expire in 1922—Paul Shoup, president Pacific Electric Railway, San Francisco, Cal.; P. S. Arkwright, president Georgia Railway & Power Company, Atlanta, Georgia.

Terms to expire in 1923—H. G. Bradlee, president Stone & Webster Management Corporation, Boston, Mass.; H. E. Chubbuck, vice-president executive Illinois Traction System, Peoria, Ill.

Terms to expire in 1924—R. P. Stevens, president Republic Railway & Light Company, New York, N. Y.; W. H. Sawyer, president East St. Louis & Suburban Railway, East St. Louis, Ill.

Manufacturer Members-at-Large: Terms to expire in 1922—George H. Tontrup, president National Safety Car & Equipment Company, St. Louis, Mo.; Thomas Finigan, vice-president American Brake Shoe & Foundry Company, Chicago, Ill.

Terms to expire in 1923—Samuel M. Curwen, president the J. G. Brill Company, Philadelphia, Pa.; L. E. Gould, president Economy Electric Devices Company, Chicago, Ill.

Terms to expire in 1924—John G. Barry, manager railway department, General Electric Company, Schenectady, N. Y.; Charles R. Ellicott, eastern manager Westinghouse Traction Brake Company, New York, N. Y.

There were no other nominations and the meeting, by a unanimous vote, elected the above named nominees to office.

F. R. COATES
Fourth Vice-President

PAPERS ON FINANCE

There were three papers on electric railway finance by H. M. Addinsell, Harris, Forbes & Company, New York; F. E. Frothingham, Coffin & Burr, Boston, and J. K. Newman of Isidore Newman & Sons, New Orleans. Each of them approached the solution of the existing situation from a different angle, but all emphasized many of the same points. Abstracts of these papers are found elsewhere in this issue.

The paper on the comparative position of the traction industry today and four years ago by Edwin Gruhl, New York, who was unable to be present, was abstracted by Harlow C. Clark, Public Service Railway, New Jersey. This paper is given in abstract elsewhere in this issue.

RELATION OF MANUFACTURERS

E. F. Wickwire, Ohio Brass Company, presented a discussion on how the manufacturers of electric railway material could help the industry build up public opinion and incidentally its credit. An abstract of his remarks is published on another page. S. M. Curwen, the J. G.

W. H. SAWYER
Operating Member-at-Large

R. P. STEVENS
Operating Member-at-Large

GEORGE H. TONTRUP
Manufacturer Member-at-Large

THOMAS FINIGAN
Manufacturer Member-at-Large

Brill Company, also furnished a prepared discussion, which in his absence was read by Secretary Welsh.

Olin W. Hill, street railway expert of the Babson Statistical Organization, presented the paper on "Street Railways as an Investment" in the absence of Roger W. Babson. This paper in abstract will be found elsewhere in this issue.

TRACKLESS TRANSPORTATION

In reporting for the trackless transportation committee, H. B. Flowers, Baltimore, chairman, said that the committee had held three well-attended meetings during the year and had evidenced a keen appreciation of the importance of making a report, but was unable to do more at this time than to make a progress report. It was impossible to agree on any report which the committee was willing to sponsor, hence no report was prepared. Mr. Flowers made this comment particularly to correct an impression which he said had been current that the committee had prepared a report which had been suppressed. This was not the case. He recommended that a similar committee be appointed for the ensuing year and that it endeavor seriously to determine where the trackless trolley may be effectively and profitably used.

W. J. Harvie, chairman of the Committee on Electrolysis, then presented the report of this committee.

ELECTROLYSIS

After the publication of its last report, in 1916, the American Committee on Electrolysis was delayed in its activities during the war period, and early in the year 1919 the committee resumed its active work. The most active of the sub-committees has been the one on research, the work of the other sub-committees being in a considerable degree dependent upon the findings of this committee.

After the research sub-committee undertook to work in co-operation with the Bureau of Standards an important question of policy arose. Members of the research sub-committee, and especially the representatives of the American Electric Railway Association, considered that reports upon the conditions prevailing in particular localities should be limited to statements of fact without any expression of opinion as to what should be done to correct conditions. The members of the research sub-committee were of the opinion that there still existed considerable difference of opinion as to methods for mitigating electrolysis troubles and that until the committee had been able to agree upon the principles involved it was premature and unwise to express an opinion with reference to any particular locality. Furthermore, it was considered that in the absence of an agreement as to the engineering principles involved it would be unfair to the local utilities to express an opinion that might cause controversies or even litigation between such utilities. This policy has been strictly followed by the research sub-committee, working in conjunction with the Bureau of Standards in the course of its many investigations in the different cities throughout the United States.

Within the past two years the research sub-committee has conducted active field investigations in Memphis, St. Louis, East St. Louis, Kansas City, Denver and Cleveland. This sub-committee has devoted its attention particularly to the question of pipe joint electrolysis, for the reason that the efficacy of pipe drainage was very largely dependent upon the seriousness of joint electrolysis. Electrical surveys were made in all of the above cities for the purpose of determining the location of pipe joints of high resistance. Excavations to uncover these joints were made and the joints, together with the pipe for some distance on either side of the joint, thoroughly sand-blasted and a very careful examination made. All of the data so obtained were carefully recorded and in many cases include photographs. The committee arrived at the conclusion that joint corrosion does not take place where both sides of the joint are negative or neutral to the surrounding earth. The sub-committee was unable to agree as to the seriousness of joint corrosion. It is, however, the opinion of the representatives of the American Electric Railway Association on this sub-committee that the seriousness of joint electrolysis has been overestimated and that it does not constitute a serious objection to the use of pipe drainage. It has been the policy of the American Committee on Electrolysis and of its sub-committees to arrive at definite conclusions only by the unanimous consent of the different interests represented. There is naturally a difference of opinion with reference to the electrical drainage of underground structures as a mitigative measure.

It has not yet been decided whether or not the American Committee on Electrolysis will be continued in its present form. There is unquestionably a large amount of work to be done before the principles underlying the prevention of electrolysis can be finally formulated. It has been proposed to discontinue the main committee and to carry on the work through what is now the research sub-committee. In the report of this sub-committee, which is incorporated in the report of the main committee, there is included a program (as noted at the end of this report) of future investigations to be made by the research sub-committee in co-operation with the Bureau of Standards. Whether or not this program can be carried out depends upon the financial support that may be given to the committee by the various member associations.

The committee on electrolysis calls particular attention to the report of the American Committee on Electrolysis, which is now being printed and which will be ready for distribution in the near future. This report, although by no means final and complete, nevertheless represents an important contribution to the art. It merits the careful study of all electric railway engineers. The representa-

S. M. CURWEN
Manufacturer Member-at-Large

L. E. GOULD
Manufacturer Member-at-Large

JOHN G. BARRY
Manufacturer Member-at-Large

C. R. ELLICOTT
Manufacturer Member-at-Large

tives of this association, realizing the importance of the work of this committee, have taken an active part in all its deliberations, in the field work of the research sub-committee and in the preparation of the report.

Following is the program of future work recommended by the research sub-committee of the American committee.

1. Development of practical means for measuring current density across contact surfaces of pipes and earth. Such measurements are especially necessary if structures are not kept negative to earth.

2. Development of working means for determining the polarity of structures and adjacent earth in such a way as to eliminate galvanic effects.

3. Study of effect on underground structures of different values of voltage drop in the track and the effect on stray current from rails, including supposed large variation of this relation under different conditions.

4. Cost studies of street railway systems and different methods of power supply to determine the minimum values of track voltage drop consistent with economic operation.

5. Quantitative effect on insulating joints in protecting pipes and cables, assuming railway stray current at economic minimum.

6. Investigation of the distribution of current from pipe to adjacent earth for the purpose of determining whether a diversity factor can be established, *i.e.*, the relation between maximum and average current density.

7. Detailed study of the application and maintenance of such a drainage system as will keep all underground structures negative to earth, including study of the importance of corrosion of railway structures.

8. Comparison of (5) and (7).

9. Continuing study of joint corrosion.

10. Study of soil and galvanic corrosion, with particular reference to its bearing on the problem of corrosion by stray currents.

11. Setting limit of current on gas and oil pipes to avoid fire and explosion hazard.

12. Setting limit of current on power cables to avoid overheating.

The meeting then adjourned.

Thursday's Session

The first matter taken up at the meeting of the American Association Thursday morning was the report on national relations, which was read by Charles L. Henry, chairman. An abstract of this report follows:

NATIONAL RELATIONS

Soon after the last annual convention representatives of various railway brotherhoods presented to the United States Railroad Labor Board, then recently organized, applications involving some twenty or twenty-five electric railway companies of the country, seeking to have the Railroad Labor Board take jurisdiction of complaints concerning labor matters against the electric railway companies. The questions involved were of interest to all electric railway companies, and this committee immediately took up the matter with the United States Railroad Labor Board, calling in question the jurisdiction of the Labor Board to determine labor complaints against electric railway companies "not operating as a part of a general steam railroad system of transportation," and asked that preliminary to a consideration of any such cases those companies be given an opportunity to present to the Labor Board the question of jurisdiction.

The Labor Board granted this request, and for three days a very extended oral argument of this question of jurisdiction was had before the board in the city of Chicago. At this argument this committee appeared for all the electric railway companies of the country and a number of the companies also appeared personally for themselves. At the close of the argument our committee asked for, and was granted, leave to file a printed brief with the Labor Board on the matters involved and a few days later presented to the board its printed brief, copies of which were sent to all member companies of this association. Very much to the gratification of the committee, the Labor Board decided the question of jurisdiction adversely, holding that the exempting clauses in the transportation act of 1920 excluded from its jurisdiction all electric railway companies "not operating as a part of a general steam railroad system of transportation."

A renewed attempt, very vigorously pressed, was made to have Congress authorize the coinage of a Roosevelt memorial coin, coins of ½-cent, 2-cent, or 2½-cent denominations being suggested. As many electric railway companies had adopted what are known as recording fareboxes, which would, by the adoption of either one of the proposed new coins, require rebuilding so as to accommodate the new coins, the question presented was one of very great financial interest to those companies. It was found that the expense of thus rebuilding these recording fareboxes would involve an expense to the companies using them of between $400,000 and $500,000, and it was also feared that the rebuilding of the fareboxes to accommodate the additional coins would slow them down so as to render them practically useless on some railways where travel was very heavy. At a hearing held by the committee on coinage, weights and measures of the House of Representatives this committee appeared and, at the request of the chairman of the coinage committee, took charge of the opposition to the bill. The committee secured the co-operation of a large number of bankers against the coinage proposed. Mr. Brandt, president of the Brandt Manufacturing Company, which manufactures coin counters especially for the use of banks and similar institutions, and Mr. Johnson, president of the Johnson Farebox Company, both responded to the request of this committee to assist in the hearing. Since the hearing referred to no action has been taken in either of the houses of Congress on the coinage bills and the committee does not believe there is any danger of the enactment of the proposed legislation.

Many questions growing out of the provisions of the transportation act of 1920 have called for the attention of the committee before the Interstate Commerce Commission, and it has frequently appeared before the commission concerning such matters. The commission, however, has moved very slowly on all questions relating to the status of electric railway companies under the various provisions of the transportation act of 1920 and thus far has not promulgated any definite rulings of a general character concerning same:

In the case of the Petaluma & Santa Rosa Railroad this committee assisted the company in presenting its case to the Interstate Commerce Commission, which was decided by the commission on the specific facts concerning that company in the operation of its electric railway. After the decision was rendered the committee wrote to Commissioner Meyer of the Interstate Commerce Commission, who was chairman of the section having the question under consideration, that as a committee it would take no further action in the case. Two paragraphs from the letter to Commissioner Meyer follow:

> It has always been the contention of this association before your honorable body that the transportation act was remedial rather than regulatory in character and must be construed accordingly. It has also been our contention that in order to effect the purposes of the act the conditions of the carriers under it must be considered in each case, and particularly so with reference to inclusion or exclusion in or from section 15s. It is very apparent to us, and must be to you, that many electric roads would be seriously injured by being included in this section, while, on the other hand, there are undoubtedly electric roads the character or business of which not only logically brings them within the provision of this section but practically demands such inclusion.
>
> I wish to state in closing that the association will, of course, at all times, aid its members in properly getting their cases before your commission and in getting to your commission such information as you may desire.

The legislative questions involved by Senate bill 1874, a proposed amendment of the Clayton act and the interstate commerce act as well, has been delegated to a sub-committee composed of A. W. Brady, C. D. Cass and C. W. Kellogg (representing H. G. Bradlee of the committee). No legislative action has been taken on this bill, but the sub-committee is giving attention to it with a view that, if finally passed, it shall be in such form as not to injure our companies.

The transportation act of 1920 has raised many questions involving various companies of the association, many of which have been disposed of by correspondence.

Just recently a question has been raised with the Public Utilities Commission of the District of Columbia by the Washington Railway & Electric Company insisting that that commission does not have jurisdiction over it regarding depreciation charges and accounts, but that, being an interstate carrier, it is, in such matters, subject only to the jurisdiction of the Interstate Commerce Commission, under the provisions of sub-section (5) of section 20 of the interstate commerce act, as amended by the transportation act of 1920 and has asked the co-operation of this committee in presenting the questions involved.

The determination of this question of jurisdiction is likely to prove a matter of great importance to many of our railway companies. As now pending, it is somewhat local in character, but similar questions may arise, involving other companies, concerning the jurisdiction between state public service commissions and the Interstate Commerce Commission. The committee, therefore, feels that it should carefully look into all the questions involved and, after so doing, determine what should be its attitude concerning the same.

At the request of government officials connected with the work, this committee lent its aid in securing a proper appropriation to enable the Bureau of Standards to prosecute its field work on the subject of electrolysis, our association being represented on the joint committee acting with the Bureau of Standards in the investigation of this subject.

The Washington office of the association, at 949 Munsey Building, has been under the management of the chairman of the committee. Paul W. McGovern has had immediate charge of the office, and has, in the absence of the chairman of this committee, transacted for the association a large amount of business. A résumé of the matters is then contained in the report, which was signed by Charles L. Henry, chairman, and Arthur W. Brady, Henry G. Bradlee, Britton I. Budd, Lucius S. Storrs, Edwin C. Faber, C. L. S. Tingley, C. D. Cass and W. S. Rodger.

The report on valuation was presented by Martin Schreiber, chairman. In conclusion Mr. Schreiber said that a large number of letters commenting on this report had been received and that most of these were complimentary. In a few cases some criticisms were raised, but when further explanation was made by the committee these objections were withdrawn. The report was approved as presented.

VALUATION

The committee during the year devoted its time to the two questions recommended for consideration at the last annual meeting, namely, "rate of return" and "economical procedure for appraisals."

Under rate of return the committee presented a general economic analysis to prove that a "fair return" must be allowed or guaranteed This "fair return" is not determinable in advance, but is a function of the variable conditions in each case.

In approaching the general question of the rate of return which should be allowed to a public utility the committee discussed the factors affecting the flow of capital into any given line of business. It pointed out the fluctuations of capital flow as dependent on production, competition and profits. The committee pointed out then that, left to itself, business is regulated not so much by competition for customers as it is by competition for capital. If prices are excessive in comparison with cost, capital flows in and lowers them; if prices are low in comparison with cost, capital refuses to flow in and even flows out until the shortage of production brings about an increase in price.

The committee then proceeded to discuss the control of monopolies, shawing that there is a dual standard for controlling monopolies, some being controlled by economic laws alone, while "public utilities operating under economic law, are put also under the direction and control of public utility commissions, which fix maximum rates for the product which these utilities offer for sale."

The committee then argued that there is no justification for the "exceptional treatment of public utilities," but concludes: "The committee would offer no protest against the regulation of the public utility. It is pointing out merely that the attempt to confine regulation of price to public utilities as a class has neither a historical nor a logical foundation."

A commission may desire to allow a satisfactory return, but its mere allowance of a return which it deems sufficient may not attract capital. The investor's mind determines whether his money goes in or not, and the practical fact is that the community which offers reward below the standard of the owners of fluid capital will not continue to receive adequate public utility service. The committee then pointed out that a rate fixed below the standard set by the investing community naturally leads to overbonding on the part of the utility; this merely aggravates the stock-issuing difficulties and tightens up the financial situation.

The committee then analyzed the views of the common stockholder and shows what he must have, indicating the change in stock quotations in recent years due to the low rate of return realized.

In its conclusions the committee covered these same points in different language. It then makes perfectly clear that it did not desire this report to be considered as opposing regulation, *per se.*, but merely an attempt to point out the dangers confronting the industry and the civic communities served by the industry if the rate of return is not adequate; in other words, if the rate of return is not such that new and additional capital from new investors will readily flow into the industry.

Finally, the committee said: "By the phrase 'adequate rate of return' we mean a rate of return such as will encourage a reasonable inflow of new capital from new investors. If the rate of return allowed does not do this, it is unquestionably inadequate, and the communities served will suffer all out of proportion to any possible minor gain through temporary lower rate of fare, for over a period of years the industry can better serve any community, at a lower rate of fare, if given adequate money for improvements."

Under the heading "Economical Procedure for Appraisals" the committee showed how past detailed methods of valuation entail the expenditure of considerable time and money. It pointed out that the accuracy of these detailed methods is probably no greater than some more general method which would consider types of construction with minor variations as basis for making large units to price. In other words, if railways with good property records will get together with the authorities it should be possible to determine upon a certain number of "yardsticks" corresponding to the various classes of property shown on the company records, and these company records can be made the basis of the valuation, any objection to their use on the part of any interested parties being made by affording to these interested parties full opportunity for such check inspection of the property as will determine the accuracy and adequacy of the records in question.

The committee then proceeded to show what is meant by this, listing the following types: (a) Types of track, (b) types of overhead construction, (c) types of equipment, (d) types of buildings reduced to cubage, (e) types of bridge and culvert construction, (f) type of pavement and foundation, and other similar types.

The committee recognized a certain amount of error, but says this would be no greater than that accompanying present methods. To show that this plan has not been confined merely to theoretical discussion, it pointed to the determination of the cost of reproduction new of the physical property of the Connecticut Company used and useful for the public service, substantially along these lines. (See ELECTRIC RAILWAY JOURNAL, May 21, page 947 and May 28, page 985.) The committee concludes that the progress of the art is such that in all future appraisals member companies shall attempt to secure:

1. Series of conferences between all of the parties interested in the appraisal to the end that there shall be an agreement as to the methods to be followed in the making of the inventory and in pricing.
2. That this agreement should cover the adoption of a minimum number of "yardsticks" or types to the end that the inventory may be rendered as simple as is consistent with equity to both parties.
3. That the prices of these "yardsticks" should, so far as possible, be fixed by agreement between the interested parties, falling back upon detailed study of construction only in those cases where agreement proves impossible or records incomplete.
4. That, wherever possible, overheads and intangible value shall be determined in like manner by agreement, resting upon the records of other appraisals which have met with the approval of regulatory bodies and the courts, modified, in those cases where such modification is demanded, by local conditions and the experience of the conferees.

The committee recommended that the next year's committee continue the detailed study of the above recommendations upon economical procedure for appraisals. The report is signed by Martin Schreiber, chairman; C. W. Gillespie, W. H. Sawyer, Williston Fish, J. H. Hanna, H. C. Anderson, Cecil F. Elmes and W. H. Maltbie.

SAFETY-CAR OPERATION

The report of the committee on safety car operation was next presented by R. P. Stevens, chairman. The following is an abstract.

The committee feels that its inquiry should be limited to safety car operation as a matter of general company policy. It has considered the subject from the viewpoint of public opinion, legislation, commission regulation and labor relations. The committee suggests the uniform use of the term "safety car" to designate all types of car operated by one man and equipped with adequate safety devices. Cars of older types rebuilt for one-man operation but lacking adequate safety devices cannot properly be described as safety cars.

In August, 1921, there were 5,500 one-man cars in operation in the United States. Of this number 4,300 were standard safety cars and 1,200 were converted former two-man cars.

This number of safety cars and safety devices on the former two-man cars, as well as the double tracking, turnouts and carhouse facilities incident to operating this equipment, represent an investment by the electric railway companies of about $50,000,000.

Not a single negative reply was included in the 122 answers received to the question of the one-man safety car being satisfactory to the public as to both quality and safety of service, although four were doubtful. Furthermore, as to opposition by public bodies, either city or state, to one-man safety car operation there were at the date of this report but two such cases pending in the whole country.

As regards safety of operation, experience has shown that on the basis of carefully kept accident records the one-man safety car, equipped with the standard safety devices, shows fewer accidents, and a lower cost of settling accidents, per 1,000 car-miles than the average two-man cars. The following figures show the result of experience in 1920 with one-man safety cars by seventeen companies carrying 246,642,000 passengers in eleven different states:

The success of one-man safety cars in improving the accident situation is particularly striking when viewed in connection with the rapid growth in vehicular street traffic during the last few years while the one-man safety cars were being introduced. The total number of automobiles in the United States has grown from 2,424,000 in 1916 to 7,904,000 in 1920, an increase in four years of 226 per cent.

	Type of Car		
	One-Man	Two-Man	Total
Total car-miles operated	19,727,000	17,406,000	37,133,000
Total passengers carried	113,777,000	132,865,000	246,642,000
Total accidents	7,282	9,406	16,688
Accidents per car, 10,000 miles	3.69	5.40	
Total cost accidents	$291,620	$279,920	
Average cost per 1,000 car-miles	$14.77	$16.06	
Decrease in accidents per 10,000 car-miles			31.7 per cent
Decrease in accidents per 100,000 passengers carried			9.6 per cent
Decrease in accidents cost per 1,000 car-miles			8.03 per cent

One-man operation has also proved satisfactory from the operator's point of view. As one-man car operation was inaugurated by introducing only a few cars at a time, the normal labor turnover prevented any man from losing his job, and the trainmen like the job, not only because it pays more money but because the work is more interesting. A great deal also has been done to facilitate the performance of the operator's duties, such as the use of registering fare boxes, air-operated transfer registers, simplification of reports, sale of metal "tokens" or tickets off the cars, and turning in of transfers only twice daily.

Where the principle of one-man operation has been applied to large double-truck cars, with the installation of adequate safety devices, the car is fully as safe and satisfactory as the small, light-weight safety car. Experience shows that the large double-truck, one-man car has fewer accidents from collisions than the light safety car, because, with its greater weight, the operator does not feel like taking chances with it, nor do the drivers of motor vehicles have the contempt for its size that they do for the smaller vehicle. All but two of the fifty-four replies received on that subject state that double-truck cars can be run by one man with the same degree of safety as by two men.

As the rate of fare paid by the public must be sufficient to cover the cost of furnishing a street car ride, the public benefits from one-man operation because the labor cost is reduced. The employee benefits because he is able to earn a higher rate of pay with one-man operation.

There are now no laws on the statute book of any state prohibiting the oper-

The Banquet at the Ambassador Hotel

THE ASSOCIATION THIS YEAR REVIVED THE PRACTICE OF HOLDING A BANQUET AT ITS ANNUAL CONVENTIONS ation of street cars with one man. Bills proposing to prohibit one-man operation have been defeated by the legislatures of eleven states. Fifteen state public service commissions have approved one-man car operation. Numberless cases of city action with regard to one-man car operation are on record. Perhaps the most striking is the case of Detroit. In this city in 1916 (before the advantages of one-man operation with the safety car were generally understood) the city passed an ordinance prohibiting the use of one-man cars in that city. As soon as the city of Detroit went into the street railway business, however, this ordinance was amended so as to permit of the use of one-man cars, and the city-owned lines placed an initial order for 200 standard one-man safety cars.

The overwhelming majority of electric railway companies, backed by every state legislature or commission that has acted on the matter, agree that the one-man safety car means better and more economical service to the public and a more interesting and higher paid job for the operator.

The report was submitted by R. P. Stevens, chairman; James P. Barnes, H. B. Flowers, W. H. Heulings, Jr., C. W. Kellogg and J. W. Passailaigue.

DISCUSSION ON SAFETY CARS

J. P. Barnes, Louisville, Ky., contributed to the discussion of one-man car operation by stating that at this stage of development of the electric railway industry the principle of safety car operation needs no defense and no propagandists. The safety car has made its way against all obstacles by sheer force of its intrinsic merits, and its further application to traffic problems becomes a matter of executive policy rather than of engineering data or operating rules.

Public opinion, like individual opinion, forms favorable conclusions from consideration of those things which are of direct advantage to the public, and is negative in that it is more quickly and deeply stirred by inconvenience than by convenience, by discomfort than by comfort and by self-interest than by altruism. All the signs and notices and all the newspaper advertisements that can be printed will not carry a conviction of comfort and convenience to the man whose feet are trod upon or whose fingers are pinched. With the introduction of safety car operation the advantages should be explained concisely and pointedly from the viewpoint of public comfort and convenience and the operation must be carried out so as to be a real fulfillment of the prediction of better things. The report of the committee says, "Cars of older types rebuilt for one-man operation but lacking adequate safety devices cannot properly be described as safety cars." This is not to say that every car should be equipped with all safety devices available, but that every car operated as a safety car and described as such to the public must be equipped with safety devices adequate to its territory. The final injunction of Mr. Barnes was:

"Operate real safety cars where safety cars are applicable; give adequate service, comfortable and convenient; let your service be, in short, of the quality you yourself expect from the lighting company, the water company and the telephone company. So, and not otherwise, will the safety car be a success with the public, a joy to the operator and a boon to the industry."

In discussing this report H. A. Mullet of the Milwaukee Electric Railway & Light Company said in part:

"Realizing the necessity of economies which are made possible through the operation of one-man cars and to avoid the opposition which frequently results in cities accustomed by long usage to double truck cars, it was thought expedient to secure for Milwaukee a one-man car conforming in general respects to the regulation safety car but of double truck type. A spacious platform, but without change in height above the rail as compared with the standard safety car or without a step between the body and platform floor, is provided. Separate entrance and exit doors selectively controlled and provided with a division rail to separate the flow of passengers are included.

"The aisle of the car is 28 in. The seats in the new Milwaukee car are 3 in. wider than in the standard safety car. Two seats only at the diagonal corners are longitudinal, the balance or twenty in number being of the cross-type. The longitudinal seats are effective in affording somewhat more passage space and are provided to avoid the congestion which exists in the front end of safety cars when operating under heavy traffic.

"It has long been the practice in Milwaukee to employ street fare collectors at heavy transfer points, and to allow this practice to be continued and applied to the new safety cars a device has been designed which makes it readily possible for the fare collector on the street through the use of a small lever carried with him to open the doors on the rear end of the car, thereby allowing passengers to board at the rear end while the car operator is receiving passengers at the forward end. The device has been worked out in a simple manner and is operating satisfactorily.

"The car complete weighs slightly less than twice the weight of a safety car and seats fifty-eight passengers, taking into account certain folding seats provided on the platform. It will be noted, therefore, that the weight of the car per seated passenger is approximately the same for the two types of cars.

"Transfers of the directional type are employed in Milwaukee. Four different colors representing the different directions are carried in a suitable holder which allows the operator to select the desired one without loss of time.

"To date, operation with one man per car has been commenced on but two lines, both being cross-town lines. One of these by reason of a stretch of single track is limited to a minimum of 7½ minutes headway. The other line is more representative and is being successfully operated at a schedule speed of 10.15 m.p.h., as compared with 10.38 before the crews were reduced from two to one man.

"During the month of August, the total passengers carried per car mile on the line which is double tracked for its entire length was 9.6, as compared with 9.63, the general average in the City of Milwaukee for the particular month. Checks made to determine the time of loading per passenger indicate that from 1¼ to 2¼ seconds are required per boarding passenger within a range of from twenty-five to five passengers, which is somewhat but not appreciably greater than the time required on the standard two-man car as heretofore operated in Milwaukee.

"The safety car as designed allows of its operation with either one or two man crews, and it has been possible therefore to operate these cars on certain portions of lines with two men crews while the balance of the routes running into the suburbs are handled by one man per car.

"The results of the operation of the double truck cars thus far accomplished are eminently satisfactory, and accordingly arrangements are being made for the extension of the one-man service to numerous cross town lines as well as others running through the more congested sections of the down town portion of the city."

H. H. Adams of the Chicago Surface lines described the sample single-truck safety car which had been built for his company and which was now in operation. The essential features of this car were described in the ELECTRIC RAILWAY JOURNAL for Jan. 22, 1921, page 173. Mr. Adams stated that his company was making further investigation in regard to the most suitable type of car for one man operation in Chicago, and with this in view they were now building in the company's shops a double truck car for one man operation. As at present arranged this car is 37 ft. 2 in. long, 8 ft. 6 in. wide, and will seat forty-five passengers. Separate entrance and exit openings with a longer platform will be provided with this double truck car the same as has been used for the single truck sample car.

W. J. Harvie, Auburn and Syracuse Electric Railway, commented on the definition of the term "safety car" as included in the committee's report and suggested that the word "special" be added so that the sentence would read "cars operated by one man and equipped with adequate special safety devices."

Martin Schreiber of the Public Service Railway of New Jersey said that the service which they had been obtaining from the standard type of safety car was generally satisfactory and that they had experienced no increase in the number of accidents from this operation.

E. M. Walker, Terre Haute, Indianapolis & Eastern Traction Company, referred to the 100 per cent operation of safety cars on his system and stated that the industry now had reached such a stage that safety car operation need not be defended as its use has proved conclusively that this type of car is an efficient salesman of transportation.

L. H. Palmer, United Railways & Electric Company, Baltimore, described the new type of safety car with separate entrance and exit, ten of which are in service on this company's line. These cars were described in the ELECTRIC RAILWAY JOURNAL for Sept. 10, 1921, page 400. In concluding Mr. Palmer said that the greatest need for railways at present was to give the public the best service possible and that the officials of the electric railway in Baltimore felt that the so-called standard safety car fell somewhat short in providing a service entirely satisfactory to patrons. He voiced the sentiment that railway officials should not allow themselves to get into a single-track frame of mind in regard to safety car operation and that the changes which they had found necessary to make in the last order for safety cars in the way of separate entrance and exits would tend to make this type of car even more popular with the traveling public and thus provide a substantial impetus to the use of one-man operated cars everywhere.

D. P. Abercrombie, Connecticut Valley Street Railway, in discussing the report stated that his experience with the use of one-man cars extended over a very short period. His observations as to the use of converted one-man double-truck cars have forced him to the conclusion that on long runs, involving many rates of fare, the number of duties placed upon the individual operator becomes too great and the operator is not able to collect properly all revenue from passengers. On shorter runs, however, with a flat fare it seemed to him that this type of car had a substantial possibility. It is regrettable that it has not been possible under the Massachusetts regulations to operate this type of car before, as it involves a substantial saving in platform labor.

It may be possible with the proper fare-collecting device for one operator on multi-zone lines to do more than is possible if the operators use the Rooke register. The present system of fare collection opens up substantial loopholes for the constant rider to ride substantial distances on a minimum fare, and furthermore, presents opportunities for the passenger to ride longer distances than he pays for even through the use of identification checks. These observations were formed from only a limited experience with this type of car and are subject therefore to criticism by those who have had longer experience.

At the latter end of the session when the president called for "unfinished business," there was a short renewal of the discussion on the safety car and it is included here so that it will all be together.

W. H. Sawyer, East St. Louis, criticised the expression "so-called" standard safety car. He thought the industry had taken a big step forward in the design of the usual type of single entrance-and-exit car. H. H. Adams, however, declared that neither the association nor any of its affiliated associations had adopted any car as standard. R. P. Stevens declared the committee had no intention of establishing standards in its report, but it was prepared only to supply information. He expressed the opinion that all one-man double truck cars should be equipped with safety devices.

TERMINAL SERVICE POSSIBILITIES

J. R. Bibbins, manager department of transportation and communications U. S. Chamber of Commerce, then presented a paper on "Terminal Service Possibilities of the Electric Railways." This appears elsewhere in this issue.

In verbal explanation Mr. Bibbins explained that his paper might seem somewhat academic, but it was so prepared intentionally, partly because he wished to outline general principles and partly because many of those present were well able to make practical applications of the principles.

ADDRESS FROM SECRETARY HOOVER

President Gadsden than announced that about two weeks ago he with other representatives of the association had seen Secretary Hoover of the Department of Commerce and he had agreed to present an address at the convention if official duties did not keep him in Washington. Mr. Hoover had found that it was impossible for him to be present but he had sent his address, which would be presented by F. M. Feiker, assistant to the Secretary.

Mr. Feiker on being introduced said that Mr. Hoover had expressed great interest in the problems of the electric railways. It is the philosophy in the Commerce Department for the Government not to do business in place of business men but for business men, and to utilize as far as possible the collective activities of men or groups of men in promoting industrial prosperity. He also explained that Mr. Hoover had personally taken a great deal of interest in preparing this address, which was written during one of his weekly single-day boat trips. He then read the address, which is published elsewhere in this issue.

RESOLUTIONS

The report of the resolutions committee was then presented by Mr. Bozell. The resolutions, which were unanimously adopted, follow:

SERVICE BY MR. GADSDEN

Whereas, Philip H. Gadsden, called in a time of peculiar need, has served the association as its president for the past year in a remarkable manner of usefulness and service to the industry and the association, and

Whereas, Mr. Gadsden has given unstintingly of his time and thoughts to the difficult problems of association organization and operation during the year, and

Whereas, Mr. Gadsden has in addition given a special and immeasurable service to the industry through his constant willingness and ability to present in public in many and various places in the country the peculiar problems of the industry, therefore,

Be it resolved, that the association hereby record its deep appreciation of the extraordinary service Mr. Gadsden has rendered and extend its sincere thanks and indicate its obligation to him.

TRIBUTE TO OFFICERS

Whereas, the past year has been one which, for several special reasons, has demanded extra and extraordinary service on the part of the officers of the association, and

Whereas, they have given unsparingly of their time and thought in the effort to have the association perform its proper function and prove of greater usefulness to the industry, now therefore,

Be it resolved, that the association express its appreciation and thanks to the officers for this service.

DEATH OF MR. LANDERS

Whereas, the association has learned with deep regret of the death of J. J. Landers, auditor of the York Railways, president of the American Electric Railway Accountants' Association, and a member of the executive committee of the association, and

Whereas, Mr. Landers was a man of sterling character and high purpose and served this association and its affiliated association in a spirit of true service.

Be it hereby resolved, that, we do record our appreciation of his worth and service and our sorrow at his loss from our midst.

DEATH OF MR. LITTELL

Whereas, the association has heard of the death, last spring, of Hardin H. Littell, one of the organizers of this association and the first president of the association, and

Whereas, we recognize the debt the industry and the association owe Mr. Littell for his early constructive work, and

Whereas, Mr. Littell was known to be by all his friends a man of courage, ability and accomplishment, a man of character and a loyal friend, therefore,

Be it resolved, that we do record our appreciation of his service to the industry, of his worth and of our sorrow at his loss from our midst.

DEATH OF MR. WRIGHT

Whereas, the association has heard with deep regret of the sudden death of Thomas A. Wright, vice-president and general manager of the Wilkes-Barre Railway Company, and

Whereas, Mr. Wright was a man of strong personality, quiet and courageous, a genial companion and a warm and loyal friend, now, therefore,

Be it resolved, that we record our appreciation of his worth and our sorrow at his loss from our midst.

TO THE SPEAKERS

Whereas, during this convention of the association, we have had the pleasure and benefit of having addresses presented to it by men outside of its membership, and

Whereas, these addresses have been of very great value to the association in its deliberations, now, therefore,

Be it resolved, that the thanks of the association be extended to Dr. J. Duncan Spaeth and Messrs. H. M. Addinsell, F. E. Frothingham, J. K. Newman, J. R. Bibbins and R. H. Babson.

TO MR. HOOVER AND MR. FEIKER

Whereas, the Secretary of Commerce of the United States, Herbert Hoover, though overloaded with the pressing problems of his office, particularly the unemployment situation and the condition of dislocated industry of national importance, has nevertheless recognized the importance of the electric railway industry and its problems, and

Whereas, Mr. Hoover has prepared a message to the association and has sent his personal representative, F. M. Feiker, assistant to the Secretary, to present the message in person, therefore,

Be it resolved, that we express our appreciation to Mr. Hoover for his message and to Mr. Feiker for his personal presentation.

SUPPORT OF TECHNICAL PRESS

Whereas, the association recognizes the value in any field of a strong technical press and the close interdependence of interest of an industry with the technical and business papers which serve it, therefore,

Be it resolved, that the association express its appreciation of the excellent service to and support of the industry and association rendered by papers in the electric railway field.

President Gadsden then stated that the time had arrived to lay down the gavel and he appointed a committee to escort the new officers of the association to the platform. All were present with the exception of Mr. Emmons.

Mr. Todd expressed his appreciation of the honor accorded to him and pledged his best efforts in behalf of the association. Mr. Budd urged a more general adoption of the policies recommended by the association, and said he referred particularly to the organization of safety committees. Mr. Shannahan urged the co-operation of all during the coming year and Mr. Coates emphasized this need by two stories.

President Todd, after saying that the reports scheduled for Monday morning but not presented would be placed on record, declared the meeting adjourned. Abstracts of these reports follow:

COMMITTEE OF ONE HUNDRED

In accordance with action taken at the 1920 convention, the Committee of One Hundred, with slight changes in personnel, has continued to function for the purpose of disseminating general information regarding the industry. This publicity and educational work has been carried on through co-operation of the Committee of One Hundred and the American Electric Railway Association, being under the direct supervision of the committee on publicity with the general approval of this committee.

The committee planned a dinner in New York City on July 8, 1921, in commemoration of its second anniversary, but it was postponed due to the impossibility of securing the desired speakers at that time. It is expected that this dinner will be held some time during this fall or winter. What the committee has in mind for the future has to do more particularly with matters affecting credit. Your committee feels that however good the results may be from local effort, the results in improving the credit of electric railway companies will not be so good unless this national campaign is carried on. The report was submitted by Henry R. Hayes, secretary and treasurer.

REPORT OF COMMITTEE ON COMPANY SECTIONS AND INDIVIDUAL MEMBERSHIP

Martin Schreiber, chairman, presented the report of the committee on company sections as follows:

There was only one company section of the association formed this year This, however, does not represent the full activities of the company section movement. At present individual members of the association number only about 830; while the company section individual members are nearly three times that number. So the company section idea is largely responsible for the individual memberships of the association.

If it had not been for the company sections during the past few years the record of the individual members would be rather a disappointing one. Now, it is generally considered that the possibilities of the American Electric Railway Association or any other body made up of individuals largely depends on its personnel, and since the company section is the strongest influence for increasing the efficiency and number of individuals identified with our association, why don't our member companies take more interest in organizing company sections?

F. G. Buffe, general manager for the receiver of the Kansas City Railways, says: "There is a broad field to cover in association work and that is the development of company sections. There is an opportunity in bringing to the army of electric railway employees the advantages of this co-operative work. Our organizations will best progress with the education of our minor officials, and through company sections this can be accomplished. We should all strive to make every employee of every street railway system in the United States an interested participant, feeling that he is a part of this gigantic combination of capital and labor, united for the public service."

The company section referred to as instituted this year is Section 13 of the association. It comprises the employees of the southern division of the Public Service Railway, Camden, N. J. This section was created and in operation in about one week after it was decided to go ahead and more than 200 members are enrolled.

It has been operating for less than a year but has quite a unique record. The monthly meetings of this section are not only an open forum for the rank and file of the company, but also for the public as well. To get a true view of the car riders, instead of an interpretation, often initiated by the company's mutual admiration society, prominent representatives of the public are invited to address the company men at the section meetings. Already the president of the City Council, the secretary of the Chamber of Commerce, president of the Rotary Club and the City Attorney have appeared at these meetings. In this way, these people are given a chance to talk directly to the persons who are really responsible, at least as far as the car rider can see, for the operation of the railway. If experience is any criterion, the experiment has been very satisfactory to all concerned.

Your committee does not intend to go into detail about a particular company section when such splendid work is being done by other company sections, such as those of the Community Traction Company, Connecticut Company, Chicago Elevated Railways, Newport News & Hampton Railway and others. But the committee mentions the work at Camden because it seems to be rather a new departure.

When officials go back to the job, the committee recommends they give the company section idea honest and sincere consideration. We believe that each one of you who does this will start a company section at the earliest possible time. Moreover, you will accomplish for your own company what Mr. Buffe has pointed out as well as give an impetus to the association that will put it in the position which it rightfully deserves. The members of the committee stand ready to render any aid that they can in the organization work.

REPORT OF JOINT COMMITTEE OF NATIONAL UTILITY ASSOCIATIONS

The joint committee of National Utility Associations was organized as the result of the belief that matters of a national character bearing equally upon and having the same relation to all utilities could be more effectively handled and confliction of effort avoided by a central conmmittee representing equally and impartially the three national associations most directly concerned. Preliminary discussions of the matter resulted in an organization meeting in the headquarters of the National Electric Light Association on Dec. 22, 1920, at which Randal Morgan was elected as temporary chairman by the representatives of the American Electric Railway Association, National Electric Light Association and American Gas Association.

The permanent officers elected at this meeting are: Randal Morgan, chairman; S. Z. Mitchell, vice-chairman, and O. H. Fogg, secretary. The executive committee members are: S. Z. Mitchell, chairman; P. H. Gadsden, vice-chairman, and O. H. Fogg, secretary.

Among the several sub-committees appointed that on taxation has been the most active, W. V. Hill having been temporarily retained to represent it in Washington. This committee has had under frequent advisement the various phases of federal taxation as they relate to public utilities and its chairman and representatives have presented the views of the committee before various governmental committees and officials. Its sub-committee appointed to confer with representatives of the Association of Railway Executives has had several meetings with representatives of that association. A sub-committee on fuel, of which J. W. Lieb is chairman, has been actively carrying on the activities formerly conducted by the National Committee on Gas and Electric Service in so far as they relate to the supply of fuel for the use of public utility companies.

A third meeting of the joint committee was held in the office of Mr. Mitchell, president Electric Bond & Share Company, Sept. 21. The question of tax-exempt securities and the constitutional amendment was discussed and the possibility of providing a modification of the present law. The National Tax Association has passed a resolution against tax-exempt securities.

Mr. Hill has also prepared a report on federal tax revision, a copy of which is attached as part of this report. It follows:

FEDERAL TAX REVISION

The sub-committee on federal taxation of the joint committee of public utilities associations consists of the following members: Philip H. Gadsden, chairman; Charles A. Munroe, Henry G. Bradlee, Frank W. Frueauff, R. A. Carter and Oscar E. Fogg, secretary.

While a report on the work of the committee on taxation at this time is somewhat premature, the tax revision bill having only passed the House, and at present being considered by the Senate finance committee, it may be of interest to some to know what has been done, and what is proposed by the committee.

Mr. Gadsden appeared before the Senate finance committee on May 10 last, during the consideration of a sales tax bill, urging against the levying of a sales or turnover tax on car fares, gas, electric light bills or meters, explaining the reasons for his objections; in fact, opposing a sales or turnover tax on regulated industry. He stated, however, that he favored a sales or turnover tax with the above exceptions. The finance committee subsequently placed the proposed sales tax bill in the discard.

Mr. Gadsden injected in his statement before the committee strong opposition to the continued issuance of tax-exempt securities by municipal, state and federal governments, calling attention to the serious effect this practice was having on public utilities securities competing in the open market with them and the effect on business in general. He also stated that he favored the repealing of the higher brackets on surtaxes and the excess profits tax.

The tax committee, realizing the increasingly adverse effect that the continued practice of issuing tax-exempt securities, especially by states and lesser subdivisions, was having on public utilities securities, as well as other taxable securities, started an educational publicity campaign and through the cooperation of the three national public utility associations, bankers, farmers, associations and others interested, a strong public sentiment has been developed in favor of immediate legislation to correct the evil. Unfortunately, however, legal authorities, in and out of Congress, who have made a study of the question, have concluded that the only remedy is through the enactment of a constitutional amendment, which cannot become effective until ratified by the legislatures of three-fourths of the states. Bills have been introduced by influential members in both houses of Congress to correct this situation, and a majority of the congressmen favor this legislation.

Also the ways and means committee prepared, approved and submitted on the floor of the House an amendment to the revenue revision bill, which would create a temporary commission to be appointed by the President, consisting of members of both Houses and the public, to study the situation and report within a year its findings and recommendations on this question. The amendment, owing to lack of sufficient time, was caught in the jam just before final vote was taken on the bill and was not adopted. We have assurances, however, that the Senate finance committee will embody it in the bill in that committee.

The ways and means committee of the House held four days hearings on the general tax revision bill. Mr. Gadsden was scheduled to appear on behalf of the tax committee on July 28, but at the last moment an urgent business engagement prevented, and the writer was asked to appear in his stead, making a short statement and filing with the committee a brief prepared by Mr. Gadsden. General publicity was given Mr. Gadsden's statement through the association's service letters and magazines; also other technical journals and the press. The Philadelphia *Public Ledger* printed a strong editorial indorsing Mr. Gadsden's views.

Mr. Gadsden advocated in his statement that public utilities be placed in a special class for the purpose of taxation, setting forth the reasons therefor. He protested against any increase in the normal income tax on gas, electric railway and electric light and power companies. He urged that normal income tax on public utilities be retained as at present at 10 per cent, giving reasons why this distinction should be made. He protested against a tax on undistributed income upon public utilities, and urged legislation to stop issuance of tax-exempt securities, and the repeal of the higher surtaxes and excess profits taxes, showing in detail the adverse effect these taxes have on public utilities.

The writer in his statement before the ways and means committee touched upon the proposed increase in normal income tax and undistributed income and the effect of these taxes on public utilities, and also urged that the committee give consideration to extending the tax exemption of 42 cents on one-way fares to one dollar, if it did not contemplate repealing all of the transportation tax at this time, explaining the reasons for this change.

The tax committee, through Mr. Gadsden, endeavored to get a hearing before the Senate finance committee to again urge a separate classification for public utilities for the income tax levy and also the repeal of the capital stock tax on public utilities, but Senator Penrose, chairman, advised us that no further hearings would be held, but we could file supplementary information and it would receive the careful attention of his committee. The tax committee will continue to watch the situation carefully as it develops in the Senate finance committee and until final enactment of the bill, and will endeavor to carry out the program as outlined by Mr. Gadsden. The committee asks for the continued co-operation of all interested in this important work.

Entertainment Features at the Convention

NOTWITHSTANDING the heavy business program of the convention a very pleasing entertainment program was provided for the delegates. It began with a golf tournament, at which O. A. Broten, National Pneumatic Company, won the kickers' handicap and L. A. Wilson, Ohio Brass Company, won low gross. The low net for the supply men was won by R. Wilson of the Westinghouse Electric & Manufacturing Company and for the railway men by G. T. Seely of Youngstown. The tournament between the railway and the supply men was won by the latter by a score of 7 to 1, there being eight players on each side.

Rain proved to be such a formidable obstacle that the ladies' obstacle golf game scheduled for Monday afternoon on the links of the Marlborough-Blenheim Hotel was canceled. The weather the rest of the week, however, was ideal. On Monday evening, the annual reception was held in the Venetion Ballroom of the Ambassador Hotel. In addition to the dancing, which continued into the early hours of the morning, an aquatic exhibition was provided by a number of expert men and girl swimmers for the entertainment of those who cared more for this than dancing. Included in the aquatic exhibition was a water polo contest engaged in by members of the association. The game was not finished as the ball mysteriously disappeared. The reception was enlivened by novelty features and professional dancing.

On Tuesday the ladies enjoyed an afternoon tea in the Japanese Tea Room of the Ambassador and music by the Special Ambassador Orchestra. The association dinner, made more pleasant by the presence of the ladies was an innovation in the convention program and was generally pronounced a great success. Dancing followed the banquet.

Wednesday afternoon the ladies indulged in a bridge tournament at the Ritz-Carlton Hotel and in the evening there was a grand ball in the Renaissance Room of the Ambassador. Another informal tea, in the Trellis Room of the Ritz-Carlton, with music by Veschey's Parisian Band, formed the afternoon entertainment for the ladies on Thursday. The convention concluded with a theater party that evening, at which the delegates were entertained by Ed Wynn in "A Perfect Fool."

A large committee, under the direction of Chairman Edwin C. Faber, was responsible for the elaborate and highly successful entertainment program provided.

Engineering Association Proceedings

Engineers Held Five Busy Sessions at Which Experts from Outside the Association Were Heard—Unusual Amount of Prepared Discussion Followed Presentation of Reports—C. S. Kimball Elected President—Retiring President Gove Suggested a Committee to Study Possible Improvements in Organization

W. G. Gove
Retiring President

Charles S. Kimball
Newly Elected President

PRESIDENT W. G. GOVE opened the convention of the American Electric Railway Engineering Association on the afternoon of Oct. 3 in the Solarium of Haddon Hall. The first number on the program was the reading of the presidential address by Mr. Gove. An abstract of this follows:

Mr. Gove Recommends Some Revision of Association Procedure

This convention marks the end of the eighteenth year of the existence of this association, under one name or another, as an independent association or one affiliated with the American Electric Railway Association. It is incredible that changes cannot be made in its constitution and procedure that would greatly enhance the standing of the association and the value of its work. As in every other industry, the experience of the past is of value in shaping the course for the future, but it is not a safe or proper guide as to just what should be done. New methods must be found; modern ways of obtaining more efficient and prompter results should be devised.

The American Electric Railway Association has found it desirable to appoint a reorganization committee, with a view to modernizing and increasing the efficiency of its organization. Similarly this association should take up the work of reorganization. The time is now ripe for the appointment of a reorganization committee by the incoming president, to report the results of its work to the executive committee as early in 1922 as possible. I wish, therefore, to make an earnest presentation of facts as I see them with the recommendation that the association inaugurate promptly certain reforms and changes. These could not but be beneficial and would be consistent with the action recently taken by associations similar to this.

Following are some of the things that, I think, the association should do.

1. Definite recommendations have been made by the reorganization committee of the American Association, which include several features that are deserving of very careful consideration by those charged with the responsibility of shaping the destinies of the American Electric Railway Engineering Association.

To the extent that the American Association exercises supervision of this association and its organization, including provision for financing its work, and continues the present policy of denying the Engineering Association an adequate appropriation for carrying along its research and committee work, the results which can be expected are limited. The policy of paying none of the expenses of standing (or working) committees, and depending entirely upon the generosity, enthusiasm or ability of member companies to pay the expenses of its employees when engaged on committee work is a restriction that cannot but militate against the value of the results finally obtained.

As a further item of direct interest to the association, it will be noted that the reorganization committee of the American Association has recommended the continuance of *Aera*. This has been a matter discussed for some years, and there is wide divergence of opinion as to its value. Inasmuch as it is likely to be continued, however, I appreciate that the magazine can be made use of by your association in reporting proceedings, or as a means of obtaining more widespread discussion of committee work. Publication of such reports should be made from time to time, and the final report of the committee should be printed previous to the convention. Under the present procedure I see no advantage that accrues to the Engineering Association. Furthermore, there is the Question Box, which occupies space and incurs expense that could be better devoted to the interests of the Engineering Association. This would aid the association in taking its proper place among the national engineering associations.

Simplification of Committee Work

2. The carrying along of work from year to year by means of standing committees has accomplished some results. If, however, the industry at large is to be greatly benefited by current rather than "post-mortem" action, there needs to be a radical change in the methods pursued in carrying on research work. All committees should, so far as possible, be equally divided in membership between engineering representatives of manufacturers and railroad operating engineers. Committees today are altogether too large, and have too many subjects assigned to them. Due to the financial policy already mentioned, about 85 per cent of the committee work done in accordance with the yearly assignment of subjects is performed by comparatively few men from a few Eastern cities. Many of those appointed take little interest in the work. Even if the very considerable financial obstacle to the proper accomplishment of committee work cannot be immediately removed, much can be done by organizing committees to represent more nearly the various sections of the United States. Discussion, even through the mail, should insure wider discussion of recommendations than at present, and the representation of the views of a larger section of the country. Subjects should be very carefully considered some months in advance of the convention and only a few of them assigned to each committee.

As a member of the American Society of Civil Engineers, I was greatly impressed by an address of Edward J. Mehren, editor of *Engineering News-Record*, delivered at that association's headquarters on Jan. 5, 1921. He summarized present industrial and political conditions in western Europe and Germany, the particular feature of interest to the Engineering Association being his reference to "standardization or direction of design." While standardization is of the greatest importance, it will never be fully effected. In fact, if carried too far it will retard rather than develop an art. While the work of the standing committees has done much in this field, an equal amount, or more, could be accomplished if certain consideration in the matter of design were given in advance. For instance, in connection with rolling stock we have all agreed that a universal application of a standard car is out of the question, but it should be entirely possible, and would be of considerable economic value, to have standard types of cars. Today the safety, or one-man, car most nearly approaches this condition, although there is already a disposition seriously to criticise this type. Premiums or penalties in the form of an increased first cost are paid to obtain something special to meet either assumed or real "local conditions."

To offset this, closer co-operation in advance of production by the manufacturer and with the railway engineer might be carried along with the aid of an advisory committee. This should be restricted in number, but should, like other committees, include an equal number of manufacturing and operating engineers. Among the latter should be a civil, a mechanical, and an electrical engineer. The committee should function separately from the standards committee and should have a secretary-engineer as its nominal head. There need be no restriction as to the number of types of cars. The list could include buses, for instance.

The standardization by types is an economic necessity at a time when the industry is struggling to find means of producing increased efficiency and economy and when it is highly probable that trackless trolleys and buses will be added to the equipment of public service utilities. Why should not careful consideration be given to standardization in the development of such vehicles rather than leave them for "post-mortem" consideration?

WHO SHOULD VOTE ON THE EQUIPMENT STANDARDS?

3. Voting upon standards at present is done on a wrong basis, as can be seen by a simple illustration. Take the case of rolled steel wheels regarding which a company operating a few cars with cast-iron wheels has as much to say as one operating 50,000 rolled steel wheels. The cast-iron wheel user can criticise the steel wheels and share in determining the characteristics of the steel wheels. Voting upon standards should follow the long-established practice of the Master Mechanics' and Master Car Builders' Associations, now the mechanical division of the American Railway Association. There standards bearing upon rolling stock are voted for upon a unit basis, the company voting the number of cars owned. In power generation, line distribution and affiliated matters, kilowatt output for railway purposes, should govern. So also should the number of single-track miles operated in all way and structure matters. For manufacturer members a unit based upon gross sales could be worked out. Perhaps in both cases only those directly concerned with the subject at issue should vote.

4. A permanent organization should be provided by having a paid head of marked ability. It is all right to elect a president each year, if desired, as at present, but there should be a secretary-engineer, who would be the nominal head of the Engineering Association in all matters excepting those having to do with direct administration and policy. These, of course, rest now and should continue to rest with the executive committee. Thus continuity of action from time to time could be assured. The technical correspondence and the co-ordination of all committee work could be carried along from year to year, regardless of changes in the office of president, or changes within the executive committee. Such a plan would only be consistent with the practice of such national associations as the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and others of national importance.

AS TO THE IMPROVEMENTS IN THE ENGINEERING MANUAL

5. The *Engineering Manual* is the record of committee determinations and findings. It should bear to the association and the industry at large much the same relation as does "Kent's Handbook" to the mechanical engineer and "Trautwine" to the civil engineer. The *Engineering Manual* is valuable, but from time to time questions have arisen as to its being in proper form; also as to the method of binding, providing for additional copies in whole or in part, and other pertinent questions. I recommend that this matter be made a part of the work of the proposed reorganization committee so that it may be determined in a manner consistent with up-to-date methods and practices.

CO-OPERATION WITH AMERICAN ENGINEERING STANDARDS COMMITTEE

The association has taken a progressive step in obtaining representation in the American Engineering Standards Committee. This organization is comprised of representatives of leading engineering, railway and other associations, and has the object of unifying methods and promulgating rules for developing standards. The literal carrying out of such a purpose would undoubtedly be of very considerable value to the electric railway industry. But until the organizaton of the association provides for more active research work throughout the entire industry this purpose cannot be fully accomplished as far as the electric railway industry is concerned.

In submitting these suggestions I realize that they will not meet with universal approval. It is always easier to continue doing what has been done than to make somewhat radical changes in methods. However, there never was a period when changes could be made to greater advantage than now, and there are comparatively few matters that can properly be carried along in the same way as was the practice but a few years ago. My object in making these recommendations is only to suggest ways of giving the association a higher standing among the other national engineering associations to which foreign countries are looking for engineering progress. I trust that such changes can be made as will, in the end, render more valuable the results of the committee work as embodied in the Engineering Manual.

SECRETARY WELSH REPORTS

Secretary J. W. Welsh then presented the report of the executive committee. This, he said consisted of the minutes of the committee meetings for the year. It was accepted without reading, for publication in the proceedings.

Mr. Welsh also read his report as secretary. He gave statistics of the attendance at committee meetings, showing a very high average attendance. He also explained the ways in which the association is co-operating with the American Engineering Standards Committee. He gave as the present membership the following: individual members, 533; company section members, 451; total 984. The report of the secretary was accepted.

The next business was the appointment of a committee on resolutions as follows: H. H. Norris, H. H. George and R. H. Dalgleish.

REPORT ON APPRENTICE SYSTEMS PRESENTED

The report of the committee on apprentice systems was next read by F. R. Phillips, chairman. An abstract follows:

APPRENTICESHIP SYSTEMS

The scope of the duties assigned to the committee on apprenticeship systems proved to be so great that it was able to submit only a suggested outline this year to serve as the foundation for a plan of apprenticeship training which may later be adopted by the association.

After a report upon the apprentice work being done by various organizations, including the Paris-Orleans Railway of France, a plan was outlined which follows steam railroad models, modified to suit the peculiar requirements of the electric railway business. This plan, in the committee's opinion, offers the best means by which the industry may secure recruits for its personnel.

The plan comprehends two sections: (1) A trade apprenticeship course, and (2) an engineering apprenticeship course.

The trade apprenticeship course provides for four years of continuous service in one trade, with accompanying classroom instruction. The classroom instruction would consist of two periods per week throughout the entire four years of apprenticeship, each of two hours duration. A summary of the curriculum follows:

First year, mechanical drawing and blueprint reading, two-thirds of time; practical shop arithmetic, remaining time.

Second year, mechanical drawing and study of elementary mechanism, half time; remaining half of time to be devoted to study of tool designs, shop practice, etc.

Third year, study of general principles of electricity, electrical devices and machines, half time; other half to be devoted to further study of problems connected with the apprentice's particular trade.

Fourth year, details of electrical mechanical equipment used on cars of the company, half time; remaining time to be devoted to instruction in the rules and regulations of federal, state and municipal bodies relating to the company's cars, and some instruction in elementary economics as applied to the company's business and everyday life of the apprentice.

It was the committee's opinion that for the developing of engineering apprentices some form of the co-operative training such as was originally inaugurated by the University of Cincinnati, and introduced later by the University of Pittsburgh and seventy other educational institutions more or less, would be most economical and satisfactory.

This report was signed by F. R. Phillips, chairman; L. C. Datz and H. A. Johnson.

DISCUSSION ON APPRENTICE SYSTEMS

Following the presentation of the report, prepared contributions to the discussion were presented by H. W. Cope. Westinghouse Electric & Manufacturing Company; E. P. Roundy, New York State Railways, and E. P. Waller, General Electric Company.

Mr. Cope said that the steam railroads and the large manufacturers had found a course of training for their young men to be indispensable, and he believed it possible for the electric railways to use a modified form of the apprenticeship system adopted by the steam railroads. He believed it desirable to work out more than one plan, owing to the differences among properties, due to size and environment. Some properties are so located that apprentices could attend classes at colleges or universities, while apprentices on other properties might take correspondence courses.

Mr. Cope suggested the organization, at association headquarters, of the proper personnel to guide this activity while in a formative state. He also suggested that the period of four years required to complete an apprenticeship course is too long. A shorter period of intensive training proved its effectiveness during the war.

In addition to a study of economics Mr. Cope suggested that the course might include the study of public relations. It is also very important that the men be rightly chosen at the start in order that time and money be saved by not trying to train misfits. He listed six subjects for consideration by the committee. *i.e*, (1) a special one-year course for college graduates; (2) more mathematics for trades apprenticeship courses; (3) a reduction of the age limit; (4) systematic scheduling of students through the various departments; (5) the making of an agreement under which both parties will have to make good; (6) the placing of the apprenticeship wage rate at a fixed percentage of the standard journeyman rate.

Mr. Roundy said that the report covers the ground very well, and from one of the plans described a system can be devised which will apply to electric railways. As it is the province of the colleges to give the necessary technical training it is not advisable for the electric railways to provide this. However, a young man attending college might be given four months of work each summer with an electric railway. Mr. Roundy believed the idea to be erroneous that a knowledge of the financial condition of the industry keeps college men away.

In the training of mechanics and tradesmen, Mr. Roundy said that technical training should be carried just far enough so that the mechanic understands the reason for doing the work as he is taught to do it. If he shows qualifications for foremanship the technical training may be continued. Technical training of foremen should not overlap that of the apprenticeship engineer.

Mr. Waller said that the apprentices of his company are taught shop trades and not engineering. The training given technical graduates is not an apprenticeship course. Most shop courses cover four years, but high-school graduates are given special credit for their school work, and this may amount to a reduction of one year in the apprenticeship course. Class work averages four hours a week. Classes are held in shop time and apprentices are paid their regular rate during class periods. Those who drop behind in their studies go into the school room on full time without pay until they catch up.

Mr. Waller said that in most cases the students spend from six months to a year in the training room and are then rotated through the shop departments. They remain on the payroll of the apprentice department, however, and regular reports are rendered by the shop. This prevents favoritism. Graduates from the course are given a diploma and a bonus of $100; and receive preference in shop promotions, other things being equal.

Mr. Waller believed it inadvisable to specify a definite ratio of shop apprentices to shop mechanics, as in some localities this might cause labor troubles. He also thought that the suggested course lacks mathematics, but in other respects it seems to be comprehensive. Mr. Waller referred to a booklet on shop apprenticeship system prepared by his company and which he recommended for reference by electric railway companies.

After the above discussion, L. C. Datz, American Cities Company, chairman of the committee on subjects. inaugurated a new procedure by reading the tentative assignment made by his committee immediately after the conclusion of discussion on the particular report.

HEAVY TRACTION REPORT PRESENTED

An abstract of the report of the committee on heavy traction was read by the chairman, Sidney Withington, New York, New Haven & Hartford Railroad. An abstract of this is given below.

HEAVY ELECTRIC TRACTION

A new feature of the report of the committee on heavy electric traction this year was a summary of the activities of other associations in the study of heavy traction matters. In this way the committee endeavored to coordinate the work of the American Railway Engineering Association, the International Railway Congress, the American Railway Association Mechanical Section, the American Institute of Electrical Engineers and the Association of Railway Electrical Engineers, in so far as this can be done by bringing the attention of the readers of the report to the work of these associations.

The outstanding features of the report this year were the compilation of data on electric locomotives and multiple-unit equipment and the bibliography of heavy traction literature. Complete data were included for electric locomotives of North and South America weighing more than 80 tons. Promise of similar data for European electrification was made for the future. A table is included giving the facts regarding multiple-unit trains practice for twenty railway companies in North America.

The electric locomotive data table contains forty items for each locomotive, including weights, dimensions, fundamental operating data and facts as to dates, manufacturers, etc. Accompanying the table was a chart of steam track mileage electrified and corresponding electric locomotive tonnage, showing that between 1905 and 1920 electrification was proceeding at the rate of 180 miles of track and 36,000 tons of locomotives per annum. There was a reasonably uniform relation between these two quantities, the average, of course, being 200 locomotive-tons per mile of track. No increase in trackage or tonnage was noted for 1920.

The table of data for multiple-unit trains of North America in heavy service contained twenty-four items and covered both electrified steam railroads and rapid transit lines in large cities. As to multiple-unit operation, the committee reported that in suburban electrification of railroads the application of multiple-unit equipment results in certain advantages as compared to electric locomotives, which may be summarized as follows:

The long heavy multiple-unit train accelerates more quickly than the train of the same weight hauled by a locomotive.

In a multiple-unit train the motor equipment is varied to correspond to the length of the train, and thus is often more efficiently used than in the electric locomotive.

The reliability of operation of multiple-unit equipment is somewhat greater than that of electric locomotive equipment.

The multiple-unit cars, being heated electrically in winter, are free from all difficulty connected with oil-burning steam boilers, and although the cost of power thus used in heating may be considerable, this convenience of operation is valuable.

Perhaps the most important advantage of multiple-unit equipment is in switching, especially in crowded stub-end terminals. Locomotive-drawn trains, after arrival at the terminal, must be backed out to free the locomotive. This extra double move is often necessary when the terminal tracks are most congested. The multiple-unit train, on the other hand, is ready for the return trip practically as soon as it has reached the terminal.

There are some limitations, however, to multiple-unit operation as compared with electric locomotives. Multiple-unit cars in general can be operated economically only over tracks equipped with energized third rail or trolley (although occasionally this type of equipment is hauled outside the electric zone by steam locomotives for short distances). The result is that the cars are not available for duty outside the electrified territory in the event of a local heavy traffic demand elsewhere.

The mileage of multiple-unit motor equipment is often less than that of an equivalent electric locomotive, on account of traffic limitations.

The maintenance, reduced to a seat-mile basis, is usually higher with multiple-unit equipment than in the case of electric locomotives and standard trailer coaches.

The decision between multiple-unit and locomotive equipment in each individual case is governed by local considerations. The excess cost of multiple-unit car maintenance is often offset by the saving made possible in terminal tracks on account of elimination of switching requirements. In general, it may be said that each type of equipment has its definite place in the heavy traction field.

In the design of multiple-unit equipment there is some question as to the relative advantages of trains made up of old motor cars as compared with motor cars and trailers. This question involves careful study of equipment, as well as terminal characteristics. One railroad which started electric operation with mixed motor car and trailer trains has since equipped all cars with motors, while another railroad, which started operation with all motor cars, has revised the initial policy by acquiring trailers.

The report concludes with a 104-page bibliography on heavy electric traction which was compiled with the co-operation of the association of railway electrical engineers. This covers all topics related to the rolling stock, track, power distribution, operation, economics, etc.

This report was signed by Sidney Withington, chairman; A. H. Armstrong, R. Beeuwkes, H. W. Cope, J. H. Davis, J. C. Davidson, J. V. B. Deur, C. H. Quereau and L. S. Wells.

DISCUSSION OF REPORT ON HEAVY TRACTION

The discussion of the report on heavy traction was opened by H. H. Norris, ELECTRIC RAILWAY JOURNAL. He pointed out that, in giving this year a synopsis of the electrification activities of the committees of the several national societies concerned with heavy traction, the heavy traction committee had taken one step toward the formation of an American committee on electrification. The compilation showed that there is much duplication of effort among the committees, which could be avoided through the functioning of such a joint committee. The value of a central, co-operative and unbiased agency of this kind would be very great. He suggested that the executive committee be requested to consider this matter as soon as convenient.

Mr. Norris said, further, that as an example of the kind of thing that such a co-operative committee could do, nothing would serve better than the elaborate bibliography which the committee had been able to present this year in collaboration with the Association of Railway Electrical Engineers. A joint committee could maintain such a bibliography continuously. He suggested that the association might later provide a condensed and more highly selective list of the most important articles, adding a brief summary of the salient features of each, including articles published up to the date of the completion of the list. The present list might well be reprinted in pamphlet form for sale at a nominal price and the association could advertise it along with other reprints, so that its existence would not be forgotten.

The compilation of the locomotive and multiple-unit car data, in Mr. Norris's opinion, was one of the outstanding features of the committee's report and of the year's work. He expressed the hope that the admixture therein of data regarding heavy multiple-unit car practice on steam roads, interurban lines and rapid transit urban lines would prove to be a prophecy of the time when there will be a greater community of interest between the steam and electric roads in relation to suburban passenger traffic.

Mr. Norris referred to the question that has been raised as to the appropriateness of electrification activity on the part of the American Electric Railway Engineering Association, the contention being that the matter is properly one for the steam railroads to consider and push. It is true that no electrification project is possible unless the railroads are convinced of the savings that can thus be affected. On the other hand, electric traction, having demonstrated its success under steam road conditions, is looking for new fields to develop. It is to be expected, therefore, that initiative will be exerted by the electrical manufacturing and operating interests. The steam railroads will necessarily be somewhat conservative in regard to this matter, partly from financial considerations, partly because they have so much money and talent tied up with their steam equipment. The electrical interests have therefore on their hands a "selling proposition" of enormous magnitude.

The next speaker was S. B. Cooper, Westinghouse Electric & Manufacturing Company, who urged the importance of the suggestion that the work of the committees of the several national associations be co-ordinated in so far as it relates to heavy traction. He also approved the suggestion that the bibliography be reprinted.

W. B. Potter, General Electric Company, also expressed a belief in the importance of inter-society co-operation. He said that there is no doubt of the existence of duplication of effort. Electrification is coming, said Mr. Potter, although it has hardly begun as yet. Conservation of fuel has come to the fore during the past few years. This together with the increasing economy in the generation of electrical power by steam and the development and interconnection of water-power plants, is a factor favoring electrification. Abroad there is much preliminary activity in this direction, and in this country in addition to the projects mentioned by the previous speaker there are several others which are only awaiting the arrival of favorable conditions.

Mr. Potter pointed out that the success of electrification from the operating standpoint is unquestioned. Also the comparative operating expenses with steam and electricity are well determined. If financial conditions improve, if power facilities continue to be developed and if the super-power plan of power distribution is perfected, then progress in railway electrification may confidently be looked for.

J. H. Davis, electrical engineer Baltimore & Ohio Railroad, called attention to the fact that the chart given by the committee did not include the pioneer electrification, that of the Baltimore & Ohio in 1895. He also pointed out the fact that the classification of the 6-9 type Baltimore & Ohio locomotive should be 0—8—0 and not 0—4—4—0 as given in the table.

After the discussion, L. C. Datz, for the committee on subject, explained, as he did in the preceding case, the tentative assignments for next year, following in general the recommendations of the committee.

A "vote of thanks" was then passed, recognizing the efforts of the committees and of those who had participated in the discussion.

Tuesday Afternoon Session

At the second session of the Engineering Association convention held on Tuesday afternoon the report of the committee on power generation was presented by A. B. Stitzer, Republic Engineers, Inc., chairman of the committee. An abstract of this follows:

POWER GENERATION

The work of the power generation committee for the year took the following form:

1. A recommended form of power contract and the suggestion that this be included in the association's "Miscellaneous Methods and Practices." This was a revision of the report of last year's committee, upon which no action was taken.

2. A supplement to the 1920 report on steam production with particular reference to stoker operation.

3. A comprehensive paper on automatic substations, with tabulation of data, distinction being drawn with regard to "metropolitan," suburban and interurban service.

The revisions made in the previously suggested form of power contract were such as to embody the results of constructive criticism of that form, in the hope that one could be prepared which would be acceptable. To facilitate examination of the proposed contract form it was presented in the report with comments in parallel columns, so that the reasons for each item as worded would be understood.

The report on this subject began with definitions of the four essentials of a contract as follows:

1. "Agreement"—All parties to the contract must agree on the same thing. There must be no misunderstanding about the point at issue.

2. "Two or more competent parties" —The parties must be competent in the eyes of the law to enter into the contract.

3. "Valuable Consideration" — The arrangement must be such that each party will receive something having value (however small) in the eyes of the law, in return for what he gives. A promise to give a present freely, with nothing in return, cannot be enforced at law.

4. "To do or not to do something that is lawful"—An agreement requiring the commission of an illegal act is not an enforceable contract.

Following the form of contract and comments was a memorandum discussing the changes which had been made in the form submitted last year.

As to costs of steam production, the committee reported the impracticability of securing data to check and supplement last year's report on this subject. The principal new material this year consisted in a preliminary statement of the results of stoker experiments made by the Minneapolis Street Railway. The equipment for this purpose consisted of a six-retort stoker, 10 ft. 8 in. in width and 10 ft. in horizontally projected length, placed with flush fronts under a 556-hp. B. & W. boiler set 11 ft. above the floor, with a 900-sq.ft. superheater but no economizer.

The main features of the stoker and furnace setting were: (1) Facility for controlling distribution of coal over fuel bed. (2) Agitation of lower fuel bed. (3) All grate surface effective for combustion. (4) Elimination of arch and bridge-wall reflecting surface. (5) Side wall protected by extension side wall tuyeres. (6) Adequate combustion chamber. (7) Control of air supply above fuel bed. (8) Control of air through lower tuyeres and dump grates. (9) Power dumping mechanism. (10) Exposure of lower boiler tubes for absorbing radiant heat.

The design produces a fuel bed of practically uniform depth, relatively low temperature at the surface of the fuel bed, thorough mixture of gases insuring complete combustion, high heat absorption by radiation to boiler tubes, low maintenance of furnace walls and stoker parts and lower percentage of combustible in the refuse.

These results were secured with bituminous coal of between 8,800 and 9,700 B.t.u. content, 14 to 20 per cent moisture, 16 to 22 per cent ash and 45 to 48 per cent fixed carbon.

In this section the committee stated the conclusion that for high fuel-burning capacity the underfeed stoker has proved to be the most flexible type of fuel burning equipment now available. Insufficient information was available to make possible any report on burning powdered fuel. Except under special conditions and in certain localities there is little probability of the adoption of fuel oil for steam production, until the supply and comparable price become stabilized.

The section of the report dealing with the automatic substations covered twenty-seven pages. A few of the high spots in it were as follows:

The automatic control of the substations in large cities for actual high-capacity, heavy-duty work is now an accomplished fact. The two unit substations of the Cleveland Railway have been operating with complete success. From the operating records available, automatic operation appears to be more reliable than manual operation. Apparently the ideal scheme of installation is to use the smallest possible single-unit stations located at relatively short distances from each other in a very simple and small building. Larger stations are necessary where service requirements are exacting and where the traffic density reaches a point where a service interruption results in large monetary loss.

The area or zone to be supplied by a station, which also fixes the capacity, should be determined primarily by the feeder investment and annual charges, together with losses occurring in the feeder layout. In large cities such other considerations enter as land values, building costs and restrictions, maintenance and operation costs, alternating current feeders and reliability of service. Where the multiple-unit station proves the most efficient and economical to install, the relatively simple and yet comprehensive scheme of automatic sequence operation will give the greatest possible service insurance, as well as good power economy.

In order to prevent reflecting unusual loads back on the rotary the feeder control must have these characteristics: The feeder must be opened promptly on short circuit and the feed to the disturbed sections must be resumed immediately at reduced potential. The best way to reduce the potential appears to be by means of tie feeders connecting to other stations, with an auxiliary bus.

Experimental work is now being done to overcome the difficulties which still exist in applying automatic control in large city systems. In some cases a plan of remote control superimposed on the "automatic" would be satisfactory. A plan for this purpose is this: The dispatcher's office would be located at a central point, preferably the general offices, from which telephone conductors would be extended to each of the automatic substations. At the dispatcher's office each of the automatic substations would be represented by a small panel upon which would be mounted small manually operated contact devices, such as telephone jacks, together with visual and audible signals. Certain master relays, or controlling devices making up the automatic substation control, could be so equipped that by the manipulation of the jacks on the dispatcher's board these relays or devices could be opened, closed or held out or in, as the occasion might demand. The signal lamps would indicate the positions of the relays so controlled. The functioning of these devices by reason of the automatic control would also set up corresponding signals at the dispatcher's board. To enable the dispatcher to know the load conditions of the substations, arrangement would be made to indicate in the dispatcher's office the loading of each station upon a chart. The control wires might also be used for telephone communication.

This section of the report contained also much information regarding the details of the Cleveland substations, and the results of calculations as to relative costs of manually and automatically controlled substations.

Regarding the Cleveland Railway the statement was made that even if there were no financial saving from the use of automatic control the resulting reliability of service would warrant its installation. The company plans eventually to convert the whole system to this type of control.

This report was signed by A. B. Stitzer, chairman; L. D. Bale, H. P. Bell, Walter E. Bryan, N. A. Carle, F. C. Chambers, H. E. Davis, C. A. Greenidge, H. A. Kidder, Charles F. Lloyd, George W. Saathoff, E. H. Scofield, L. R. Shattuck, Walter C. Shade, and E. P. Waller.

Mr. Stitzer first outlined the plan of the report and called upon W. E. Bryan, United Railways of St. Louis, to give the details of the suggested power-contract form. Mr. Bryan did so, giving special attention to the changes which had been made from the form suggested last year. On motion of C. S. Kimball, representing the committee on standards, it was voted to include the suggested form in the Manual under the head of "Miscellaneous Methods and Practices."

Mr. Stitzer then called on E. H. Scofield, Minneapolis Street Railway, to explain the section of the report devoted to power generation. The latter elaborated the printed matter, reading a written memorandum. He said that the work done at Minneapolis was undertaken when it was found that the possibilities with the chain grate and natural draft were inadequate to meet the requirements, both in capacity and operating efficiency, incident to the extreme demands on a steam plant when acting as an auxiliary to an inflexible power supply, such as a water power furnishing power for an urban railway load.

In working out the design of the stoker the most desirable feature of the chain grate, *i.e.* the steady travel of a fuel bed of uniform depth with the least possible agitation, was adopted. In all other respects the design departs materially from chain-grate practice.

The fuel as introduced by the rams is spread laterally by deflector plates so as to cover the surface between retorts. The action of these plates also loosens up the fuel, which, when containing large percentages of moisture and dirt, becomes densely packed while coming through the rams.

Retorts with their secondary rams, under independent control and extending in their action practically to the dump grates, insure a continuous movement of the fuel bed, filling blowholes which may start and maintaining a uniform fuel bed.

The front dump grate, by its lifting action, may be used to break up clinkers as they pass to the rear dump and hold back the fuel bed when the rear dump is dropped. Both front and rear dump grates are power operated and supplied with air, under control, for combustion. The entire grate surface thus becomes active when required; the carbon is burned down to a low percentage of the refuse before dumping; dumping may be done frequently on heavy loads without interfering with output or efficiency, and refuse is disposed of before it builds up into large clinkers.

Side-wall tuyeres, extending approximately to the top of the fuel bed, so designed that there is no dead pocket for lodgment of partially burned coal or clinkers, protect the brick of the side walls from the direct heat of the fuel bed. Both side-wall tuyeres and front-wall air boxes admit a limited amount of air underneath, and near the surface of the fuel bed, tempering the gases and forming a cool blanket over the lower furnace walls.

The rear furnace wall is so built as to expose 90 per cent of the tube length, resulting in a boiler surface double the area of the grate surface exposed to direct radiation from the furnace heat, and a combustion chamber of 13 cu. ft. per square foot of grate surface. The bridge wall rises from the dump grate to a level with the surface of the rear of the fuel bed, then recedes to the rear furnace wall.

A battery of high-velocity steam jets, placed in the front wall about 18 in. above the fuel-bed surface and directed parallel to this surface, thoroughly mix the gases, insuring complete combustion before they enter the tubes, and diverts the gas flow toward the back wall of the furnace, providing for a sweep of the gases over the full length of exposure of the boiler tubes.

Special baffling is designed to give a cross section of passage approximately proportional to the temperature of the gases.

Experience with this equipment has demonstrated the possibility of operating throughout a range from 100 per cent to 350 per cent of rating. Low-grade fuel is burned up to a rate of one ton per retort per hour, and the refuse is disposed of with no excessive loss of carbon or loss of capacity or efficiency while dumping. The air supply is controlled to the most efficient proportion; the furnace temperatures are low enough to prevent excessive clinker formation; little if any slag is formed on furnace walls, and highest efficiency is secured at or near normal rating.

This furnishes a unit of great flexibility, peculiarly adapted to standby and intermittent demands and reducing the losses from banking to the lowest possible in stoker practice.

Following Mr. Scofield, H. D. Savage, Combustion Engineering Corporation, read a paper regarding the burning of powdered fuel. An abstract of his paper follows:

THE BURNING OF PULVERIZED COAL

The obvious economic advantages of burning coal in pulverized form, particularly as applied to the varying load conditions of street railway operation, would seem to warrant more consideration than the brevity of the committee's report would indicate has been given.

The operation of the Oneida Street plant of the Milwaukee Electric Railway & Light Company during four years has warranted the building of the Lakeside station in such a manner that it would be impossible to use any other fuel than coal in pulverized form. It is safe to assume that the financial interests did not authorize the second station without careful scrutiny of cost versus results.

The cost may be considered under two heads; capital expenditure and operating cost.

The important results in street railway operation are: (1) The ultimate obtainable continuous capacity and ability to meet peak-load conditions. (2) The ability to maintain efficiencies during high ratings and peak periods. (3) The substantial reduction of stand-by losses.

As to capital expenditure, the initial cost will not be greater than for a stoker plant built under similar conditions. Comparative figures of a general nature would be misleading, as every individual plant is a separate engineering problem and involves features that do not apply to another plant. Figures purporting to show the cost of pulverized-coal plants on a unit basis, or a standard cost of coal preparation, are of absolutely no value.

Theoretically and in actual practice the cost of firing pulverized fuel plants, including the complete cost of preparation, is no greater than that of burning coal on stokers. The power required for pulverization is no greater than that required for operating the forced-draft fans and moving the stokers when multiple-retort stokers or underfeed stokers are used.

To realize adequately on the expenditure necessary for boiler plants it is necessary to drive them at the highest possible ratings. Powdered coal would seem to present an ideal opportunity for much higher continuous ratings than have been possible in the past. While stoker-fired boilers can be run for several hours at extremely high ratings, it is possible to run equally high ratings with powdered coal and to maintain them continuously. The usual interference from clinkering and slag does not apply to powdered-coal applications.

It is possible while operating at high ratings to maintain an efficiency far in excess of the normal operating efficiency with stoker-fired boilers. In stoker firing it is necessary, of course, to keep boilers under a considerable fire between the period of the morning peak and the afternoon peak. With powdered-coal firing, when the load begins to drop off, certain boilers are entirely shut off stopping the coal feed immediately. These boilers will carry pressure for several hours.

Recently one of the 1,308-hp. boilers at Lakeside was operated at 160 per cent of rating for five hours. The fuel feed was then stopped and the damper was closed. The boiler "popped" sixteen times during the next three hours. During the following twelve hours the boiler pressure dropped at the rate of about 15 lb. per hour, after which the pressure had dropped to 110 lb. That is, after banking the boiler pressure stayed at between 270 and 275 lb. for three hours and in the next twelve hours dropped 160 lb. The boiler could be brought up to rating in about five minutes after the fuel feed was started after an ordinary bank of eight hours, during which period the pressure generally dropped to about 200 lb. Thus a very large item of saving occurred during the banked period.

In summing up the advantages to be derived from powdered coal burning, the following may be stated: (1) The capital investment will be no greater than for any usual type of plant. (2) The cost of firing, from coal car to ash car, will be slightly less than with stokers. (3) The maintenance of the furnace and boiler will be less than with stokers. (4) High ratings and high efficiencies will be obtained no matter what the character of the fuel received. (5) The problem of plant operation will be much less complicated. (6) The load can be followed more closely. (7) There will be a very considerable saving in fuel under any condition.

AUTOMATIC SUBSTATION DISCUSSED

On the committee's topic of the automatic substation prepared discussions were presented by W. E. Bryan, United Railways of St. Louis; C. F. Lloyd, Westinghouse Electric & Manufacturing Company, and G. H. Roosevelt, General Electric Company.

Mr. Bryan said that he was heartily in accord with the view of the committee that in general the single-unit automatic substation is preferable to the multiple-unit station. If full advantage is to be taken of the possibilities of multiple-unit operation the buildings must be small and of simple design, located perhaps on the rear portions of lots of which the fronts are used for other purposes. The cost of land for the multiple-unit station is less per unit than for the single-unit station unless advantage is taken of such possibilities. An ideal system of automatic substations, said Mr. Bryan, is a number of single-unit stations none of which is loaded above its rated capacity for the maximum half hour. Then in case one station is out of service there would be ample capacity in converter equipment in adjacent stations to carry the load. Another item to consider is the fact that single-unit stations are considerably less complicated as to control apparatus than multiple-unit stations.

An important element, said Mr. Bryan, is the method of handling the direct-current feeder circuits. One manufacturing company is advocating, instead of the limiting resistance in each feeder, the use of a device which differentiates between a grounded circuit and a legitimate overload. With this device a grounded circuit would be disconnected from the bus or connected to a tie feeder running to another station, while a legitimate overload would be carried at full voltage unless the overload were sufficient to cause the converter circuit resistances to come into play. The subject of automatic substations is comparatively new and we may expect to see some of our present ideas subjected to modification as the art develops.

Mr. Lloyd said that the list of automatic installations included in the report is a convincing testimonial for this type of apparatus. Automatic control has come to stay. Continuing, he said that the deevlopment had been very rapid and during the past year had been largely in simplifying the equipment, wiring, etc. The usual equipment, he said, protects against starting on low alternating-current voltage, starting on reverse or single-phase, loss of high-tension phase, loss of low-tension phase, loss of machine field current, restarting when undesirable, overheating of machine, direct-current overloads, hot bearings, alternating-current overloads, direct-current reverse-current, over speed, failure to start, failure of field, failure to reverse polarity.

While the manufacturers have been working diligently to simplify the equipment, said Mr. Lloyd, the operating engineers have been active in simplifying the substation building. In Cleveland it was found possible to make a saving of 25 per cent in building cost without impairing the reliability of the substation. Instead of the roomy hand-operated station with all equipment under the roof, we now have a semi-outdoor type that requires only a very small building to house the converter, the automatic switching panels and protective resistance.

Mr. Lloyd said that it early became evident that the standard resistance type of feeder would not meet the requirements of the metropolitan field and now a selective tripping scheme is available for use in connection with direct-current feeders, allowing the carrying of heavy overloads without tripping, but tripping immediately on short circuit. He described the operation of this selective action and went into some detail regarding the several methods for handling direct-current feeders and the advantages of each. The problem of load-limiting resistance in the converter circuit becomes quite involved on large systems, said Mr. Lloyd, and the ventilation problem is one worthy of very careful consideration.

E. P. Waller, General Electric Company, was represented by G. H. Roosevelt of the same company, who said that although the report states that the single-unit station is the best, the multiple-unit installations in Cleveland do not bear this out because of the low cost of buildings and land used in that city. If the cost of the stations used for multiple units is placed on a comparative basis with the estimated costs of stations for single units, Mr. Roosevelt believed that it will be shown that two single units are superior to the multiple-unit installation. In any case, he said, the report is proof of the reliability of the automatic station, regardless of the number of units or the number of feeders concentrated at a station. The factors to be considered are wages, cost of copper and losses. The cost of operation of the manual station is higher than that of either two single units or a multiple-unit automatic installation. Mr. Roosevelt referred to an article in the Sept. 17 issue of the ELECTRIC RAILWAY JOURNAL describing a miniature layout of the entire track and trolley system of Atlanta. The arrangement there provides for two substations at the center of Atlanta, feeding all radiating trolleys.

After the proper location of the station has been determined the important consideration is the type of building. Now that automatic control has proved to be reliable the next step is to reduce installation costs. Automatic control is best adapted for application to converters operated twenty-four hours a day, as the chief economy is the elimination of operators. Mr. Roosevelt referred to one case under consideration where it is proposed to connect a manually operated machine to the bus one hour in the morning and evening to operate in multiple with the automatic units during the peak load. He said that operators can be of great service to the manufacturers by assisting in the determination of the proper feeder control systems. Is it better to use up copper in burning off a "short" or to delay service and call out the trouble gang?

R. H. Rice, board of supervising engineers, Chicago Traction, said that he is very much in favor of automatic substations, as they represent a means of obtaining additional stations without greatly increased cost. At present they have the disadvantage of extreme complexity and the chief objection is the load-limiting resistance and the resistance on the feeders. Mr. Rice introduced Victor E. Thelin, Chicago Surface Lines, who described briefly a substation which he has installed which uses no resistance on either feeders or converter circuit. Mr. Thelin said that he believes the one-unit station to be cheaper in the long run. He has been using the automatic reclosing circuit breaker, which is so designed that the breaker opens instantaneously. An inverse time-limit relay takes care of continuous overload. The shunt rotary is coming into use in connection with automatic substations. Its natural characteristics assist in distributing the load. The development of the automatic substation, said Mr. Thelin, is just beginning. The surface has only been scratched.

Following Mr. Thelin's remarks the recommendations of the committee on subjects were presented and the report of the committee was accepted.

Following this a paper was read by George B. Muldaur, general agent Underwriters' Laboratories, New York, N. Y., on "The Work of the Underwriters' Laboratories." This paper is abstracted elsewhere. Mr. Muldaur then showed a motion picture film giving the audience a graphic idea of the work of the laboratories.

The joint report on stores accounting by the committee on stores accounting of the Accountants' Association and the committee on purchases and stores of the Engineering Association was read at the accountants' meeting on Tuesday. An abstract of their report follows:

STORES ACCOUNTING

Consideration was given to material accounting having to do with the control over the money tied up in the inventories of materials and supplies and the adoption of methods helpful in so regulating such stocks as to minimize such investments without sacrificing service in operation. A preliminary step was to send out a questionnaire to some fifty representative electric railways located in all sections of the United States covering their methods and practices. Replies were received and studied from some twenty-six railways. The committee collaborated in this matter with the committee on purchases and stores of the Engineering Association. The conclusions follow:

A standard material classification is a very great help in the control and regulation of the stock account. Such a classification should be broad enough so that all electric railways can adopt it as a standard. Of twenty-two companies studied only ten had classifications which could be considered at all adequate and of those not more than two or three have forms for reporting under which intelligent conclusions could be drawn as to whether the stock was well regulated. From the best classifications found in use and from that of steam railroad materials recommended by the Railway Storekeepers' Association, a classification was prepared and recommended for adoption as the standard material classification for electric railways. This classification is appended to the report.

Two standard monthly material report forms are also recommended. One is a summary of totals according to storehouses and the second is a detailed report by storehouses and by material classifications, with a combined report for the system as a whole.

Stock books are recommended in storehouses, either in lieu of the more customary form of stock card or stock ledger sheet or in addition thereto. Very few roads are using such a book. Three which do are the Philadelphia Rapid Transit Company, the Public Service Railway of New Jersey and the Pittsburgh Railways. Some of the main advantages of the stock book are as follows:

1. By compelling an actual inventory and a checking of outstanding orders each month it puts the storekeeper in the best position to keep his stock at the proper level and change it according to current demands.
2. It makes it necessary to keep the stock in a better physical condition than under any other method.
3. It enables the storekeeper to keep a close watch on inactive and obsolete stock, otherwise not regularly obtainable.
4. When the material is listed in books, a large number of items can be handled more readily and more easily than on individual cards.
5. It provides a system that can be depended upon as to quantities of material on hand and due on orders, whereas the accuracy of a postal card or ledger record depends upon too many stock clerks issuing materials and office clerks posting entries.

Recommendations were also made as to working stocks, i.e., material drawn out of the storeroom in excess of the daily need and carried as a sub-stock in the shops, at the headquarters of a line or track foreman or at outlying points. A different practice exists on different roads in accounting for such materials. On some roads the practice is to charge out the material to the account for which it was drawn when taken from the storeroom. It would not therefore be inventoried when the general stores were inventoried. This method is deprecated as not sound accounting, as it tends to waste and deterioration of material because the control over it is not good.

On other roads such materials are not charged out when they are drawn out of stock, but when the materials are drawn from sub-stock and replace material used. At inventory time such sub-stocks are inventoried and also set up in the general stores account. This practice is recommended. However, to keep the stock at a reasonable limit and to control it, the report recommends that the general storekeeper and the official of the department interested agree in detail as to the quantities, locations, etc., for the working stocks, and the requisitions on the storekeeper simply be for such quantities as will maintain such working stocks to the limits as agreed upon in advance. Furthermore, stock books should be carried for such materials. By means of these records the stocks can easily be adjusted to the consumption requirements.

The report is signed by R. A. Weston, chairman; E. L. Austin, E. J. Boos, W. L. Davis and Erwin Fullerton for the Accountants' Association and by W. H. Staub, chairman; John Fleming, W. N. Ford, F. E. Henderson, P. F. McCall and H. H. Pace for the Engineering Association.

The discussion on this joint report appears in connection with the proceedings of the Accountants' Association.

Wednesday Morning Session

The presentation of the report of the committee on power distribution, having been postponed from the scheduled time on Tuesday, was taken up at a special session Wednesday morning.

POWER DISTRIBUTION

The outstanding feature of the report of the committee on power distribution this year was a compilation of information on composition and limits of economical wear of trolley wire. The committee divided the subject into: Composition of trolley wire, limits of economical wear and causes contributing to wear. The result of a questionnaire on these topics was given, together with the gist of articles on the subject by S. L. Foster, chief electrician United Railroads of San Francisco.

The committee also recommended a number of items to be submitted to the American Engineering Standards Committee, as follows: As "American Standard," the specification for galvanizing or sherardizing on iron and steel; as "Recommended American Practice," the specification for 600-volt direct-current overhead trolley construction; as "American Standard Specification," the specification for wood poles; as "American Standard Specification," the specifications for tubular steel poles; as "Recommended American Practice," the specification for round and grooved high-conductivity trolley wires, the specification for overhead line material, the railroad specifications for electric light, power supply and trolley lines crossing steam and electric railways, various specifications referring to insulated wires and cables, and the hard-drawn aluminum wire table.

It is not the thought of the committee that all of the above will be acceptable in the present form, but the plan is to set in motion the machinery necessary to bring about, through the American Engineering Standards Committee, such changes as will ultimately render them acceptable to all interests concerned.

On the subject of catenary overhead construction, the committee gave the results of a questionnaire, but recommended the continuation of the study. Progress was also reported as to the standard stranding of cables, regarding which the American Electric Railway Association has accepted joint sponsorship from the American Engineering Standards Committee. As this was the first occasion of the association becoming a sponsor for an American Engineering Standard, the committee gave, in an appendix to the report, a detailed record of the procedure being followed.

As to lightning arresters, both on cars and on the line, the committee expressed a conviction, resulting from a questionnaire on the subject, that traction properties are not giving this essential detail the consideration it should have. Further, the recommendation was made that all operating officials have a survey made of arrester equipment, with a view to bringing it up to recommend practice. Many properties are having lightning damage, due to improper installation or to lack of sufficient arresters, others are not providing proper protection by choke coils, still others have used arrester wiring of too large resistance, etc. The committee included specifications for installing arresters to insure the best results.

The report included a number of appendixes containing valuable data, questionnaire forms, etc. It was signed by Charles Rufus Harte, chairman;

Azel Ames, C. C. Beck, J. H. Drew, R. W. Eaton, H. H. Febrey, C. A. Harrington, C. J. Hixson, C. H. Jones, F. McVittie, M. B. Rosevear, W. Schaake, A. Schlesinger and F. J. White.

M. B. Rosevear, on behalf of the chairman, Charles Rufus Harte, introduced the several sections of the report. He called upon R. W. Eaton, public service engineer, Providence, R. I., to comment upon the joint crossing specification.

Mr. Eaton agreed with the statement of the committee that the specification is "incomplete, is in need of clarification in many places and of revision in many others and is not up to date." The most important question is how to proceed in future so as to produce a specification that will be likely to secure general acceptance. It seems desirable that further work by a restricted committee should be abandoned and that future efforts should be made through the American Engineering Standards Committee or the United States Bureau of Standards or both. It is too bad that the existing specification is not generally known and used by members. Probably the same situation applies on the steam railroads. Certainly the specification is not being adopted rapidly by state and other regulatory bodies.

Mr. Eaton though that the sponsorship of the specification is too restricted and that there is no prospect of constructive action through further co-operation with the steam railroads only. Further, conferences should be held between the power distribution committee and the Bureau of Standards regarding the details of the appropriate parts of the National Electrical Safety Code, so that in case, as now appears to be the trend, the national code is approved by state commissions, the views of electric railway men may be before the Bureau of Standards in connection with any revision of the code.

Next, speaking for himself as an individual, Mr. Rosevear said that the latest revision of the specification, as adopted at the 1919 convention of the association, was participated in by three bodies only; namely, the American Railway Association, the American Railway Engineering Association and the American Electric Railway Association. At that convention the speaker had voiced his objections to favorable action by the Engineering Association, but the report was nevertheless adopted, and it was explained that the revision was so much better than the original that it was advisable for this association to adopt it. It was also stated that further revision was required, and the specification was immediately referred back to the power distribution committee for such action, which, as the present report shows, has been impossible of accomplishment.

The committee at its June meeting thought that further action should be by all interested parties, not by a selected few, and that such general action, leading to the preparation of specifications that would be universally acceptable, might best be secured through the medium of the American Engineering Standards Committee. It was not the idea of the committee to submit the present specification as a basis for a general one as the committee was convinced that it was unsatisfactory in many respects.

Since the completion of the report, further consideration by some members of the committee has raised the question as to whether the action of the 1919 convention really should not be rescinded and the overhead crossing specification rejected and removed from the manual. Admittedly such action would be very radical and might subject the association to severe criticism for its changing attitude. Nevertheless, such action would seem to be a natural corollary of the committee's report. It would also give the association representatives on any general joint committee, such as are formed under the auspices of the American Engineering Standards Committee, greater freedom of action than if the specification remained in force as a "Recommended Specification."

Next a communication was read from Thomas Sproul, Public Service Electric Company. He said that he could not agree with the recommendation of the committee that the preparation of specifications covering the type of construction to be employed by electric light, power supply and trolley lines crossing steam and electric railways is a proper study for a committee organized under the auspices of the American Engineering Standards Committee. The subject is already completely covered by the National Electrical Safety Code, which includes rules covering all types of overhead and underground constructions, crossings being only a small part. To give separate consideration to a crossing specification will tend to interfere with the adoption of the entire code as a standard by the American Engineering Standards Committee.

General standardization of a crossing specification is particularly desirable, but an acceptable standard can only be prepared by basing such a specification on the National Electrical Safety Code, which, as the result of the care exercised in its preparation, is being adopted in many states as a basis for the preparation of rules regulating such construction. Mr. Sproul therefore urged that the association suggest to the committee on power distribution a revision of the specification in accordance with the National Electrical Safety Code, rather than that the construction of crossings be given separate study by a special committee under the auspices of the American Engineering Standards Committee.

Dr. M. G. Lloyd of the United States Bureau of Standards was next called upon. He spoke of the way in which the state commissions had made use of the National Electrical Safety Code, both in its original form, that of 1916, and the present revised form. It has largely taken the place of sundry codes previously used. It had an almost immediate effect in unifying procedure. No argument is needed as to the need for uniform rules. The men of the Bureau of Standards were disappointed that, in 1919, the association adopted the specification without consulting them. He hoped that the action would be rescinded, but said that there could be no objection to the calling of a conference on the subject by the American Engineering Standards Committee.

Speaking from the standpoints of several interests in this matter, Martin Schrieber, Public Service Railway, Camden, N. J., opposed rescinding of the 1919 action, particularly as the specification is to be revised. Opinion is divided as to the status of the safety code, and, he thought, both the code and the specification should go to the American Engineering Standards Committee. After this the recommendation of the committee was adopted.

OVERHEAD CATENARY CONSTRUCTION

The next topic taken up was the construction of catenary "overhead." In this connection W. K. Archbold, Archbold-Brady Company, read a communication from R. L. Allen, chief engineer of the company, stating that a type of supporting structure should be chosen with a view to the lowest annual capital and maintenance cost. The allowance for maintenance of wood poles should be studied in view of the prospect of constantly rising costs for renewals. It is difficult to lay down general rules for selecting spans and types of supports, due to the differences in conditions on different properties. Where line voltage is so high that the cost of insulators per mile is important, it is advisable to use longer catenary spans, especially if a large part of the track is on tangents. Where much feeder capacity is required, the total strains and cost may be reduced by using the feeder as a messenger.

As to the assumption that a steel messenger will have a modulus of elasticity of 29,000,000, this is correct for a single wire, but on account of the spring action in a stranded cable the value should be taken at about 22,000,000 in this case.

It would not seem desirable to put in steady strains as close as 300 ft. on tangents, as each fixture tends to make a hard spot in the wire, and general practice appears to be to place the steady strains from 500 ft. to 1,500 ft. apart. Sometimes they are omitted altogether. Again, if the line structures are substantial, full anchor bridges would not appear to be necessary.

The primary purpose of catenary

construction is to obtain a trolley contact without hard spots. The cause of arcing on a contact line is the impact at points of support. This varies directly with the pressure of the collector and the square of the speed. The weight of the portion of the hanger which is integral with the contact wire tends to increase the hammering effect. The force of this blow varies inversely as the weight of the contact wire per linear unit and inversely as its tension.

LONGER SPANS MAY BE CHEAPER

In a communication read as coming from M. W. Manz, the Ohio Brass Company, the writer gave an estimate of the saving secured by increasing span length from 150 ft. to 300 ft. He said that from 10 per cent to 15 per cent may thus be saved. With the longer spans as used on the Chicago, Milwaukee & St. Paul Railroad, two No. 0000 contact wires are supported on a $\frac{1}{2}$-in. messenger with about 300 lb. loading per pole bracket. With a $\frac{7}{16}$-in. messenger and one No. 0000 wire, the total load would be about 240 lb. per bracket.

Mr. Manz gave as a formula for curve work the statement that, approximately, the length of the mid-ordinate in feet is equal to seven-eighths of the product of the degrees of curvature and the square of half the long chord or half the pole spacing in percentage of 100 ft. He also expressed preference for a contact wire height of 24 ft., if commercial freight haulage is to be considered.

Mr. Manz gave a set of logarithmic diagrams for calculating sags and tensions for a wide range of spans, with provision for variation in temperature.

H. M. Gould, Department of Street Railways, Detroit, Mich., sent in a statement that the Department of Street Railways has installed catenary construction at two steam railroad crossings, the first one having a clear span of 190 ft., and covering thirteen tracks, and the second having three shorter spans and covering eight tracks. In both cases the contact wire is No. 00 round phono-electric, with $\frac{5}{8}$-in. stud bronze clinch ears and a $\frac{5}{8}$-in. round copper-clad steel hanger, looped over the messenger. In the first instance the messenger wires are $\frac{5}{8}$ in., seven-strand, copper-clad steel, supported by two cross spans of the same material. In the second case the messenger wires are $\frac{5}{16}$-in., seven-strand, copper-clad steel, suported by two cross spans of the same material. The span lengths were automatically fixed. Copper or copper-clad steel was used to ward off the corrosive action of the locomotive gases. A flexible hanger was used to cut down the wear on the trolley wire, which was installed 22 ft. above the rails as required by law. A hanger spacing of 15 ft. was decided upon as this is the maximum which will allow the trolley wheel just to raise the trolley wire and hanger. A $\frac{5}{8}$-in. hanger was used because it was only necessary to thread a standard rod and this could be used with a standard $\frac{5}{8}$-in. boss clinch ear.

This citation was made to show that the reasons for any particular installation are just as important as the details, and the quickest way to bring about standardization is to eliminate those methods which have no good reason for existing.

DISCUSSION ON QUALITIES OF TROLLEY WIRE

Mr. Rosevear opened the discussion on trolley wire by stating that the wire of today is better than earlier wire, but that specifications are needed to prevent the effects of haste in manufacture due to competitive conditions. He deplored the fact that so few companies purchase wire by the association specification. He then called upon the secretary to read a communication from S. L. Foster, Market Street Railway, San Francisco, who said that while what he wished to contribute is not new, this seems to be a good time to bring it up again. Although the trolley wire used on the San Francisco property was bought by the association specifications and carefully inspected, it occasionally "broke off like macaroni when we put it in a splicer," to use a lineman's words. While this may have been an exaggeration, the experience described was unusual and disconcerting. Mr. Foster said that he had heard of a practice followed in Europe of specifying a certain number of up-and-down bends in the wire to be withstood without fracture. He thought that if the wire in question had been subjected to such a test the defects would have been discovered. He said that the use of hard-drawn wire had been largely abandoned in San Francisco. Figure 8 and grooved wire had not been used there for many years.

Mr. Foster expressed preference for No. 00 round wire with 15-in. clinch ears. The clamp ear does not protect the lower surface of the wire where the blow of the passing trolley wheel is delivered. With the clinch ear, inclosing the wire all around, the lower surface of the wire is protected. By the judicious use of clinch ears much longer life can be secured from the whole length of the trolley wire.

Mr. Foster did not claim that the clinch ear will give ideal results. The ear should be carefully designed to give the smoothest possible entrance and exit for the passing trolley wheel and should have more metal around the trolley wire measured both transversely and vertically at the center than elsewhere.

On this subject H. M. Gould wrote that the lack of reliable data is a serious matter and is inexcusable. If the railways would make systematic tests of trolley-wire wear valuable data could be readily obtained. He said that he is working with one of the manufacturers in the development of a spring hanger and a flexible strain plate for the purpose of reducing wear on the trolley wire at the ears and strain points respectively.

The next speaker was Horace A. Staples, American Copper Products Company, who expressed preference for numerous reductions in wire drawing. Specifications should be considered from the standpoints both of the user and the manufacturer. Sometimes it seems as if it was believed that "if it's harder to make it's better." He thought the torsion test all right if that is what the customer wants, but he did not see why the tensile strength should be limited. The A. S. T. M. and A. E. R. A. specifications should be harmonized.

J. L. R. Glover, Bridgeport Brass Company, spoke regarding high-strength wire, in connection with which, as with all other wire, the matter of care in handling should be considered. Breaks are important as well as wear. Nicking is particularly bad. Wire is sensitive to handling both in erection and in the storeroom.

H. G. Burd, National Conduit & Cable Company, backed up Mr. Glover as to breaks. He thought that the reasons for non-use of the standard specification are lack of interest and the possibility of higher price.

E. H. Scofield, speaking for the railway men, said that fatigue should not be overlooked. Recent experiments showed 60 per cent of the breaks in a given case were due to this. More data are needed here. In the "Twin Cities" a flexible hanger and general use of span construction have eliminated hard spots. Then, as to the method of collection, Mr. Scofield said that in cities little has as yet been done with sliding contact. His experiments show that a shoe 3 in. to 4 in. long requires only one-half the pressure of a wheel. Wheel wear is largely due to burning. No flashing occurs with the shoe at high speed, and there is no vibration on the roof of the car. A great source of trouble with wheels is due to the fact that they wear "out of round."

The specification for overhead line material was then taken up. Certain minor revisions were approved and the specification was referred to the standards committee with a view to submission to the American Engineering Standards Committee. Other recommendations of the committee to the same end were approved.

Before the morning session was adjourned a suggestion was received from James H. Drew, Drew Electric Company, to the effect that sentiment out in the industry seems to favor some change in the form of the Engineering Manual to make it more convenient for use. President Gove said that this matter would undoubtedly have early attention. A resolution, suggested Monday by H. H. Norris, ELECTRIC RAILWAY JOURNAL, regarding a move to bring about unity of action in regard to electrification of steam railroads was passed.

After hearing a report from the committee on subjects regarding power-distribution-committee assignments for next year, the meeting adjourned.

Wednesday Afternoon Session

At the Wednesday afternoon session of the Engineering Association R. C. Cram, chairman, presented the report of the committee on way matters, in abstract, and discussion was called for as each subject was presented. Martin Schreiber, chairman of the committee on standards, presented the recommendations of that committee.

WAY MATTERS (INCLUDING WOOD PRESERVATION)

In presenting the report of the committee on way matters the chairman read from an abstract of it which was printed in connection with the advance copies. This is a new feature of convention reports. Attention was called by the chairman to the size of the report and to the number of subjects which he believed to be too many for adequate consideraton by any single committee.

The standardization of frogs requires adoption of standard track center distances, and a set of eight distances was recommended. The work of standardizing branch-off frogs received much study and a proposed scheme with a large number of tables was presented as a progress report. Similarly a set of tables for car clearance easement curves were given and a study of these tables by the members of the association was suggested. A set of engineering data for standard crossovers and turnouts was presented for adoption.

A progress report on curved contours for wheel treads indicated the desire for further study in co-operation with the equipment committee.

The subject of curved treads for plain girder and girder guard rails was exhaustively treated and includes a number of drawings. The committee recommended that the treads of the guard rails and plain girder rails be left as at present. An important recommendation is given, calling for the inclination of tilting of plain girder rails.

The progress report on the investigation of arc-weld joints contains matter of interest to all track engineers who are studying this type of joint. A large number of illustrations are included, covering apparatus and types of joints in use. Seven conclusions are reached, indicating the need for much more study of the process, and the subject is suggested for continuation.

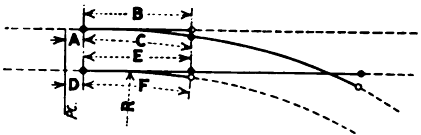
A complete specification for special trackwork of the rail-bound insert type was presented for adoption as a recommended specification.

The study of the proposed impression test for girder rails was continued in co-operation with representatives of the A.S.T.M. The test is proposed by the A.S.T.M. as a substitute for the drop test. Some modifications are suggested for the test as proposed by the A.S.T.M., but no agreement with the latter body was reached. The committee believes the subject needs further study.

A brief progress report on designs of substitute ties was presented, and the subject is suggested for continuation as it is considered to be of considerable importance. Time did not permit the committee to give the subject much attention.

The subject of wood preservation was considered jointly with the committee on buildings and structures and on power distribution. A separate joint report was found desirable, and this was presented separately. The joint report contains a mass of information on the whole subject of wood preservation as related to the electric railway industry. A number of recommended specifications covering different materials and processes was presented. The joint report includes a valuable glossary of terms used in wood preservation which is thought to be the first compendium of such information ever prepared. It should be of great service to all who have to study the general subject of wood preservation.

Several important changes in existing standards and recommendations



DIMENSIONS OF SWITCHES AND MATES

(This table is to be withdrawn in favor of the revised table herewith):

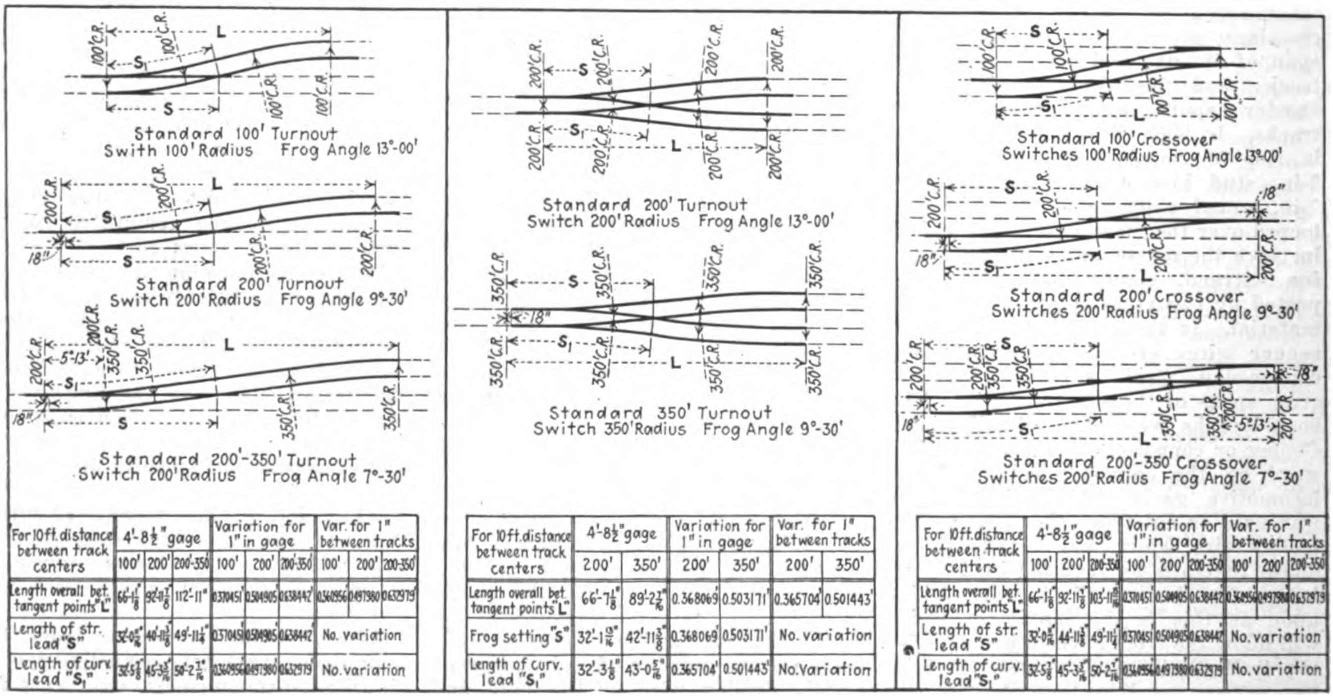
Standard Radius	Radius for All Gages	Dimensions			
	R	A	B and C	D	E an F
50-ft. lateral......	47 ft. 7¾ in.	—6 in.	10 ft| 0 in.	—6 in.	10 ft. 0 in.
75-ft. lateral......	72 ft. 7¾ in.	0 in.	12 ft. 0 in.	0 in.	12 ft. 0 in.
100-ft. lateral......	97 ft. 7¾ in.	0 in.	13 ft. 6 in.	0 in.	13 ft. 6 in.
150-ft. lateral......	147 ft. 7¾ in.	12 in.	15 ft. 0 in.	12 in.	15 ft. 0 in.
200-ft. lateral......	197 ft. 7¾ in.	18 in.	16 ft. 6 in.	18 in.	16 ft. 6 in.
100-ft. wye........	97 ft. 7¾ in.	—6 in.	10 ft. 0 in.	—6 in.	10 ft. 0 in.
150-ft. wye........	147 ft. 7¾ in.	0 in.	12 ft. 0 in.	0 in.	12 ft. 0 in.
200-ft. wye........	197 ft. 7¾ in.	0 in.	13 ft. 6 in.	0 in.	13 ft. 6 in.
350-ft. wye........	347 ft. 7¾ in.	12 in.	16 ft. 6 in.	12 in.	16 ft. 6 in.

NOTE.—It is recommended that the 100-ft. radius lateral and 200-ft. radius wye shall be used wherever practicable. It will rarely be found necessary to use others.

(This table submitted for adoption as standard design in lieu of the table opposite.)

Standard Radius	Radius for All Gages	Dimensions			
	R	A	B and C mate	D	E and F Tong. SW.
100-ft. lateral.....	**97 ft. 7¾ in.**	**0 in.**	**13 ft. 6 in.**	**0 in.**	**13 ft. 6 in.**
200-ft. lateral.....	**197 ft. 7¾ in.**	**18 in.**	**16 ft. 6 in.**	**18 in.**	**16 ft. 6 in.**
200-ft. equilateral	**197 ft. 7¾ in.**	**0 in.**	**13 ft. 6 in.**	**0 in.**	**13 ft. 6 in.**
350-ft. equilateral	**347 ft. 7¾ in.**	**12 in.**	**16 ft. 6 in.**	**12 in.**	**16 ft. 6 in.**
50-ft. lateral......	47 ft. 7¾ in.	—6 in.	10 ft. 0 in.	—6 in.	10 ft. 0 in.
75-ft. lateral......	72 ft. 7¾ in.	0 in.	12 ft. 0 in.	0 in.	12 ft. 0 in.
100-ft. equilateral. .	97 ft. 7¾ in.	—6 in.	10 ft. 0 in.	—6 in.	10 ft. 0 in.

NOTE.—Radii and dimensions shown in light face type should only be used where special conditions will not permit the use of standard dimensions shown in heavy face type.



Standard 100' Turnout
Swith 100' Radius Frog Angle 13°-00'

Standard 200' Turnout
Switch 200' Radius Frog Angle 9°-30'

Standard 200'-350' Turnout
Switch 200' Radius Frog Angle 7°-30'

For 10 ft. distance between track centers	4'-8½" gage			Variation for 1" in gage			Var. for 1" between tracks		
	100'	200'	200'-350'	100'	200'	200'-350'	100'	200'	200-350'
Length overall bet. tangent points "L"	66'-1⅛"	92'-11⅞"	112'-11"	0.370451'	0.504905'	0.638442'	0.360956'	0.497980'	0.632979'
Length of str. lead "S"	32'-0 11/16"	40'-11⅜"	49'-11¼"	0.370451'	0.504905'	0.638442'	No. variation		
Length of curv. lead "S₁"	32'-5⅞"	45'-3 5/16"	50'-2 7/16"	0.360956'	0.497980'	0.632979'	No. variation		

Standard 200' Turnout
Switch 200' Radius Frog Angle 13°-00'

Standard 350' Turnout
Switch 350' Radius Frog Angle 9°-30'

For 10 ft. distance between track centers	4'-8½" gage		Variation for 1" in gage		Var. for 1" between tracks	
	200'	350'	200'	350'	200'	350'
Length overall bet. tangent points "L"	66'-7⅛"	89'-2 7/16"	0.368069'	0.503171'	0.365704'	0.501443'
Frog setting "S"	32'-1 13/16"	42'-11⅜"	0.368069'	0.503171'	No. variation	
Length of curv. lead "S₁"	32'-3⅛"	43'-0 5/16"	0.365704'	0.501443'	No. Variation	

Standard 100' Crossover
Switches 100' Radius Frog Angle 13°-00'

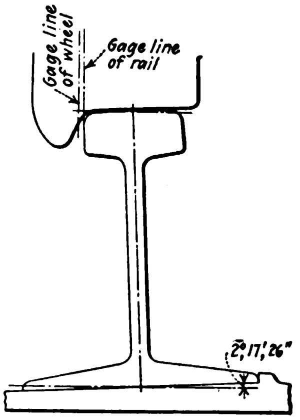
Standard 200' Crossover
Switches 200' Radius Frog Angle 9°-30'

Standard 200'-350' Crossover
Switches 200' Radius Frog Angle 7°-30'

For 10 ft. distance between track centers	4'-8½" gage			Variation for 1" in gage			Var. for 1" between tracks		
	100'	200'	200'-350'	100'	200'	200'-350'	100'	200'	200'-350'
Length overall bet. tangent points "L"	66'-1⅛"	92'-11⅞"	103'-11 15/16"	0.370451'	0.504905'	0.638442'	0.360956'	0.497980'	0.632979'
Length of str. lead "S"	32'-0 11/16"	44'-11⅜"	49'-11¼"	0.370451'	0.504905'	0.638442'	No. variation		
Length of curv. lead "S₁"	32'-5⅞"	45'-3 5/16"	50'-2 7/16"	0.360956'	0.497980'	0.632979'	No. variation		

ENGINEERING DATA FOR STANDARD CROSSOVERS AND TURNOUTS were proposed, the most important of these being the table of dimensions of switches and mates. This table is to be raised to the status of standard, and two switch radii are to be abandoned. These are the 150 ft. lateral and equilateral. Tables of the former recommendations and proposed standards are reproduced herewith.

A list of subjects which were suggested for study by the Engineering Experimental Station of Illinois University was reported, and ten standards and recommendations were presented for adopton as American Engineering Standards. The report also noted the fact that a special committee has been appointed to study the subject of all types of welded rail joints. The Engineering Association is represented on this committee by E. M. T. Ryder and H. M. Steward. The chairman is Dr. G. K. Burgess of the Bureau of Standards. The work is to be conducted under the auspices of the American Bureau of Welding, of which Prof. C. A. Adams is director.



METHOD OF INCLINING OR TILTING PLAIN GIRDER RAIL, USING INCLINED FACE TIE-PLATE

There were, all told, twenty-three recommendations submitted by the committee, seven of which called for action by the committee on standards.

PAPER ON SUBSTITUTE TIES READ

In connection with the discussion of the way committee's report, a paper on substitute ties was read by T. A. Ferneding, Dayton Mechanical Tie Company. An abstract of this follows:

Nature seems to have provided in the wood and in the soil from which it grows, the essential elements for the construction of good track. The increasing demand and the decreasing supply of wood suitable for cross ties, however, has forced the consideration of some kind of a substitute, but when we look around for that substitute, we are confronted with so many obstacles that we soon become confused. This, however, does not help, but it does suggest that we must confine ourselves to the fundamental principle of "resiliency" that is embodied in the wood tie.

The success of the reinforced concrete buildings gave rise to the thought that to use concrete as the foundation for the track in paved streets would overcome the high costs and failures of gravel and stone. So a concrete beam was laid under the rail as a substitute for a tie. This construction did not prove successful for two reasons: First, the two beams not being tied together gave way at different locations, thus throwing the track out of surface and gage. Then again, the heavy strains and blows that were delivered on the rail were readily and easily transmitted to the concrete, which soon began to deteriorate.

The next step was to increase the size of the concrete beams and construct a reinforced concrete slab on which to rest the rail. Theoretically this idea was fine and apparently had solved the problem of a substitute for wood ties. The idea was gathered from the reinforced concrete building, and made to apply to the track by shifting the steel in various positions. One very important factor, however, was overlooked and that was that the concrete was subjected to an entirely new condition. In the case of the building, the concrete merely had to support a heavy load under a continuous strain, without any abuse; but functioning as a track foundation, it not only has to perform the same duties as in the building but is subjected in addition to the abuse of having to withstand a heavy blow every time a wheel passes over the rail. Concrete, unmolested by any outside influences that will tend to destroy its integrity, will remain in a solid mass indefinitely, but subject to the impact of continuous blows, disintegration invariably follows.

Concrete, because of its strength and density, offers the best assistance to the use of a substitute tie. The steel reinforcement is not only preserved against corrosion but adds strength to the concrete itself and permits of a lesser amount of excavation, which also carries with it a saving of ballast. From a standpoint of economy and durability, reinforced concrete offers the best aid to the use of a substitute tie—with just one reservation—"if it can be properly protected." Through the efforts of the manufacturers in their endeavor to find a substitute tie, attention has been called to two kinds of track construction: monolithic and resilient.

Monolithic means steel in concrete in a solid mass. Resilient means any substance that contains the properties to yield, to give, to absorb, to deflect, etc. The meaning of the word monolithic has been, unfortunately, very frequently misunderstood. It has been said that a track laid on wood ties, with stone ballast and concrete in between the rails and on top of the ties was monolithic, but in reality it is resilient because of the shock-absorbing features of the wood in the gravel or stone ballast.

The mere finding of a substitute for the wood tie in itself is not sufficient, because there are so many other points that are so closely related to it that its use must be given very close consideration; i.e.: (1): the cost of the substitute must be considered, and its relative bearing on the total cost of track when completed. (2): the life of the substitute. By this is meant not only the life of the substitute itself, but the life of the track where the substitute is used. (3): the effect of the substitute. By this is meant the effect the substitute may have on the economy of operating other departments of the railway, as well as the effect on the track itself.

The years of experience that have been had in track construction where the basic principle has been that of "resiliency" and the reluctance with which many engineers are willing even to experiment with any kind of construction where this principle is not strictly adhered to is, I believe, sufficient proof of its correctness.

On the other hand, to deviate from this principle and cast it aside for something diametrically opposite, when the traffic conditions, weight of cars, etc., are growing worse, and assume that monolithic construction in track can go contrary to all the laws of nature and science, in my humble opinion, is not good judgment.

In conclusion, therefore, when selecting a substitute for the wood tie and its attending economies in first cost, select a foundation that is most durable and economical, but in the application of a substitute tie, do not lose sight of the positive destruction that follows when two non-resisting bodies come in communication with each other by an impact or a blow. The weaker of the two will necessarily deteriorate first, and in any construction where concrete is used in any form, no matter how strongly it is reinforced with steel, unless there is some substance interposed between the material receiving the blow and the concrete, the latter will start to disintegrate at the first impact, and its destruction compounded with each succeeding blow.

DISCUSSION ON OTHER FEATURES OF REPORT

In connection with the possible advantages of curved contours for treads of wheels, R. H. Dalgleish, Capital Traction Company, Washington, D. C., reported that he had turned a number of wheels to the contour as recommended by the way committee, and that these had made approximately 22,000 miles in service. There appeared to be slightly more wear on the flanges of wheels turned to this special contour than on standard wheels; otherwise they were apparently giving satisfactory service. Mr. Dalgleish referred to the difficulty of turning wheels to curved contours, but felt that the subject was of sufficient importance to warrant further investigation. He said that the excessive wear indicated by the first 10,000 miles of service was due to the cold rolling of the surface and not to actual wear.

Regarding welded joints, a letter was

read from W. W. Wysor, United Railways & Electric Company, Baltimore, in which he referred to his article in the issue of the ELECTRIC RAILWAY JOURNAL for July 30, 1921. He said that the simplicity, small equipment required, ease of application, cheapness, and freedom from interruption of traffic, all combine to make the arc-weld joint attractive. But there is something more to be done than simply buying an equipment and starting a man to welding. The work calls for careful supervision and skillful operators. Evidence is available to show that internal stresses are set up and chemical or metallurgical changes take place in the metal affected by the arc. In applying the arc-weld or seam-weld joint, by whatever process, we are not eliminating the joint. The rails should be abutted as closely as possible and should be milled or ground on the ends, and the bases slightly undercut so as to bring the heads together. After welding is completed the rail heads should be ground to a true surface and proper contour, using no more grinding than necessary.

Too much stress cannot be laid on the importance of selecting proper operators, men who will take an interest in the work. Such men will soon learn when they are making a proper weld.

E. C. Price, vice-president the Indianapolis Switch & Frog Company, Springfield, Ohio, discussed the report of the way committee at length. He said, in part:

That the subject of joints should lie dormant in the annals of the A. E. R. E. A. from 1910 until 1920 may be attributed to the constant activities on the part of the manufacturers in conducting research and in developing and exploiting special joints and bonds. The wisdom is self-evident of allowing sufficient time between periodical reviews to incorporate the "time and usage test," particularly of a product of this nature. Ten years ago very few street railways, and those confined mainly to the large centers, were using "welded joints," but today the property not employing some type of welded or semi-welded joint is the rare exception. The following statements refer to the "metal-electrode arc-welded joint" known as the "Indianapolis" joint.

The principle of this joint, which is a combined joint and bond, embodies four separate features in its construction and application, namely: (1) It is primarily a web-bearing joint; (2) it is essentially a metal-electrode joint; (3) it is eccentric in shape and contour, and (4) it is staggered.

The web contact feature is in keeping with the principle of the I-beam, of which the rail is a modified form. In splicing I-beam sections, web plates are riveted to both sides of the web, which in effect increases the thickness and reinforces the web. With the Indianapolis joint, the web of the rail is similarly reinforced with steel bars or plates, ¾ in. in thickness, integrally attached by welding and adding 1½ in. to the original thickness. Tests show the strength and resiliency at this joint to be greater than that of the unbroken rail, while tests for conductivity show 138 at the joint compared with 100 for the unbroken rail.

In the Indianapolis joint the best results follow the application of the plates with approximately 500-volt current, cut down through the "resistance welder." The metal electrode is still used not only as being dependable, but for the elimination of excessive or localized heat during the welding process, thereby preventing or reducing to a minimum certain detrimental after effects.

The plates are shaped sloping to afford a great welding area, thereby distributing the lines of force and dissipating the heat effects and also to avoid vertical lines of welding on the web, a matter of vital importance. The points of the plates are undercut, to prevent the joining of welding lines along the base with those coming down the web and to prevent excess welding or "dwelling" on the part of the welding operator at these points, thereby causing segregation. The plates are staggered further to obtain a distribution of lines of force and heat effects, by breaking the opposing lines of welding. The terminating of the joint at each end with but one plate extending and beveled has the effect of tapering off the section of the splicing members. This contibutes to elasticity and resiliency through the joint as a whole. When a severely rigid section, abruptly interposed within a line of flexibility, meets with sudden and concentrated lines of energy or stress, a condition is set up conducive to breakage or abnormal usage.

Experience with the joint has been had in more than 200 cities and towns over a period of nine years, and low maintenance costs have always followed the use of the joint where it has been properly installed under normal conditions.

The potential should be such that the "action" will "impregnate and weld" and avoid the two extremes of "burning" and "melting only" and the welding plates should be of selected mild carbon stock and of great tensile strength, toughness and flexibility.

The welding steel, the "fillet" material, should produce, in conjunction with minor portions of both the welding plates and the rail, a "melt" equal in characteristics to the plates. For example, the tensile strength of a "melt" of fluxated heat-treated electrodes tested from 56,000 to 70,000 lb., whereas a "melt" from the same basic steel without flux or treatment tested but 35,000 lb. per square inch.

The human element factor as it enters into the question of electric metal electrode welding covers a much greater scope than an operator's ability to "draw and hold a true arc." The operator who does not soon become an "artisan" in this respect is an exception, yet with lack of proper supervision or working under unwise directions of his superiors he will not do well. With the work properly done the results are satisfactory.

Paving should be of such nature as to protect and act as a binder to the rails. In new track, the rail ends should be squared or faced that they will abut tightly together, especially at the head. In case of old track, the opening should be closed with an insert, or filled in with welding. Joints should be gound to a smooth surface after welding. Care should be exercised in the selection of temperatures and seasons for installing welded joints, particularly in the case of new work.

Rolling stock should be in relation to track, both as to weight and condition. This not to be taken to mean that all of these constructive factors must be incorporated to admit of the use of arc-welded joints nor that the welded joints will not make up for many of the deficiencies existing in the average track. This they have done in many instances of record, but that is an extra or assumed function. Subnormal conditions include welding on rail that is precrystallized, rail that is eaten through with rust, rail that lacks any substructure or foundation and paving binder.

W. R. Dunham, Jr., then read a statement prepared by H. M. Gould and himself in which they stressed the importance of securing reliable service data in regard to welded joints. Among the attractive features of electric seam welding are that standard or non-standard joint plates can be used, the welding equipment can be easily transported and handled, the cost of welding equipment is not excessive and arc-weld bonds can be installed at the rail joints, at cross bonds or in the special work. At the same time seam-welded joints cannot act as substitutes for ties, ballast and pavement.

The speaker then showed a number of exhibits of joint work in Detroit. He also stated that the paper was intended as a means of clinching the argument that service records and a complete discussion of the policy to be followed will develop the best type of rail joint, whether it be the seam-welded or some other, with resultant benefits to the electric railway industry as a whole.

Chairman Cram then opened up for discussion the topic of girder rail specifications, which he said had been under discussion for two years. He thought that the subject might well be continued. He called on F. M. Speller and G. C. Farkell, both of the Lorain Steel Company, for discussion. The latter read a paper prepared by Mr. Speller and himself, of which the following is an abstract

STEEL MILL EXPERTS DISCUSS DROP AND IMPRESSION TESTS OF STEEL RAILS

The use of the drop test for the purpose of determining the physical properties of rails as they are rolled can be said to be universal in this country. In nearly all specifications this test is the only physical test which is required.

There has long been doubt on the part of engineers as to the value of the drop test to determine the reliability of the rail, but no test has been devised which so nearly approximates some of the conditions under which steam-road rails are used. When the question of tests to determine the physical properties of rails, put into paving over which electrically propelled cars are operated, is considered, the value of the drop test becomes still more problematical. The lower speed of operation makes the blow from a flat wheel far less serious, while the use of the electric motor eliminates all blows such as are caused by reciprocating parts of the steam locomotive.

To indicate how extreme are the variations in a section of girder rails, the moment of inertia of girder sections now rolled was stated to vary from 31.2 to 182.1, while the metal in the head varies from 34.6 per cent to 66.3 per cent of the total weight.

Failures of drop tests on girder rails made according to the various specifications are extremely rare. There has been shipped to various customers by the rail mill at Lorain, since open-hearth steel was substituted for bessemer in 1909, 1,312,164 tons of girder rails, the product of 23,139 open-hearth heats. During this period there have been 310 failures of drop-test specimens on the original test. Duplicate tests allowed by the specifications withstood the tests in all except twelve cases, so that the total rejections for this period amounted to 710 tons of rail, or less than 0.05 per cent. More than half of these rejections occurred in a rolling of high-carbon and high-silicon steel for a customer who afterward modified his specifications to permit the use of a softer steel.

Objection to the drop test is made by manufacturers particularly when rolling the now prevailing heavy sections, on account of the considerable weight of good material required for the test pieces and the number of short rails which are made when "cutting these tests." In some cases, one-half the allowance of "shorts" is used to obtain the drop tests required.

Recognizing the limitations of the drop test, various engineers have turned their attention to other means for determining the physical properties of rails. Hardness tests have received considerable attention, one form of which, the impression test, has been included in certain specifications to supplement the information obtained from the drop test.

We have so far been unable to arrive at any satisfactory conclusions as to the causes of the occasional failures of individual rails before they get into the track. Chemical, tensile and impression tests made close to the point of breakage have in most cases failed to show any unusual conditions. Every rail rolled for a considerable period was tested by a heavy blow in the web, using a 16-lb. sledge, with negative results. We have been forced to the conclusion that such failures are due to extraordinary abuse when cold straightening the rail which causes failure at that time or introduces locked-up stresses which result in failure later, rather than to inherent brittleness of the steel. The cold straightening operation is a severe test, straining the material beyond the elastic limit at frequent intervals, both vertically and laterally. Should the steel have brittle characteristics, this fact should be developed during this operation.

It will be seen that the impression test furnishes useful information as to the uniformity of the steel with respect to its tensile strength and indirectly gives valuable information probably bearing a close relation to the wearing quality. If data as to the strength of the rails as measured by the impression were collected systematically, way engineers would in time have some valuable records of the steel in their track on which to base future specifications. Under the present American specifications the only records available are the analyses of the steel.

It is true that the impression test gives no information as to the brittleness of the steel, but are such data necessary in the case of girder rails, and if so, does the drop test give this information with sufficient precision to be worth while? Evidently not, by the records of drop test failures given above.

In conclusion the speaker suggested that the impression test proposed by the committee (and adopted by the A. S. T. M.) be included tentatively in the present specification, as an alternative for the drop test. If this is done arrangements will immediately be made for equipment to make this test concurrently with manufacture in the belief that the results will amply justify the expense involved.

Following Mr. Farkell's reading the report of the committee on way matters was accepted, and the report of the buildings and structures committee was next presented in abstract by D. E. Crouse, chairman. There was no discussion. An abstract of the report follows:

BUILDINGS AND STRUCTURES

The subject of equipment and postpayment of fares was investigated in co-operation with the Transportation and Traffic Association. The committee finds that postpayment schemes are but little used, while prepayment schemes are widely employed and are essentially the same as outlined in last year's report. Turnstiles promote a rapid flow of traffic, the device has but little to go wrong, requires but one attendant and assures a large percentage of fares.

The use of a change booth and coin box has possibilities for a more rapid flow of traffic, but there is the chance of loss of revenue through bad coins; also, in passing, patrons are inclined, in their speed, to throw coins hurriedly at the box, with the result that many coins bounce out, thus detracting the attention of the attendant. The use of a ticket booth and cancellation box is similar to this and has much the same characteristics. On the elevated lines of Chicago the attendant performs both functions by receiving and registering the fares as the patron passes the prepayment point.

The following suggestions are pertinent in the design of either a prepayment or postpayment area:

1. Traffic conditions should be anticipated through conference with plant officials or others in authority who are cognizant of them.
2. There should be an attempt to concentrate loading at as few points as possible, but with sufficient track room to permit loading in a minimum of time.
3. There should be sufficient reservoir capacity in entrance or exits to permit an even flow of traffic.
4. Arrange for operation at a minimum of expense by utilizing plant employees, etc., at rush hours.
5. Allow for storage of cars as the prepayment point is often at a train terminal.

Other means of speeding up loading are front end collection, fare receipts and queues. The advantage of front-end collection is that it permits loading twice as fast. The principal disadvantage is that there is no way of checking the number of passengers in the car against the fares registered. Where fare receipts are sold by traffic inspectors to waiting passengers at congested loading or transfer points the conductor simply collects the receipts instead of making change also. This scheme offers decided advantages to properties using one-man cars and those having a flat fare in excess of 5 cents. It does not in any way interfere with the operation of registering devices nor does it impair data taken therefrom. There is no dual responsibility as between conductors and collectors.

Queue loading can hardly be classed as a prepayment feature except as it facilitates loading. It is a logical outgrowth of the use of safety platforms.

SHOP LAYOUTS

Two typical layouts have been designed, one for a property having 150 cars and the other for one having 250. In addition, plans of several representative existing shops are also submitted. It was deemed advisable by both the equipment committee and the buildings and structures committee to include these to give additional information to prospective builders.

The grade of the floor on the shop buildings should be somewhat above that of the surrounding land and streets to prevent entrance of water into the buildings. The minimum clearance between cars and posts, walls and other fixed parts of buildings should be 2 ft., increased on curves. Non-combustible construction materials are recommended. Corners and recesses where rubbish would tend to accumulate should be avoided. Insurance requirements are important factors in determining many other details of construction, and a study of the underwriter's regulations when planning may save many expensive changes later.

A study was made of the shops and equipment now being used by fifty electric railway properties. The results show that the number of cars operated by the various properties has increased to a much greater extent than the facilities for maintaining them. The committee recommends that a liberal allowance should be made always for growth. In arriving at the area of a proposed shop, it should be borne in mind that the particular type of equipment to be handled and the effect of local conditions should be carefully considered. For instance, a property which contemplates manufacturing cars or car parts should allow additional space for this purpose and an interurban property having but a few heavy cars must provide more space per car.

In the arrangement of departments the following considerations should govern: (1) Cars should progress from motor and track repair shops to carpenter shops and thence to paint shop; (2) have as few isolated departments as possible; (3) have what may be termed the "Centralized Shop Plan"; (4) locate office to permit the master mechanic to keep in touch readily with his various departments; (5) arrange departments to afford economical handling of material and apparatus.

The actual areas of departments in the typical layouts are as shown in the tables which appear at the bottom of this page.

Generally too little space has been allowed between track centers. Both the equipment committee and this committee believe 16 ft. is a desirable spacing and that it should not be less than 15 ft. This does not apply to inspection pits in carhouses, which matter is covered in the 1919 buildings and structures committee report on design of carhouse inspection pits.

For smaller shops undoubtedly ladder tracks are to be preferred. For a moderate sized shop local conditions often dictate which shall be used. For a large shop a combination of the two is often desirable as it gives additional flexibility and speed in handling cars through the shops. For a small number of tracks the first cost of a ladder track will be lower, while for a large number of tracks the transfer table will cost less. In designing a new shop layout it will be well for the engineer to make up detailed estimates covering both and then make a study of the advantages of each to ascertain which will be best adapted to his particular case.

Some companies have had trouble with transfer tables due to the use of old discarded motors to drive them and on account of improper design or construction. If the transfer table is to be used it should be carefully designed and ruggedly built. Transfer tables are of the pit type or flush type. The pit type is less expensive and more desirable. Whether the transfer tables should be in the open or under cover depends on climatic conditions. Where there is much snow and ice it is well to have them under cover.

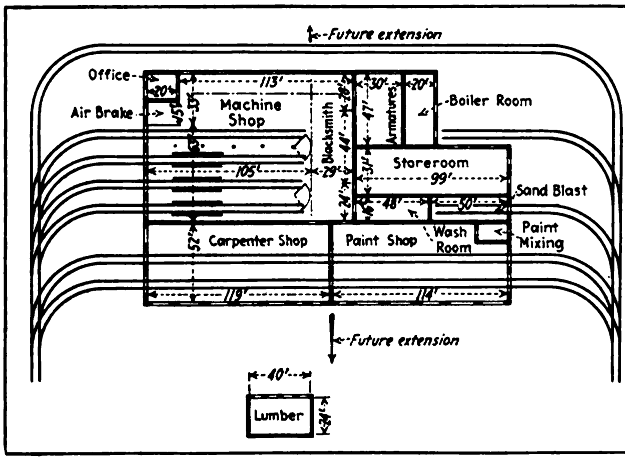
The subject of pits was thoroughly discussed by both the equipment committee and the buildings and structures committee, and it is recommended that in a repair shop to accommodate modern equipment pit space should be kept to a minimum. Either open or closed pits may be used. The type which appears more desirable at present is the open type with the devil strips covered except at wheel-changing pits. With such construction the workmen can move from one track to the next without difficulty. Pits vary in depth from 4 ft. 6 in. to 5 ft. When conditions require, tile covered with stone or washed gravel may be used to drain subgrade. Sump should be connected to the sewer and the floor sloped to the sump.

The principal types of illumination used in electric railway shops are:

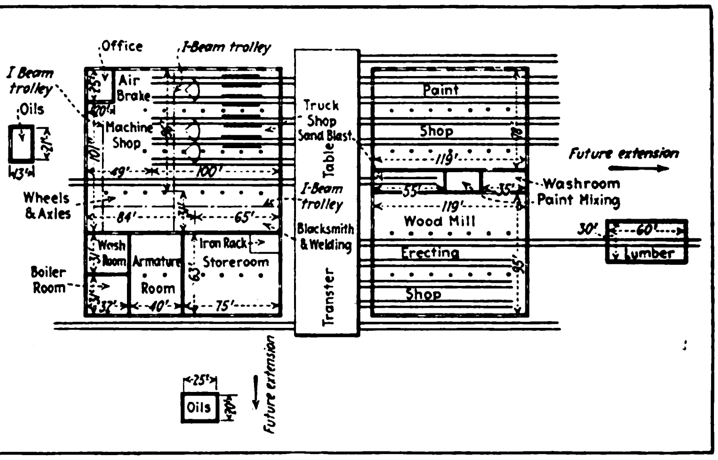
1. General lighting, secured by a system giving uniform intensity throughout a shop without regard to machines or work; it approaches more nearly "daylight" conditions than any other.
2. Localized lighting, secured by single units suspended over individual working planes.
3. General and localized lighting, a combination of the first two types.
4. Modified lighting, secured by suspending lighting units so that the maximum amount of illumination will be received on the most important working planes.

Individual drive of shop machinery has many advantages over belt drive so far as building construction and natural lighting is concerned. Especially is building construction affected when the machine tools are of a heavy type, which means a rigid support for line shafting. There are other advantages, such as continuity of service and general economy in operation.

The site for the repair shops should have sufficient area to provide for outside storage and to permit of enlarging the buildings to take care of future growth. Many classes of materials, such as wheels, iron castings, lumber, scrap and the like, can be conveniently



TYPICAL SHOP FOR 150 CARS



TYPICAL SHOP FOR 250 CARS

Shop for 150 cars

Departments	Dimensions	Area	Per Cent Area
Overhauling and truck	63 x 105	6,615	21.7
Machine, wheels and axles	(33 x 113) (5 x 29)	3,584	11.7
Blacksmithing and welding	29 x 44	1,276	4.2
Air brakes	15 x 21	315	1.0
Office	17 x 20	340	1.1
Armature	47 x 30	1,410	4.6
Carpenter and mill	119 x 52	6,188	20.3
Paint	(114 x 52)- (14 x 21)	5,634	18.5
Paint mixing	13 x 20	260	0.9
Sand blast	16 x 50	800	2.6
Storeroom	31 x 99	3,069	10.0
Oil house	13 x 21	273	0.9
Washroom	16 x 48	768	2.5
		30,532	100.0

Shop for 250 cars

Overhauling and trucks	96 x 100	9,600	19.2
Machine, wheel and axle	101 x 49 31 x 35	6,034	12.1
Blacksmithing and welding	31 x 65	2,015	4.0
Air brake	26 x 28	728	1.4
Office	20 x 25	500	1.0
Armature	40 x 63	2,520	5.0
Carpenter	119 x 65	7,735	15.5
Wood mill	119 x 30	3,570	7.1
Paint shop	119 x 78	9,282	18.6
Paint mixing	16 x 27	432	0.9
Sand blast	16 x 55	880	1.7
Storeroom	63 x 75	4,725	9.4
Oil house	20 x 25	500	1.0
Washroom	31 x 32 16 x 35	1,552	3.1
		50,073	100 0

stored outside, and this is undoubtedly better than to have them occupying valuable space under the roof. In addition, it is common practice to make use of the shop yard for storing track material, so the plot of ground should be considerably larger than the shop buildings.

The shops should be so located as to reduce non-revenue mileage and obtain a steam road connection. The latter, while not essential, is a great convenience in unloading carload lot materials.

The committee recommends the continuance of the study of the shop design by next year's committee. The committee was D. E. Crouse, chairman; M. V. Haulard, N. E. Drexler, J. R. McKay, S. J. Steiner, B. P. Legare, E. H. Berry, James Link, B. R. Brown, and L. L. Newman.

H. B. Doyle of Philip Kobbé Company, Inc., New York, presented an address dealing with the correct method of purchasing railway supplies. An abstract of this paper is published in another part of this issue.

The joint report on wood preservation as prepared by the committees on buildings and structures, power distribution and way matters, was presented in abstract by Howard H. George, Public Service Railway. Reference to this report is given on page 634 under way matters.

Following the presentation of this report, letters commenting on the report were read by P. R. Hicks of the Service Bureau of the American Wood Preservers' Association and Ernest Bateman and George W. Hunt of the United States Department of Agriculture Forest Service.

These letters set forth the importance of the subject and the need for careful consideration.

Thursday's Session

The first matter taken up by the Engineering Association at its final session Thursday afternoon was the report of the committee on unification of car design. This was presented by H. H. Adams, chairman, and the essential points are given in the following abstract.

UNIFICATION OF CAR DESIGN

The committee was appointed to study the various types of constructions, as given in data collected, to obtain, if possible, a uniformity in dimensions and design, such as post centers, height of window rail or arm rest from the floor, height of car from under portion of sill to top of roof, type of roofs, etc. Once these dimensions and designs are established, it will be thoroughly possible to get a uniform size of glass, probably using standard glass which would not require cutting.

As to the length and width of cars, it is thought that a width corresponding with the dimensions most generally used at the present time could be determined upon, and then, if other widths seem desirable, variations from the width used in the majority of cases could be made by even dimensions, say by increasing or decreasing the same by 4-in. increments. As far as the length of the cars is concerned, this could be varied by the addition or deduction of one or more window lengths.

The above instances are cited as showing the possibilities presented, and it is believed that by studying this subject carefully it will be possible to bring about a uniformity of design that will be of great value to the member companies in purchasing new equipment and to the car builders from the standpoint of having uniform practice to work to.

A summary of the data obtained by the committee was presented showing the maximum and minimum and the weighted average dimensions for the principal items tabulated, as applying to the closed, double-end, double-truck motor cars. The data from which this summary was prepared were studied and a certain amount of the information covering cars that appeared to be outside of the scope desired for consideration was eliminated. The summary submitted represents data obtained from 2,204 closed, double-end, double-truck motor cars. In addition, the committee received information covering 123 double-truck, single-end motor cars, 516 double-truck, center-entrance motor cars, 261 double-truck front-entrance and center-exit motor cars, 62 double-truck, center-entrance and exit and front-exit motor cars, 97 double-truck, double-end trail cars and 438 double-truck, center-entrance and exit trail cars, representing a total of 3,701 cars. The summary of the data for the 2,204 double-truck, double-end motor cars is submitted as illustrative of the variations that are encountered in present-day car construction. The cars from which the data given in this tabulation were taken represent recent design and what is considered good present-day practice.

Under the column "number of cars" is shown the number of cars from which the particular data were obtained. The variations in this last-mentioned column are due to the fact that in certain cases the information called for was not furnished. The committee recommends the continuation of the study of the subject unification of car design. The report was submitted by H. H. Adams, chairman; H. A. Benedict, J. W. Hulme, John Lindall, J. A. Brooks, G. L. Kiepenberger, and V. R. Willoughby.

The discussion of this report was opened by G. L. Kippenberger, St. Louis Car Company. J. W. Hulme, International Railway, Buffalo, said he felt that all equipment men realized that there is a large field for the unification of car design, but the subject as to how far operating companies are willing to go in developing a standard car, or in adhering to any standard recommended, is one that he believed would be hard to enforce. However, there should be some good method of bringing the desirability of standard dimensions before the equipment men, and Mr. Hulme felt that such steps could be best taken at the time that new equipment was purchased.

Frank R. Phillips, Pittsburgh Railways, said that he could see no valid reason for spending so much time in standardizing things that require changing so frequently and he felt that even if a standard car was ultimately adopted, most railway men would still adhere to the types which they already had in service. Mr. Phillips gave several illustrations as to troubles that might occur if the dimensions of car bodies were increased or decreased by increments. One example was that of the aisle space, which is very important, and the decrease of this by even so small amount as a fraction of an inch is not desirable.

Mr. Phillips referred to the relative merits of the arch and monitor types of roof construction, and suggested that in any study to be made very extensive experiments would be necessary to arrive at definite conclusions regarding the relative amounts of ventilation to be obtained from the two types. He referred to some extensive experiments made by the Pittsburgh Railways, in

DOUBLE-TRUCK, DOUBLE-END MOTOR CARS

	No. Cars	Maximum	Minimum	General Average
Length over bumpers	1,428	50 ft. 10 in.	37 ft. 5 in.	47 ft. 2 11/16 in.
Length over corner post	2,105	41 ft. 4 in.	25 ft. 0 in.	32 ft. 11⅜ in.
Length over platform or vest	2,105	8 ft. ½ in.	4 ft. 6 in.	6 ft. ½ in.
Width over posts	2,204	8 ft. 9⅞ in.	7 ft. 10½ in.	8 ft. 4 in.
Width over sills	2,204	8 ft. 9½ in.	7 ft. 7⅝ in.	7 ft. 2¼ in.
Width of platform over crown	2,104	7 ft. 11½ in.	6 ft. 4 in.	7 ft. 1 3/16 in.
Post centers	2,154	36¼ in.	28 in.	30¼ in.
Height of steps (from track) first	2,204	18⅞ in.	13 in.	14 3/16 in.
Second	2,204	15⅜ in.	11 in.	12⅝ in.
Third	202	11 in.	10 in.	10 in.
Height platform to floor	1,428	11½ in.	0 in.	9½ in.
Height floor to belt rail	2,160	31½ in.	23 3/16 in.	26¾ in.
Height floor to bottom of letter board	2,160	6 ft. 8½ in.	5 ft. 3 11/16 in.	6 ft. 3⅜ in.
Height floor over top rail	1,897	7 ft. ½ in.	6 ft. 2⅝ in.	6 ft. 7 in.
Height floor over roof	2,158	8 ft. 9 3/16 in.	7 ft. 7 in.	8 ft. 3 in.
Height bottom sill over roof	1,426	9 ft. 5 3/16 in.	8 ft. 3 3/16 in.	8 ft. 10 5/16 in.
Underside of headlining to top of roof	1,734	7⅜ in.	2½ in.	4 3/16 in.
Height from top of roof over top of trolley board	1,426	4½ in.	1½ in.	2¼ in.
Size sash glass, bottom	2,160	....	....	26½ x 22¼ in.
Size sash glass, top	2,160	....	....	26 1/16 x 11⅜ in.
Over-all length of transverse seat	1,386	38 in.	34 in.	36 15/16 in.
Width of seat cushion	1,363	18 in.	16 in.	17 11/16 in.
Length of seat cushion	1,145	34½ in.	30 in.	33¼ in.
Height seat back	1,255	22 in.	16 in.	18 11/16 in.
Center to center seats	1,260	32½ in.	28 in.	30 3/16 in.
Sheet steel sides-gage	658	No. 7	No. 16	No. 12
Polster centers	1,327	27 ft. 9 in.	16 ft.	21 ft. 4 9/16 in.

which it was found that with an arch roof a total of thirty-two ventilators were necessary to give the same ventilation as was obtained from the monitor-type roof, and with the installation of such a large number of ventilators the roof construction was in reality a monitor type.

R. H. Dalgleish, Capital Traction Co., Washington, D. C., said that his railway had also made some very extensive experiments as to the relative merits of the arch and monitor type roofs and that it found better ventilation could be obtained with arch roofs.

H. H. Adams, Chicago Surface Lines, said that the committee had not considered the subject of standardization of cars, but had endeavored to make accommodations which would ultimately lead to some uniformity out of the present chaotic conditions. Referring to the discussion of arch and monitor-type roofs, he said that in Chicago a very satisfactory system of ventilation had been obtained in connection with arch-roof cars.

John Lindall, Boston Elevated Railway, said that he considered the subject of the unification of car design to be very important, but that he feared that it could never be covered in such a manner as to produce a standard car. He said that he personally was an advocate of the monitor type of roof construction, as experience in Boston had indicated that roofs of this type, at least have the appearance of better ventilation and that was all that is necessary to satisfy the traveling public.

The report of the committee was approved with the suggestion that it be continued by next year's committee.

The report of the committee on equipment was then presented by Daniel Duries, chairman. An abstract of this report follows.

EQUIPMENT

The committee reported on twelve subjects:

1. Brake Shoes, Brake Shoe Heads, and Brake Shoe Keys—The three standard designs adopted in 1916 were revised. These included a brake head, shoe and key for 3-in. tread contour A1 and 3½-in. tread contour A2 wheels of a diameter 33 in. to 36 in.; a brake head, shoe and key for 2½ in. tread wheels, contours B1, C, D and E1, 28 in. to 34 in. in diameter, and a brake head, shoe and key for 2½-in. tread wheel contours B1, C, D and E1, 21 in. to 26 in. in diameter to accommodate wheel flanges ranging from ⅝ in. to ¾ in. in height and ⅞ in. to 1 in. in thickness. Two additional designs of brake heads, shoes and keys were presented, namely (a) for 2½-in. tread wheels, contours B1, C, D and E1, 28 in. to 34 in. in diameter, and (b) for 3-in. tread wheels contours B2 and E2, 24 to 26 in. in diameter to accommodate wheel flanges ¾ in. in height and ⅞ in. to 1 in. in thickness. Limit gages for the brake heads and shoe designs included in this report were also presented. These limit gages are practically the same as those adopted in 1916, but have the gage for maximum width of end lug on back of shoe and minimum space between end lug and flange of shoe omitted, as these are not necessary with the recommended designs.

2. On Standard Tread and Flange Contours for Steel Wheels — The committee resubmitted the eight designs suggested in 1920. Various questions raised regarding these designs were investigated by the committee and were found to present no obstacle to their adoption.

3. Standard Contour for Cast Iron Wheels—The Association of Manufacturers of Chilled Iron Wheels submitted to the committee recommended contours, but after discussion with other committees of the Engineering Association the equipment committee recommended no adoption of standards at this time but that the subject be continued next year.

4. Specifications for Solid Wrought Carbon Steel Wheels—A careful study of the present specification indicated that the Class B tolerances were not being used and these were omitted from the specification. Additional changes conform with the specification of the American Society for Testing Materials. It was recommended that it be adopted as standard in place of the present specification.

5. Helical Gears — Responses to a questionnaire indicate that this type of gearing is being more generally used than ever before. It is well liked, though in most cases it has not been in service long enough to afford conclusive results. The committee recommended that this be given attention by the next committee.

6. Car Arrangement and Design — Considerable work was done by the committee on this subject, but no definite conclusions were reached on account of the limited time available. The committee recommended that all information collected be turned over to a special committee recently appointed and that future study and work be done by it.

7. Life of Wearing Parts—The committee investigated the life of seven equipment parts, namely, trolley wheels, steel wheels, brake shoes, gears, pinions, armature bearings and axle bearings. The information obtained is included in the equipment report in sixteen tables.

8. Personal Observations On the Life of Wearing Parts and Shop Practices— The committee felt that such information would obtain greater publicity and reach a wider circle of men who are particularly interested in this subject if published regularly in technical publications rather than as a part of each year's equipment committee's report. The suggestion of obtaining a reel or two of motion pictures appeared inadvisable at this time due to the high cost of providing the film.

9. Current Lightning Arresters — A study was made in conjunction with the power distribution committee. The The design and method of installation of car arresters was covered by the report of the 1915 committee. The present committee brough the history of lightning arresters up to date and made seventeen recommendations regarding car and line equipment, including the following:

Many properties are having lightning damage due to improper installation or to not having sufficient arresters installed; others are not protected by choke coils or use arrester wiring of too large resistance. These points should be given special consideration and every car in lightning territory should be equipped with arrester and choke coil. Double-end cars should be equipped with two.

Arrester wiring should be No. 6 or larger with soldered joints and not placed in metallic conduit. Connections to arrester and from arrester to ground should be as short and straight as possible.

Line arresters should be placed at each feed tap, with not less than five to the mile. They should be grounded to either earth or rail, but not to both, and the negative wire down the pole should be protected by a wood molding.

10. Revision of Standards and Specifications — This year's committee had several meetings with the committee of the American Gear Manufacturers' Association in order to harmonize the specifications for gears and pinions of the two associations. The equipment committee revised the following specifications and recommended that they be adopted as standard:

Recommended specification Et-15a, specification for case-hardened forged steel gears.

Recommended specification Et-15a, specification for quenched and tempered forged carbon steel gears.

Recommended specification Et-16a, specification for case-hardened forged steel pinions.

Recommended specification Et-17a, specification for quenched and tempered forged carbon steel pinions.

The specifications as revised are acceptable to the American Gear Manufacturers' Association and will undoubtedly be adopted by them following favorable action by the American Electric Railway Engineering Association. The committee recommends that thes specifications as revised be adopted as standard specifications.

11. Curved Contours for Treads of Wheels — The committee co-operated with the way committee, and some of the members of the equipment committee turned wheels to a curved tread and placed these in service. Records are being kept that will show the results which can be obtained from curved contours. The equipment committee is of the opinion that it would be quite a difficult matter to turn wheels with curved contours and doubts the advisability of adopting them as standard. However, it agrees that this subject is of sufficient importance to warrant further investigation.

12. Typical Shop Building, and Shop Layout — The committee co-operated with the buildings and structures committee and furnished information and tables in regard to the amount of space required for the various departments, the proper arrangement of departments consistent with modern routing of work through the shop and the facilities necessary to accommodate modern equipment. As a result of the various studies and the information obtained, a rather extensive report on this subject is included in the report of the committee on buildings and structures.

The equipment committee's report was signed by Daniel Durie, chairman; H. A. Johnson, Vice-chairman; Walter S. Adams, H. A. Benedict, R. H. Dalgleish, James C. C. Holding, Thomas R. Langan, Frank H. Miller, C. N. Pittenger, E. D. Priest, C. F. W. Rys, F. W. Sargent, Charles F. Scott, Karl A. Simmon, C. W. Squier and J. M. Yount.

The disposition of the equipment committee's report was opened by N. B. Trist, Carnegie Steel Company, who referred to the subject of design of tread and flange contours for steel wheels. He said that if the standards were increased in number, by three, to take care of the objection raised by one railway, the standards would make provision for all the large users of steel wheels. He personally felt that this should be satisfactory not only to the railways but to the manufacturers as well, and that beneficial results would be obtained if the railways would only adhere to the standards as adopted.

H. H. Adams said that two very important subjects regarding standardization had been presented by this year's committee. These were brake shoes and tread and flange contours. He felt that the report was a very valuable one and that this year's committee had presented conclusions that would be of far-reaching effect. Referring to the matter of helical gearing, Mr. Adams said that results from the use of this gearing had led to the development of a new shape of tooth, and whether this is applied to either spur or helical gearing a great step in advance has been made. Another part of the work that he considered valuable was the obtaining data on the life of wearing parts. He felt that this work could be profitably continued.

R. H. Dalgleish discussed the recommendations of the committee in regard to tread and flange contours, and said that the present recommendation of the committee was to increase these so as to provide a total of eleven contours instead of eight as shown in the printed report. This subject had not yet received the approval of the standards committee, but if this meeting approved it the obtaining of further approval by the standards committee would be taken up at the next meeting. Mr. Dalgleish outlined the experience that he had had in a trial of curved contours on wheels in service on his lines. He exhibited several graphs which had been made on these wheels after 21,000 miles of service. He felt that present experiments are insufficient to permit definite conclusions but that the subject could profitably be continued by succeeding committees.

K. A. Simmon, Westinghouse Electric & Manufacturing Company, referred to the subject of wearing parts, stating that the suitability of all equipment for any service could best be shown by such data and that these were particularly valuable to the manufacturers of railway equipment. In analyzing the information contained in this report he had found several apparent inconsistencies in the life obtained from the same parts under almost identical service conditions. He felt that this emphasized the fact that the methods of keeping records by the different railways were not uniform. He suggested that a subject could be profitably added to those considered by future committees that would ultimately lead to some recommendations as to standard methods for keeping records.

J. C. C. Holding, Midvale Steel & Ordnance Company, urged the adoption and use of the committee's recommended wheel contours. G. W. Lyndon, Association of Manufacturers of Chilled Car Wheels, pointed out that standards for cast wheels are in use for steam roads, for industrial companies and for foreign shipments, but there is none for electric railway use. He offered to cooperate in any way to create standards for the A. E. R. A. and urged a study for this purpose.

L. H. Frye, Standard Steel Works, who spoke for the American Society for Testing Materials, complimented the committee on the specifications for wrought steel wheels and said that the A. S. T. M. specifications would probably be revised at the next meeting to conform to the A. E. R. A. specification, as the changes made in the latter were substantial improvements. H. A. Miller, chilled wheel manufacturer, said he anticipated a tendency to work toward the M. C. B. standard tread and flange in the electric railway field. He commented that it is possible to manufacture concave tread wheels, but he could see no reason for such a design. The M. C. B. design has been revised in the opposite direction. He likened making a wheel tread concave because it wears that way to making shoes with run-down heels.

H. Fort Flowers, Differential Car Company, thought that wheels for curved-head rail should have more metal in the fillet between tread and flange to prevent the early wearing of thick and thin flanges. He appreciated that the final determination of the most economical contour would require a very long study and the trial of many different contours.

H. A. Johnson, Chicago, stated that he believed the association is now in a position to adopt as standard the recommended brake-shoe head, key, etc., and the eleven wheel contours. In connection with the latter, he explained that the standards committee had not acted on the wheel contours on account of certain objections which had since been removed. The convention could therefore adopt these contours subject to subsequent approval by the standards committee, which approval had been assured if the convention so voted.

Referring to the wrought-steel wheel specification, he explained that the A. S. T. M. specifications had been clarified in some respects and that the specification for the closer of two tolerances covered there had been eliminated as it was found that this was not used. The more liberal tolerance used does not require so much machining. As to the recommendations on helical gears he thought if adopted, this would be a standard that could also be adopted by the manufacturers.

DISCUSSION ON BRAKE SHOES, BRAKE HEADS, ETC.

F. W. Sargent, American Brake Shoe & Foundry Company, chairman of the sub-committee on brake shoes, heads and keys, said that the committee recommends as standards for this association the following revisions of the 1916 standards of brake shoes, brake heads and keys:

Plate 1.—Brake head, shoe and key for 3-in. tread wheel contour A-1 and for 3½ in. tread wheel contour A-2 for wheel diameters 33 in. to 36 in.

Plate 2.—Brake head, shoe and key for 3-in. tread wheels contour B-2 and E for wheel diameters 28 in. to 34 in.

Plate 3.—Brake head, shoe and key for 2½-in. tread wheels contours B-1, C, D and E for wheel diameters 28 in. to 34 in.

Plate 4.—Brake head, shoe and key for 2½ in. tread wheels contours B-1, C, D and E for wheel diameters 20 in. to 26 in.

Plate 5.—Brake head, shoe and key for 3-in. tread wheels contours B-2 and E-2 for wheel diameters 20 in. to 26 in.

The 1916 standard shows the forked brake head with reduced bearing on each side of the shoe lug, and with narrow toes straddling the end guide of the shoe.

Due to the limited contact of head to shoe, there is excessive wear of the head, and as the toes are worn down, there is an uneven distribution of pressure on the shoe. The shoe becomes loose on the head and wears out of true, resulting in heavy scrap weight. The life of both head and shoe are reduced and maintenance cost increased.

The 1921 design of brake head overcomes this trouble by increasing the area of contact between shoe and head, providing a head with solid ends, with practically a continuous contact with the back of the shoe, supporting the shoe from end to end, and maintaining a uniform pressure, ensuring a true wearing head and shoe.

Considering the motor shoes and heads, the 1916 design gives an area of contact of 7.9 sq.in. between head and shoe, while the 1921 design provides 17.5 sq.in., an increase of 123 per cent for the broad tread wheels. In the case of the narrow tread wheels, the 1916 head shows 5.5 sq.in., as compared with 12.2 sq.in. in the 1921 design, an increase of 153 per cent. A similar relation exists with the pony shoes and heads.

The 1921 design of head provides a continuous support for the way, which prevents loose heads and keys, and reduces wear of all parts. The key way in both head and shoe have been reduced to give as little side play as possible between head and shoe. In addition the solid square ends of the brake head prevent the shoe from getting twisted on the head and wear unevenly.

To accommodate the solid end brake head, the end guides on the 1921 design of shoe have been omitted. This makes a better shoe and does away with the trouble often experienced with obstruction in the narrow space between end guide and back of flange, which is difficult to clean and gets clogged with dirt, preventing the toes of the forked head going into place.

The taper has been removed from the shoe face in the 1921 design and the tread made flat. If only new shoes were applied to newly turned wheels. the taper would be all right, but the average wheel is a worn wheel. Wheels start with taper, then wear flat and finally concave. The straight or flat faced brake shoe makes a better fit on a greater number of wheels in service than shoes with taper; moreover, the tendency of shoes to pull off the wheel is much less with the straight than with the taper tread. For this reason, the straight face shoes have been preferred and give better service, that is, lower scrap weight.

Formerly brake shoes were made with a single or continuous face curvature. To avoid the use of the improper curvature shoes on a given size of wheel, as well as to reduce the number of patterns and stock to be carried, the composite face curvature has been adopted in the 1921 design of brake shoes. The middle half of the shoe is curved to fit the smaller diameter wheel, while the outer quarters of the shoe face are curved to fit the large diameter wheel. The shoe thus fits the larger wheels on the ends, and the smaller wheel in the middle, and makes a better average fit on wheels of intermediate diameters, and a single pattern only is required to cover the range in wheel diameters noted.

The report was further discussed by Thomas R. Langan and F. R. Phillips.

ELECTION OF OFFICERS

Following are the officers of the Engineering Association elected for the ensuing year:

President.—C. S. Kimball, Engineer of Way and Structures, Washington Railway & Electric Co., Washington, D. C.

First Vice-President.—L. C. Datz, Birmingham, Ala.

Second Vice-President.—H. A. Johnson, Chicago,, Ill.

Third Vice-President.—A. B. Stitzer, New York City.

Secretary-Treasurer. — James W. Welsh, New York City.

Members of the Executive Committee.—C. H. Cark, Cleveland, Ohio; R. C. Cram, Brooklyn, N. Y.; Charles R. Harte, New Haven, Conn.; Daniel Durie, Connellsville, Pa.

Engineering Association Executive Committee Meets at Atlantic City

A MEETING of the executive committee of the Engineering Association was held on Oct. 2, with the following in attendance: President W. G. Gove, Secretary J. W. Welsh, H. H. Adams, L. C. Datz, H. A. Johnson, C. S. Kimball, M. B. Lambert, F. R. Phillips, E. H. Scofield and A. B. Stitzer.

After the reading of the minutes of the last meeting by Secretary Welsh, he brought up the question of the procedure to be followed in connection with the activities of the American Engineering Standards Committee. After discussion it was decided that the representatives of the association on the American Engineering Standards Committee sub-committees should report on matters of interest to Secretary Welsh. On receipt of information from the representatives, the secretary will report to the executive committee, at the same time sending full information to the standards committee, and informing the membership through *Aera* of what is going on. This will give the standards committee and the members at large an opportunity to transmit to the executive committee any suggestions which may bear upon the subject in hand, in time for the committee to consider such suggestions before taking action upon the recommendations of the representatives. It is understood that the information furnished to the membership will be in abstract form, as it is likely that voluminous material will develop in the conferences held under the auspices of the American Engineering Standards Committee.

It was further decided that continuous reports of progress as to the development of "American Engineering Standards" should be published in *Aera*.

A report was received from Secretary Welsh as to plans for co-operation with the American Association for Municipal Improvement and the line and materials section of the Associated Manufacturers of Electrical Supplies. Such co-operation was approved by the executive committee.

L. C. Datz then reported for the committee on subjects to the effect that several meetings had been held and tentative assignments had been made to all committees. He suggested that these assignments be reported to the association, after the discussion of the several committee reports respectively.

Mr. Gove spoke of the reorganization plans presented to the American Association and raised the question in connection therewith as to the status of engineers in the employ of non-member companies with respect to committee work. After discussion it was agreed that no great hardship will be done the association by the putting into definite form the practice followed for some years, namely, by insisting that committee work be restricted to the employees of member companies.

Some discussion followed as to the effect of non-payment of committee expenses by the association, in so far as it relates to attendance upon committee meetings by committee members. A motion was passed to the effect that this subject be referred to the incoming executive committee, with a view to possible future payment of committee members' expenses as soon as the financial condition of the association warrants such action.

Publicity Men's Meeting

A MEETING of the publicity men at the convention was held in the Chalfonte on Wednesday afternoon. Labert St. Clair, publicity manager of the association, presided. About twenty-five publicity men and executives of companies were present.

President Gadsden, who was first introduced, said that among the causes of the present trouble with the electric railways that of unwillingness to tell the public took first place. This was an old idea and it had taken about thirty-three years to overcome it. Some persons believe the duty of the publicity man was to write advertisements occasionally. That, however, is not his real work. The speaker's understanding of the fuctions of such a man was that he should be the medium of information between the public and the company at all times. If he was always ready to give facts, the newspapers would rely on him. In this way he could be of value to the company even if he never wrote anything. He hoped these meetings would be continued each year.

W. A. Draper, Cincinnati, said that he always took a great interest in publicity as he was once in the newspaper business himself. The best way was for the president himself to be the publicity man, but as his duties prevent that, it was necessary to have someone to act for him.

Barron G. Collier, chairman of the publicity committee, said that the railway companies now realized the policy of the big stick and seclusion was not desirable. It was only necessary to get the truth before the public so that the railroads would have a square deal. He referred to the successful use for publicity which can be made of spaces in the car not occupied by car cards.

Britton I. Budd, Chicago, spoke strongly in favor of newspaper advertising. Bernard G. Mullaney followed with an interesting discussion on publicity in general and the work of the Illinois Committee on Public Utility Information. Other speakers were J. K. Punderford of the Connecticut Company; H. O. Allison, Beaver Valley Traction Company; A. H. Ferradou, Washington Railway & Electric Company; R. F. Gorman, Harrisburg Railways, and W. O. Clure, Twin City Rapid Transit Company.

Transportation & Traffic Association Proceedings

R. P. STEVENS
Retiring President

Attention of Convention Focused on Reduction of Accidents, Traffic Regulation, Transportation Merchandising and Employee Training —L. H. Palmer, Baltimore, Was Elected President—Desirability of Study of Possible Improvements in Organization Was Suggested

L. H. PALMER
Newly Elected President

THE first session of the Transportation & Traffic Association was called to order shortly after 2:30 p.m. Monday. The first order of business was the annual address of the president, R. P. Stevens. After referring to the work and reports of the different committees of the association and to the work of Mr. Welsh, Mr. Stevens said, in part:

SUGGESTIONS OF PRESIDENT STEVENS

At this time also I would like respectfully to call the attention of the incoming president and executive committee to the following suggestions which occur to me as helpful for the future of our association.

I would recommend that the new executive committee appoint a committee to consider changes in the constitution and by-laws of the association that we may avail ourselves of the experience gained in conducting the affairs of the association in the past.

I feel that only one vice-president is necessary and that provision should be made for a senior member of the executive committee to become ex officio acting president, in event of both president and vice-president being unable to attend to the duties of the office, until the vacancy has been filled in the regular way. This, to my mind, would make an increase in membership of the executive committee advisable.

I would recommend that a plan be considered for the appointment of chairmen of committees, whenever possible, from the membership of the preceding year's committee; that the first vice-president be ex-officio the chairman of the subjects committee for the ensuing year; that the custom be adopted of this committee meeting before and again immediately after the convention and that at the meeting of the executive committee directly after the convention all committees be appointed forthwith so their work may be started before the holidays.

I would recommend a Transportation & Traffic Association committee to consider the transportation phase of trackless trolley and motor bus operation, a subject now occupying an important place in the affairs of our companies, and also a committee to take up the question of the bus competition from a transportation viewpoint.

Revival of the committee on one-man car design and operation and continuance of the committee on freight and express traffic appear to me desirable, and I would further recommend consideration of a suggestion to the *Aera* advisory committee that more space in *Aera* be devoted to the education of transportation employees and that a definite plan to this end be adopted.

In closing, I want to suggest that the business of handling the transportation and traffic problems of an electric railway property is developing rapidly—changing constantly—and that we must keep not only abreast but ahead of the swiftly shifting conditions surrounding public utilities.

In comparing the situation today with that even so late as a year ago one thought that impresses me as most significant is that the theories of radical socialism, which were so menacing to our operations a short time ago, are now wholly discredited and have ceased to be a contagion adversely affecting the minds of either our employees or our patrons. The feeling of "damn the trolley company" surely has subsided, so that our communities are appreciating not only the convenience but the absolute necessity of trolley transportation. This changed attitude has helped our employees to realize the position which they occupy in the industry and to see the limits to which they can aspire in regard to wages and working conditions, whereas in the recent past, in many instances, they failed to realize that there was any limit at all, so far as they were concerned.

Some companies are fast getting their houses in order, so that now they can help make effective for good over the entire country the interest that has been aroused in the utility situation, a self-interest that can be, and should be, established in the minds of the people in such a way that utility operation will be recognized as a business founded upon a national principle rather than on local caprice. Then the utility will cease to be a political football. The one sure, safe and direct way to bring this about is through the employees of the transportation department, the employees who come into constant contact with the public.

The transportation and traffic employees of the electric railways of the country have a latent power hardly realized—certainly never utilized. This force, properly led, can carry any objective when its cause is founded on right. It can overcome the might of politicians, who gained their now declining power through our failure to take the aggressive and to use to the fullest extent the facilities we have at hand.

J. P. Barnes, president Louisville Railway moved that the recommendations in the president's address, so far as they are related to changes in organization, be referred to the incoming executive committee, and those relating to subjects to the committee on subjects.

EXECUTIVE COMMITTEE REPORT

In view of the fact that this report contained merely a review of the minutes of the various executive committee meetings during the year it was not read in full.

The report outlines in full the work laid out by the committee on subjects for the year, practically all of which was accomplished and is given in the reports of the committees following.

The reports of the secretary and treasurer were then read. The secretary's report showed on Sept. 30, 1921, 114 individual members and 728 company section members. The total ex-

COMPANY MEMBERSHIP RECORD

	Railway	Manufacturing	Total
No. of members Nov. 1, 1920	355	237	592
Less resignations during year	9	22	31
Add new members during year	7	8	15
Net loss during year	2	14	16
Total members Sept. 27, 1921	353	223	576

penses for the year were slightly over $1,000.

The president then announced the appointment of the resolution committee and nominating committee. The former consisted of H. V. Bozell, C. L. Van Auken and W. H. Boyce; the latter of W. H. Sawyer, F. R. Coates and E. C. Spring.

The president then called for the report of the committee on merchandising transportation. It was presented by Mr. Coates. An abstract follows:

SELLING TRANSPORTATION THROUGH EDUCATION AND ADVERTISING

It was agreed that, in view of the thoroughness with which many of the subjects properly coming within this committee's scope were covered last year, the committee should this year pick those several suggestions which seemed most feasible for immediate enlargement and most necessary to put into immediate practice and that it should endeavor to find a definite and specific means for adopting as many of them as possible generally among the various railway organizations in the country.

With this in mind, the recommendations of the committee may be summarized, first, under the head of "education of employees" and then under "advertising."

The first phase dealt with under these headings, the most important of which, in the opinion of the committee, was "Courtesy." The committee has agreed, in substance, that the industry must actively educate its employees to a point where it can demand of them the courtesy and service which is essential to the industry's adequate development. The practical means of accomplishing this end is to sell the idea of service and courtesy to the executives and dispatchers, and to the inspectors immediately over the train crews, as well as to the platform men themselves.

It has been agreed by the committee that it is essential to the success of each individual company that the car rider understand many of the problems with which the company is faced. One important and practical means of conveying such information is to see that the employees who come in contact with the public are themselves acquainted with those problems and the means by which the company is hoping to solve them.

Noon-hour talks in shops and at division headquarters can also be adopted. In each individual property the method adopted will necessarily differ. Noon-hour meetings have proved feasible and highly beneficial in some instances, and it was the opinion of the committee that some companies would do well to make more extensive use of this means of reaching their employees directly.

The official publication of the Association carries in every issue much educational matter of which a large majority of the member companies are not taking full advantage. Some means might well be taken for disseminating these educational articles among a larger number of employees.

A third means of conveying to the employees information which should be helpful to them in understanding many company matters and make them generally better informed on the subject of company affairs, is the posting of pamphlets or bulletins at points of vantage at division points or at the shops. At times when men are standing about waiting for a change of shifts, posters or pamphlets about the bulletin board which are changed frequently, hold out a topic of conversation to the men, and it was the opinion of the committee that this is a very excellent means of imparting to the employees general information in a way that will ultimately react to the benefit of both the men and the company.

The co-operation of employees, to be most valuable, must be directed in definite channels. Company policies must be instilled in the minds of the employees. Employees must be convinced of the sincerity of the company in its desire to give every consideration to the employee's service and well-being. The formation of committees through which recommendations can come from employees and sometimes be worked out, have proved an excellent means to these ends. In many cases labor difficulties have been smoothed out and proposed schedule changes abandoned by the committee itself as not feasible, leaving the men entirely satisfied, whereas had the refusal come from the company there would have been increased dissatisfaction.

The second phase of the committee's recommendations dealt with the matter of advertising, first — directly, by means of newspapers, cards, circulars, time-tables, letters and moving pictures, and, second—indirectly, through employees' memberships in public bodies and civic associations and by company co-operation with national, state and local organizations and affairs.

It was the opinion of the committee that a way must be found to put suggestions and recommendations into effect and that the best means available is to add to the duties of the association publicity manager the work of assisting member companies in putting into operation such of these recommendations as are appropriate for any individual property.

After an elaboration of these points the committee discussed the question of advertising in newspapers, cards, circulars and time-tables. On this point it said that the car crews and other employees have for years read articles in the press which charge the electric railways with all sorts of improper practices, financially and otherwise. In general, they have not and do not now receive corresponding definite and clear-cut statements of facts proving that the contrary is true for the press does not give the same space to the public utilities side of the story that it gives to sensational statements of the demagogue. Again, it must be remembered that bad news and gossip spread faster than straightforward facts.

The real object of advertising is to sell, whether it be to sell an article, an idea or service. It is the opinion of some that "direct advertising" in newspapers can be made to sell more rides in off peak hours. Transportation can be sold just like gas stoves or electric lights or steam heat. Riding on street cars can be transformed in the minds of the public from an ordeal into a real pleasure, a happy pastime, and a form of helpful recreation. It is the opinion of the committee that this can be done by systematic intensive publicity. Advertising directly in newspapers to increase the sale of transportation has been carried on for at least ten years. Sample advertisements considered effective are then reproduced.

The committee declared that the fact should not be lost sight of that every act of each employee is an advertisement. Reputation, honesty, politeness, neatness, promptness, are all advertisements. Quality, price, frequency, everything is an advertisement, either good or bad. Intelligent propaganda would suggest the use of one of the greatest advertising mediums extant, namely, the street cars themselves.

Moving pictures, the committee declared have become the greatest aid to education that civilization has created. They offer today one of the greatest fields for advertising and are peculiarly adaptable to carrying the various types of message which the street railway industry must convey to its users and potential users.

There are two reasons why this is true. First—they reproduce incidents, events and ideas for high-minded people—the 85 per cent; second—moving pictures are projected under facilities ideal for concentration in that there is but one thing before the vision and the room is dark. It is for these reasons that moving pictures offer one of the best ways of putting ideas in the consciousness of human beings. It was the opinion of the committee that there are three ways in which moving pictures can be utilized to advantage by street railway industries. First—safety productions for the car-riding public and the company employees. Second—Publicity productions for the promotion of special financial and engineering problems, which require the approval of the car riders. Third—Industrial engineering productions to instruct shop employees and trainmen in efficiency methods. These three types serve entirely different purposes and are equally important. The safety production will aim to educate the car riding public as well as the car employees. Reports of the National Safety Council show that accidents tend to fall off considerably after every campaign for exercising greater caution. A series of safety reproduction films should show how accidents on and off a street car occur and how they may be prevented. The purpose should be to instruct the public as a preventative measure or assurance against accidents.

That type of film which may be termed a publicity production requires the utmost good judgment and foresight, and if wisely used, can pave and prepare the way for many otherwise difficult developments, extensions and improvements.

The third type of film production recommended pertains to shop and operating efficiency. The need for training in production is universally recognized. The type of training to be adopted should always concern itself with the development of men to see and understand the causes behind wastes, leaks, power losses, and injuries to equipment which continually occur. With this purpose in mind the methods can be developed from a study of the films to overcome existing inefficiency with regard to human time, machine time, power saving, preservation of equipment.

The most valuable asset a street railway can have on its books is the good will of the public, and to build good will and extend a company's radius beyond its present circle is its responsibility. Advertising is one of the mediums that will carry the character of its organization to its public and help form public opinion. The committee also emphasized the necessity for taking an active part in all civic affairs.

In conclusion the committee suggested that the association's publicity director might add to his duties the work of bringing to the attention of the industry from time to time, in his traveling, such of these recommenations as seem particularly appropriate and aiding them in the inauguration of any new or additional programs which member companies may deem feasible for adoption. It also suggests that *Aera* be asked to run a series of articles on the more important phases of this subject and that these articles be prepared especially for the consumption of the rank and file of motormen and conductors and others directly concerned in operating the cars. Companies having house organs can reprint these articles and gain widespread benefit while others may subscribe for sufficient copies of *Aera* to obtain fairly wide circulation among the trainmen.

The report is signed by J. H. Alexander, chairman, W. H. Boyce, F. L. Butler, H. C. Clark, F. R. Coates, A. H. Ferrandou, B. W. Frauenthal, A. L. Kempster, M. B. Lambert, A. Stuart Pratt, S. L. Vaughan and Elton Wilde.

DISCUSSION BY W. L. GOODWIN

Purposely assuming a critical attitude toward the sales ideas expressed in the report of the committee on merchandising transportation, W. L. Goodwin, assistant to the president, Society for Electrical Development, New York, began by stating that no one would question the ability of the executives in the electric railway field. The fact that the industry is in bad condition financially, however, indicates that the industry has either been badly directed or this ability misplaced. He considered that the main problem of the industry is one of salesmanship. Before the ideas of the committee can be carried out, he thought it would be necessary to reorganize the companies. The executives are thinking in financial, engineering and legal terms, and not attacking the problems from the sales viewpoint. The electric railway companies are in business to make money and the only way this can be done is to sell transportation. The commodity for sale is transportation regardless of the tool used to produce it. Some one man must be placed in charge of the sale of this commodity, and the sale of it at a profit.

As to the suggestion of the committee that courtesy is essential in selling transportation, Mr. Goodwin remarked that courtesy is a very elementary consideration and that he could not conceive of selling anything without courtesy. He said he had attended a great many important sales conferences and he did not recall ever having heard the matter of courtesy mentioned. Few trainmen realize that their function is to sell. He noted that the committee suggested getting the trainmen together on their own time and said that he would never think of asking men to attend a sales conference on their own time as this would be resented. If it is desired to re-train the men in sales work, this must be done on company time and attendance must be compulsory and not left to the volition of the men as suggested in the report. In hiring new employees, their first training should be in the principles of selling.

All through the report reference is made to advertising and publicity as selling work, but Mr. Goodwin emphasized the point that this is only a subdivision of selling. The spoken and the printed word, properly co-ordinated, are subdivisions of selling, which involves in addition, policy, quality of product, and various other elements. He said he knew of one company which is using extensive publicity in which the printed word does not agree with the company policy. The people feel this and the result is that the publicity represents time and money wasted.

Referring to the committee suggestion that the association publicity manager be made available to assist companies in their advertising and publicity work, Mr. Goodwin suggested that this man should be called the association sales manager and that his work should be to assist the companies in setting up a proper sales organization, after which the matter of publicity would follow as one of the functions of this department.

In the matter of educating the employees to sell, Mr. Goodwin said that this could not be accomplished unless the executives themselves first caught the spirit of selling. He took issue with the committee's statement that the remedy for discourtesy is dismissal, saying that the men were not to blame, that the fault lay with those above and that the men were working under wrong principles. He suggested that the title of conductor and motorman be dropped inasmuch as these are much misused terms and since a new title is sought in connection with the one-man car, substituting the man's own name on his cap and thus establish personal contact. He thought it would be a mistake to urge the sale of company securities to the employees in an effort to win their co-operation by this means, unless the management was absolutely sure of the safety of the investment and that it would earn a return.

Commenting on the list of subjects suggested by the committee for discussion in meetings of the employees, Mr. Goodwin thought that some of the most important had been omitted. The matters of policy, product and competition are the real topics that should be taken up in these sales meetings and of these, competition is by far the most important now. He suggested that a sales demonstration be included among the subjects, wherein an example could be given the trainmen of how to meet the arguments of the dissatisfied customer.

Mr. Goodwin also took issue with the suggestion of the committee that more space in *Aera* be devoted to the subject of training employees in the sales attitude. He said that he thought association journals had done more to retard constructive development in various industries than almost any other thing because they publish only those things that the members like to hear. He maintained that associations should put into their own publication only such matter as would not be accepted by the independent press. He urged greater dependence on the latter and less on the association magazine.

One of the most important tasks in obtaining sales effort from trainmen is to get a good understanding among them, and in fact among the executives, too, of what the problems are, for co-operation cannot be secured until such understanding is had.

In speaking of broad good will publicity campaigns, Mr. Goodwin mentioned the serious error made by another association in signing the campaign by the name of the association, which was unknown and meaningless to the public. He said this would apply also be such a campaign signed by the American Electric Railway Association. As to the noticeable absence of publicity in the industry, he said that this was due to the fact that there are no sales departments of the companies. If these were had this would be the greatest advertised industry in the world. Any advertising entered into must be continued, for the selling job is one that must go on for all time, and the terminable campaign can only be used for putting over some temporary idea. If companies were reorganized to include proper sales organizations, he believed that the condition of the industry would be greatly improved. He also took issue with the idea that the selling of transportation is selling a necessity for he considered it a convenience. A necessity is sold by sufferance while a convenience is sold by putting forth its virtues and meeting all competition.

DISCUSSION FOLLOWING MR. GOODWIN

Summing up the committee's report in a word, Harry Reid, president Interstate Public Service Company, Indianapolis, Ind., said it would seem that merchandising transportation is entirely a matter of proper public relations. He suggested the formulation of a public relations section of the association, modeled after the public relations section of the National Electric Light Association. He thought that the best method of developing proper public relations consists in giving satisfactory and adequate service rather than in proceeding on the theory that they can be developed by oral and advertised alibis and excuses. Good business management does not depend upon popular sympathy, nor can sympathy help very much in its attainment. There must be something of merit to sell. Through proper salesmanship and advertising success will follow naturally. The time has come when further increase in rates cannot be expected and everyone connected with the electric transportation business should cease referring to it as a "busted" enterprise. Nothing succeeds like success. Shabby clothes and run-down heels rarely bring forth very much sympathy. We have got to get our clothes pressed, our heels straightened and put on a prosperous appearance, even though it is somewhat feigned. Of course, a new suit of clothes and new pair of shoes may be rather difficult to pay for, but it is not so difficult to appear in the market with the optimism of a purchaser. In other words, "optimism" should be written in electric lights on our sign posts, thus pointing to success.

The property for which Mr. Reid is responsible fairly demonstrates, he said, the success of this bit of philosophy. Within the last five years through the purchase of additional equipment, the passenger receipts have increased 42 per cent and the freight earnings have increased from 6 per cent to 27 per cent of the gross business. The additional equipment was financed by the usual car-trust equipment method.

Continuing, Mr. Reid said that if the companies can continue to carry out the policy developed during the war of informing the public regarding the utilities, it will bring about good public relations, without which merchandising transportation is bound to fail. Left alone the cities will not realize or consider the importance of their transportation systems. Yet unfair treatment by city government will tend to destroy these systems and impair the prosperity and comfort of the citizens.

Selling transportation, whether street car or interurban transportation, is perhaps the most important phase of the work. The training of employees in this work is surely very essential to the success of any property. Cooperation and co-ordination of all departments are absolutely necessary. General policies and sales methods should be determined by the executive in charge and extreme care and rare judgment used in determining them. For the education of men to carry out these general policies costs vast sums of money each year.

Mr. Reid directed particular attention to the use of motion pictures, as recommended by the committee. The full importance of this powerful agency is likely to be overlooked unless special attention is paid to it. It was his notion that a very wide distribution and showing of films could be obtained at a comparatively small expense, if there were available pictures of a really instructive character, honestly setting forth the history and present-day problems of electric transportation. They could be shown in the public schools, community centers, Y. M. C. A.'s and even in the commercial theaters at practically no expense.

General publicity is an important factor in paving the way for effective sales work on the part of employees. The transportation systems of the entire country are suffering from a lack of honest, straightforward publicity. Does the public know the efforts that are being made to create and maintain the service they demand? Does the public know the cost of such service? Does the public realize that, because of adverse legislation, both by state and cities, the average investor refuses to buy public utility securities? Does the public know that petty politicians use the transportation facilities of their cities and states as means to stir up hatred and animosity? Tell the public the truth. Do we realize that we have all of these problems to meet? If so, how are we meeting them? Publicity and lots of it is necessary. Let the people know our troubles. Impress the importance of the transportation system and of their co-operation.

Let us look well into our organization. Is it a real organization? Does the head of every department have his duties clearly outlined? Are the departments co-operating properly? Are the employees in each department being properly trained and educated to carry out their part of the program? Are we making future heads of departments in our organizations? Are we endeavoring to fit our whole organization to meet the public squarely and fairly in the discussion of policies and rules which affect the public?

E. M. Walker, general manager Terre Haute Traction & Light Company, declared that merchandising or salesmanship in the last analysis is trading for a profit, and every true salesman or merchant has in mind his profit at the completion of the transaction. This is perhaps the reason why salesmanship is the missing link that has caused the non-success of the various forms of municipally owned or operated projects in public service. It has been well said that a government not only abhors a surplus but also is indifferent to a deficit. Therefore, if a government is not and can not be operated at or for a profit, why worry about salesmanship? One could take a course of lectures on baseball, but no man and no book could teach him how to hit the ball, and hitting the ball is the salesmanship of baseball. The champion home-run hitter is champion because he believes in himself, believes in the team he plays on, and knows that the man he works for will see that his profit is adequate and satisfactory. The all too brief story of the life and death of Jim Burleson, of El Paso, as recently told, did not convey the idea that Jim knew much about the problems of merchandising and salesmanship, yet he was a master. There was another Jim Burleson a quarter of a century ago on one of the suburban lines of Boston. In those days on a Saturday night a rather unruly crowd used to patronize the 11:30 train, which was regularly in charge of Dennis Collins. On nights when the run was in charge of a substitute this train was more than likely to become thoroughly demoralized, but Dennis had a way of selling the railroad to these boisterous rowdies that proved him a thorough believer in himself, in his work, and in his road. What the roads need is more Jim Burlesons. No doubt all railroads have a few, and the task of the sales manager is to pick out as far as possible men of the salesman type. This, of course, can not be done successfully when there are more jobs than men.

Continuing, Mr. Walker said that of perhaps equal importance in the merchandising of transportation is the matter of keeping abreast of the times by meeting the changing and evolutionary standards of speed and comfort in equipment. Companies can not meet 1921 demands with the standards of two decades ago. Many a property has been able by the generous introduction of the light-weight safety car to improve the quality and frequency of the ride, to keep down the fare, to increase the number of riders at least proportionately to the increased service, to stem the tide of the competing jitney bus, and finally, to live and breathe and to preserve the true semblance of real merchandising.

The speaker said that there are fields for salesmanship still unexplored. For example, how to get an increased number of riders interested in buying transportation when the companies need most to sell it—either by a reduced rate between certain hours, or by a free return ride in co-operation with a downtown sale of large proportions. Thus his own company several times this year in connection with Dollar Day Sales has put out through a large department store a limited quantity of street car tickets at a reduced rate—"a dollar's worth to a customer, while they last." These have been popular items with the store management and customers, and of course have produced something in popularizing the riding habit. The companies can not stop the increasing use of private automobiles but they can extend their efforts to make the automobile owner a short-ride prospect, as he has the riding habit more fully developed than the non-owner.

As to newspaper publicity, "The time to advertise is all the time." The trouble with many companies has been that in days of prosperity they have been too little inclined to think that they had things in common with the public. Then when dark days and trouble came, the public showed its disinclination to bother with the problem. Let us tell the public about the good as well as the bad, telling them the truth always, in which we believe just as implicitly as we believe in ourselves. After all, merchandising of transportation is a matter of men and methods, and there will probably be as many different methods as there are men. But wherever these methods are founded on knowledge of the business, truth, and an unfailing belief in oneself and one's work, that is the basis of true and successful salesmanship.

F. G. Buffe, general manager for the receivers, Kansas City Railways, thought a distinction should be drawn between the sale of a commodity and the sale of a service. If a man buys a razor he does not care particularly about the methods of the manufacture, but if he goes to a barber shop and buys a service, he is greatly interested in the methods of production. Railway transportation is a service, and the customer is concerned in the manner in which the motorman and conductor do their duty. Hence everything which enters into the equipment of a car is concerned with salesmanship. Opinions as to the desirability of employment on a railway have changed, and it is now sought after. The turnover is small, and the men are more anxious to study sales methods. While electric railway service had been declared by some people not to be a necessity, the speaker believed that it was now so recognized in Des Moines and other cities where the service had stopped. Everyone there now wanted the service restored.

Walter Jackson, Mount Vernon, explained that the London Underground Electric Railways Company had a "commercial manager" and described the extensive publicity carried on by the London company. It did not expect to get every dollar back which it spent, but the company knew that if it told every day about its service and why it wanted people to ride, the public would understand that the company was up-to-date. A railway manager should utilize every occasion for developing traffic. On a rainy day merchants would get out special notices about overshoes, raincoats, and umbrellas for sale, but though transportation was equally desirable on a rainy day, the railways did no special advertising. Most companies are unfortunate in that they sell transportation at all times at the same price. Youngstown has recently introduced a weekly pass, and the speaker described ways by which its sale is promoted. It had to be sold to people who wanted to take more than two rides a day, that is, to the voluntary riders, who wished to visit theaters, do shopping, etc., besides traveling to business. This riding was of course of reciprocal advantage to the theaters and merchants. The matter of advertising the pass was therefore taken up with them. As a result several department stores advertised the pass in their own newspaper space, and the theaters used slides with the company's selling slogan about the pass. The Y. M. C. A. evening school was also interested, and got out a poster which helped the sale to pass. Off-peak riding would be encouraged if someone realized that after the workers had left in the morning there were more people at home than were in the factories and stores.

In answer to a question by Mr. Lambert, Mr. Goodwin declared that the sales responsibilities should be put up to one man. It might be all right for people to think that riding was a necessity, but those in the organization should not hold that idea. He then told about the practice of the Electrical Jobbers Association where a member who does not attend the meeting loses his $5 fee, paid from a fund contributed by the members for that purpose. He also thought that where papers were printed in advance it detracted from the interest taken in them.

Britton I. Budd, Chicago, commended the report of the committee. He also said that the idea of a sales manager was a good one as it awakens the selling instinct in a railway organization, but it is impossible to divorce management from general oversight. Courtesy will be practiced by the men only if their supervisors and other officials are courteous. The rules should be such as to bring out what is best in the men. Like everyone else they like to be commended for work well done. Hence, if patrons are urged to report uncivility, they should be asked also to report good actions. In fact, if the request was confined to the commendations, it would be sufficient. It is impossible to overestimate the value of courtesy. If the men feel right toward the management, they will at all times defend it and put forth their best efforts for the company. The speaker was not sure if they would feel the same way towards a sales manager.

The speaker then described the methods followed by the Chicago, North Shore & Milwaukee in developing traffic. Solicitors are sent out far and wide. Illuminated billboards and other ways of soliciting traffic are used. The purpose is not to get the business of competitors, but to create business. In discussing the desirability of mutual understanding between manager and men, Mr. Budd then said that his company was going to have a series of educational talks given to the foremen of his companies on the history of the company. The speaker will be a professor of finance and the facts will thus be carried to the men. It is the hope that by means of these lectures the men can talk intelligently on the subject. In answer to a question he said that his North Shore line had a regular traffic manager.

Mr. Goodwin declared that Mr. Budd had the sales instinct and thus was the sales manager of his company as well as the president.

C. E. Morgan, assistant general manager, Brooklyn City Railroad, in referring to the question of service, emphasized the necessity of a careful supervision of schedules so that the service should be given where needed.

On motion the report was then received by the association, and the meeting adjourned.

Tuesday's Session

The session of the Transportation & Traffic Association on Tuesday afternoon was a joint meeting with the Claims Association and was devoted to traffic regulation and safety work. The first report presented was that of the committee on traffic regulation. This follows in abstract below:

TRAFFIC REGULATIONS

The report contains the code of traffic principles drafted in conference at Washington, Jan. 10-11, 1921, at which practically all associations of national scope interested in traffic were represented. W. H. Maltbie of the committee represented the committee in this work. Another result of the conference was the preparation and consideration, although without final approval, of a modified uniform traffic code.

The code of traffic principles covers not only the methods of administration to be followed but recommends the registration of all vehicles and the licensing of their drivers. Among other things it provides that operators must be at least sixteen years of age to obtain a license and that chauffeurs be eighteen years of age. Speed limits of motor vehicles should depend on the weight and tire equipment of the vehicle, whether pneumatic, solid or metal, and for passenger motor vehicles such speed limit should not be less than 30 m.p.h. in open country, 20 m.p.h. in residential districts and 15 m.p.h. in business districts. Motor trucks and motor buses must carry a metal plate showing the actual weight of the vehicle with its equipment and the loading or seating capacity.

Reciprocity as between states is recommended toward vehicle and operators' licenses for a three-month period in any one year, the time not necessarily being consecutive. Size and weight restrictions by the proper authorities should contemplate the protection, safety and convenience of the traveling public, the preservation of the highways and the meeting of highway requirements. Lighting requirements recommended are those issued by the Illuminating Engineering Society under date of June, 1920. This code of traffic principles is signed as being approved by twenty-one interested associations.

The Washington conference urged the classification of grade crossings as "ordinary" or "dangerous" and declared that in the latter, in addition to being protected by standard grade crossing signs, be marked with uniform and conspicuous signs specifying the speed at which vehicles may cross. The committee requested that the United States Bureau of Standards make a study of such signs, including size, location, etc., and that it should have the advice and co-operation of the signal section of the engineering division of the American Railway Association as well as that of the signalmen of our Engineering Association.

Many favorable comments, the report states, have been made upon the committee's original code of traffic principles and model traffic ordinance. The ordinance, with some slight modifications, has already been adopted by the Canadian Electric Railway Association. The report is signed by H. B. Flowers, chairman; F. R. Cogswell, A. Gaboury, R. F. Kelker. Jr., W. H. Maltbie, H. B. Potter, Fielder Sanders and Paul E. Wilson.

Following this report were papers on traffic regulation by Inspector John O'Brian of the New York City Police Department and J. M. Quigley, Chief of Police Rochester, N. Y. Abstracts of these papers are published elsewhere in this issue.

The report of the committee on safety work was then presented by E. C. Spring. An abstract of this report follows:

SAFETY WORK

A study of public accidents indicates that of the total deaths caused thereby last year 78 per cent, or 60,000, occurred on the highways or in the home. Industrial accidents declined as a result of the concentration of effort put upon them by industrial management. The committee believes that the same amount of vigilance backed by education will accomplish much in the elimination of public accidents.

The teaching of safety must not be made a spasmodic or perfunctory matter and if done it will not accomplish the result sought. Electric railway accidents cover a wider range than other industries largely because their track locations bring them into more intimate contact with both vehicular and pedestrian traffic. Here is a situation that demands close vigilance not only on the part of the operating departments but constant study by all the company officials to improve conditions.

Information collected from 131 companies dealing with accidents and safety work indicates that there is an urgent need for active participation in accident prevention. Of a total of 86,500 accidents reported 50.5 per cent come within classes directly affected by the public safety movement. Fifty per cent of the companies reporting are spending nothing on safety work and the balance only average $2,002 per company per annum. Eighty-six companies do not have departmental safety committees, yet of the thirty-nine who have them, thirty-six report they are successful.

STATISTICAL STUDY OF SAFETY WORK BY ELECTRIC RAILWAYS

Number of Companies Reporting	Yes	No	No Reply
Has company entered into any public safety campaign?........	42	80	9
Has company given co-operation to any local safety movement?..	49	55	27
Is company member of National Safety Council?..............	67	54	10
Has company done any work in connection with public schools and to what extent?............	50	69	12
Has company carried safety advertising in its cars?............	78	49	4
Has company co-operated in safety work with automobile associations?......................	31	84	16
Has company adopted as a basis the standard code of operating rules of the T. & T. Association?	75	44	12

Electric railway hazards, the report states, may be divided into two main groups, namely, industrial or applying to employees only, and operating or those involving the public. In the first group the hazards are those similar to those of other industries and should be handled along similar lines. The second group divides into three subdivisions, namely, urban, suburban and interurban operation. Each of these three subdivisions is further divided into five more classes, namely, boarding and leaving cars, collisions with cars, collisions with vehicular traffic, accidents to pedestrians and passengers injured on cars. Of these last five classifications, the third and fourth involve most frequently the public safety. Probably in the greater number of cases the driver or pedestrian is at fault for the resulting accident, but that fact does not lessen the need or wisdom of the traction company supporting the public movement. Street railway companies should actively foster the public safety movement in their respective communities, and the place to start is in the home and school, with particular reference to safety on the streets.

The report then goes on to detail how this can be accomplished and illustrations are given of the campaign plans followed in some places. An appendix outlines a suggestion for safety work in cities too small to support a paid local secretary.

The report recommends that the joint safety committee of the T. & T. and Claims Association be made a permanent committee for and under the direction of the American Electric Railway Association, such sommittee to act in an advisory capacity on matters of safety for that association.

The report is signed by E. C. Spring, chairman; R. E. McDougall, co-chairman, and W. H. Boyce, G. E. Deibert, H. V. Drown, C. G. Rice, C. B. Scott and E. M. Walker.

In discussing this report C. G. Rice, Pittsburgh, stated that there was no reason why transportation and claim men could not work congenially. If the transportation men could cut down the number of accidents, they were entitled to all the credit. The real trouble was that while the transportation men believed in safety, they did not always like to do all that it required. Accidents should be anticipated, and it is just as well to be a little timid at times. He then declared that the report calls attention to the automobile hazard—a live subject. There are 9,000,000 automobiles in the country and they are increasing at the rate of about 2,000,000 per year; in other words, there is one auto for every fourteen of population. In Pennsylvania the 600,000 automobiles, or one for every thirteen of population, killed 1,141 persons in the past three years, with but three convictions. In the first six months of this year they killed 103 people. In Allegheny County alone, where it is figured there are 120,000 machines, the accident ratio has not increased, though it has not decreased. The streets are no longer safe playgrounds for the children, and it is hard for the parents to realize the change. It is not impossible, however, of correction if the idea of safety is sold with the car. The automobile manufacturers and dealers when selling cars should instill into the minds of the purchasers the idea of safety in operation. The standardization of traffic laws will have much to do with the elimination of some accidents. Under present conditions there is not much uniformity, although good work is being done by the Traffic Officers' Association in trying to have a standard code adopted.

Another means of accident control, according to Mr. Rice, is the licensing of operators and having the operators actually demonstrate their ability to handle properly the cars they drive. Strict enforcement of these traffic rules will also do much toward improving public safety. New York City and the State of Massachusetts have done much along this line. In Massachusetts during the past year 1,200 licenses have been suspended and 900 revoked, while in Pennsylvania, where the enforcement is rather lax, there have been only eighty-nine revocations. The formation of local vigilance committees to report violators is not impossible or wrong. The state of mind in most cities requires that something be done to curb the continued reckless operation of motor vehicles.

In the Pittsburgh district what is known as the Safe Drivers' Club is supported by employers, such as coal concerns, taxicab companies, etc., who use a large number of automobiles. A series of meetings is held for the chauffeurs and subjects of interest to safety are discussed. When these employees know that their employers are back of the club they take more of an interest in its aims. It is planned to close the series of meetings with a public meeting and to urge a central traffic court where all violators of traffic regulations would be treated alike. There is much that can be accomplished in the interest of public safety, but it cannot all be done at once.

Speaking of safety organizations, Mr. Rice pointed out that since the formation of safety committees in the industrial plants of western Pennsylvania the fatalities had decreased from 50 per cent of all accidents to 30 per cent and that a man was now safer at work than at home or on the street. Safety is a development of the mind, a mental attitude, and it does not matter whether it is obtained in the mill, at church or on the street. Safety can be developed only if worked from both ends, so to speak, by teaching it to the child in the school and to the man when at work. The National Safety Council believes in the establishment of local safety councils in every community and experience shows that where established it pays, for it has proved of benefit in many cities.

The traction companies, however, for some reason or other are backward in taking an active part in public accident prevention. Nevertheless, there is every reason to believe that a year's effective organization work along these lines will reflect a decrease in the number of accidents and causes of railway accidents.

Britton I. Budd, Chicago, also discussed the report of the committee. His prepared discussion is given elsewhere in this issue. In addition he spoke of the large number of companies that were doing nothing to develop public safety and stated it was useless to attempt such work in a community unless the traction company helped out in some manner. The money spent for safety work on each of the properties with which he is connected has brought more benefits than any similar expenditure. The effect on the morale of the employees cannot be figured in dollars and cents, for it develops an interest in the company not otherwise gained. It is essential though that the suggestions made by employees be acted upon promptly and, if approved, that the work orders issued should have precedence over other work orders.

It was his belief that it was essential for railways to back up safety organization work and also that it was up to every railway to have a safety organization of its own.

Edward Dana, Boston, complimented the committee on its report and was surprised to learn that the railways were doing so little with regard to accident prevention. It is now time to put the house in order, but it is a problem. It becomes necessary, first of all, to have the co-operation of the whole personnel of the railway employees, which can be done through company training schools. But the contact with the public at large can more easily and perhaps only be reached through the National Safety Council, of which the Boston Elevated Railway is a member. In Boston the number of accidents so far in 1921 has decreased 1,000 over the average for the same period for three years previous. The cost of accidents is less than 2½ per cent of the gross revenue. The company has now its own industrial accident company, with the heads of departments as officers. This has materially reduced the premium which the company must necessarily pay under the Massachusetts laws for similar protection.

H. B. Flowers said that in Baltimore, in co-operation with the National Safety Council, the railway company organized a no-accident campaign week, along lines suggested by the safety council. During that week there were 309 accidents of all kinds, compared to an average of 415 for the four weeks preceeding, a decrease of 106 accidents, or 25 per cent. During the first week following there were 269 accidents, a decrease of 119, or 28 per cent, and for the second week after 295 accidents, or a decrease of 29 per cent. If a comparison is made with the average for the whole nine weeks since the campaign, which is 277, there is found a decrease of 138 accidents, or 33.2 per cent. The effect of the campaign is felt in more ways than one, for the public press and the public at large knew the railway company was behind the campaign.

H. A. Mullett, Milwaukee, told of some of the work undertaken in that city. The Association of Commerce has taken an active part in industrial campaigns for the prevention of accidents. There are two divisions—one composed of manufacturing companies for the prevention of industrial accidents and the other of individuals for the prevention of street accidents. The funds for the industrial accident campaign come from the manufacturers while in the case of street accidents the funds were raised by popular subscriptions to what is called a safe drivers' club. The first year $6,500 was raised—from memberships at $1 each. This year a similar amount was raised, but it was harder, for the idea had to be sold to each subscriber, whereas before it was new and the work was undertaken during a campaign. In addition there is the vigilance committee of 100, on which some motormen are members. They do very effective work, and often from fifteen to twenty-five reports of violations of traffic regulations are turned in. The Milwaukee company has also for the last five years maintained a chief safety inspector and also has local safety committees in the shops and carhouses. The latest innovation is to show photos of wrecked cars and accident statistics graphically comparing each station or carhouse on an equal footing.

A. J. VanBrunt, Public Service Railway, told of the safety patrols or junior policemen which he had formed in the schools. The members of this patrol wear a distinguishing arm band and are trained by a uniformed policeman. They act at crossings in the absence of regular traffic officers and at school recess protect the smaller children.

Wednesday's Session

This was a joint meeting with the Accountants' Association to consider two reports. The first was that of the committee on economics of schedules and was read by Edward Dana, chairman. An abstract follows.

ECONOMICS OF SCHEDULES

The committee was asked: (1) To develop definitions and analyses of car-hours and crew-hours, (2) to study the question of variable running time, and, (3) to report on recent methods for speeding up traffic in congested centers, as done in Boston, Washington and Kansas City by John A. Beeler, as well as at other points. The committee first recommends the following definitions, the first group referring to car-hours and the second to man-hours:

1. *Running Time* is scheduled time operating between terminals, including time allowed at stops.

2. *Layover Time* is time allowed on schedule for layover of car at terminals.

3. *Run-off Time* is scheduled time to and from carhouses and connecting point of line.

4. *Excess Time* is time of car operating in excess of schedule due to service delays.

1. *Platform Time* is actual time of operating trips, including time between trips allowed on schedule as layover time.

2. *Report Time* is time allowed for preparing car for service or putting car away after service.

3. *Run Allowance Time* is time in addition to platform time allowed to bring run up to prescribed number of hours.

4. *Spread Allowance Time* is time allowed because of length of spread over all time to work a given run.

5. *Guaranteed Minimum Time* is the amount of time allowed to bring the time of extra men up to the prescribed number of hours per day or week.

6. *Overtime* is time worked by men in excess of their regular scheduled run or assignment for day's work.

7. *Continuous Time* is time allowed between completion of regular run and time reporting for extra work. This also covers all swings for which crews are paid.

8. *Instruction Time* is time allowed platform instructors in excess of regular running time, as well as time allowed to students.

Until these definitions have been approved the committee doubts the advisability of formulating any definite method for recording of these data.

On variable running time the committee points out that on the average road there are six different running times, as follows: (1) Inward bound a.m. rush hour, (2) Outward bound a.m. rush hour, (3) Inward and outward bound throughout the base schedule period, (4) Inward bound during p.m. rush hour, (5) Outward bound during p.m. rush hour, (6) Inward and outward bound during the evening and early morning hours. As speed is an essential factor in determining cost of service, the committee recommends care to prevent waste in running times by using the six running speeds in schedule making.

In discussing the handling of traffic in congested centers the report points out that as street cars are confined to a fixed path and as they carry many times the number of passengers per unit that other vehicles do, it does not seem unreasonable to ask support from the public authorities to reduce delays to a minimum. Agitation along these lines also has the indirect benefit of attracting public attention to the fact that many delays of street cars are due to causes for which the operating company is not responsible.

The following methods are recommended to facilitate loading and unloading in crowded districts:

Loading platforms, which may be placed at heavy loading and unloading points where the street width permits. They should be 4 to 6 ft. wide, from 8 to 10 in. high and from 50 to 100 ft. long. In some situations it has been found necessary to maintain lights on the platforms after dark as a warning to vehicular drivers, but this is not done where there are street lights nearby. The lights should be maintained by the city. They are used successfully in San Francisco, Boston, Pittsburgh, Washington, D. C.; Minneapolis, Kansas City, Baltimore, Newark, Los Angeles and Indianapolis.

Safety zones, marked by upright stanchions, are helpful in reducing accidents and can be used on streets where there is a distance between curb and nearest rail of not less than 15 ft. They are most effective if placed under the control of police department and the city should be responsible for the maintenance of lights on stanchions. White lines on pavement also are useful as a guide to traffic and protection to waiting persons. If the street is wide enough to permit safety zones, the consent of authorities to loading platforms should be asked. Good results reported from Los Angeles, Seattle, Louisville, Milwaukee, Columbus, Portland, Ore.; Baltimore, Brooklyn, San Francisco, Pittsburgh, Detroit, Washington, D. C.; Cleveland, Minneapolis, St. Louis, Philadelphia, Kansas City and Indianapolis.

Queue loading has been found effective in facilitating the loading of cars, but has not been so successful on streets where there is more than one line of cars. Queue loading gives best results when used in connection with multiple-berthing of cars and assisted by front-end collectors. Indorsement of this system is given by the companies in Detroit, Milwaukee, Pittsburgh, Dallas, Portland, Ore.; Philadelphia and Seattle.

Double or multiple berthing is used where cars on close headway stop before crossing an intersection and all proceed on the same signal. The system saves unnecessary steps, speeds up service and reduces congestion. In Pittsburgh and Kansas City berthing spaces are marked by signs suspended from the trolley wires at the exact place where passengers are to board. Used with satisfaction in Seattle, San Francisco, Milwaukee, Boston, Pittsburgh, Washington, D. C.; Minneapolis, Kansas City, Baltimore, Philadelphia, Los Angeles and Indianapolis.

Street collectors or additional men stationed at congested points and terminals to collect fares and so increase the rate of loading, are especially helpful if used with loading platforms or queue loading. One company reports having loaded passengers at a rate twice as fast as where all fares are paid to conductor. Others report a quicker and more even loading of cars with this system. It is especially helpful at stub-terminals in the congested district. One company keeps down the expense for this extra service by using as collectors in rush hours men who work inside other departments during the day. Used successfully in San Francisco, Los Angeles, Seattle, Milwaukee, Boston, Washington, D. C.; Dallas, Kansas City, Chicago and Portland, Ore.

Prepayment areas are used to good advantage in Boston, where the company has purchased property at several points where rapid transit and surface cars have a common terminal. Persons entering this area pay their fares at a booth and are then ready to board cars without delay. These areas cannot be installed, to any great extent, on public property in traffic centers.

Traffic Regulations: Street cars can serve the community best when given a clear right of way. This can be assisted by prohibiting parking of vehicles along car routes in congested districts at least during the rush hours, limiting the parking to thirty minutes during other hours, forbidding coal deliveries along car lines during the day and restricting parades to certain streets. The day may come when other vehicles will not use car tracks in any part of the city, and thus a better schedule speed can be maintained throughout the system. Traffic ordinances will not clear the tracks unless enforced by police and courts. A further improvement can be secured by adopting a rail head which does not provide a guide for vehicle wheels. Beneficial results with police co-operation have been secured in Chicago, Milwaukee, Boston, Portland, Ore.; Baltimore, Brooklyn, Los Angeles, Seattle, Pittsburgh, Cleveland, Kansas City, Washington, D. C., and Columbus.

Other topics considered were: elimination of loops in congested districts, turnbacks outside of congested districts, elimination of left-hand turns, one-way streets, segregation of vehicle traffic, semaphore control of traffic, location of passenger stops, reduced number of positive stops, staggered hours, trailer cars and jitney control.

The report is signed by Edward Dana, chairman; J. M. Campbell, Donald Goodrich, E. H. Ives, B. F. Jacobs, H. C. Moser, A. G. Neal, Harold A. Otis, Samuel Riddle, Walter Schroyer and J. A. Stoll.

There were two prepared discussions, one by John A. Beeler, New York, and the other by Albert S. Richey, Worcester.

In discussing the report of the committee John A. Beeler, New York, said: The definitions of schedule terms have been needed for many years, as it is difficult to compare companies reporting scheduled hours in different terms. The careful research made by the committee of handling traffic in congested centers indicates that the specified means for relieving congestion are giving good results where they are properly applied, and the recommendation that these various methods be applied elsewhere to facilitate street car operation and eliminate congestion is a sound one.

While the subject of traffic regulations is stated by the committee to be somewhat outside the scope of its investigation, it is pointed out that such things as prohibition of parking, elimination of left-hand turns, use of one-way streets, segregation of vehicle traffic, semaphore control of traffic, etc., have a marked bearing on schedules. in fact, everything that clears the way for the passage of a street car must assist in keeping not only the cars but all traffic moving. Enterprising city governments are now realizing this and are in many instances inaugurating such regulations. In other cities quasi-public bodies like chambers of commerce are working along similar lines.

In inaugurating the innovations mentioned in the report the railway operator is sure to meet with a discussion regarding the effect on safety. He should emphasize that speeding up traffic movement is not done by running the cars at a breakneck pace, but by eliminating time that traffic is standing motionless. Streets relieved of congestion have proved themselves much safer than those clogged with jammed, slow-moving traffic.

The installation of loading platforms may in itself appear a matter of little consequence, but they can be used to advantage to concentrate the riders right where they will board the cars, and at the same time they provide a safe waiting place out of the street traffic. Platforms also facilitate loading by decreasing the physical effort to board the car. Their use presents advantages to the car riders even greater than those cited for a bus loading at the curb. Not only do loading platforms speed up street car movements but they assist in the movement of traffic generally.

Double berthing, or cutting out the waste time at stopping places, speeds up schedules and tends to greater regularity of service. The second berth may be used very little save in emergencies, for with greater regularity of car movements the number of times that a car is delayed by the one immediately ahead is reduced. This result, of course, is not obtained if the mistake is made of stopping the car at both berths.

Elimination of left-hand turns has transformed some of the most complicated and difficult traffic corners in the United States to quiet and orderly intersections, although there may be more traffic moving straight ahead than formerly. The exact location of car stops at junction points is of great importance, as they should be placed not only to prevent street car interference but to reduce interference with general traffic as well.

The use of street collectors is a courtesy extended by the company to the public that results in faster and more even loading of cars. It conserves the time of the public while saving money for the company.

Routing is a subject of tremendous importance. A change in downtown routing may enlarge the delivery district and at the same time reduce the number of cars at congested points. This is of great advantage to both public and the company. These methods all eliminate waste motion and lost time for the passengers, which incidentally saves time for the company and results in faster schedules. Relatively unimportant as any one of them may appear individually, many a company has been saved from bankruptcy by an increase in speed of less than a mile an hour.

A note of caution is not out of place against indiscriminate application of these remedies for improving traffic conditions without a thorough analysis of the causes of the existing congestion. After a correct diagnosis of the case a forecast should be made of the results of applying each of the remedies enumerated. It is my experience that certain and frequently all of these means are applicable for the betterment of the general traffic situation in any community where the changes are properly inaugurated and the right kind of publicity obtained.

The phases of street railway operation covered by this report offer greater opportunities for reducing operating expenses that any others I know. In one large city that conducted a campaign of this nature the result was not only to popularize the service but to increase the net income a million dollars a year. Capitalized at 10 per cent, this is equivalent to adding $10,000,000 to the value of the property.

A. S. Richey, Worcester, Mass., the next speaker, congratulated the committee on its report and called attention to the fact that the committee had well defined the four constituent parts of car-hours, namely, running time, layover time, runoff time and excess time, but had not given an exact definition of the term "car-hours." He mentioned the difficulty which is experienced in comparing the schedule speed of two roads unless the method of reporting car-hours is definitely known. He suggested that in addition to the four definitions relating to car-hours recommended by the committee the association adopt a fifth defining car-hours as the total time embraced in the four as stated.

Following these two statements the discussion of the report was opened to the floor of the convention. Alexander Jackson, Public Service Railway, stated he believed the four definitions relative to car-hours as well as those for platform time and report time conflicted with those submitted in 1914 by the then committee on definitions. He read the 1914 definitions to substantiate his position.

It was pointed out by W. B. Wheeler, Third Avenue Railway, New York, that the definition for running time, while using different words, meant the same as the 1914 definitions. It was not feasible, F. R. Cogswell, Pittsburgh Railways, stated, to separate runoff time when cars returned through a territory that offered good business. Chairman Dana pointed out that runoff time was to be used only when cars were not engaged in revenue service. In the case outlined by Mr. Cogswell such time would be a part of the running time.

On motion by J. V. Sullivan, Chicago, it was voted that hereafter when asking for car-hour figures for comparative purposes they be figured so as to include the four parts suggested by the committee in its definitions. The four definitions as to the division of car-hours and the eight applying to man-hours were approved.

In discussing variable running time F. R. Cogswell, Pittsburgh, stated that on his property if a man works a run that is made up of two pieces, each on a separate car, the time intervening between the two pieces must be paid for. He also stated that due to the narrow Pittsburgh streets the loading platforms necessarily had to be narrow and that as a result queue loading automatically resulted. If passengers do not follow this plan they cannot get on the cars.

On the Third Avenue Railroad W. B. Wheeler stated that the running time was varied according to the degree of congestion. This was especially true of the so-called owl car service. Due to the large amount of single track and division lines it was not possible to change the running time very frequently, and then, too, to do so put a burden on the schedule makers. In Pittsburgh it was pointed out by F. R. Cogswell that the running times were changed five times daily, that is for the morning peak, mid-day, evening rush hour, evening and for owl service. In summer on the heavy traffic lines there is perhaps more layover time in the rush-hour schedule than during the winter. On the light traffic lines nothing but a uniform schedule is maintained.

In Baltimore, according to J. H. Stoll, variable running time has been applied to many lines. On the heavy traffic lines there are five or six changes a day, while on the crosstown and light traffic routes there are but two changes. These changes have effected a real saving in the number of cars and car-hours operated and have also materially speeded up the system. It has also had a good effect upon the car rider for it enables him to get to his destination quicker, and so far as car operation is concerned it takes up the slack during certain hours. Variable running time should also be carefully considered.

In Youngstown, Ohio, as pointed out by C. D. Smith, this method of schedule making is followed on both the urban and interurban routes. It has developed that if schedules were not changed the men would do it themselves so as to get more layover time. He believed it best to study schedule conditions as operated and make at least four changes in running time, thereby making a saving in cars operated.

C. E. Morgan, Brooklyn, agreed in the necessity of having variable running times. He told how the traffic on each line must be continually analyzed for the full twenty-four hours of the day and that if it were not done those who were in charge of operation were not serving the company in the way they should. It pays to add schedule makers and to change schedules even as frequently as sixty to ninety days. The only way to make any profit in the railway is to keep the wheels turning. Factors that enter into schedules are demand and units of operation, either single cars or trains, and as traffic thins out to take off or turn back cars at specific points. His studies had enabled him materially to better handle the traffic with a lesser number of cars. On single-track turnout lines it is possible to speed up by spreading out the meeting points. It is the net results that should be looked out for and not the mere fact that an expenditure has to be made to accomplish the desired result. The point to be looked out for is an increase in the number of passengers per seat-mile and to eliminate all unnecessary car-miles.

FREIGHT ACCOUNTING

The second report presented at the joint meeting was on freight accounting. The report stated in part:

This tentative classification and system of freight accounting for electric railroad corporations is made with the hope of filling a long felt need for a system which would give an accurate record of the results from the operation of freight business. It is so prescribed that any corporation, by keeping on its books the accounts prescribed by the Interstate Commerce Commission can carry out this system with very little additional labor and expense. In most cases the accounts of this classification, were different from those prescribed by the I. C. C., are merely groups of several accounts of the latter.

In order that uniformity in the application of the provisions of this system may be secured the accounting officers are requested to submit all questions of doubtful interpretation to the joint committee on freight promotion and costs, as appointed by the American Electric Railway Association, for its consideration and decision.

WAY AND STRUCTURES

Maintenance of Track, Overhead, Etc. (1-23). — This account shall include a proportion of the cost of maintenance, including supervision of roadway, track, bridges, signals, telephone lines, distribution system and all miscellaneous way and structures expenses as shown in the uniform system of accounts, numbered from 1 to 23 inclusive. This account shall be charged with the proportion that the freight car-miles bear to the total car-miles operated.

Buildings and Fixtures (24). — This account shall include the cost of labor and material used in repairing freight stations, platforms and all other freight structures; also a proportion of the cost of repairing jointly used carhouses, shops, offices and other buildings, same to be proportioned on use or car-mile basis.

Depreciation of Freight Buildings and Structures (25). — This account shall include the amount set aside to provide a reserve for the retirement of freight stations, platforms and other freight structures.

EQUIPMENT

Repairs to Freight Cars (31, 33).—This account shall include the cost of all labor and material used in repairing bodies, trucks and electrical equipment of freight cars.

Repairs to Service Equipment (32).—This account shall include a proportion of the cost of repairing service cars, including line cars, snow plows, sweepers, etc., same to be proportioned on the car-mile basis.

Repairs to Locomotives (34). — This account shall include the cost of labor and material used in repairing locomotives. This includes repairs to bodies and trucks and all fixtures and appliances inside and outside of bodies and trucks including electric motive equipment of locomotives.

Miscellaneous Shop Expenses (29, 36, 37, 39).—This account shall include a proportion of the cost of shop supervision, repair to shop equipment, cost of heating shops and other miscellaneous shop expenses, same to be proportioned on use or car-mile basis.

Depreciation of Freight Equipment (40). — This account shall include the amount set aside to provide a reserve for the retirement of freight equipment.

POWER

Power Delivered to Cars (45-62).—This account shall include the total cost of power, including generating, converting or the amount paid for power purchased and all expenses incident to delivery of power to cars. Where power is purchased give details including cost per kilowatt-hour. Where trail cars are hauled add 25 per cent additional for each car.

CONDUCTING TRANSPORTATION

Freight Trainmen (65). — This account shall include the wages of motormen, conductors and other trainmen engaged in freight service.

Station Employees and Expenses (68, 69).—This account shall include wages of agents, warehousemen and others employed in freight stations; also the cost of heating and lighting stations and other miscellaneous freight house expenses.

Freight Collection and Delivery (38, 76, 96).—This account shall include the wages of chauffeurs, drivers and helpers employed on wagons or other vehicles, used for collection or delivery of freight. This account shall also include the cost of repairing wagons, harness, trucks and all garage and stable expenses incidental to maintenance of wagon or truck delivery service in connection with the freight business.

Loss and Damage (77). — This account shall include the expenses incurred for losses and damages to freight intrusted to the carrier for transportation, also cost of settling such claims.

Miscellaneous Car Service Expenses (67). — This account shall include miscellaneous expenses for car and locomotives, such as lubricants, waste, carbons for headlights and other supplies except such as are used for repairs.

Carhouse Employees (70).—This account shall include the wages paid car, motor and brake inspectors and other carhouse employees not engaged in making repairs.

Miscellaneous Transportation Expenses (63, 66, 71, 72, 73, 78). — This account shall include a proportion of the cost of superintendence of transportation, operation of signals and telephone lines and other miscellaneous car service and transportation expenses, same to be charged on the car-mile basis.

TRAFFIC

Solicitation of Freight (79). — This account shall include the salaries and expenses of freight solicitors and clerks.

Advertising (80).—This account shall include the salaries and expenses of advertising agents, the cost of printing and distributing timetables, folders, notices to shippers and all other freight advertising matter; also freight advertising in newspapers and magazines.

Miscellaneous Traffic Expenses (82). —This account shall include miscellaneous traffic expenses of the freight department.

GENERAL AND MISCELLANEOUS

Officers, Clerks and Miscellaneous General Expenses (83-91, 95). — This account shall include a proportion of the salaries and expenses of general officers and clerks, law expenses, stores expenses and miscellaneous general office supplies and expenses, the charge to be made on the basis of gross earnings.

Accidents and Damages (92). — This account shall be charged with salaries and expenses of claim agents and attorneys and amounts paid in settling claims of accidents arising from the operation of freight cars.

Insurance (93). — This account shall include premiums paid for insurance on freight buildings and equipment, also premiums paid on freight in freight houses and in transit.

FREIGHT DEPARTMENT—REPORT OF EARNINGS, EXPENSES AND STATISTICS

SUMMARY OF OPERATIONS

Earnings	Month of	This year to	last year to	Accounts	(Note)
Freight (car load).					
Freight (less car load).					
Milk and cream.					
Other revenue.					
Gross Earnings—operating expenses.					
Ways and structures:				Accounts	(Note)
Maintenance of track, overhead, etc.				1-23	(B)
Maintenance of buildings and structures				24	(A)
Depreciation of freight buildings				25	(A)
Equipment:					
Repairs to freight cars				31, 33	(A)
Repairs to service equipment				32	(B)
Repairs to locomotives				34	(A)
Miscellaneous shop expenses				29, 36, 37, 39	(B)
Depreciation freight equipment				40	(A)
Power:					
Power delivered to cars				45-62	(A)
Conducting transportation:					
Freight trainmen				65	(A)
Station employees and expenses				68, 69	(A)
Freight collection and delivery				38, 76, 96	(A)
Loss and damage				77	(A)
Miscellaneous car service expenses				67	(A)
Car house employees				70	(A)
Miscellaneous trans. expense				63, 66, 71, 72, 73, 78	(B)
Traffic:					
Solicitation of freight				79	(A)
Advertising				80	(A)
Miscellaneous traffic expenses				82	(A)

	Month of	This year to	last year to	Accounts	(Note)
General and miscellaneous:				Accounts	(Note)
Officers, clerks and miscellaneous general expenses				83-91, 95	(C)
Accidents and damages				92	(A)
Insurance				93	(A)
Stationery and printing				94	(A)
Rent of tracks and facilities				97	(A)
Rent of equipment				98	(A)
Total operating expenses					
Taxes					(A & C)
Income less operating expenses and taxes					
Interest					
Net income					

Note—Proportioned—A=actual, B=car-mile basis, C=gross earnings basis.

FREIGHT STATISTICS

Passenger car-miles operated
Total freight motor car-miles operated
  Miles loaded cars
  Miles empty cars
Total freight trail car-miles operated
  Miles loaded cars
  Miles empty cars
Total milk car-miles operated
  Miles loaded motor cars
  Miles loaded trail cars
  Miles empty motor cars
  Miles empty trail cars
Total freight locomotive-miles operated
Total tons carload revenue freight handled
Total tons less carload revenue freight handled
Total tons non-revenue freight handled
Total train-miles operated
Average cars per train
Freight revenue per ton per mile
Tonnage handled and expense at principal freight terminal
Tonnage handled and expense at average station
Number of miles road operated
  Single track
  Double track

Stationery and Printing (94).—This account shall include the cost of printing freight bills, waybills, milk tickets and other freight printing; also the cost of stationery and postage used by the freight department.

Rent of Tracks and Facilities (97).—This account shall include the amounts paid for rent or use of tracks and facilities by the freight department.

Rent of Equipment (98). — This account shall include the payments to other companies for rent or use of freight cars and equipment.

TAXES

This account shall include gross earnings and income taxes based upon the gross and net earnings of the freight department; also a proportion of all other taxes, same to be proportioned on the gross earnings basis.

INTEREST

This account should be charged with the interest on equipment and facilities used exclusively for freight business, at the same ratio that the general mortgage or indebtedness bears to the total value of the railroad property covered by the mortgage. For example: If the total value of the railroad, as covered by the mortgage, amounts to $15,000,000 and the mortgage amounts to $5,000,000 at 5 per cent and the value of the equipment used exclusively for freight is $100,000; interest at 5 per cent per annum should be charged on one-third of $100,000, as in this case the railroad property is mortgaged for one-third of its book value. This account should also be charged with interest on any loans made for the purchase of freight buildings or equipment, not covered by the mortgage.

The above plan is suggested, but if any other basis is used give details. The distribution of operating expenses, taxes and interest will not be exactly the same on all roads but the fundamentals as set up in this system of accounts will give the cost of operation of the freight business from which we can obtain valuable information.

The report was signed by the two chairmen, F. W. Coen for the T. & T. Association and L. T. Hixson for the Accountants' Association.

DISCUSSION ON FREIGHT ACCOUNTING

In presenting the report of the joint committee on express and freight traffic promotion and costs, F. W. Coen, Cleveland, chairman, submitted a complete tentative system of freight accounting and a compilation of freight statistics from eleven Mid-West companies, which latter, however, he rather completely discredited for any valuable purpose because of many impossible figures submitted. He explained, for example, that the figures were not segregated as between motor and trail car-miles and that no division was made between carload and l.c.l. car-miles. He cited several other discrepancies from what must evidently be the true figure.

R. N. Graham, Youngstown, commented that the present I. C. C. accounting system provides but three freight accounts, one covering maintenance of freight cars, on the wages of motormen and conductors used on freight equipment and the third covering losses and damages resulting from freight claims. He pointed out the many ways in which this system is inadequate in determining the cost of freight service and expressed the opinion that the systems of accounting generally in use are exceedingly inadequate. For example, the segregation of maintenance cost of freight cars was no more important than the segregation of maintenance of electrical equipment used in freight service, or of the accidents involving freight equipment, etc. He maintained there was nothing to be gained by carrying freight at a loss and that the only way that it will be possible to determine whether this business is profitable or not is through the adoption of a complete system of accounting. As to the car-mile basis for the freight accounting system, he thought it was certainly not unfair to the freight business and probably favored it, because of the relatively higher maintenance costs involved in connection with operating freight equipment as compared to passenger equipment.

L. T. Hixson, Indianapolis, co-chairman of the joint committee, forwarded a letter which was read in his absence in which he maintained that the use of the ton-mile unit would be better than the car-mile basis recommended by the committee, and giving reasons for his contention.

G. T. Seely, Youngstown, pointed out that there were two important reasons for establishing a proper system of freight accounting. The first was for the purpose of determining the actual expense in order to find out whether a company is actually losing money in giving freight service, taking into consideration that the roadbed is already there. The second reason was for its value in determining whether the rates were proper, when taking into account not only the interest on the actual investment in freight equipment, but including also a proper proportion of the carrying charges on the investment in other equipment used.

F. D. Norviel, Anderson, Ind., pointed out that in 1911 a similar committee had made virtually these same recommendations as to accounting, but that the industry was just about as far along today as it was ten years ago in this matter. He said that the Union Traction Company of Indiana is using a system of accounting practically the same as was recommended by the association some years ago and that by this means it has been possible to arrive at a sufficiently accurate cost of freight service to make the statement that this business offered an opportunity for profit to electric railway companies.

Mr. Seely, in order to bring the matter to a head and avoid further delay in establishing a proper system of freight accounting, made the motion that the association adopt the classification of accounts as submitted by the committee and recommend that all companies put it into effect. He explained that even though this might not be the best system of accounting it would be better to put it into operation and try it out for one or two years, after which there would be a much better idea of its value or what changes should be made. The motion was passed after some discussion as to whether it was advisable to adopt this system in view of the difference of opinion expressed by the letter from Mr. Hixson on the use of the ton-mile or car-mile unit. Mr. Coen brought out that this matter had been thoroughly considered by the committee with Mr. Hixson in attendance.

C. E. Morgan, Brooklyn, moved that the association send out a notice to a high official of every member company urging that he take steps to have this system of accounting started on Jan. 1, 1922, in order to insure a comprehensive trial.

The meeting then adjourned.

Thursday's Session

At the closing session of the Transportation & Traffic Association convention, held on Thursday afternoon, the report of the committee on personnel and training of transportation employees was read by James P. Barnes, Louisville Railway, chairman. This, in abstract, was as follows:

PERSONNEL AND TRAINING OF TRANSPORTATION DEPARTMENT EMPLOYEES

The report covered specifically the matter of employment, and consideration of the proper training after employment was left for future committees. The committee's recommendations may be summarized thus:

1. All applicants for employment as trainmen should be received under uniform conditions and subjected to preliminary tests and, so far as possible, be interviewed in each instance by the same person. The preliminary stages of employment, which may be covered either verbally or by a written form, should be in the nature of elimination tests and should embody a general examination of the candidates for mental alertness, answering questions and his ability to execute simple instructions promptly and correctly. There should be a preliminary test of sight and hearing designed to eliminate candidates who are already "hard of hearing" "color blind," "short-sighted" or suffering from similar defects of sight or hearing. The preliminary test should be applied only as a basis of rejection and the test should be designed to eliminate the unfit.

2. Those who are found fit should be asked to fill out an application blank, each candidate in his own handwriting and preferably at the employment office under observation. The blank should include such additional questions as local conditions may require, but should cover certain minimum requirements specified in the report.

3. When vacancies are to be filled selection should be made from the appli-

cations on file, based on the information already obtained in the preliminary examination, application blank and references. The candidate chosen should be required to undergo a physical examination.

4. After the applicant has satisfactorily passed the preliminary and medical examinations, a general talk should be given by the employment agent, including presentation and preliminary instruction on operating and safety rules with the presentation of the student badge and instruction book.

5. The applicant should be personally introduced to the instructor or chief motorman or conductor who is to follow the detail of his "breaking in" on various lines, and this man in turn should personally introduce him to such of the instructing motormen or conductors as he is to operate with.

6. Following the "breaking in" on cars, there should be a brief and general instruction on a car or in the shop on mechanical and electrical principles of the equipment. This instruction should be brief and hit the high spots only, as it is felt that an attempt to crowd too much into this course merely bewilders the candidate and results in adding to, rather than decreasing, his troubles.

7. A written examination (questions to be changed at intervals) should be given at the end of the "breaking in" period on operating rules and such other matters as need to be covered, to be followed by a final talk from the head of the department on observation of rules, personal conduct, safety matters, accident prevention, etc., which talk will include some form of cross-examination on rules.

8. The new employee should be taken by the superintendent or assistant superintendent, where this is practicable, to the carhouse where he is to work and there personally introduced to the carhouse foreman, under whose authority he is to be placed.

9. At the end of the probationary period, the new employee should be brought in for oral examination as to rules, operating conditions, etc, and further instruction on personal bearing, accident prevention and similar matters.

10. The old men should be re-examined physically and on rules at intervals of not more than five years.

The report was signed by James P. Barnes, chairman; F. G Buffe, F. D. Burpee, F. L. Butler, Dr: John Leeming, A. P. Norris, Martin Schreiber, F. J. Trazzare and J. E. Wayne.

Report on Employee Selection and Training Discussed

In discussing the report of the committee on personnel and training of transportation employees Dr. John Leeming, medical counsel Chicago Surface Lines, explained in detail some of the considerations involved in the report. He said that an intelligent employment man should easily be able to discover at the first meeting if an applicant is mentally dull, hard of hearing, color blind, short-sighted, deformed, etc.; in other words, plainly unfit for the service. A physical examination by a competent medical man is of great importance and essential before employment. A mental examination in the form of intelligence tests is also desirable. This will satisfy the medical examiner that the proposed employee is possessed of a fair degree of intelligence and mental ability.

Dr. Leeming said that while valuable mechanical devices have been contrived with the object of enabling the examiners to ascertain the mental ability of the applicant for quick appreciation and ready response to unusual situations suddenly presented, the information in regard to the intelligence status of an applicant may be obtained in a satisfactory manner by a competent examiner, who is fairly well posted on the principles of practical psychology, without the aid of any mechanical device. Such an examiner need not necessarily be a physician. This work might properly be handled by a trained and expert employment man, working in co-operation with the medical examiner, superintendent of transportation and general manager. Tests should be used which will indicate the applicant's powers of memory, attention, perception, adaptation, judgment (of forms, weights, measurements, etc.) and his readiness, accuracy and speed in voluntary motor response to mental impressions.

In regard to the importance of thorough medical examination, Dr. Leeming said that while the committee made only a modest recommendation in the form of a minimum requirement, some of its members favored a much more thorough examination than the report indicates. He said that of late years he had had opportunity to observe the benefits derived from a thorough mental and physical examination which eliminated approximately 10 per cent of the men who had previously passed the preliminary interview by the employment man.

The committee's last recommendation, that "old" men be re-examined physically and on rules at intervals of not more than five years was treated by Dr. Leeming in detail. The most complicated piece of mechanism, he said, that is used in running a street car is the human machine, and he, like other machines, will get out of order. Comparing the human mcahine to a bridge, he pointed out that it would not be safe to say: "This has been a good faithful bridge and has carried our cars and our passengers safely over it for many years. I notice its timbers are showing signs of dry rot, but it seems to be doing the work all right, therefore I will not go to the trouble and expense of examining it. I will take a chance with it." Even if there is no visible evidence of dry rot or any other surface indications of defect it is the engineer's duty to have every detail carefully and repeatedly examined and elements of weakness removed. If an old employee is disqualified he cannot be used, but maybe his disqualification is not so complete but that he may be safely used in some work other than that of trainman. If so he should receive preference. But if on re-examination a motorman is found to have positively disqualifying defects, he should be removed and not be permitted to endanger the lives of passengers.

This re-examination, said Dr. Leeming in conclusion, might in many cases be valuable to the employee, in disclosing partial and only slightly disqualifying defects, which in many cases could be benefited by advice and suitable treatment. Then, again, a motorman with slight ailments might be changed to a less hazardous run on outlying crosstown lines, or, in some cases a motorman might be made a conductor.

To use a mechanical analogy, if a company has a car, a rail or a signal which can no longer be used under the legal requirements of the highest degree of care and safety, it must be either repaired or used in some part of the service where it is not an element of danger. This is equally true of a trainman. It would be no answer whatever to a failure in duty in this regard to say that an unsafe employee is continued in his work because of his past service, however long or excellent, or because of his financial circumstances, however bad.

Henry H. Norris, ELECTRIC RAILWAY JOURNAL, abstracted his paper bearing on this subject. It appears in abstract earlier in this issue. He was followed by Robert L. Wilson, works manager Westinghouse Electric & Manufacturing Company. Mr. Wilson said that the committee was to be congratulated on the sound and definite recommendation presented. Physical examination, he said, is of great importance. In his company the most difficulty is experienced in determining how far to go in the re-examination of old employees. There is often opposition encountered both from the employees and from outside organizations.

The substance of the report of the committee, said Mr. Wilson, may be divided under the following subheads: (1) central employment department, or uniform methods; (2) application forms; (3) selection and physical examination; (4) preliminary instruction and explanation; (5) introduction of new employees; (6) detail instruction or breaking in; (7) examination.

Under the first head it may be said that success will depend not so much upon an specific method as upon the personality of those carrying on the work.

In the Westinghouse works the central employment department has been divided as follows: general division, men's division, women's industrial division, women's clerical division, statistical division, personal service division.

Under the second subhead, the application form is important, and under the third it may be said that in an industrial organization personal records are not given much attention. Applicants should be put through a preliminary "weeding out" process. In the interview which follows the filling in of an application form the success or failure of the employment function occurs. The interviewer must remember that he is selecting an employee, not alone for his ability to perform some manual work or for his intelligence, but he must consider what kind of a "front" the applicant can put up.

In this connection, said Mr. Wilson, the so-called psychological and intelligence tests should be used only by those of large experience. Each applicant accepted by the interviewer should be given a thorough physical examination, both as a safeguard to his prospective fellow employees and to insure his not being put on work unsuited to his strength.

Under the remaining subheads Mr. Wilson said that the employing officer should make the new employee feel that the railway is a desirable concern to work for. Any time taken in introducing him to his work and his fellows will be well repaid.

By way of summary, Mr. Wilson said that a well-organized personnel or employment department is about as valuable as any other one department to any large enterprise. In one thing, it should lessen labor turnover by substituting well-thought-out policies for haphazard selection and practices. It first sells the company to the employees and they, in turn, do a great deal in fostering a public opinion favorable to the enterprise. To deal fairly with employees it is necessary to know something about them as individuals; their skill, dependability, personality, length of service, etc. Hence, well-balanced records are kept by the employment department. It is necessary that petty injustices be corrected, and the employment department furnishes a good place to which a man can bring a real or fancied grievance for adjustment without fear of prejudicing his standing.

L. H. PALMER ELECTED PRESIDENT

At the close of the session the report of the nominating committee was presented by W. H. Sawyer, East St. Louis, Ill., and the report was accepted, thus electing the following: President, L. H. Palmer, assistant to the president United Railways & Electric Compan, Baltimore, Md.; first vice-president, G. T. Seely, Youngstown, Ohio; second vice-president, J. K. Punderford, New Haven Conn.; third vice-president, Arthur Gaboury, Montreal, Que.; executive committee, G. H. Clifford, Fort Worth, Tex.; T. C. Cherry, Syracuse, N. Y.; J. V. Sullivan, Chicago, Ill.; Edward Dana, Boston, Mass.

W. H. Boyce, New Brighton, Pa., then presented the report of the committee on resolutions, which was accepted. In addition to expressions of appreciation for the several factors which had made the convention a success, a resolution of regret for the death of President J. J. Landers of the Accountants' Association was included. Mention was also made of the services of the technical press to the association. The report of the committee on personnel and training of transportation employees, with its ten recommendations, was then accepted; the president and first vice-president elect were introduced, and the meeting was adjourned.

Care in Construction and Maintenance of Overhead Lines*

Every Employee Should Take an Active Part in Establishing and Maintaining Safe Working Conditions—Much of the Danger on High-Tension Lines Due to Man-Failure

By A. B. Gates

Superintendent of Overhead Lines Commonwealth Edison Company, Boston, Mass.

IN THE early days of electrical distribution poles were erected and wires attached to these poles, with no thought as to the safety of the lineman who later must handle these wires while they were alive. As the distribution systems grew and more circuits were needed wires were added until the poles were so congested that linemen in ascending or descending were forced to climb out around the ends of the arms.

But changing times have changed conditions and we find that overhead line structures are now designed with considerable thought for the safety of the workmen, safe working methods are being established and every effort is being made to insure a proper attitude on the part of the linemen toward safety work.

In the design of overhead lines or structures the first consideration should be the strength of the structure. It must have a sufficient factor of safety to withstand any stress to which it may reasonably be expected to be subjected, and, secondly, it must be simple and so arranged that the conductors and equipment may be supported in a manner such that the workmen can ascend or descend the pole or structure without danger of accidentally coming in contact with the live conductors or equipment.

All conducting material, such as braces, transformer cases, bolts and guys not permanently and intentionally grounded, must be installed so as not to be in contact with grounded or live wires. The climbing space must always be kept clear of guy wires, live or grounded wires, as well as cable lateral pipes, transformer cases or other equipment.

KEEP TOOLS IN GOOD CONDITION

The most essential contribution to safe working methods in line work is satisfactory tools and equipment. Ropes must be free from metal strands and when worn they must be replaced. Cutting tools must be sharp and provided with suitable handles or holders, chisels, bars, wedges, hammers and star drills must be faced and free from mushroomed heads. Wrenches must be carefully inspected and repaired or junked when the jaws become worn or sprung. Every workman who is required to work on or near live wires should be provided with rubber gloves and every crew should be provided with a sufficient number of insulating covers so that all live or grounded wires or conducting material with which the workmen can possibly come in contact while working on or near live primaries can be covered.

As far as possible methods of doing standard work should be systematized and working rules should be established so as to insure uniform practice in all gangs. In addition to the working rules or standards a complete set of safety rules should be established, kept up to date and enforced. All conductors not known to be dead should be considered alive and when men are working on or near live wires all other conducting material with which the workmen may come in contact should be covered. No workman should be allowed to handle live conductors with rubber gloves only as protection on circuits of over 4,000 volts. If overhead line repair or construction work is to be done on live lines of over 4,000 volts high-tension tools of proper and safe design should be used.

Whenever a high-voltage line is killed to be worked on it should be grounded before it is turned over to the line crew, and in addition the line crew should put a ground on the line by means of a chain attached to the ground wire, if there is one on the structure, or to a pipe or rod ground, if no ground wire is available, between the point at which work is to be done and all sources of feed or back feed to that portion of the line. The temporary ground should not be removed until all work at that location is completed.

Whenever possible all circuits and lines should be killed while they are being repaired. In many cases the saving in labor effected by doing the work on dead equipment will more than offset the trouble and expense of taking the equipment out of service, and when the reduction of hazard is considered usually the decision can readily be made in favor of dead work. On our system the customers who are supplied from higher voltage lines—that is, 9,000 volts and above—are practically all provided with more than one source of supply so that we have not found it necessary to use high-tension tools for making line repairs, as usually we have no difficulty in taking a line out of service.

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*Abstract of an address delivered before the Public Utilities Section, National Safety Council, at the tenth annual Safety Congress, Boston, Mass., Sept. 28.

For distribution work we have found that a rubber blanket about 3 ft. square provided with three eyelets along two of its edges and 3 and 4 ft. lengths of ¾-in. garden hose provide the best protection possible while doing live work. Rubber gloves which have been tested for puncture at 5,000 volts are supplied to all workmen who have occasion to work on or near primary wires. These rubber gloves are always worn under a horsehide glove which has a complete palm, thumb and fingers, but has the back removed. The horse-hide glove is short, coming only to the wrist, and is held in place by a wrist strap. For work in rainy or stormy weather all men who do emergency work are provided with rubber coats and three-quarter length or sporting boots.

Our workmen are required to test their gloves by the air pressure method each time before putting them on. The foreman examines all rubber goods, other protective devices and tools at least once each week and in addition a monthly inspection is made by the safety inspector. With all precautions taken, through man failure or other causes, accidents may happen. In order to be sure that we will be prepared to meet such an emergency if it occurs, every member of the overhead line force is required to practice the prone method of resuscitation each week.

ATTITUDE OF THE WORKMAN TOWARD SAFE METHODS

Statistics show that 80 per cent of industrial accidents are caused by man failure; therefore, with the best and safest standards of construction followed rigidly, with the best of tools, equipment and safety equipment provided, and with the best possible working and safety rules drawn up and circulated among the workmen, little can be accomplished unless we can obtain the proper co-operation on the part of the men who are to do the work. The first step in attaining proper attitude toward safety and other established rules is a permanent working force. A premium should be placed on length of service. This can be in one of many forms, rate of pay, disability and death benefits, pension systems or in many privileges which can be made to depend on this factor. But even with all these inducements for continuous service, there will always be a turnover, and the men who leave must be replaced. The line force should be built up from the bottom and as far as possible all vacancies should be filled by promotion and new men hired in the lower grades.

Every groundman should be given a chance to learn. He should be taught the working and safety rules and should be examined as he progresses in the work. No workman should be allowed to climb and do line work until he has proved by examination that he is capable of doing the work of the grade to which he is to be promoted. After he has climbed for some time and is capable of handling himself on the pole and has become familiar with safety and working rules, he should be examined before he is allowed to work on live wires, and after he has worked on live wires under the direction of a lineman or a foreman, he should again be examined before he is promoted to the grade of lineman and is allowed to work on primaries without direct supervision by an experienced lineman or foreman.

If this method is followed no new man will be expected or allowed to do work for which he is not properly trained. Only when it is absolutely necessary should men be hired as linemen, and when so hired they should not be allowed to work without supervision until it has been determined that they are thoroughly familiar with the system and with the methods of doing work.

It should be impressed on every employee, and especially the new employee, that while engaged in his regular duties, which in line work usually require co-operation of the several men who make up the crew or gang, he is his brother's keeper and he must not only care for his personal safety but must so conduct himself in the execution of his particular part of the work that he will not endanger the safety of his fellow workmen.

We have heard many times that the foreman is the key to the safety situation. This is true and we should constantly preach and talk this idea. But let us remember that the real key to the situation in our safety problem is a proper attitude toward safety on the part of every employee who must engage in a line of work which without care is hazardous.

We must perfect our standards of construction from the standpoint of safety. We must provide the workmen with safe tools and equipment, and finally we must convince each member of the line force that he must believe in and practice safe methods before we can allow ourselves to believe that we are exercising care in the construction and maintenance of our overhead lines.

Gear Manufacturers' Association

THE semi-annual fall meeting of the American Gear Manufacturers Association will be held in the Powers Hotel, Rochester, N. Y., on Oct. 13, 14 and 15.

Reports will be offered by the various committees on standardization, and the papers include the following: "Gear Tooth Wear," by S. O. White, Warner Gear Company; "Duraluminum as a Material for Worm and Other Gearing," by R. W. Daniels, Bausch Machine Tool Company; "The Grinding of Gear Teeth," by J. F. Barr, The Gear Grinding Machine Company; "Tooth Forms," by E. W. Miller, Fellows Gear Shaper Company; and "First-Hand Impressions of Europe," by E. S. Sawtelle, Tool Steel Gear & Pinion Company, who has recently returned from an extensive trip through Europe studying conditions there. F. W. Sinram, of the Van Dorn & Dutton Company, Cleveland, is president of the association, and F. D. Hamlin, of the Earle Gear & Machine Company, of Philadelphia, is secretary.

Importance of Claim Department Statistics*

BY J. H. HANDLON
Claim Agent Market Street Railway, San Francisco, Cal.

INTELLIGENTLY prepared claim department statistics, if readily accessible, can be used most advantageously by a claim agent not only for reference purposes but with the object of comparing present-day records of accidents and their costs with what has been accomplished in the past.

The natural tendency in gathering statistical information is to prepare this information in such detail that the main facts are obscured by the mass of accumulated data. On the other hand, there are claim agents who are content with such meager statistical information as the total number of accidents and the total costs of the same.

Claim department statistics should be so computed that they will promptly show any increase or decrease in any class or classes of accident on any division or line; at any carhouse or on any particular car or type of car; to any individual motorman or conductor, and they should readily reveal any increase or decrease in accident costs. By preparing such figures on a basis of car-miles, or car-hours operated, and passengers carried, many interesting facts are often brought to the surface.

Such a statement furnished at regular and brief intervals to the operating department for each division, carhouse or line has a tendency to create a rivalry between divisions, carhouses or lines, and the company reaps the benefit of that rivalry. It also enables the operating department to maintain a record of the amount each individual employee is costing the company for accidents. Incidental information as to the average number of witnesses obtained per accident and the number of "blind" or unreported accidents is also valuable to the operating department in co-operating with the claims department.

Additional statistics that are of direct benefit to the claim agent relate to the cost of operating the claim department; summarize the work of each of the investigators; give the percentage of accidents that result in claims being presented and show the proportion of claims that are rejected or from which litigation arises.

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*Paper presented before the Pacific Claim Agents' Association at its twelfth annual convention held at Butte, Mont., Aug. 25-27, 1921.

Such figures often guide the claim agent in determining the policies of the claims department. For instance, we undertook the experiment of temporarily abandoning the practice in vogue for years of immediately appraising all damaged automobiles regardless of whether a claim had been filed or how the accident occurred. By keeping a list of automobile accidents that developed into claims we saw the advisability of restricting our appraisals to only those automobiles involved in accidents where the carmen's reports indicated that the responsibility was uncertain or the extent of damage was considerable, or where claim was presented.

The adoption of this policy last year resulted in more than 19 per cent less automobile claims being presented in proportion to the number of automobile accidents that occurred as compared with the preceding year. In other words, we found that by an appraiser making an inquiry the day after the accident as to the extent of the damage to the automobile, owners of automobiles were encouraged to present claims.

The statistical record of pending claims, rejected claims, outlawed claims and litigated cases should serve to indicate to the claim agent any laxity in his work or if he is allowing too many claims to accumulate or suits to be filed. Perhaps his perspective has become so blinded that he is either too severe upon the claimant or too severe upon his own company in the rejection or granting of claims. The records of the department will immediately reflect such an attitude of mind.

In brief, statistics to the claim agent should be what a cost sheet is to a manufacturer, a steam chart and a steam gage to an engineer and a balance sheet to a banker. For is it not vital to claim agents to know the cost of their department, the work the department is doing, any fluctuations in that work and the stock of accidents on hand? Like a stethoscope, claim department statistics should disclose the heart beats of the department.

Investment Bankers' Association of America

The tenth annual convention of the Investment Bankers' Association of America will be held in New Orleans Oct. 30-Nov. 2. Headquarters will be at the St. Charles Hotel.

Illinois Association to Meet at Aurora on Oct. 14

The Illinois Electric Railway Association will meet at Aurora, Ill., Friday, Oct. 14. A special train over the Aurora, Elgin & Chicago Railroad will leave the Wells Street Terminal, Chicago, at 7:55 a.m., Central Standard time. A very interesting program is assured by Secretary R. V. Prather. This is the first meeting of the association since last fall. A full attendance is urged.

American Association News

More About Des Moines

In an article to be published in *The Nation's Business* for October, President P. H. Gadsden tells the story of the cessation of street car service in Des Moines, Iowa. He also tells something of the attempts the buses made to give service and points out the lack of substantial propositions by the bus interests to take over the transportation responsibilities. The title of the article is "The City Without a Street Car."

Meeting of the Executive Committee, American Association

THE Executive Committee of the American Association held its regular annual pre-convention meeting on Monday morning, Oct. 3. Among the matters before the committee was the resignation of Philip J. Kealy, second vice-president of the association, which had been accepted by President Gadsden at the time it was presented. This action was approved by the committee. Mr. Kealy said that his business interests were such that he could not continue to devote necessary attention to association affairs.

The committee authorized a special resolution with reference to the death of J. J. Landers, president of the Accountants' Association and member of the executive committee.

The committee considered the manner in which the W. O. Gibson case had been concluded and approved President Gadsden's action in making the agreement he had, which resulted in the parole sentence already referred to in these columns.

A special report from the electrolysis committee was given by W. J. Harvie, chairman. The executive committee approved this report, which included a recommendation for continued co-operation with the American Committee on Electrolysis, and also included a recommendation that $2,500 be appropriated by the American Association toward the expenses of the American committee, this being contingent upon similar action by the other associations represented on the committee.

Two subjects were brought up by the Committee on National Relations. One of these had to do with what policy the association had to follow in connection with the present case of the Washington Railway & Electric Company before the Interstate Commerce Commission, in which case the subject of the commission's authority over depreciated figures is in question as against the authority of the District and Maryland Commissions. No definite action was taken. The other question had to do with a situation which is at present facing a large number of electric railway companies in connection with excess profits tax. It appears that the Internal Revenue Bureau has decreased, by a very considerable amount, the investment figure of several railways for the 1917 income tax returns and this has in some cases placed the railways in the excess profits bracket, making them liable for payments ranging as high as $250,000. It is apparently a question of discretion in interpretation of the law and a special committee of five was authorized to consider the special problems and interpretations which might affect the electric railways as a whole in this important matter of taxation.

The committee adjourned after disposing of the usual routine matters and reports.

First Meeting of New Executive Committee

IMMEDIATELY after the close of the American Convention on Thursday noon the new president, R. I. Todd, called the newly elected executive committee into session with the following members present: Messrs. Ely, Harries, Henry, Gadsden, Todd, Budd, Shannahan, Coates, Stevens, Sawyer, Tontrup, Gould, Barry, Ellicott, Secretary Welsh and L. H. Palmer of Baltimore and H. V. Bozell of New York.

The committee took several steps which were necessary in order to start the machinery under the newly revised constitution, such as to authorize the executive secretary and treasurer to pay off ordinary routine office expenses, make provision for convention expenses, for protection of association property, etc.

The committee decided tentatively that its regular meeting shall be on the last Friday of each month except in November, which would make the meeting date fall on the day after Thanksgiving Day. The first meeting will thus be held on Friday, Oct. 28, and will be at the New York headquarters of the association.

A special vote of appreciation to President Gadsden for the energy and self-denial with which he had shouldered the difficult tasks subsequent to the defalcation was adopted.

The executive committee discussed the work of the publicity men and decided to do something to make this part of railway activity more effective. On motion of Mr. Budd the executive committee decided to communicate with the principal executives in companies which are not now engaged in publicity work asking them to pull together with the rest of the association in the general policy of railway publicity in the interests of the industry.

Mr. Todd appointed a finance committee of J. H. Pardee, chairman; R. P. Stevens and J. G. Barry, this committee becoming active immediately in order that the association machinery may not be held up due to lack of direct control over expenses which the finance committee exercises under the new constitution that was adopted at the annual convention.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Schenectady Award Ruinous

James F. Hamilton, president of the Schenectady (N. Y.) Railway, and H. B. Weatherwax, vice-president and general manager, when interviewed by the correspondent of the ELECTRIC RAILWAY JOURNAL at Albany in connection with the recent arbitration award between the Schenectady Railway and the Amalgamated Association, made the following statement:

> The purpose of the arbitration was to determine a fair and reasonable rate of wage to be paid the members of the association who were employees of the company, based on present existing conditions. The decision rendered was not based on existing conditions, but on a letter written by J. F. Barnes, former general manager, which was technically construed as continuing the 60-cent per hour rate of wage. As a matter of fact, the conditions of the letter were never carried out in that the Public Service Commission refused to grant the company all of the increases sought for and referred to in the letter, and such increases as were granted were not authorized until sixty days after the time contemplated by the parties and in no event was the 60-cent rate intended to extend beyond May 31, 1921
>
> Under existing conditions the high rate of 60 cents an hour is entirely out of proportion to the wages paid for similar service throughout the State generally and is ruinous to the company financially. It cannot render present service under such an unreasonable rate of wage and in order to lessen the loss of this company, it will necessitate the immediate installation of one-man cars on all city lines. And even with the installation of one-man cars this company will be unable to pay war-time wages in times of peace without incurring great loss.

Electrification Urged

Residents of the surburban cities on the peninsula adjoining San Francisco recently presented a petition to the Southern Pacific Company asking the company to electrify the double-track steam line between San José and San Francisco on which interurban traffic is handled. All of the suburban cities between San Francisco and Palo Alto, a distance of 30 miles, are served by an excellent concrete highway which leads directly into San Francisco. In addition to a bus system and the steam railroad, which operates a commuters' schedule during the rush hours, there is also an interurban electric line that runs as far as San Mateo, 18 miles down the peninsula from San Francisco.

Still, there is an insistent demand for an electrified interurban service on a private right-of-way where high speed will be safe and where long trains can accommodate crowds during the rush hours, while small light units could be economically operated at reasonably frequent intervals during the off-peak hours.

In a letter addressed to Daniel C. Imoden, executive secretary of the peninsula bureau of chambers of commerce and civic associations at San Meteo, Cal., William Sproule, president of the Southern Pacific Company, gives his views on this proposed electrification. He said in part:

> High cost of money caused by the world war, excessive taxation, unequal competition by untaxed motor vehicles for hire over public highways which we were heavily taxed to build in the first place and are taxed to maintain afterward, with further competitive highway construction urged at this time, all combine of themselves to prevent the possibility of favorable answer to your call for electrification.

Paul Shoup, vice-president of the property, is also opposed to this electrification project on the ground that it would be an unprofitable undertaking.

In the absence of prospect for early electrification of the Southern Pacific steam lines, the Menlo Park Chamber of Commerce, stating that it was acting for all towns below San Mateo, adopted a resolution inviting the Western Pacific to extend its line northward into Santa Clara and San Mateo Counties. The president of this Chamber of Commerce, according to press reports, declares that plans are also being considered whereby the peninsula towns would build an electric line from Palo Alto to San Mateo so as to effect a connection there with the Market Street Railway.

Urges Relief from Paving Burdens

Jackson, Mich., has taken a forward step in recommending the abolition of the paving charges on the Michigan United Railways which operates in that city. A special committee, appointed by the City Commission of Jackson to investigate the affairs of the Michigan United Railways in that city, recommends that the company be relieved of the paving charge and also of the charge for sprinkling the streets it traverses, and furthermore the committee recommends that the company be given a 10-cent cash fare with five tickets for 35 cents and a 5-cent cash fare for children between the ages of five and twelve. This represents a substantial increase in the fares that have been charged in Jackson.

The report of this committee, which is constructive throughout, demanded that the company be maintained in a strong and secure financial position. It is attracting wide attention throughout the State of Michigan. The Michigan United Railways also operates in Lansing, Battle Creek and Kalamazoo and other Michigan cities as well as interurban cars between them.

In addition to these definite recommendations, this committee also recommends that

> Much could be done by the patrons of the street railway if they would educate themselves to the thought of assisting to expedite the service and avoid unnecessary delay. Loading and unloading the car is delayed by patrons, unnecessary stops are demanded, care is not taken by the people in calling for the right streets and in many other ways delays are forced upon the service which by a little forethought could be avoided and much of the waste eliminated.

Franchise Draft Expected

Progress Being Made Toward Conducting Negotiations Which Will End Des Moines Struggle

With the return to Des Moines on Oct. 6 of M. H. McLean and F. C. Chambers, president and general manager, respectively, of the Des Moines City Railway, there are evidences that actual progress has been made in the negotiations looking toward the end of the Des Moines street railway muddle. It is understood that Mr. McLean is coming to Des Moines to participate in the entire negotiations with the City Council and in the franchise election. It is likely that final draft of the franchise will be handed to the Council not later than Oct. 7.

Mr. McLean and Mr. Chambers were in Chicago on Oct. 5 in conference with representatives of the McKinley interests, owners of the Des Moines Electric Company, relative to the clause in the proposed franchise which permits the railway to sell electric power. One Des Moines daily published a story on Oct. 4 that the subject covered at the conference was the sale of railway plant to the McKinley interests, but this is not taken seriously by the business people in Des Moines. No officials of the city railway could be reached to verify or deny the report.

J. G. Gamble, attorney for Des Moines City Railway, was quoted in the daily papers on Oct. 4 to the effect that service on the basis of sixty cars could be available very shortly after the franchise ordinance is passed by the Council.

One of the reasons for Mr. Chambers' visit to Chicago according to Mr. Gamble was to prepare means for financing the resumption of service in the event the franchise is passed by the Council.

The police department took a firm hand in bus operation this week and ordered that buses must submit to brake inspection once a week by a city mechanician; that buses must be equipped with doors on Oct. 5 and that buses must not be opened until the vehicle has come to complete stop. Buses are also ordered to come to a complete stop at railroad crossings and are prohibited from stopping at street intersections.

A canvass of 12,000 Des Moines women by the women's bureau of the Chamber of Commerce completed on Oct. 5 showed 99½ per cent favored the electric railway as against the buses; 94½ per cent voted for the 8-cent fare franchise, provided fares are reduced when traffic increases. The vote will be placed in the hands of the City Council on Oct. 7. Sentiment has steadily crystallized in favor of the railway during the past two weeks.

Buses Must Be Regulated

Toledo Commissioner Insists Improved Railway Service Will Not Eliminate Jitney

W. E. Cann, commissioner of street railways, Toledo, Ohio, for the first time since he assumed this position seven months ago, has made public comment on the service-at-cost franchise of the Community Traction Company as it is being operated in his city. The occasion of Mr. Cann's public remarks was furnished by a recent newspaper interview in which Mr. Bradley, president and general manager of the Walding, Kinnan & Marvin Company and a member of the commission appointed by Judge Killits to draft the service-at-cost ordinance, discussed bus competition and suggested improved electric railway service as the means of offsetting jitney competition.

Service-at-cost became effective in Toledo on Feb. 1. Mr. Cann has selected the month of January, the month previous to the adoption of the service-at-cost, and August, the last month of operation under the ordinance, as fitting months for a comparative study of service-at-cost operation. He says in part:

> In the month of January, 1921, there were carried on the electric railway cars in Toledo 6,042,813 so-called revenue passengers. This figure includes the full fare passengers, children, purchased transfers and tickets or tokens and does not include free transfers or employees' tickets. In the month of August there were carried 4,608,393 revenue passengers, a decrease of 23.74 per cent. These figures graphically illustrate the decline in riding, and in this connection it might be well to remember that a material decrease in fare became effective on Feb. 1.
>
> Contrary to the general idea the introduction of a cheaper rate of fare did not act as a stimulus to business, for our records show that during January, passenger travel was at the average rate of 194,284 passengers per day, while in February our records show a drop to an average rate of 151,455 per day.
>
> Decrease in passenger travel, due entirely to the industrial situation, has been constant and uniform since the ordinance became effective. Such a marked decrease in travel would from a business standpoint warrant a decrease in car service.
>
> It is, and has been, my aim to operate this property on a business basis yet there are certain factors and elements incident to electric railway operation which prevent a decrease in service in direct ratio to the decrease in passenger travel.
>
> In January the Toledo Railways & Light Company operated 2,275 round trips per day. At the present time our schedule requirements call for 2,165 round trips per day, an actual decrease in service of 4.84 per cent, as compared with a decrease in the revenue passengers carried of 23.74 per cent.
>
> In January the average speed of all cars operated in the city was 8.79 m.p.h. This speed has been gradually increased to 9.5 m.p.h., so that on the majority of lines the actual running time from the outer terminus to the center of the city has been reduced from two to four minutes. While the effect of reducing the service has in some instances slightly increased the gap between cars, the additional time spent waiting for a car is more than offset by the time saved due to the increased speed of the cars.

Mr. Cann defended the cuts in service as "reasonable, and good business practice." and said that it was not his desire to boom the bus nor to assist in any form of unfair competition but to give Toledo the best and cheapest transportation system in America.

In reply to Mr. Bradley's suggestion that good railway service would absolutely eliminate the bus because the bus would have no business in the streets where car lines served, Mr. Cann said:

> This plan has already been tried out but until such time as buses are required to compete with street cars on a fair basis and are subject to the same rules and obligations as to service, routes, liability and taxes, they will continue to skim the cream of the transportation business, while the street cars must stand the brunt of furnishing continuous service during the periods of the day when travel is at a minimum and revenues fall far short of even meeting operating expenses.

"Distance Lends Enchantment"

Omaha is a long, long way from São Paulo, Brazil, but not so far as to keep Brazilians from admiring the type of electric car operated by the Omaha & Council Bluffs Street Railway, Omaha, Neb. It is reported that in looking over some magazines recently devoted to municipal undertakings some South American officials saw a picture of a car, No. 1001, used on the Farnam Street line in Omaha. No. 1001 is a type built by the local railway, seats forty-five passengers and costs $15 000.

Our Latin cousins were so favorably impressed with the picture of this car that they "up" and notified their agents, the Canadian Engineering Company, New York, to secure the plans of this vehicle. R. A. Leussler, vice-president of the railway, has sent the plans on to New York.

Industrial Publishing Added to Modern Curriculum

The New York Business Publishers Association announced on Sept. 23 the establishment of a course in industrial publishing. The course will include lectures, conferences, text books, problems, and a personal commenting service. Classes are now being organized in New York and will soon be organized in other publishing centers. The course can also be taken by correspondence.

Although the course is designed primarily for the benefit of members of the editorial and business staffs of trade and technical periodicals, it will be open to all who are interested in the field. It is intended not only to give instruction, but to develop the business as a whole by setting up higher standards of editorial and business service and showing how these standards can be attained. Among the topics covered are distinctive features of industrial publishing; its code of ethics; personal qualities required for success; determining editorial policies; getting the right kind of articles; securing accurate reports and data; writing for industrial papers; building up circulation; creating advertising; departmental management; service to the industry; service to advertisers; basic policies and tendencies. The editor of the fifteen text books to be used in this course is Henry H. Norris, managing editor of the ELECTRIC RAILWAY JOURNAL, who has received a leave of absence from this paper to undertake this work. Further information can be obtained from the secretary of the Course in Industrial Publishing, 185 Madison Avenue, New York.

Saginaw Rejects Municipal Bus Proposal

An effort by Commissioner Phoenix of Saginaw, Mich., to have necessary resolutions and an ordinance prepared by the city attorney looking to the establishment of a municipally-owned motor bus system received a setback at the hands of the Council on Sept. 27 when all members declined to support his motion to adopt a resolution authorizing the city attorney to proceed.

This and the statements of the commissioner that the jitney buses had failed to provide suitable transportation for Saginaw since the suspension of electric railway traffic nearly two months ago are the outstanding features in the efforts of the Council to provide an adequate means of carrying the people.

Since the road went into the hands of a receiver on petition of several of its creditors officials of the Saginaw-Bay City Railway have declined to make any statements as to when electric railway service might be expected to be resumed.

Sentiment seems to be gaining that the Council must do something to provide suitable transportation, and many are predicting that unless action is taken soon, jitneys will absolutely fail when winter comes. Even Commissioner Phoenix, friend of the jitney operator, has had a change of heart and publicly says, they are "dangerous" and cannot take care of the city's requirements. He has always leaned toward municipal ownership and asserts if the Council does not stand with him on the matter he will circulate petitions to the electors and force the adoption of municipal ownership.

It was Phoenix who proposed a jitney ordinance to regulate the buses, but after several conferences the measure has been forgotten. The buses are being run to suit the owners and people are riding at their own risk as none of the jitneys provide insurance in case of personal injuries.

Wages Cut Four Cents

A wage reduction of 4 cents an hour was made by the Los Angeles (Cal.) Railway on Oct. 1. A raise of 5 cents an hour was placed in effect in August, 1920, to meet the increased cost of living at that time. According to the railway's statement:

> The management realized that the men needed temporary financial relief and determined that the company should lose rather than its employees should suffer. The increase in wages has resulted in a great loss, which it can stand no longer. The cost of living has decreased somewhat and it will fall further. The condition is general throughout the country.

The new scale in cents per hour is as follows:

First three months	46
Next nine months	47
Second year	48
Thereafter	50

Safety car operators on shuttle lines will receive 2 cents an hour additional and on line cars will receive 4 cents an hour additional.

The Pacific Electric Railway has put into effect a similar cut.

Relief Suggested for Present Unemployment

President's Conference Confident Existing Situation Will Be Improved by Recognition of Principles It Has Laid Down and Compliance With Its Recommendations—Readjustment of Prices Essential to Promote Renewed Buying

TWELVE recommendations have been adopted by the President's Unemployment Conference for emergency relief in the present crisis. These recommendations lay down a standard procedure, urge in detail the resumption of certain classes of work and propose measures of relief applicable to manufacturing establishments.

The conference completed on Sept. 30 the first part of its work, the consideration of measures for emergency relief of unemployment, and then adjourned to meet again Oct. 10 in order to consider measures for preventing or mitigating unemployment periods in the future.

Organization of the conference was effected on Sept. 26 and the work divided among committees on statistics, employment agencies, emergency measures in public works, in manufacturing. in transportation, in construction, in mining and in shipping. These committees immediately got to work, and though it was not expected that they would be ready to report until Oct. 5, such progress was made that they presented their findings to the conference as a whole on Sept. 30 and adopted recommendations with reference to emergency measures. These recommendations follow in part:

METHODS OF PROCEDURE

1. The conference finds that there are, variously estimated, from 3,500,000 to 5,500,000 unemployed. There has been an improvement, but pending general trade revival this crisis in unemployment cannot be met without definite and positive organization of the country.

2. The obligation of meeting the emergency of unemployment is primarily a community problem. The responsibility for leadership is with the Mayor and should be immediately assumed by him.

3. The basis of organization should be an emergency committee representing the various elements in the community. This committee should develop and carry through a community plan for meeting the emergency, using existing agencies and local groups as far as practicable. One immediate step should be to co-ordinate and establish efficient public employment agencies and to register all those desiring work It should co-ordinate the work of the various charitable institutions. Registration for relief should be entirely separate from that for employment.

4, The personnel of the employment agencies should be selected with consideration to fitness only and should be directed to find the right job for the right man and should actively canvass and organize the community for opportunities for employment. The registry for employment should be surrounded with safeguards and should give priority in employment to residents. Employers should give preference to the emergency employment agencies.

5. The emergency committee should regularly publish the numbers dependent upon them for employment and relief that the community may be appraised of its responsibility. Begging and unco-ordinated solicitation of funds should be prevented.

CLASSES OF WORK URGED

6. Private houses, hotels, offices, etc., can contribute to the situation by doing their repairs, cleaning, and alterations during the winter instead of waiting until spring, when employment will be more plentiful.

7. Public construction is better than relief. The municipalities should expand their school, street, sewage, repair work and public buildings to the fullest possible volume compatible with the existing circumstances. Municipalities should give short time employment the same as other employers.

8. The Governor should unite all state agencies for support of the Mayors and, as the superior officer, should insist upon the responsibility of city officials; should do everything compatible with circumstances in expedition of construction of roads, state buildings, etc.

9. The federal authorities, including the Federal Reserve Banks, should expedite the construction of public buildings and public works covered by existing appropriations.

10. A congressional appropriation for roads, together with state appropriations amounting to many tens of millions of dollars already made in expectation of and dependence on federal aid, would make available a large amount of employment. Notwithstanding the necessity for economy, the conference under existing circumstances recommends congressional action at the present session in order that work may go forward.

11. The greatest area for immediate relief of unemployment is in the construction industry, which has been artificially restricted during and since the war. We are short more than a million homes; all kinds of building and construction are far behind national necessity. We recommend that the Governors summon representative committees, with the co-operation of the Mayors or otherwise as they may determine, to (a) ascertain facts; (b) to organize community action in securing adjustments in cost, including removal of freight discriminations, and clean-out campaigns against combinations, restrictions of effort and unsound practices where they exist, to the end that building may be fully resumed.

12. Manufacturers can contribute to relieve the present acute unemployment situation by:

(a) Part time work, through reduced time or rotation of jobs.

(b) As far as possible, manufacturing for stock.

(c) Taking advantage of the present opportunity to do as much plant construction, repairs and cleaning up as is possible, with the consequent transfer of many employees to other than their regular work.

(d) Reduction of the number of hours of labor per day.

(e) The reduction of the work week to a lower number of days during the present period of industrial depression.

Employees and employers are urged to co-operate in putting these recommendations into effect.

A large number of employers have already, in whole or in part, inaugurated the recommendations herein set forth, and for this they are to be commended, and it is earnestly urged upon those employers who have not done so to put same into use, wherever practicable, at the earliest possible opportunity.

12. Specific methods for solution of our economic problems will be effective only in so far as they are applied in a spirit of patriotic patience on the part of all our people.

During the period of drastic economic readjustment through which we are now passing the continued efforts of any one to profit beyond the requirements of safe business practice or economic consistency should be condemned. One of the important obstacles to a resumption of normal business activity will be removed as prices reach replacement values in terms of efficient producing and distributing cost plus reasonable profit.

We, therefore, strongly urge all manufacturers and wholesalers who may not yet have adopted this policy to do so, but it is essential to the success of these measures when put into effect that retail prices shall promptly and fairly reflect the price adjustment of the producer, manufacturer, and the wholesaler.

When these principles have been recognized and the recommendations complied with, we are confident that the public will increase their purchases, thereby increasing the operations of the mills, factories and transportation companies, and consequently reducing the number of those out of employment.

Commission Procedure Outlined in New York

Public Hearings Next Step in Considering Transit Board's Recommendations—Politicians See Sinister Influence at Work

As was made plain in the last issue of the ELECTRIC RAILWAY JOURNAL the plan advanced by the New York Transit Commission for a settlement of the traction problem in that city is only a preliminary outline. The commission has taken the attitude of not commenting on the matter for publication, but the members have met the daily newspaper men to answer informally such questions as might be asked. It is understood, however, that when all the criticisms and objections, both constructive and obstructive, have been filed they will be met by a statement from the commission.

AS THE next step in furtherance of the adoption of the plan it is proposed to institute a series of public inquiries, the first of which will be set for an early date, at which the several companies will be subjected to further examination as to their affairs and in particular as to their attitude toward the plan. At these hearings an opportunity will be afforded for criticism and constructive suggestion.. In conducting these inquiries, the commission, under the law, will have all the power of a committee of the legislature.

VALUATION WORK BEING CONCLUDED

Until these public examinations have been held and until the work of valuation has been finished, the commission will not undertake to present in complete form what might be called the statutory plan. As for the valuation itself that work is rapidly being completed. Under it valuations according to existing security issues and present capitalization will be disregarded and the entire financial structure of the consolidated company will be based upon a new valuation.

The statement was made beyond peradventure by the commission that it would require that the rate of fare for the first year following the initiation of the plan should remain at 5 cents. The commission has further concluded that until there has been ample demonstration of the general results of the new plan and until the changes and economies the plan has in view are tested fully, there shall be no change in the present rate of fare.

POLITICIANS QUICK TO REPLY

This would seem to be too plain to be successfully controverted. To Mayor Hylan, however, the unmistakable intent of the commission as so expressed apparently means nothing. He sees in it all a deep laid plot. According to him the real plan will be disclosed after election. Its character, so the Mayor says, will depend "according to whether or not a Board of Estimate is elected for the city that will adhere to the policies of the present administration in preserving the public rights with respect to traction contracts and the inviolability of the 5-cent fare, or whether a complacent set of men is elected with aid of the delusive bait in this 'preliminary plan' to do as the traction interests bid." It is "gratifying" to the Mayor to find in the plan a provision for the use of buses to supplement the traction lines.

It was not until Tuesday that the comment of the Mayor appeared. His associates in political office, however, were less prone to delay. Those who took it upon themselves to comment upon the report before a day had elapsed after its presentation were Comptroller Charles L. Craig, Commissioner of Accounts Hirschfield, Corporation Counsel O'Brien and the presidents of the Boroughs of Brooklyn, Queens, the Bronx and Richmond. While the characterizations of the report by these gentlemen varied in particulars they all professed to see in the commission's statement malign influences at work. Mr. O'Brien referred to the report as a "concededly incomplete and camouflaged pronouncement."

To the newspaper men the railway officials with one exception asked for time in which to consider the commission's statement carefully. The exception was H. Hobart Porter, vice-president and general manager of the Brooklyn City Railroad. "From first reading," said Mr. Porter, "I felt that the commission had made a very comprehensive study of the situation and had prepared and submitted a plan which if the details for its execution could be acceptably worked out might prove a final solution for the transit situation here."

NEWSPAPERS SYMPATHETIC

With the exception of the Hearst papers both the afternoon and the evening newspapers are a unit in declaring in substance that back of the plan may lie the means for straightening out the affairs of the companies and bringing to an end conditions which have resulted in receiverships and the disintegration of the various systems, with the concomitant advances in fares in many instances and the lessening in nearly all cases of the value of the companies to the public in the service which they furnish.

Wage Arbitrators Drafting Decision

The arbitration committee in the wage controversy on the Connecticut Company's lines met at New Haven during the week ended Oct. 1 and after discussing the evidence submitted by both sides at recent hearings adjourned without reaching any definite conclusion.

It was agreed that Justice Beach, the third or "neutral" arbitrator, would present his ideas for review at a future meeting of the committee. The two other arbitrators will then suggest changes or alterations which will be gone over and discussed and an outline for a final decision arrived at if possible.

Joseph F. Berry, Hartford, the Connecticut Company's representative on the committee said:

> At a future meeting we will take up this draft for consideration. It might be adopted just as he draws it, or one of the others of us might have changes or alterations to offer. It is unlikely that Justice Beach's proposals will be made public before they have been taken up by the full committee.

City Council Will Consider New Franchise

With the hope and intention of making extended improvements and betterments to its system the Dubuque (Ia.) Electric Company, through its vice-president and general manager, has requested the City Council to call for a special vote of the people on a new twenty-five-year railway franchise.

Mr. Maynard, vice-president of the property, in a recent letter to the City Council reviews the after-war financial distress which has prevented his company expending any funds on additions, the dawn of prosperity which is about to break and his anxiety for Dubuque to be prepared to meet the changed conditions in order to supply the increasing need for transportation facilities. Production means must therefore be increased at once for new installations will require a great deal of money, time and labor.

In discussing the need for capital Mr. Maynard stressed the point that it was impossible to market a bond which outruns the present franchise and pointed out the limited market that exists for a short-term bond and the burdensome terms such financing would entail. With a guarantee of continued service in the city limited to five years and some months under the present franchise the financial difficulties attendant upon any new financing would appear insurmountable. But with a guarantee to the investors of a twenty-five-year grant improvements could be readily financed.

In its proposed franchise draft submitted by the company it does not fix the rates of fare to be charged, but leaves the matter of fixing just and reasonable rates to the City Council. Provision is also made for conducting negotiations for the purchase of the property by the city.

The new franchise would be effective following the passage of the ordinance by the City Council and the subsequent adoption by the people of Dubuque.

According to the Dubuque *Journal* the proposition deserves the serious and careful consideration of all voters. In a recent comment this paper says that if the granting of a new franchise would give Dubuque something better than it now has it would appear to be a wise step.

Purchase Price Fixed

$2,297,277 Fixed as Sum Detroit Shall Pay for "Day-to-Day" Detroit United Railway Lines

According to a report of the board of arbitration which was chosen to determine the price the city of Detroit will have to pay the Detroit United Railway for the 29½ miles of day-to-day lines, the price set for the lines and equipment is $2,297,277. This includes $1,605,000 for the trackage and $692,277 for 105 double-truck cars and 25 trailers and other miscellaneous equipment. The decision of the board was unanimous. The arbitrators were Prof. Henry E. Riggs, representing the railway, William H. Maybury representing the city and W. E. Davis, Cleveland, chosen by Messrs Riggs and Maybury.

LINES BUILT RECENTLY

The lines covered by the decision of the arbitrators were built by the company under day-to-day agreements which gave the city the right to purchase the lines whenever it was ready to operate them, the price to be paid to be based upon costs less depreciation. They include the Twelfth Street, Grand Belt and Hamilton lines, some of the company's later construction built between 1912 and 1920. With the trackage are included all necessary sidetracks, turnouts, curves, switches, spurs, connections, wires, poles, overhead power equipment, special work, crossings and equipment constructed under Council resolutions or contracts together with equipment necessarily furnished and acquired by the company for the operation of its cars over these tracks. The acquisition of these lines by the city was authorized at the election last April and they will be paid for out of the $15,000,000 municipal street railway bond issue authorized in April, 1920.

With approximately 60 miles of municipal lines constructed, the acquisition of the day-to-day lines will add approximately 50 per cent to the extent of the municipally owned system.

WORKING AGREEMENT SUGGESTED

In their report the arbitrators cite that in so far as it is possible to guarantee the protection of both parties it is desired to do so, and they recommend that the operating officials of both parties meet and draw up an agreement which will fully cover and protect certain points which developed during the hearing, and similar cases which may arise later. These points include the granting of running rights to each party over the other's tracks after the lines are taken over, to preserve the continuity of the existing lines. The arbitrators report that while there is nothing in the day-to-day agreements that specifically grants any authority to the arbitrators in this matter, they feel they would be remiss in their duties if they failed to direct attention to the fact that at four points at least, and undoubtedly at others as well there are and will be openings left for serious contention and considerable annoyance to the patrons of both sides.

This is termed an operating matter which must be cured by an agreement between the parties so as to secure harmonious co-operation between the two transportation systems of the city for the benefit of the riding public. The arbitrators further recommend that if it develops that the parties can not agree on the terms of such a contract the matter be referred to a disinterested board of arbitration in lieu of resorting to litigation.

In advising the city to take over the lines and equipment at once or to make provision for taking care of the cars, the arbitrators cited that in the event that there should be a delay in the taking over of this property by the city, there is a moral reponsibility on the Detroit United Railway to see to it that this equipment is fully maintained and that these particular cars are given fully as much or more care in the matter of running repairs and general upkeep as is given to the other new and modern equipment of the company. While the same comment is applicable to all property, it is believed to be particularly necessary regarding this equipment as neglect for a period of a few months would inevitably result in serious depreciation and might put the city to materially heavier costs of repairing than would be the case were the cars taken over now.

The board of arbitrators held its first hearing on July 19 and the last formal hearing was on Sept. 12. In all, twelve days were consumed in taking testimony. Over twenty witnesses were examined and a large amount of evidence and many data in the form of exhibits, reports and maps were studied.

It is anticipated that the lines acquired from the Detroit United Railway will be operated as part of the municipal street railway system as soon as the Street Railway Commissioners have completed the necessary transfers, and as soon as the street railway department has installed special track work connecting the lines with the municipal railway lines already built. This work of connecting the two systems can be commenced immediately by the city department.

Houston Decides Against Franchise

The proposed new franchise for the Houston (Tex.) Electric Company, a Stone & Webster property, which includes the electric railway lines and the lighting privileges in Houston, was defeated in a decisive vote at the special election on Oct. 4. The vote was the lightest total vote polled in a city election in recent years. Only four small city wards favored the franchise, one was tied and the others decidedly against.

Mayor Holcombe said after the election that the City Council would at once begin the work of drafting a traction franchise that would be approved by the citizens. He said further that railway service in Houston must be improved and that this would be the main consideration in the drafting of the new franchise.

Denounces City Scheme

Justice James C. Cropsey, in the Supreme Court, Brooklyn, N. Y., denied the application by the city to start condemnation proceedings against three streets in Queens on the grounds that the city was actually attempting to get possession of the lines of the North Shore Traction Company and operate the cars.

The city claimed that the three streets were needed to complete boulevards. The Judge decided the city had no authority to go into the business of operating street cars and that if some property were desired by the city which did not belong to the North Shore Traction Company such an application might be granted.

$1,000,000 Expenditure Suggested to San Francisco Municipal Railway

An entirely erroneous impression has been caused by accounts telegraphed to the papers in the east from San Francisco referring to the probable expenditure of $8,101,000 by the city of San Francisco, Cal., in extending its municipal railway system. It is said that this expenditure was recommended to the Board of Supervisors in a report by M. M. O'Shaughnessy, city engineer. A telegram to the ELECTRIC RAILWAY JOURNAL on Oct. 5 from its Pacific Coast editor resident at San Francisco says that the $8,000,000 figure is erroneous. It resulted from the reporters summarizing the cost of alternative routes. Even if all the proposed lines were built the total cost, excluding tunnel assessments, would be only about $1,000,000. In the following all mileages are double track. Four new lines under consideration include:

1.57 mile extension on Masonic Avenue	$225,000
0.88 mile line on Traval Street	120,000
0.91 mile line in Ocean View District	175,000

The Sunset district line would extend from the Ocean Beach along Judah Street connecting via tunnel with the present municipal lines for a direct route to the ferry. Estimates on four alternative tunnel routes for this line ranged from a total cost of $914,000 to $2,467,000. Of these totals the municipal railway funds would be needed only for track construction and an assessment district would be formed to cover the tunnel cost. Of these Sunset line alternatives Mr. O'Shaughnessy favors the 4.54-mile route using a 4,200-ft. tunnel on Duboce Avenue with track cost of $576,000 and tunnel cost of $1,900,000. Mr. O'Shaughnessy has reminded the board that these new lines will require $800,000 additional for equipment and carhouse. These estimates were made by Mr. O'Shaughnessy on request of the board.

Financial and Corporate

P. R. T. Net for Eight Months, $936,583

The total operating revenue of the Philadelphia (Pa.) Rapid Transit Company for the eight months ended Aug. 31, 1921, was $28,170,950. Of this amount $27,555,073 was passenger revenue. After deducting fixed charges amounting to $6,552,816 the net income for the period amounts to $936,583 against a deficit of $151,779 for the same period a year ago. The accumulated deficit for the twenty-month period to Aug. 31 now stands at $1,181,351.

The largest amount in passenger revenue for the first seven months of this year was realized in May when $3,686,931 was collected from 74,455,275 passengers. The month of February was lowest in traffic with a total of 63,033,838 passengers carried amounting to $3,140,820.

The total number of passengers carried from January through August inclusive was 555,773,826 against 605,581,130, a decrease of 49,807,304 over the same period a year ago. While the traffic handled decreased, the passenger revenue increased $3,322,937 over the first seven months of 1920.

Another Effort to Restore Shore Line Railway

It is reported that another effort is being made to restore the Shore Line Electric Railway between New Haven and New London. The latest proposal to this end comes from a Delaware corporation known as the Finance & Reorganization Company, New York. It outlines the plans as follows:

> Subscription blanks for the new company set the amount of money to be raised at "not to exceed $4,000,000 of 7 per cent first mortgage gold bonds" and "common stock of the par value of $100 each, an issue not to exceed 7,000 shares."
>
> Stocks and bonds are to be of a corporation to be known as the Shore Line Traction Company, a Connecticut corporation. In the subscription blank it says "In consideration thereof, the said Finance & Reorganization Company agrees to assign and transfer to the Shore Line Traction Company the part of the trolley line formerly belonging to the Shore Line Electric Railway between New Haven and Chester, in operating condition, with a power house and transmission line for said company for an amount not to exceed $900 000 in 7 per cent first mortgage bonds and 7,000 shares of common stock of the said Shore Line Traction Company."

Under the plan it seems apparent that the Finance & Reorganization Company would control all the securities of the Shore Line Traction Company with the exception of $100,000 of its bonds.

The subscription blank says that in the event that the company shall not succeed in selling $205,000 in bonds and $205,000 par value of stock any amount which shall have been paid shall be refunded.

When the company has sold bonds in the amount of $205,000 it will make demand for the payment at the purchase price or any part remaining unpaid to be used in the purchase of the property of the Shore Line Electric Railway.

Accumulated Dividends Financed

Financial Structure of Portland Company Rearranged to Suit Changed Conditions

Plans have been perfected for readjusting the capitalization of the Portland Railway, Light & Power Company, Portland, Ore., to bring it more nearly in line with the present requirements of the company. Hard hit by the industrial depression following the declaration of war in 1914, all dividends on the stock of the company were suspended. Progress of the company since then has been steadily forward with the result that it was recently felt that the financial structure of the company should be changed in the interest of the security holders deprived of their incomes, particularly as the earnings now justify the payment of first preferred dividends.

While the credit of the company to profit and loss amounts to more than the total of the accumulated dividends, the cash has been expended on improvements and for the payment of sinking funds and it was therefore desirable that the accumulated dividends should be paid in some other way than in cash. As a matter of fact the value of the stock equity in the property was increased by $6,625,000 while the stockholders were receiving no return.

The plan hit upon was to declare a dividend of 27 per cent on the first preferred stock, payable 2 per cent in cash and 25 per cent in first preferred stock at par. The stock issued in payment of this dividend will be cumulative from Oct. 1, 1921. In anticipation of this move the stockholders approved the plan for the change in the financial structure of the company, including the authorization of $10,000,000 of prior preference stock and increased the first preferred stock by $2,500,000. The capitalization of the company, following the consummation of the new plan, will be as follows:

	Authorized	Outstanding
Cumulative prior preference stock	$10,000,000	————
Cumulative 6% first preferred stock..	7,500,000	$5,000,000
Non-cumu ative 6% second preferred stock	5,000,000	5,000,000
Common stock....	20,000,000	11 250,000

The stock outstanding prior to the consummation of the present plan was as follows:

6% Cumulative first preferred stock	$5,000,000
6% Non-cumulative second preferred stock	5,000,000
Common stock, 75% paid ($11,250,000) and liable to calls up to 25%	15,000,000

The $15,000,000 of common stock outstanding has been over 75 per cent paid. This part paid stock will be retired and full paid stock issued to the amount paid in. The stockholder will then be released from all liability for the 25 per cent unpaid upon the part-paid stock. This requires the issuance of only $11,250,000 of full paid common stock.

The first preferred 6 per cent stock outstanding was issued $2,500,000 on Jan. 1, 1916, and $2,500,000 on April 1, 1917. There had accumulated on the $2,500,000 first issued 7½ per cent up to April 1, 1917, and this was paid in cash on July 1, 1921, thus making the entire amount of $5,000,000 of 6 per cent first preferred stock alike in the accumulation of dividends from April 1, 1917, which up to July 1, 1921, amounted to $1,275,000.

The $10,000,000 of 7 per cent prior preferred stock will probably be issued in series. The right is reserved to the stockholders to change the dividend rate and the redemption features. President Franklin T. Griffith of the company explains that the issue of the new stock was authorized to give the people of Oregon an opportunity to invest their savings in an Oregon enterprise. According to Mr. Griffith the company "will market it from time to time, as we need money, or as our friends are willing to buy. The money will all be used for the betterment of the property."

The company is out of debt except for funded and current obligations.

Splendid Return in July in Dallas

The Dallas (Tex.) Railway's report covering operation in July shows a considerable falling off in the number of passengers carried as compared with the number carried in June. Revenue passengers carried during June numbered 4,251,054, while for July the number was 4,097,755, a decrease of 153,299. Figures for July, 1920, show that a total of 4,298,150 persons were carried during that month.

Despite the falling off in the number of revenue passengers carried, the company broke all past records in amount and rate of returns. While the rate of return on the agreed valuation authorized by the franchise is 7 per cent, the return for July amounted to 8.67 per cent.

The return for July permits the setting aside of $13,146 for reserves, the largest amount set aside in any one month in the history of the company. Total gross receipts were $264,639, while operating expenses amounted to $196,470. This return was made before the recently announced 10 per cent reduction in wages of all employees became effective. The service maintained in July showed practically no change in car-miles operated.

$59,678 Loss in Eight Months in East St. Louis

The East St. Louis & Suburban Railway East St. Louis, Ill., is informing the public of its difficulties through the columns of local newspapers. In a recent statement President W. H. Sawyer shows that the company in the eight months ended Aug. 31, last, was short $59,678 of earning the revenue to which it is entitled under the valuation and interest charges granted by the Illinois Public Service Commission.

In this period there was a decrease of 20.05 per cent in the number of passengers carried as compared with the corresponding period of 1920. "But it seems that we reached bottom in August," says Mr. Sawyer, "for there was an increase in August over July." He predicts that the next three months will show a gradual increase in travel. In the meantime service has been cut slightly, though passengers are being handled as heretofore, and the public is informed of the conditions.

Montreal Has an Accumulated Deficit of $1,967,834

The Montreal (Que.) Tramways reports record gross earnings of $11,773,004 for the fiscal year ended June 30 compared with $10,782,470 for the preceding year. The balance after operating expenses and taxes and maintenance and renewals was $2,868,667 compared with $2,695,394 a year ago. Allowances due the company on this balance by the Tramways Commission based on the franchise was $2,489,959 compared with $2,452,269 in the preceding year. The balance of $378,707 was not sufficient to meet the city's rental allowance and required contingent reserve totaling $617,730 by $239,022, this deficit comparing with $364,700 a year ago. The accumulated deficit on that account since the going into effect of the new franchise in February, 1918, is $1,967,834.

Revenues Exceed Current Expenditures of $65,506

During the receivership for the Ohio Electric Railway, Springfield, Ohio, between Jan. 26 and July 14 the excess of revenue over current expenditures was $65,506. The income was $2,725,046 during the period. These facts were noted in the receiver's report made to Federal Judge John M. Killits at Toledo by B. J. Jones, Columbus.

In the disbursements the items for which the largest sums went were: Payroll, $944,640; materials, $286,722; fuel, $215,501; injuries and damages, $5,018; taxes, $39,487.

The last two weeks of the period showed disbursements of $197,877; of which $77,375 went to pay help.

The receiver's account of J. H. McClure in the case of the Indiana Columbus & Eastern Traction Company from July 15 to 31, showed receipts of $137,321, of which $33,499 was on hand at the beginning of the period, and disbursements of $105,871.

The lines accounted for in the bills of the Ohio Electric included the Columbus, Newark & Zanesville Electric Railway, the Indiana, Columbus & Eastern Traction Company, and the Fort Wayne, Van Wert & Lima Traction Company.

Fewer Passengers Carried in August

The report of the Seattle (Wash.) Municipal Street Railway, for the month of August showed that while the car riders paid about 33⅓ per cent higher fare than in August, 1920, the receipts were only 4.2 per cent higher, and that 2,025,911 fewer passengers rode. The passenger decrease was 20.3 per cent. The report, which was prepared by Superintendent of Public Utilities Carl H. Reeves, showed receipts for August, 1921, of $524,743 as compared with $503,599 for August of last year.

In August, 1920, 9,964,100 passengers were carried, while in August of this year, only 7,938,189 passengers rode on the municipal lines. The car-miles and car-hours of operation also went down, as evidenced by figures showing 1,328,438 car-miles in August of last year compared with 1,311,086 car-miles in August this year. In August, 1920, $400,656 was expended in operation and in August of this year $367,070.

Valuation of Traction Properties Fixed

The Oklahoma State Board of Equalization has fixed valuation for purposes of taxation on Oklahoma traction and interurban lines as follows: Oklahoma Gas & Electric Company, $4,254,831; Muskogee Gas & Electric Company, $1,395,063; Enid Railway, $75,000; Chickasha Railway, $25,000; Guthrie Railway, $25,000; Lawton Railway, $59,000; Muskogee Traction Company, $335,000; Oklahoma Union Railway, Tulsa, $350,000; Okmulgee Northern Railway, $207,000; Oklahoma Railway, Oklahoma City, $3,118,586; Pittsburg County Railway, McAlester, $400,000; Sapulpa Interurban Company, $50,000; Shawnee-Tecumseh Traction Company, $55,000; Tulsa Street Railway, $300,000.

Interurban Rental Advanced

By a recent order of the Michigan Untilities Commission an advance of practically 100 per cent has been allowed in rental charges to be paid by the Grand Rapids, Grand Haven & Muskegon Interurban Railway to the Muskegon Traction & Lighting Company for use of the latter's tracks in the city of Muskegon, Mich.

Under the new ruling the interurban must pay annually $4,000 for use of tracks, two-fifths of local fares, 2 cents for every through passenger and 10 cents per freight-car mile for all freight moved over city tracks. The old contract called for a rental of $2,000 with a 1-cent charge for every passenger.

$288,850 Taken by Jitneys from Municipal Railway

Figures prepared by the Department of Public Utilities of the City of Seattle show that the jitney service during the year 1920 deprived the Seattle Municipal Railway of approximately $288,850 in revenues, derived from carrying 3,610,724 passengers. The above estimate is based on an average fare of 8 cents, taking into consideration the fact that car riders pay 8⅓ cents for tokens, a 10-cent cash fare and also use transfers.

Toledo August Deficit Only $20,098

The report made by Street Railway Commissioner Cann of Toledo, Ohio, shows that the August deficit of the Community Traction Company was only $20,098. This is less than half the July deficit. In January, before the Community Traction Company took over the lines, the number of passengers carried at a 7-cent fare and 2-cent transfer was 6,042,000. At no time since has the fare been that high and yet in August the total number of passengers carried was 4,608,393.

Mr. Cann believes that the industrial slump is almost entirely to blame for the showing. He points out that so far September figures show that the tide has turned. Checks have shown that the bus business has also decreased considerably.

The financial report shows that the Community Traction Company has cash in various funds set up amounting to $267,905, including $51,032 in the sinking fund, which represents city ownership in the system. However, in other funds there is a combined deficit of $377,074, the greater part of which is in the stabilizing fund.

The increase of gross revenue during August was $21,233. A part of this represented one-fifth of the rebate due on power since the new contract with the Toledo Railways & Light Company was signed.

Toledo Bonds Offered

The Toledo Traction, Light & Power Company, Toledo, Ohio, is offering $2,500,000 first lien 7 per cent gold bonds for subscription through a syndicate.

The company owns 93 per cent of the common stock of the new Toledo Edison Company, the successor to the Toledo Railways & Light Company, and also controls all of the $1,500,000 of preference stock of the company.

This offering is a part of the comprehensive plan of financing all of the electric power, lighting, gas, heating and railway property of Toledo. The holding company has pledged a large portion of the 6 per cent bonds of the Community Traction Company as security for the present issue of bonds.

A loan of $12,000,000 will be retired through the new financing. This will release the railroad property directly from all obligation except the bonds of the Community Traction Company.

Traffic and Transportation

No Fare Referendum in Cincinnati

A referendum on the recently enacted ordinance reducing fares on the lines of the Cincinnati (Ohio) Traction Company will not be held at the November election if the report filed with the Ohio Supreme Court at Columbus is approved by that body. The report was filed by Hugh L. Nichols, former Chief Justice of the Supreme Court of the State of Ohio, who was appointed to hear the testimony in the city of Cincinnati's protest against the referendum. It shows that a total of 5,312 signatures appearing on the referendum petitions circulated by the Citizens' Committee have been withdrawn or stricken off by order of Judge Nichols.

The petitions originally contained 14,574 signatures and after the above number had been deducted the petitions lack sixty-two signatures of the number necessary to warrant a referendum. The report of Judge Nichols if sustained by the Ohio Supreme Court will knock out the referendum petitions against the ordinance and franchise amendment which have reduced fares since Aug. 1. The ordinance and franchise amendment under which the Cincinnati Traction Company is operating also provides that fares shall be reduced another half cent to 7½ cents on Nov. 1.

The Ohio Supreme Court has since refused the writ of mandamus filed by the Citizens' Committee seeking to compel the city auditor to certify petitions for a referendum to the Board of Elections. The decision of the court gives the city a victory on the fare question. The ruling was made after the report of Judge Hugh Nichols, who sat as umpire, had been presented.

The ordinance in question was passed by the City Council last June, and provided that if the city conceded deferment of the payment of the franchise tax by the traction company until next year a reduction of one-half cent in fares would become effective on Aug. 1 and a further reduction would be made on Nov. 1 to 7½ cents. In addition the company would be compelled to grant the reduced rate to children attending public, parochial and high schools.

The extension of the time granted for the payment of the franchise tax was deemed to be merely technical since under the terms of the franchise the tax is to be paid only when it is earned, but deferred payments become cumulative. The traction company did not earn the tax last year, nor for the period this year preceding the passage of the ordinance.

As stated previously the fraudulent signatures together with those withdrawn by request reduced the number to less than legal requirement. Thereupon the Citizens' Committee attempted to file petitions containing 700 additional signatures, but the city auditor refused to accept them upon the ground that the time allowed by law in which to file the petitions had lapsed and he had no legal right to include the additional names. The Citizens' Committee then filed the mandamus suit in Supreme Court. Former Chief Justice Hugh Nichols was named Master Commissioner to hear testimony and file his conclusion regarding the facts with the court.

Unlimited-Ride Weekly Pass Started at Youngstown

The Youngstown (Ohio) Municipal Railway placed in operation, beginning Monday, Oct. 3, a weekly unlimited-ride, transferable pass similar to that in use at Racine, Wis., for the past two years and adopted for Kenosha in January, 1921. The price of the pass is $1.25 as against a cash fare of 9 cents and a ticket fare of 8⅓ cents (six for 50 cents). One advantage expected from the pass is the capture of riders using the 10-cent jitneys. The jitneys are almost entirely of touring-car type, the jitney bus being unable to compete with the smaller and swifter pirate.

Preceding the introduction of the pass, cards printed on both sides (with the side showing fewer words but bigger type facing the auto-rider and the walker) were displayed in the cars and advertisements run in both the daily English and weekly non-English papers. News stories and interviews concerning the use of the pass were also arranged for. Calls were made on the leading department stores, all of which agreed to place passes on sale during the introductory period, several going so far as to give an "ear" or box-head to the pass in their own advertising copy.

The downtown theaters and cinemas were canvassed, and these agreed to accept and display slides referring to the pass. The co-operation of the Y. M. C. A. and Y. W. C. A. was also gladly given. All of these interests—stores, theaters and schools—realized the possibilities of the pass to them in its encouragement of off-peak riding. Talks were given to the car operators and before the Kiwanis Club. Preparations have already been made for follow-up publicity to be suitable to the weather and other conditions that cause changes in riding.

Passes are placed on sale the Friday of the week (Monday a.m. to Sunday midnight) preceding the use of the pass, and sales are continued up to Wednesday of the week in which the pass is valid. The sales for the first week (Oct. 3-Oct. 10) were reported as 4200.

Jail Sentence for Broomhead, Jitney Operator

The first jail sentence for lawless jitney operators in Albany, N. Y., since the United Traction Company began its fight against the jitneys was imposed on Oct. 4 by Justice Harold J. Hinman. Frank Broomhead, Cohoes, was the offender. He must serve thirty days in the Albany County jail on a charge of criminal contempt of court for the second time.

Broomhead had been served with the injunction restraining illegal competition with the United Traction, but continued operating his jitney between Cohoes and Troy. The temporary writ of injunction was made returnable before Justice Hinman on Sept. 10. Broomhead was one of the eleven men who were charged with contempt of court. He was accordingly fined $100 by the judge.

On proof that the jitney business was being carried on by Broomhead on Sept. 17 and 19 the United Traction went further in the proceeding. At a subsequent hearing Justice Hinman reviewed the testimony and declared that there were inconsistencies in Broomhead's defense and that no credence could be given to his statements. Justice Hinman's finding follows in part:

> The court recognized the state of mind which had been permitted to prevail among the so-called jitney operators that even though the Appellate Division had held their acts to be a crime the processes of the criminal law were inadequate to punish them and that somehow they were above the law. So they continued openly and flagrantly to violate the law and held it in almost perfect contempt until it became apparent that the lawless of this section of the State were being schooled to become more lawless, the thoughtless among us to lose what respect they may have had for law and order and the sober minded and far sighted to feel uneasy for the future when the law could be so flagrantly defied with impunity.
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> It is the policy of the law to deal more gently with first offenses wherever possible, but the willful renewal of the offense cannot be tolerated. It must be dealt with sternly and the charge made here against the respondent, Broomhead, is that he has repeated the offense at least twice since receiving punishment and kindly admonition. If guilty, it is my duty to impose a more severe penalty this time as punishment to him and as a warning to others.

Fare Reductions Sought in Connecticut

Fare on electric railways will be considered by the Connecticut Public Utilities Commission at Hartford on Oct. 18 and 19. The first hearing will be held on a petition of the Common Council of New Britain and that of the city of Norwalk, both calling for reduced rates. The Common Council of Hartford has also taken up the matter of reduced fares, but it has been determined that the time is not yet opportune to ask for a general reduction. Factors which may enter prominently into the consideration of the fare matter at this time are the elimination of jitney competition by the State and the prospects for a reduction in the wages of the trainmen of the Connecticut Company in the arbitration proceedings recently brought to a close.

Syracuse Wants Fare Reduced

The city government of Syracuse, N. Y., will launch a new fight in November to reduce fares on the lines of the New York State Railways in Syracuse, Edmund H. Lewis, corporation counsel, has announced.

A demand will be made before the Public Service Commission that the 8-cent straight fare and the 7¼-cent ticket fare be reduced to 5 cents. Mr. Lewis believes the New York State Railways cannot substantiate the needs of the present alleged exorbitant fares in order to provide a fair return on the value of its property.

Milo R. Maltbie, public utilities expert, will be retained by the city to aid in fighting the case.

Mr. Lewis is quoted as follows:

> We are planning to go before the commission early in November and endeavor to force a reduction in fares. The old Public Service Commission, which passed out of office soon after it made the fare award in the Syracuse rate case, provided in its order that the city could not appeal to the commission again until six months had expired.
>
> We never have felt that the present rates were fair, and we do not believe the value of the property used by the company entitles it to present fares. Traffic will increase with the approach of bad weather and we believe we will be in a better position to get all the facts fairly before the commission than at present. The present purpose is to file the complaint against the present rates the moment the six months' period expires.

The Public Service Commission has agreed to send one of its experts here to observe actual conditions. That investigation is scheduled to start within a few days.

Jitney Issue Before U. S. Court

Corporation Counsel Walter F. Meier of Seattle has gone to Washington, D. C., to represent the city in its last legal battle for the right to oust jitneys from competition with the Seattle (Wash.) Municipal Railway. The action before the United States Supreme Court will be in the nature of an application for an appeal to the court from the decision of the Supreme Court of the State of Washington, which recently vacated the injunction in the McGlothern case under which the jitney interests in Seattle were protected.

Should the application be granted, the jitney owners would have the right to appeal to the State Supreme Court for a continuance of that injunction, upon posting a proper bond, until the case should be argued before Justice McKenna, who is assigned to this circuit on the Federal Supreme Bench. The jitney interests will be represented in Washington by Representative Merrill Moores of Indianapolis.

Recently the city utilities committee of Seattle refused to grant permission to twenty-seven members of the Auto Drivers' Union to operate jitneys in Cowen Park district. This section is strictly residential and was built almost entirely on the strength of jitney service, and its residents are prepared to fight the removal of jitney service from the district. Property owners are preparing to organize for a vigorous compaign against the decision.

Another example of the city's objection to jitney competition is found in its filing with the State Department of Public Works a protest against buses to Seahurst and Three Tree Point in competition with the Lake Burien line of Municipal Street Railway.

More Five-Cent-Fare Lines

In announcing the plan of the trustees of the Boston (Mass.) Elevated Railway to extend the 5-cent no-transfer plan to seven additional sections of the company's system, Chairman James F. Jackson strongly intimated the purpose of the trustees to reduce the 10-cent basic fare unit. In a statement he said:

> An experiment of short-distance, local riding without transfer privilege for cheap fare has already been inaugurated in several localities. The first of these lines was opened in March in Everett and Malden; the second in May in Medford and Somerville; the third in June in East Boston; the fourth in August in Charlestown, North Cambridge, Belmont, Waverly and Watertown; the fifth in September in Dorchester and Roxbury. Last Saturday certain lines of this character were established in West Roxbury and one line between Allston and Dudley street via Brookline Village.
>
> The development of similar service affecting South Boston, Somerville, Cambridge, Brighton, Roxbury, Jamaica Plain and Brookline is now under study.
>
> It has been said and should be repeated that this cheap service is and must remain for at least many months purely as an experiment. If a reasonable test of it proves that either singly or collectively this limited service invades or seriously threatens the net revenue of the railway it will become necessary either to advance the local fare or to abandon the experiment. It cannot be continued if it materially interferes with or delays any otherwise possible reduction of the basic flat fare for travel throughout the system. On the other hand if it can be maintained without any injustice to those who pay the basic 10-cent fare, it is of great importance in increasing the usefulness of the railway.

Seven Cents in Toronto

Fares at present in force on the lines of the Toronto (Ont.) Railway as operated by the city are as follows:

Cash fare	7 cents
Tickets, 4 for	25 cents
16 for	$1.00
Book of 50 for	$3.00
Children in arms and children 51 in. in height or less, 4 cents cash, or seven tickets for 25 cents.	
Night car fares	15 cents each

It will be recalled that during the concluding days before the city took over the Toronto Railway on Sept. 1 Mayor Church insisted upon a continuation of the 5-cent fare, but the commission stood pat for the increase in fares and won out, as of course the commission has been clothed with the necessary authority to "run" the system. The idea of the commission was to fix a rate that would make the system self-sustaining from the start.

The changes in the fares has resulted in a large number of people who live just a few blocks away from the old Toronto Railway lines and who formerly walked, after leaving the Toronto Railway cars, now making use of the former Civic Railway lines on Danforth, Gerrard, Bloor, etc., as of course the one 7-cent fare entitles them to a transfer.

Bus Petition Rejected

Commission Refuses Request of Ultimate Bus Company to Operate in West Virginia

The State Road Commission of West Virginia, recently rejected the petition of the Ultimate Bus Company to operate in the State of West Virginia. The company has been operating buses between Wheeling, Martins Ferry, Bridgeport and Bellaire.

Several weeks ago following differences with the Wheeling Traction Company the bus company applied for a permit. At the hearing on Sept. 14 the traction company filed the only protest against the bus company. The bus company was prepared to file a brief in answer to the protest of the railway, but before the time for filing the brief had expired the State Road Commission rejected the petition and notified the bus company to that effect.

The Ultimate Bus Company started operation last spring and soon keen competition with the Wheeling Traction Company followed. No action was taken, however, until the new state road law, passed at the last session of the legislature became effective. The law prohibited the operation of buses until permits had been secured from the state road commission where the traffic is interstate. As a result of a subsequent hearing in Wheeling at which a representative of the state road commission was present no action was taken but all bus companies accepted immediately filed applications for permits.

In the meantime the Wheeling Traction Company sought an injunction in the circuit court to restrain the bus company from operating, but on the petition of the bus company the case was removed to the federal court where Federal Judge W. E. Baaker refused to grant the injunction. According to a statement made by the counsel for the Ultimate Bus Company the line will not suspend.

Fare Increase Postponed

The threatened raise of fares by the Community Traction Company, Toledo, Ohio, did not go into effect on Oct. 1. President Frank R. Coates rescinded the order upon the advice and statistical data furnished by Street Railway Commissioner Wilfred E. Cann.

The month of October will be a test month for the rival figures of the commissioner and statisticians for the company.

It is the commissioner's belief that riding will show a tendency to increase and that through economies and a decrease in expenditures for maintenance in winter months he will be able to show an increase in the stabilizing fund at the end of the month. The first year under the new grant expires on Feb. 1.

It had been proposed to increase ticket fares on Oct. 1 from the rate of six for 40 cents, or 6⅔ cents each, as against 6¼ cents each, but to continue the cash fare of 7 cents with 1 cent additional for each transfer.

Wants to Abolish Ticket Sales

Alleging that the Public Utility Commission of New Jersey erred in its estimate of the revenue returned when it handed down its decision in the New Jersey & Pennsylvania Traction Company's 10-cent fare case, early in July, the company on Sept. 20 appeared before the board asking permission to abolish the sale of tickets.

The board allowed an increase in the fare on the Princeton line from 7 to 8 cents in each zone or 7½ cents if tickets were purchased. The company now seeks to do away with the tickets, which are sold four for 30 cents. The board claimed that the new rate of fare would yield an annual revenue of approximately $124,960, or a net income of $29,500. The company claims these figures were made on a straight 8-cent fare.

Additional testimony was taken and decision reserved.

Auto Service Cuts Into Interurban Business

Jitney competition is credited by many with putting the Saginaw-Bay City Railway out of business, and since the Glaspie rate law went into effect about thirty touring cars have commenced operations between Saginaw and Flint, and Saginaw and Bay City. The heaviest travel is between the first-named cities. The fare charged by the Michigan Railway is $1.07. The touring cars carry passengers for $1 and the operators are actually soliciting patronage from the interurban waiting room when there is no policeman around.

Company officials are incensed at the high-handed manner in which this competition is being forced on them and assert that it is unfair. Most of the road between Flint and Saginaw is a concrete pavement for which the taxpayers paid $30,000 a mile. The railroad pays taxes and maintains its own right-of-way and the city governments allow those who happen to own touring cars to injure the company's business. Just what steps will be taken to combat the jitneys is unknown, but the police have been asked to stop the men from going into the waiting room and asking people to ride with them. There is not an officer present every time an interurban arrives or departs from the station, but steam roads are accorded protection, company officials point out, and say that more passengers arrive and depart from their waiting room than from any steam road passenger station in Saginaw.

During fair week the operators' committee representing the jitney men appealed to Mayor B. N. Mercer to stop touring cars from operating on the streets and depriving them of business. They asserted that the touring cars were without licenses. Previous to the complaint the Mayor appealed to every owner of a touring car, if on the way to the fair and room was available, to pick up passengers. Many took this to mean to operate without a license and charge for carrying passengers. The jitney owners received an absolute refusal to comply with their request, the Mayor asserting they started a competitive service when the street cars were running and he did not propose to stand in the way of others doing to the jitney bus owners what they had done to the railway.

With City's Help Five-Cent Fare Is Possible

The Indianapolis (Ind.) Street Railway will be able to maintain a basic 5-cent fare if the city eliminates the burden of paying the special franchise tax of $500,000 and relieves the company also of the cost of paving between tracks, Dr. Henry Jameson, chairman of the board of directors of the company, said following a recent meeting of the executive committee of the directors. The meeting was devoted largely to discussion of two ordinances introduced in the City Council which proposed a solution of the controversy between the city and company.

Directors of the company seemed satisfied that passage of the ordinance, which would prohibit jitneys receiving or discharging passengers on streets on which cars operate and which would require jitney drivers to file high bonds and conform to other stringent regulations, will stop loss of revenues, which company officers declare amount to $1,200 daily.

Dr. Jameson declared that railway officials will have no objection to passage of the other ordinance, which provides for continuing all provisions of the surrendered franchise not inconsistent with State laws and the power of the Public Service Commission, if it is practical and economical. While declining to comment outright on whether the company will contest payment of the franchise tax and paving costs in case the ordinance is passed, he declared that it will be better for the public if the company is relieved of these two burdens and asserted that eliminating these features would mean maintenance of the basic 5-cent fare.

Bus Plans Described

The City Commission of Manistee, Mich., recently heard the plan of operating a motor bus line in the city by a representative of the Duplex Sales Agency of Lansing, one of the bidders for the right to operate.

He described the type of bus which would satisfy the needs of Manistee and stressed the necessity for investigating thoroughly the transportation problem in the city before installing buses. In his talk he emphasized the importance of local capital in the enterprise.

Railway service in Manistee was abandoned on Sept. 1. Reference to this suspension was made in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 10, page 416

Transportation News Notes

One-Man Cars in Use.—The Binghamton (N. Y.) Railway is now operating one-man cars over its system with the exception of the Endicott and Union Street lines.

Extra Pay for Safety Runs.—The Muskogee (Okla.) Electric Traction Company has offered to motormen a cash bonus of $5 a month for each month they operate their cars without an accident.

Buses Prove Satisfactory.—The auxiliary bus service started on Humberside and Annette Avenues in West Toronto, Ont., has proved exceedingly popular with the citizens and is giving a five-minute service which is well patronized.

Arranging for Live Stock Shipment.—Plans for shipping live stock over the Interstate Public Service Company's lines between Indianapolis and Louisville, Ky., are being made and it is expected stock trains will be in operation on the lines by the new year.

May Use Trackless Trolleys.—The Transportation Commission has notified the Toronto Board of Control that it is prepared to operate motor bus or trackless trolley service in Toronto on Mount Pleasant Road as far north as Eglinton Avenue as a temporary means of relieving the traffic situation on North Yonge Street.

Will Consider Bus Line.—A hearing on the proposed bus franchise for Little Rock, Ark., was held recently by the public utilities and ordinance committees of the City Council. The Citizens' Bus Company is asking for the franchise for ten years. The chief reason for the service is to afford residents of the districts not served by railway lines an opportunity of reaching the downtown districts. The matter was deferred for further consideration.

Attractive Issue Out.—The story of electrical development in Chattanooga, Tenn., is told in an interesting article in the September number of *Electro Topics* entitled "Chattanooga — An Electrical Center," in which the author concludes by saying that there is no reason why Chattanooga should not become the electrical center of the South. Another interesting article in this number is "The Nature and Handling of Complaints." The expensive operation of automobiles is the subject of another instructive account. *Electro Topics* in this issue also tells what the railway property has done during the last few years in the way of reconstruction and improvement work. This little magazine, published by employees of the Chattanooga Railway & Light Company, should appear often instead of "every little while."

Personal Mention

New Duties for Mr. Fountain

H. A. Fountain was recently appointed secretary of the executive committee of both the Toledo Railways & Light Company and the Community Traction Company. But a few years ago Mr. Fountain was a motorman on the cars in Toledo.

Mr. Fountain started work for the Doherty Company in Joplin, Mo., as a draftsman during his college vacation. After graduation from the University of Missouri, he was a junior engineer from July, 1913, until July of the next year with the Denver Gas & Electric Company, also a Doherty property.

One year later he came to Toledo as a junior engineer, one of the first ten on that property. It was to have been his duty to make a survey of the traction problems, but the work was abandoned at the outbreak of the war and instead he went on the cars as an extra trainman. Today he admits that the experience he received in those days as a motorman is probably the most valuable he ever had.

From March, 1915, until July of this year he was in the New York office, at first compiling statistics of the Cities Service Company's earnings. Then he went into the operating department handling construction requisitions, later developing the construction and stock budget system, being in complete charge of this work. He also acted as secretary of the finance committee.

At Mr. Doherty's personal request he organized the bureau for the rating of investment securities and developed a procedure for the investigation and formulation of reports on industries, companies and securities, and directed the work of this bureau. On July 15 of this year he came to Toledo as director of the important budget system and also as secretary of the executive committee of both the Community Traction Company and the Toledo Railways & Light Company.

The public utility properties at Toledo under the management of the Doherty interests have recently been segregated so that the railway and the lighting systems are now entirely separate. This change was carried out under terms with the city calling for operation under service at cost.

Mr. Duffy Appointed to Detroit United Railway

C. Nesbitt Duffy, recently assistant to vice-president—accounting and finance—of the Philadelphia Rapid Transit Company, has been elected comptroller of the Detroit United Railway. Before his appointment to the Philadelphia Rapid Transit Company Mr. Duffy was for a long time in the Philippines first as vice-president and general manager of the Manila Electric Railway & Light Company and later as vice-president of the Visayan Refining Company. Previous to that he was connected for many years with the Milwaukee Electric Railway & Light Company.

Mr. Harvell Advanced

Light and Power Superintendent Named as Mr. Buchanan's Successor in Richmond

On almost the thirty-fourth anniversary of his career as a public utility man, John E. Harvell assumed his new duties on Oct. 1 as general manager of the Richmond-Petersburg division of the Virginia Railway & power Company, Richmond, Va., succeeding C. B. Buchanan, whose resignation was announced last week. In addition to his duties as general manager, Mr. Harvell will continue to have full charge of the company's light and power business throughout the entire system.

JOHN E. HARVELL

Mr. Harvell is a native of Petersburg and has acquired wide practical knowledge and experience both in the construction and operation of public utilities. He secured his first job on Sept. 13, 1887, as a lineman with the Upper Appomattox Company, one of the pioneer companies in harnessing water power for public service. In 1891 he was made assistant superintendent and three years later was promoted to superintendent of operations. When the interurban line between Richmond and Petersburg was put into operation in 1898 Mr. Harvell was placed in charge of the service but was relieved five years later in order to give his full time to the present hydraulic power development which was then being made on the Appomattox River.

When the Virginia Railway & Power Company was organized in 1909, Mr. Harvell continued in charge of the operations of the interurban and Petersburg city lines and was later, in addition, given supervision of the company's light and power properties at Weldon and Roanoke Rapids, N. C. In 1918 he was appointed general superintendent of light and power divisions of the entire system, including Richmond, Norfolk, Portsmouth and Suffolk, which duties he will continue to discharge in his new appointment.

During the war period when government activities and the increased populations of Richmond, Hopewell and Norfolk and vicinity were clamoring for more electric power Mr. Harvell was assigned to the mammoth undertaking decided upon by the company's directors of constructing the present high-power transmission line between Richmond and Norfolk, the then only possible means for providing the additional electric power requirements. The task was completed in remarkably short order and under most trying conditions. Recent construction work completed under Mr. Harvell's supervision includes a new substation at Hopewell and a transmission line between Petersburg and Hopewell for providing adequate power facilities for the new Hopewell which is arising out of the ruins of the old, and he is now engaged on the new project recently undertaken by the company of restoring an abandoned power plant and dam on the Appomattox River at Petersburg.

Mr. Harvell's experience extending over thirty-four years in construction work and also in the operation of railway, light and power service fits him admirably for the new post assigned to him in the company's organization.

Alva R. Dittrick, the only Cleveland city councilman to serve continuously on that body from 1910 when the Taylor service-at-cost grant went into effect, retired from that body to become a county commissioner this month. For six years Mr. Dittrick has been a member of the council street railway committee before which all legislature effecting the Cleveland (Ohio) Railway must pass. For the past two years he has been chairman of that body and as such will be succeeded by councilman Sam B. Michell.

Judge Julius M. Mayer of the United States District Court, whose nomination to the Circuit Court of Appeals was sent on Sept. 22 to the Senate by President Harding, will continue jurisdiction over the receiverships of the Brooklyn (N. Y.) Rapid Transit and the New York Railways Company. Judge Mayer was appointed to his present position by President Taft in February, 1912. Since that time he has handled many important cases, especially those involving traction. Apart from directing the affairs of the receiverships of the Brooklyn Rapid Transit and the New York Railways Company he has had the suits in equity against the Interborough Rapid Transit Company begun by the American Brake Shoe & Foundry Company placed before him. The suits have been before him on three different occasions on orders to show cause why a receiver should not be appointed, and each time he has granted an adjournment on the ground that a receivership should be avoided if possible.

Obituary

Thomas A. Wright

Thomas A. Wright, vice-president and general manager of the Wilkes-Barre (Pa.) Traction Company, died on Sept. 28, as the result of injuries received in an automobile accident. Mr. Wright was connected with the Traction System of Wyoming Valley for nearly thirty years. He was one of the organizers of the Wilkes-Barre Railway and since its organization in 1910 has been its chief executive officer.

All railway men will recall the controversy between Mr. Wright and the employees of the company that resulted in the strike called in the fall of 1915 and lasting for fourteen months. It was a case in which the events of the first few days turned from any attempt to settle the main issue to disorder and riot. The issue lay in the refusal of the trainmen to abide by an arbitrated decision. The controversy became so fierce at one time that it resulted in strike sympathizers making a personal attack on Mr. Wright. This spurred him on to an even greater determination to carry the fight to a successful finish for the company, and such was the outcome when the strikers accepted the decision handed down by the arbitrators in December, 1916.

Mr. Wright was born in Quakertown, Penn., Nov. 30, 1863. He was educated in the Quakertown public schools and subsequently pursued a course in the Wyoming Seminary, after which he turned his attention to civil engineering. Subsequently for several years he practiced engineering in Wilkes-Barre.

A few years later Mr. Wright began railroad work and assisted in the survey of the Harvey's Lake Branch Railway. In 1892 he entered upon the survey of the present trolley system of the Wyoming Valley and has been with the Wilkes-Barre Railway Company since. In 1897 he was made general manager of the maintenance of way department and two years later was appointed general superintendent of the entire system consisting of nearly 100 miles of track, all of which was surveyed, constructed and brought to its present high standard of excellence under his immediate direction.

He was named general manager of the Wilkes-Barre Railway Company in 1910 when local interests purchased the lease of the old Wyoming Valley Traction Company. Mr. Wright served for one term as president of the Pennsylvania Street Railway Association.

His son, T. A. Wright, Jr., has been identified for some time with the Wilkes-Barre Railway as auditor.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Stronger Copper Demand

Copper prices went up the early part of this week, and little if any October metal can be bought less than 12⅝ cents delivered. Rise in price is due to increased demand here and abroad. There is a feeling in the trade that the corner has been turned in copper, and that prices will be upward for some time to come.

Several important consumers are figuring upon orders covering business running late into 1922. This is the most encouraging aspect of the situation. Apparently the consumers have decided that it is useless to try to get one producer to fight another any longer by cutting prices drastically to get business. All have seemed to learn that when such tactics are followed the producers all suffer greatly while consumers in their turn lose through the price uncertainty which results.

Brass and wire orders are increasing with the demand unusually good for tubes and sheet copper and brass. Apparently copper prices, barring most untoward developments in Europe, are destined to rise slightly higher. However, it can be expected that the next rise of ½-cent a pound in price will take much longer to effect than the last. Most large producers are at present out of the market.

Price of electrolytic copper is 12⅝ cents a pound delivered for September domestic shipments, and 12⅝ for October and November combined. Price of Lake copper is 12⅝ to 12¾ cents a pound delivered for October and November.

Demand is strong from both wire and brass people with business for makers of sheets and tubes unusually good. Orders being placed by ultimate consumers with manufacturers are said to be widely scattered and inclined to moderate rather than large size in most instances.

Rectifiers for a French Railway

The increasing employment, says the London *Electrician*, of the mercury rectifier for railway work abroad is exemplified in a contract recently placed with the Sociétié Anonyme Brown, Boveri et Cie by the Chemins de Fer du Midi. This contract is for the complete equipment of five substations at Pau, Lourdes, Tarbes, Montrejeau and Lannemezan respectively with mercury are rectifiers.

The contract comprises in all sixteen 1,200-kw rectifier sets to operate on the direct-current side at the high pressure of 1,575 volts. Each set consists of a single main transformer supplying two high tension rectifiers in parallel. The primary supply will be three-phase at 60,000 volts, and a frequency of 50. Everything from the high tension to the direct-current side is included in the contract. The overload capacity for which the rectifiers are being designed is 50 per cent for two hours and 200 per cent for five minutes.

Messrs. Power Rectifiers, Ltd., who represent this end of Brown, Boveri's activities in England, say that the progress made during recent years with this class of plant is very marked, something like 160 individual equipments being either installed or in hand. They comprise roughly 340 separate rectifiers giving a total capacity of about 100,000 kw.

Railway Electrification in Madagascar

The governor general of Madagascar has decided to electrify the railroads of that colony from Tananarive to Tamatave, according to *Commerce Reports*. A hydro-electric power station will be built on the Vohitra river to furnish a maximum power of 30,000 hp. The length of the line is 93 miles and the total cost of the installations will reach $4,620,000. Assistant Trade Commissioner F. G. Singer, who furnished this information, states that the governor general is also considering the electrification of the future railroad from Diego-Suares to Joffre Ville, a road about 22 miles in length.

Waterpower Development in Japan Is Being Pushed Rapidly

Japan is pushing work on hydro-electric development as the demand for power in the larger cities as well as the smaller villages is far in excess of the supply available, according to Stephen Q. Hayes, a special electrical engineer of the Westinghouse Electric & Manufacturing Company, who recently returned from a six months' tour of Australia and Japan, where he made a special study of business conditions. Tokyo and Yokohama, near the eastern end of the main island, are supplied with power at 50 cycles from many hydro-electric plants and there is an electrified section of the railway between these two cities with multiple-unit trains every ten or fifteen minutes.

Near the middle of the main island, about 350 miles from Yokohama and Tokyo, are the large manufacturing cities of Kyoto, Osaka and Kobe. These are fed by numerous transmission systems operating at 60 cycles. Some of the most important hydro-electric generating stations are located about half way between the two groups of cities and some interesting problems are involved in making some of these stations suitable for feeding 50-cycle current to Tokyo and Yokohama and 60-cycle current to Kyoto, Osaka and Kobe.

Nine Electric Locomotives Exported During July

Of the nine electric locomotives exported from this country during July, eight, having a total value of $412,076, went to Brazil, says *Commerce Reports*, and one, invoiced at $11,100, went to England.

Bituminous Coal Output Falls

Production of bituminous coal in the United States during the week ended Sept. 3 was 7,571,000 tons, against 7,163,000 tons in the week previous, and 11,167,000 in the week ended Sept. 3, last year, according to the Geological Survey. For the calendar year to Sept. 3 the output was 264,647,000 tons, against 354,396,000 tons in the same time, last year.

Express Locomotives for Chile

Six express locomotives were also included in the order of the Chilean State Railroad from the Westinghouse Electric International Company. The other locomotive equipment to be furnished, as was announced last week, includes eleven local passenger and fifteen road freight locomotives and seven switching engines. All of these locomotives are of Baldwin-Westinghouse manufacture.

Will Study American Developments

It has been learned through government channels that R. Shirase, a Japanese government official and traffic manager of the railway department of the Formosan Government General, arrived in San Francisco on board the steamship *Taiyo Maru*, Sept. 9, 1921. His visit to the United States is for the purpose of studying the developments of the railroad situation in this country following the war. While Mr. Shirase is not a purchasing agent, it is understood that a considerable volume of railway material will be purchased later on, based upon his reports and recommendations. Mr. Shirase may be addressed in care of Mitsu & Company, 65 Broadway, New York.

Rolling Stock

Elmira Water, Light & Railroad Company, Elmira, N. Y., is intending within the next four weeks to place an order for three safety cars.

Los Angeles (Cal.) Railway will install 350 new motors on center-entrance cars. These are the largest cars operated by the railway. Westinghouse and General Electric equipment is being used. The total outlay will be about $350,000. The cars to be equipped are of the two-motor type.

New York, New Haven & Hartford Railroad has purchased from the International Motor Company three gasoline motor cars adapted for operation on rails by special trucks. They will have seating capacity of 35 and also a compartment for baggage. Delivery of these cars is expected early in December. They will be used in short-haul passenger service on branch lines.

Pacific Electric Railway, Los Angeles, Cal., has just placed in commission eleven rebuilt two-man side entrance, pay-as-you-enter, stepless cars. These cars will be operated on the Willowville-American Avenue line and the East Third street line. The cars represent modern design in local street car transportation and are considered almost accident proof. Work is being rushed on the new steel interurban cars assigned to the Long Beach route, which, as soon as completed, will be placed in service.

J. G. White Company, New York, has purchased for immediate delivery on account of the Manila Electric Company two "trollibuses" from the Atlas Truck Corporation, York, Pa. These machines are to be built according to the same design as those already built for operation in Richmond, Va., and on Staten Island, N. Y., with the exception that it is propelled by a single 45-hp. motor instead of a single 25-hp. railway motor in the case of those now operating in Richmond and two 25-hp. motors coupled in tandem as used on the Staten Island rail-less vehicles.

Track and Roadway

Ironwood & Bessemer Railway & Light Company, Ironwood, Mich., has extended its lines from Ayer Street south and east to Bonnie Street.

St. Thomas, Ont.—The electrification of the Canadian division of the Pere Marquette Railway is reported to be again under consideration.

Savannah (Ga.) Electric Company will extend its double tracks on Habersham Street from Anderson to Thirty-Seventh. Permission was recently granted by the city and work will start directly.

Public Service Railway, Newark, N. J., has notified the board of commissioners of Haddonfield, N. J., that it will furnish better trolley service, repair roadbeds and lay new tracks within the borough limits.

Toledo, Fostoria & Findlay Railway, Fostoria, Ohio, will lay new 60 lb. rails from the Baltimore & Ohio to the Lake Erie crossing. The rails will be slightly elevated in order that street re-surfacing will not be impeded in the future.

Toronto, Ont.—Mayor Church is urging the Transportation Commission to proceed with the construction of a double-track extension of the King Street car line from Sunnyside to the Humber. The Commission has decided not to construct the extension until next spring.

Northern Texas Traction Company, Fort Worth, Tex., has been granted authority by the City Commission in Fort Worth, Tex., to extend its University line three blocks from Elizabeth Boulevard to Cantey Street on South Adams Street. Work on the extension will begin at once.

Duluth (Minn.) Street Railway, has drawn up plans for a double-track extending 125 ft. from Tower Avenue along Twenty-first Street in the direction of Ogden Avenue. From this point the line will run on a single track for eleven blocks to Grand Avenue. The single-track plan has been approved by the City Council.

Frankford Elevated Railway, Philadelphia, Pa., may be extended 300 ft. north of Arch Street along Front Street to Market Street. Provision is also made for a temporary terminal as near Market Street as possible. The plans for the extension are nearly completed and bids will probably be asked for within the next three weeks.

Toronto (Can.) Transportation Commission, in connection with its reconstruction work will erect on the site of the Hillcrest site, carhouse and repair plant to serve the whole railway system. Property has also been acquired at Yonge & Eglinton Avenue for carhouses in North Toronto, and on the northwest corner of Eglington and Duplex Avenues a new substation similar to the one south of St. Clair Avenue is to be built.

Frankford, Tacony & Holmesburg Street Railway, Philadelphia, Pa., has placed within the last month with the Lorain Steel Company orders for six new spiral curves, section 114 No. 480 and 80 tons of 7-in. Trilby rail section 105 No. 484. In the spring of this year the company placed orders for 300 tons of rail section 105 No. 484 and about $14,000 worth of railroad crossings, new sidings and other special work with the Lorain Steel Company. Also 6,000 ties were ordered from Bernard Brothers. The railway does not expect to purchase further this year.

Trade Notes

Ohmer Fare Register Company, Dayton, Ohio, recently received a contract with the Georgia Railway & Electric Company, Atlanta, Ga., for equipping all of its cars with No. 3 type Ohmer registers.

E. E. Aldous has been appointed representative of the American Steel & Wire Company in St Paul-Minneapolis-Duluth territory, with headquarters at St. Paul. Mr. Aldous has been connected with the company for twenty years in different positions.

Indianapolis Switch & Frog Company, Springfield, Ohio, announces a new line of rubber-covered flexible cables and cords for use with portable electrical equipment. A special cable has been designed for use with electric welders, grinders and all track tools. The outside coating, rubber-vulcanized under compression, resists abrasion, does not absorb water or liquid, is non-kinkable and of high tensile strength and extremely flexible.

Hunter Grubb has been made general manager in charge of paints of the du Pont Company, Wilmington, Del., following the company's resumption of its old plan of supervising its industries. Under the plan there will be a general manager in charge of each industry, while during the war supervision of the various industries of which the company is the owner was delegated to different members of the executive committee.

Carl F. Dietz, vice-president and sales manager of the Norton Company, Worcester, Mass., has resigned to become president and general manager of the Bridgeport (Conn.) Brass Company. He succeeds as president Fred J. Kingsbury of New Haven, who becomes chairman of the board of directors. Mr. Dietz has been connected with the Norton company for ten years, first as plant engineer, then as assistant sales manager, and afterward as sales manager of the wheel division of the business. Two years ago, when the Morton Company and the Norton Grinding Company were consolidated, he was made vice-president and sales manager.

New Advertising Literature

Insulators.—The Porcelain Insulator Corporation, Lima, N. Y., has issued a booklet, the purpose of which is to describe its pin-type insulators, manufactured for use on transmission lines operated at voltages from 6,600 to 70,000.

Battery Equipment.—S. R. Orum, 503-505 North Eleventh Street, Philadelphia, manufacturer of battery shop equipment, has issued a new catalog covering his products.

Safety Switches and Panel-Boards.—Catalog 12-A issued by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., includes new types of safety motor starters and safety panel-boards.

Track Reclamation.—Indianapolis Switch & Frog Company, Springfield, Ohio, has recently issued a booklet on the subject of track construction and reclamation by the arc welding process.

Electric Drill. — The Elecyto-Magnetic Tool Company, Chicago, has developed and placed on the market a ½-in. drill which may be used as a drill press by attaching to a portable stand.

Heavy-Duty Grinder. — The Van Dorn Electric Tool Company, Cleveland, has recently put on the market an improved heavy-duty ball-bearing electric grinder driven by a 4-hp. motor.

Edison Lamp Works, Harrison, N. J., part of the General Electric Company's system, has issued a series of pamphlets entitled "Lighting Data." Each booklet describes some phase of the lighting subject, one being on the proper system for lighting railway buildings and yards, another on lighting for outdoor sports, a third for lighting of printing plants, another a discussion of reflectors for incandescent lamps, etc.

Manganese Track Society and the Manganese Steel Founders' Society, Chicago, have issued in pamphlet form the specifications for switches, frogs, crossings and guard rails, as adopted for recommended practice by the American Railway Engineering Association at its annual convention in March, 1921. The pamphlet makes up a book of ten printed pages, printed on one side of the sheet only.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative

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T. & T. Association Will Consider Changes in Organization

AT THE Atlantic City convention changes in organization were considered not only for the American Association but for the T. & T. and Engineering Associations. In each of these associations they were recommended by the president and will be considered by the executive committee, with the possibility of course that a committee may be appointed in each body to work out the most satisfactory plan.

In the case of the T. & T. association, the first suggestion of the retiring president, R. P. Stevens, was that only one vice-president should be elected, the reason presumably being the same as that which prompted the reorganization committee of the American Association to propose that the method of electing vice-presidents in that body be changed so that there would be no order of precedence among the vice-presidents. One chief aim of this change was to do away with the plan usually followed of advancing each of the vice-presidents one step each year and thus avoiding the necessity of choosing a president four years before he will serve.

The argument in favor of a change in the T. & T. Association as well as in the American Association is not that the present plan has worked badly in the past. Both associations have been most fortunate as to the caliber of the men who have been called upon to serve as presidents of the associations. Nevertheless, there are good arguments in favor of giving the nominating committee a free choice, just as there are arguments for the present practice in the way of training vice-presidents for the presidency. If the T. & T. Association adopts the single vice-president plan there will be an opportunity of finding out how it will work out as compared with the four vice-president yearly promotion plan of the American Association. Somewhat curiously, in view of the adoption of the resolution at the 1920 session of the American Association in favor of getting away from the old system of advancement, the change was not even considered at the American meeting. The reason for this is probably that the association as a whole felt that a good many changes had been made and that it would be well to try them out before making others. As drafted, the constitution is thoroughly workable, and can easily be amended if such a plan should be considered desirable.

Other important suggestions by Mr. Stevens relating to the internal organization of the T. & T. Association were that the chairman of each committee be appointed if possible from the membership of the preceding year's committee, that the first vice-president of the association be ex officio chairman of the subjects committee, that two new committees be appointed to study the different phases of the trackless transportation subject and that *Aera* devote more space to articles of an educational nature for the benefit of employees in the transportation department. Altogether the address showed an earnest desire for improvement and a willingness to depart from precedent to accomplish that result.

Does the Engineering Association Constitution Need Revamping?

IN HIS ADDRESS before the Engineering Association at the Atlantic City Convention, W. G. Gove, retiring president, made some statements which seem at first rather startling. The address was taken up largely with suggestions as to ways in which Mr. Gove thought the functioning of the organization could be improved. He said frankly that these suggestions would not meet with universal approval. Probably they will not in detail, but they will in principle. The principle is that now is a good time to make a study of the workings of the association to learn whether some improvements may not profitably be introduced. This is timely now because the parent association has just completed such a study. The suggestion that a committee be appointed to go into this matter will meet with no opposition. If such a committee finds that present practice is satisfactory, the establishment of the fact will be worth while. The chances are ten to one that some changes will be found desirable.

To Mr. Gove's mind, the root of the trouble with committee work at present is that committee members have to pay their own expenses in attending meetings or else charge them to their expense accounts with their employers. There is some warrant for this conclusion, although the influence of the money item is probably not predominating. The way out would seem to be some kind of a mileage allowance, which would put all members on the same footing geographically, at least with respect to railroad fares. This is probably not practicable at once on account of the financial condition of the association, but the plan should be considered for adoption later.

Next, Mr. Gove wants committee work simplified. This is desirable and can be accomplished without changes in the constitution and by-laws. The executive committee appreciates the desirability of a simple program of committee work and will undoubtedly provide such for the coming year. Mr. Gove also wants more attention given to practical standardization. He suggests an advisory committee in the car design field to act as an intermediary between the manufacturers and the users. Such a committee could undoubtedly accomplish a great deal. The plan is worth a trial.

As to the "Engineering Manual," the retiring president voiced a rather general desire to have this invaluable reference book in more convenient form and in a form to insure up-to-dateness. The committee on standards has been struggling with this proposition for many years. It is a difficult one. If the volumes are bound up permanently and issued say every two years, there is much loss of good printed matter, but the appearance of each successive new volume insures the completeness of the Manual as of the date of issue. Now it is difficult, practically, to keep the loose-leaf books up to the minute. The bound volume idea, supplemented with reprints for those who do not need the complete volume, is worth pushing.

Mr. Gove's specification for a permanent secretary-engineer for the association is met in part at least by the circumstance that Executive-Secretary J. W. Welsh is an engineer by training and experience. When he was "Special Engineer" with the American Association, he acted as secretary of the Engineering Association. He will still remain an engineer and will consider matters from an engineering point of view, even with the title of secretary. While as executive-secretary he will have duties of a more general character than those which he performed as special engineer, he will be able to give engineering supervision to its proceedings. He can train some one to act as his deputy.

Finally, Mr. Gove made another important suggestion. This relates to the method of adopting standards, namely, that they be voted for on a "weighted" basis, the companies likely to be most affected having the greatest voting power. Mr. Gove quotes a precedent—the practice of the steam railroads as to certain standards. This scheme has much to recommend it but it would be complicated to apply to the electric roads. Conditions would be different if the use of standards was obligatory. Then, such a change might be necessary, but experience has shown so far that even those who vote for standards do not always adopt them.

The association should be grateful to Mr. Gove for his frankness in pointing out the spots in the organization which, after a year's presidency, he concluded needed improvement. Even if all of the details of his suggestions are not adopted, good has been accomplished by their suggestion. What is needed in any large body of specialists is the quality of alertness, the ability to sense the vital needs of an industry. This quality is illustrated in Mr. Gove's presidential address. Surely the association will note, assimilate and apply as many of his constructive comments as can at present be applied.

Bouquet Handed to Engineering Association Committee

A GOOD omen for the success of the coming year's work of the Engineering Association is furnished by the way in which the subjects committee has planned for the year's work. In the first place the committee conducted a considerable correspondence in advance, with a view to securing suggestions from qualified persons throughout the industry and the country. The response was gratifying. Then the committee held several meetings in advance of the convention and completed a tentative draft of a report. Every opportunity was given for advance consideration of the work for the coming year, President W. G. Gove's suggestion as to limiting the number of subjects to those most important being kept clearly in mind.

Then the committee placed the proposed assignments before the convention, inviting criticism. The effect of this procedure was at once apparent, especially as the assignments to the several committees were presented after the discussion of the reports of these committees respectively. If the committees next year are not satisfied with their assignments, surely they cannot hold the subjects committee responsible. Now, when the report of this committee goes to the executive committee for approval, the latter will know that nothing has been left undone to insure a good year's work.

The importance of early work in the assignment of subjects cannot be overestimated. On even such a low plane as the financial one, such work pays large dividends. In round numbers, say that 100 committee men will each devote 100 hours of working time next year to committee duty, at $5 per hour their time is worth $50,000. Assume that by careful planning 10 per cent of this time could be saved. The saving would be worth $5,000. It would, therefore, pay to spend a considerable amount in time and money to save this $5,000, which would be only one part of the real saving.

Engineering Judgment in Valuation Procedure

ENGINEERS should take to heart the recommendation of the valuation committee of the American Association that there be a more extended use of the so-called "yard-stick" method of valuation. The committee points out that this is the most constructive program for study by the incoming committee and urges the new committee to examine the subject with a view of ascertaining how best or to what extent the method can be given more general application. The ELECTRIC RAILWAY JOURNAL has urged this procedure in valuation but has recognized that it is not only a question for valuation engineers or executives but also for courts and commissions. Examples of the use of this method are not unknown, the most conspicuous example in electric railway circles being the recent valuation of the Connecticut Company, already related in these columns.

One of the principal points in such a method of valuation, it should be noticed, is a recognition of the judgment of the engineer as playing an increasingly important and deciding part in the making of valuations. It would take the engineer from the class of a clerical counter of field details and place him in the rôle of a judge of types of construction, depending upon him to decide what variations in type are negligible or compensating in the building up of intelligent costs of construction. In general, it is a step forward for the engineer in his coming into his own, and he should be ready to do his part in making the move a constructive one for the industries involved.

It must further be recognized, of course, that this is only a step; that the final object will never be realized until the commissions and courts recognize his judgment, to the extent that it must be utilized in yard-stick valuation, as competent testimony. That is, the integrity or usefulness of testimony as to value must be strengthened rather than vitiated by this method of arriving at the figures. It is up to the engineer to prove his value in this respect. The committee's recommendation, however, is a good omen.

The Question of Price Is Left Untouched

THE rest of the report of the committee on valuation this year is notable for two things—one, the excellent discussion on rate of return which should supply good arguments for companies in rate cases, and, two, the absence of any discussion on the main feature of the work of the 1919 and 1920 committee, namely, that of price. This, we believe, is unfortunate. In times of rising and high prices, it was easy and self-satisfying to urge the adoption of present-day prices in making inventory in appraisals. But the real work in the application of such a principle comes in the days of falling prices which must be admitted to be upon us—happily in most instances. The question of the base price to apply is one which presents more serious or debatable points than any other of the so-called tangible elements of valuation. Is it not logical that more constructive work should be done on it?

It is understood that in some of the companies now working up valuations of their properties, some very interesting and valuable experiments are being made to determine the effect of various pricing methods. This is a question in which the whole industry is interested, and it could be made one of the major subjects for the committee to work on. Because it is difficult is no reason to pass it up, but rather the best reason for attempting a solution. May next year's committee also consider this subject as a part of its work.

Bus Operators in the Amalgamated

NOTWITHSTANDING the fact that the association at its recent Atlantic City convention voted for the time being not to admit motor bus companies to membership, as was discussed in these columns last week, it was very evident from the remarks of many that the railways themselves are watching, analyzing or have actually established experimental bus lines as feeders in conjunction with their existing rail routes or as a supplement thereto.

That the employers do not for a minute underestimate the possibilities of the bus for exploitation services is aso evident from the action taken by the Amalgamated Association at its recent Atlanta (Ga.) convention. Perhaps the employees are one step ahead of the railway men in looking over future possibilities. Their action surely indicates that they want to get in on the ground floor, so to speak, and as the bus develops in usefulness to gain new and additional members.

Can it be their idea that the motorbus is to supplant existing electric railways or is it simply an evidence of the ever-reaching demand of labor to try to dictate in all new modes of transportation in somewhat the same manner it did when one-man cars were first put into service?

The safety car was a necessity on the part of the railway companies to preserve their integrity—thereby really retaining for the men their jobs. Now comes the bus for exploitation service—an entirely different proposition. If the Amalgamated Association attempts to foist upon the companies operating these vehicles unnecessary demands they can only open the way for the irresponsible operator to exist. The arguments advanced regarding the use of the safety car to preserve their jobs and keep more men at work cannot now be used, as this is an opportunity of work for additional men, and that is what is today being discussed at all unemployment conferences.

Many companies will recollect the difficulties that they experienced at the hands of the Amalgamated Association when the one-man car was first put into operation —the arguments regarding safety of operation, the safety of passengers, the extra work that would naturally devolve upon the operator and the 101 other fool ideas that the grievance committees brought up in arguing for a higher rate of pay for operators of this type of car.

These arguments after four or five years of continued operation have resulted in the companies' recognizing the operator to be worth about 10 per cent more than on either end of a two-man car. What will be the differential for motor-bus operators?

Changing Ideas in Regard to Car Painting

IT IS false economy not to keep cars well painted and extravagance to carry the painting process too far. This sentence sums up the philosophy of the subject as well as its economics. The statement may seem trite, but an examination of the paint shop practice of the industry will show that there is great diversity in the interpretation and practical application of the principle thus stated. In fact it may well be said that electric railways have swung from one extreme of an excessive regard for appearance to the opposite extreme of an excessive regard for cost.

Obviously the first requisite of good painting is to preserve the car structure, which means primarily protecting it from the elements. Almost any paint or varnish will serve this purpose for a time, but the practical question is: How long will the preservative effect last? This is matter to be determined by experience; every master painter has his convictions regarding it. Modern methods of paint testing will give a reasonably correct answer for a given climate.

But preservation is only one function of painting. The effect on the public is equally important. Each electric car is a traveling advertisement which is seen by multitudes every day. Its appearance either commends or condemns the management. This fact has always been appreciated, and in the early days, when paint and painters were cheap, car finish was frequently overdone. Much rubbing down was indulged in, with the idea of yielding a carriage or piano finish. Gold leaf was liberally used on lettering and striping. The artistic taste of the craftsman was allowed to display itself in ornate corner ornaments and the like. Now these luxuries have been discarded largely, which is right. But the tendency to go to the other extreme is not right. Such a type of painting should be used and such a program should be carried out that the cars will appeal to the public by virtue of their tasteful neatness.

In this connection an important lesson has been learned, namely, that a simple painting process can be made to yield results almost as good as the more elaborate ones of the past, that is, when judged by car finish rather than piano finish standards. A car does not require a superfine finish for several reasons: First, it is in general viewed from a distance. Then it is examined very casually and transiently; it is the general impression created that counts. Again, if the public gives the matter any conscious thought at all, it will favor economy in the interest of lower fares.

However, while painting need not and should not be elaborately done, it should be regularly done. It does not pay to allow much difference in the appearance of cars, because contrasts are conspicuous. A master mechanic once said to the writer, in criticism of the painting program of his predecessor: "He used to varnish the cars every year whether they needed it or not." Maybe they didn't need it every year, but much could be said in favor of the practice. And in this case the body color had been preserved for twenty years or more by the expedient of frequent varnishing.

The paint manufacturers of the country have been pushing the slogan "Save the Surface." Of course they have "an axe to grind," but the principle they are promulgating is right. It applies especially well to car painting, with the addition, "and Advertise the Service."

The Lubrication of Rolling Stock

Incidental Results of Improper Lubrication Far Reaching—Direct Cost of Lubricants a Small Proportion of Operating Expenses—Methods for Packing, Oiling and Inspecting Affected by Local Conditions—Typical Organizations for Securing Lubrication

By L. W. W. Morrow
Assistant Professor of Electrical Engineering, Yale University

IT TAKES oil and grease to lubricate the cars used on street railways; every one knows that fact. But how many railway operatives realize the importance of the subject of lubrication, and the absolute necessity for buying and applying lubricants on the basis of knowledge and not ignorance.

There really seems no one operating element that will pay better dividends than lubrication if studied seriously for the purpose of obtaining the tangible and intangible effects on the system's operation. Lubrication should not be dismissed by railway executives as an aggravating and unimportant element of operation which is best handled by purchasing the cheapest lubricants offered on a blanket bid and then function through the more or less able advice and work of oil company experts and unskilled labor.

The first cost of lubricants is the least important factor in lubrication; it pays to buy good lubricants, and the better the quality the higher the cost and the less quantity of lubricant needed. Poor lubricants applied in an improper manner may result in a final cost that will be the largest element in operating expenses with the exception of labor. Lubrication affects the wear and tear on all equipment, it affects the service reliability of the system and indirectly public sentiment, it affects the life and rate of depreciation of equipment, it is a fundamental element in shop, labor and maintenance costs, and analysis and study warrant the statement that it is one of the most important operating factors in the railway industry, yet has received the least attention of railway executives.

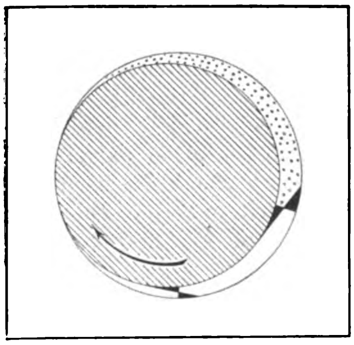


FIG. 1—OIL MOVES WITH ROTATING SHAFT

The rotating shaft tends to rotate the oil against the action of the bearing load.

The first cost and the quantity of lubricants used in the railway industry are difficult to determine; the following table shows an estimate for the yearly consumption and cost for the 90,000 motor cars and passenger trailers on electric railways in this country:

Lubricant	Quantity	Cost
Motor and compressor oil	1,600,000 gal.	$650,000
Gear grease or compound	600,000 lb.	265,000
Cup grease	150,000 lb.	15,000
Other lubricants	20,000 gal.	100,000

In 1920 the United States consumed over 500,000,000 bbl. of crude oil, so the railway consumption represents only about 0.02 of 1 per cent of the total oil consumption and a still smaller percentage of the total quantity of lubricants used by the country. The cost of these lubricants is not in excess of 0.1 of 1 per cent of the gross operating expenses of the industry.

In quantity and in cost, therefore, compared to national consumption and to other operating expenses, the item of lubrication is infinitesimal and not worthy of consideration. It is only because of the associated though intangible effects of lubrication on maintenance, service and operating methods that it is of importance and of interest to electric railway men.

Seemingly lubrication resolves itself into divisions relating to sale, purchase, storage and filling, systems of organization for oiling and packing and records and statistics to determine costs. Involved with these items from the standpoint of the railway operator are items such as reliability of service, cost of equipment, maintenance in relation to the cost of lubrication, effect of lubrication methods on rate and kind of depreciation on equipment, system inspection and labor costs and questions associated with public sentiment and relations.

The subject is very complicated and, depending on the viewpoint, may be approached from many angles. As one master mechanic says, "All troubles on rolling stock of a serious nature occur because of one of two reasons, improper lubrication or the overheating of the motors." As a traffic man states the problem:

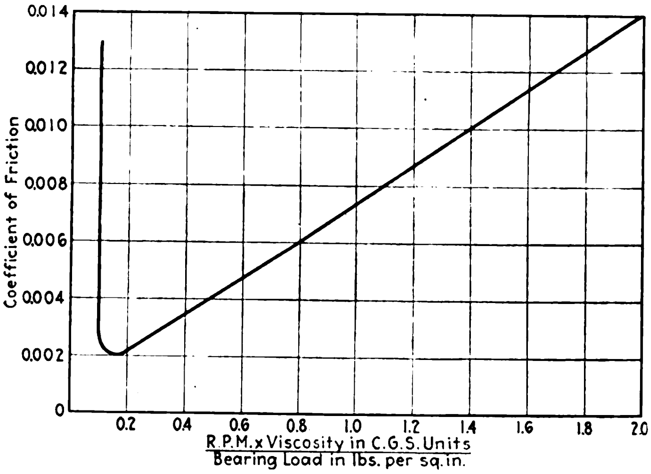


FIG. 2—CHARACTERISTIC CURVE FOR A RAILWAY BEARING

Test made in a Thurston machine. Shaft steel 3.97 in. in diameter, bearing, brass, 7.81 in. long, 3.31 in. chord of contact, 113 deg. arc of contact. Smooth surface, ungrooved cylinder, clearance 0.003 in. Loads 39, 135 and 155 pounds per square inch. Speeds 390, 230 and seizing speed from 15 to 50. Viscosities 0.5 to 0.15 C.G.S. Independent of load, speed and viscosity grouping all points fell on the curve.

"I want to give service and keep all the rolling stock in service; if my failure to do this is caused largely by breakdowns due to faulty lubrication, then my policy is to play absolutely safe and get the best possible lubricant applied in the best possible manner."

The production and sale of lubricants to the electric railways is a specialty business of small volume and requiring the services of expert lubricating engineers.

Very largely railway companies have purchased their lubricants on a guarantee cost basis whereby the oil company, after a detailed study of the system and its equipment, guarantees a maximum cost of lubrication per 1,000 car-miles and absorbs a cost in excess of this figure, while the railway company gets the benefit of any cost less than the guaranteed cost. The oil company furnishes experts and proper lubricants and the railway company supplies the men and the facilities for lubricating its equipment in conformity with the directions of the oil company experts. The oil company sells both service and lubricants to the railway company.

The other basis of sale and purchase is the gallonage basis. This basis does not contain any guarantee clause fixing the cost per 1,000 car-miles, but fixes a contract price per gallon or pound of lubricant. The oil company supplies expert lubricating engineers free of charge who function as advisers to the railway operators.

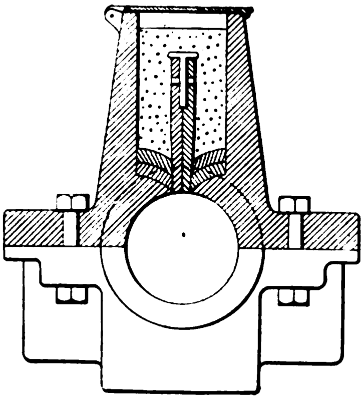


FIG. 3—GREASE CUP ARRANGED FOR OIL ON ARMATURE BEARING

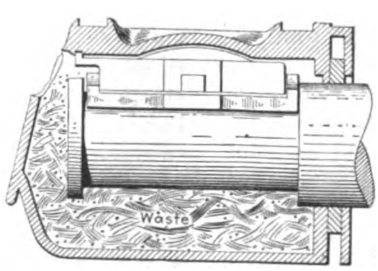


FIG. 4—SKETCH OF JOURNAL BOX AND PACKING

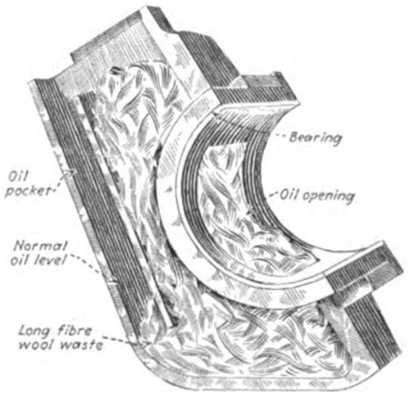


FIG. 5—SKETCH OF ARMATURE BEARING FOR SPLIT FRAME MOTOR

Some of the advantages claimed for the guarantee basis are:

1. The oil company sells service and not lubricants.
2. The maximum cost of lubrication for the ensuing year is a known item to the railway officials.
3. The railway gets the benefit of any saving obtained by keeping the cost below the guaranteed figure, while the oil company absorbs the excess. This statement must be modified when applied to those contracts which contain a clause which protects the oil company from any decided rise in the market price of oil.
4. The railway company has the services of lubricating engineers who strive to lower the cost of lubrication in order to increase their business by reducing the figure for the maximum guaranteed cost.
5. The railway company is relieved of managerial worry in regard to lubrication cost, methods or records.

Some of the advantages claimed for the gallonage basis are:

1. Lubricants are purchased on a purely quantitative basis at a figure fixed by the market price of oil.
2. The railway company is itself responsible for its lubrication and devises its system from the standpoint of efficient maintenance and service rather than lubrication cost.
3. Lubrication experts are available to the railway company who have no pecuniary incentive to advise the use of poor quality lubricants in too limited amounts.
4. The costs incidental to a detailed preliminary study of the system and its equipment are eliminated.
5. The oil company can devote its attention to the production of good lubricants—its business, and the railway company can devote its attention to the efficient operation of its equipment—its business.

Both systems of purchase have proved acceptable to railway operators and specific conditions and personal preferences usually decide the type of contract. As a general proposition, the purchasing agent desires to purchase all lubricants used by the railway company in all its operations from one company at the lowest price provided the grade of lubricants offered are satisfactory to the operating force.

The railway industry and the art of lubrication owes a great debt to the oil companies for the broad and helpful policies followed by their sales organizations and the expert technical services rendered by their lubricating engineers. It is a decided compliment to the oil companies to have an almost universal statement from foremen, oilers and master mechanics in railway shops to the effect that "those oil company engineers know what they are talking about and we follow their advice with confidence." The company experts are relied upon to specify the type of lubricant and its method of application to all the equipment. In addition, the company men and the railway men co-operate enthusiastically to secure improvements in both lubricating methods and lubricants.

After purchase, the next question asked is, How shall lubricants be stored? The storage of any lubricant is accompanied by fire hazards and a dry fireproof room is a primary requirement. The increased number of distributing centers and warehouses established by the oil companies and the financial situation of most railway properties has forced the trend of practice to the use of a small room suitable for the storage of only one month's supply of lubricant. This statement is modified by local conditions and there are many large, splendid oil storage rooms used by railway systems. The A. E. R. A. in the Engineering Manual, Bb 1a, gives a standard layout for an oil house.

Even with only a month's supply of lubricant questions arise in regard to equipment such as containers and filling apparatus. It pays to purchase and install adequate containers and adequate filling devices. Waste of oil is eliminated, and only one glance at certain oil rooms indicates how great the waste may be, the fire hazards are reduced, records are more accurate because measurements are reliable and the equipment adds to the system morale by improving the appearance of the plant and by creating pride in the oilers.

The use of lubricants on rolling stock is intimately associated with the history of electric railway equipment. Axles and car journals were adapted directly from steam railroad practice, but the electric motor with its armature bearings, gears, etc., introduced new elements into equipment design. The first tendency was to take the bearings and lubricating arrangements of the motor or generator as used in shops or power houses and adapt them to the street car. Alas! for the oil rings and reservoirs—they refused to function, so there followed a long and expensive series of changes in the lubrication methods and in the bearing design for the motors. One of the early systems used a detachable oil or grease cup—the cups got lost or were broken. Then followed a bearing which had a grease or oil receptacle cast integral with the bearing; there was no way to insure a supply of lubricant to the shaft. The next step was to use a hollow metal tube to conduct grease from a main supply to the bearing. The heat from the bearing was conducted by the tube to the grease and, melting the grease, correct lubrication would occur by reason of the automatic supply of melted grease; it failed to be automatic.

A type of bearing and a system of lubrication was then introduced for the motor journals which, in general, depended on a wick feed to the shaft from an oil reservoir. Felt was used as the wick and was arranged and formed in many ways, but the general principle was to hold one end of felt on the shaft under pressure and to hold the other end in the lubrication supply.

The next step was the use of journal boxes with waste for packing similar to those used on the car journals and, in spite of attempts to use ball bearings, ring oilers, roller bearings and other equipment for both motor bearings and axle bearings, this system is standard in American practice. In some one-man cars, however, ball bearings are used for both motor and axle journals, and in Europe several systems use this type of equipment.

The bearings and the system of lubrication on the latest equipment, as regards boxes and waste packing for axle, and motor armature journals represent all the changes and improvements that could be expected to follow from many years of experience and observation with many types of equipment under varied conditions of service. It seems crude in many ways and has some glaring faults, but it maintains its place as the best system and design for use from an economic and operating standpoint.

The lubrication of flat surfaces, gears and pinions has not changed materially in method and increased efficiency has been obtained by an improvement in the quality of the lubricant.

Wheel flange lubrication, as applied by apparatus on the moving vehicle, is used only on electric locomotives in America where it has proved very satisfactory as an agency to reduce the wear on tires or on rails located on curves.

THEORY OF LUBRICATION

The essential problem in lubrication is to maintain a film of lubricant between moving surfaces. If this film is not maintained heating, wear of parts and rapid deterioration occur. In the street car there are rolling contact surfaces in parts such as motor and axle bearings and in sliding contact surfaces in other locations such as side and center bearings. The maintenance of the film of lubricant depends on the condition and material of the friction surfaces, the pressure or bearing load on the surfaces, the contact velocity of the surfaces, the temperature of the surfaces and the lubricant, the viscosity, physical and chemical properties of the lubricant used and the method used to supply the lubricant to the surfaces. Many of these items can be controlled by the railway and oil company experts, but others are controlled by the service conditions to be met by the equipment and the design of the equipment.

A smooth surface permits smaller clearance between contact parts provided the design of the bearing permits the lubricant to be inserted at the proper places in sufficient quantity, but on motor bearings, for example, service conditions and reliability requirements cause the clearance to be larger than lubrication requires in order to allow no armatures to rub, alignments to change or other mishaps to occur under service operation.

FACTORS IN BEARING HEATING

The velocity of the contact surfaces both aids and prevents good lubricating conditions. A revolving journal, for example, gets covered with a thin film of oil and this oil film not only adheres to the journal as it rotates, but, due to its viscosity, carries around with it adjacent layers of oil and thus maintains lubrication. The higher the viscosity the greater this effect, but, on the other hand, the oil itself develops heat through molecular friction and this heat increases with an increase in the velocity and the viscosity, so that, unless the oil is cooled, the use of high velocity contact surfaces and of high viscosity oil will cause a decrease in the efficiency of lubrication because of the increase in the temperature.

The pressure between contact surfaces is detrimental to lubricating conditions since it pushes out the lubricant between the contact surfaces and decreases the thickness of the film. Designers of bearings care for this condition by inserting the lubricant on the contact surfaces where the bearing load is least, by utilizing the good features of velocity and by the use of lubricant having a high viscosity. The object is to get the lubricant to adhere to the contact surfaces and to supply more lubricant before the pressure breaks down the film or the lubricant is heated.

Lubricant of high viscosity is best to maintain a film under the adverse conditions of slow speed, high temperature and large bearing load, but, in general, the higher the viscosity the higher the first cost of the lubricant. Then again lubricant with a high viscosity develops more heat by molecular friction, requires greater clearances and is more difficult to handle but, in order to play safe and because viscosity decreases as the temperature increases, most operators demand a lubricant of high viscosity.

Lubricants may oxidize with age or heat, may gum, may evaporate, may be acid and cause corrosion, may emulsify or may "sludge," depending on the service conditions and the quality. But little criticism has been made of the lubricants used in the railway industry if used in sufficient quantity under prescribed conditions. Any criticism that arises is usually because the wrong type of lubricant was used on the specific job or because the lubricant was improperly applied to the contact surfaces.

As a theory and as regards the quality of the lubricants available, the lubrication situation is very satisfactory. The problem that remains and the one of the greatest importance to the railways is that of getting and maintaining lubricants of the correct quality on the friction surfaces at a minimum cost for time, labor and materials.

MANY PARTS TO LUBRICATE

Street cars have many parts that need lubrication and, since they are of many types, of various ages and have many different equipments, the following table is merely typical of the parts, the method of lubrication and the type of lubricant used:

Part	Method	Lubricant
Armature bearings................	Boxes and waste.....	Mineral oil
Axle bearings.....................	Boxes and waste.....	Mineral oil
Journal bearings..................	Boxes and waste.....	Mineral oil
Gears and pinions................	Intermittent adhesion	Patent compounds
Compressor bearings..............	Splash..............	Mineral oil
Center and side bearings..........	Intermittent adhesion	Grease
Brake rigging.....................	Intermittent adhesion	Grease
Brake cylinders, control and trolley equipment.....................	Intermittent adhesion	Vaseline
Trolley wheels....................	Intermittent adhesion	Sperm oil

In addition there are several parts such as air valves, equalizer bars, compression plates, door hinges and other mechanisms that require a small amount of lubricant at intervals.

Lubrication practice has not been reduced to a standardized basis even on an individual system, because it is impossible to find any system with uniform rolling stock of the same age and design and operating all cars under the same service conditions. An old car uses more lubricant than a new car. A suburban car uses more lubricant than a city car, because it usually operates at higher speed, is of different design, encounters rougher tracks and more frequently operates in water. These conditions result in a situation that requires intelligent supervision of lubrication on every railway system and makes impossible comparisons of lubrication costs on a 1,000 car-mile basis.

BEARINGS OF MANY TYPES

The most important parts of a car from a lubrication and service standpoint are the armature bearings, the axle bearings and the truck journal bearings. These bearings take the power and the hammer blows necessitated by service conditions, and a hot box on any one means a car out of commission. This results in a decrease in service and a direct cost of from $50 to $70 to remove the car, take out the bearings, put in a new bearing and to place the car back in service.

The method of lubrication for these bearings utilizes the journal box packed with waste which is soaked in oil. The general development of this type of bearing has been to have the waste packed on the side of the journal that is subject to the least bearing load while the oil is fed to the friction surfaces from the oil in the waste and in the reservoir through the action of capillary attraction. A supply of oil is retained in a well in the bottom of the bearing which can be gaged for depth and maintained at a constant level by use of the refilling tube which forms a part of the bearing.

Specific bearings differ very widely, however, not only in materials, arrangements and dimensions, but also in methods for securing adequate lubrication. Even on the same car the bearings and lubrication methods for the motor armature, driving axle and truck axle may differ materially.

On the motor armature bearings, for example, special precautions are necessary to prevent the oil from being thrown into the wrong channels, also care in design must be exercised to prevent commutator flashovers going through the bearing to the frame and causing pitting of the journal. Barriers, insulation and the use of interpole motors are used to relieve these conditions. Then again the bearings differ in material and clearances; the Brooklyn Rapid Transit Company uses solid bronze bearings on all its cars, because of their service requirement and the disadvantages of babbitted bearings from a service delay standpoint; the Public Service Railway of New Jersey uses solid bronze bearings for all axles, but the motor armature bearings have a $\frac{1}{16}$-in. liner of babbitt which is about 93 per cent tin. These changes were necessitated by the fact that track conditions were bad and caused hammer blows and shocks which caused the older type babbitted bearings to break and to depreciate rapidly. The liners in the motor armature bearings are necessitated by the difficulty of getting bearings to maintain an accurate fit to the motor journals. Some of the older type split-frame motor bearings must have their housings rebored every four or five years to maintain a correct alignment. The newer box type motors and pressure fitted bearings give no trouble from lack of alignment.

WASTE AND ITS FUNCTION

The waste used in armature, axle and journal bearings serves as a reservoir for lubricant and as a capillary agent for getting lubricant to the friction surfaces. Waste is made of long-strand wool, short-strand wool and some other material such as fiber. A typical bearing waste is 65 per cent long-strand wool, 35 per cent short-strand wool and 5 per cent fiber. The long strands in the wool waste take up oil from the oil well in the bottom of the bearing and bring it to the friction surfaces by capillary attraction. The long strands, however, permit but little oil to flow out from their circumferences and the short strands of wool are needed to afford "ends" which readily permit oil to flow on to the friction surfaces but have little storage capacity.

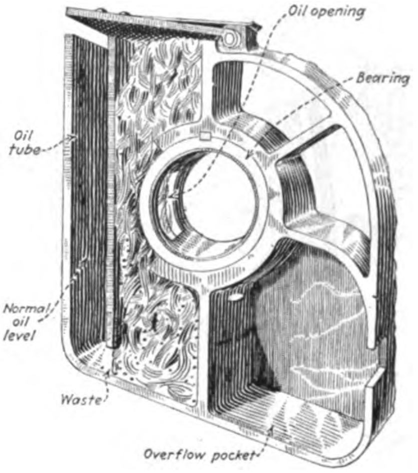


FIG. 6—SECTION OF MODERN AXLE BEARING CAP

When in operation, the jars and blows arising from track conditions have a tendency to compress the waste and cause it to shrink away from the friction surfaces. The fiber or other material in the waste is there to counteract this tendency by giving spring or resiliency to the packing.

When a car is in service the waste supplies a continually decreasing quantity of lubricant to the bearings, because it shrinks and glazes. Glazing results from the combined effect of frictional polishing of the waste and the action of the heated bearing on the oil and waste. Glazing destroys the capillary action of the waste and shortens its life. The better the grade of waste used and the better the quality of the lubricant the less the tendency for glazing to occur.

One grade of waste is generally used for all the bearings and its quality is determined by market prices.

During the war wool cost 85 cents per lb. as against 20 cents per lb. at present and, under the two price conditions, specifications for waste would differ.

Waste has a life of three or four years under ordinary service conditions. To prepare waste for use in bearings, it is picked apart and then soaked with oil for about twenty-four hours at a temperature of about 70 deg. F. The waste is drained for twenty-four to forty-eight hours and is then ready to use in a bearing. At the end of the drainage period a slight pressure of the hand should cause oil to exude and the waste should contain four or five pints of lubricant per pound of dry waste.

New waste is used in all motor armature bearings, but reclaimed waste can be used in other bearings. It is economical to schedule the waste in such a manner that it goes from motor armature bearings to driving axle bearings and then to the truck journal bearings. Between applications, the waste is always washed, picked apart, soaked and drained.

PACKING NOT STANDARDIZED

The present method of using waste as packing for motor, axle and journal bearings has some disadvantages from an operating standpoint, although it is the best method known. It involves the exercise of care and skill on the part of the oiler, yet the economics of the situation and the type of dirty work associated with the use of waste for packing result in the use of unskilled and often foreign or ignorant men as oilers and a tendency to a careless supervision on the part of the foreman and experts.

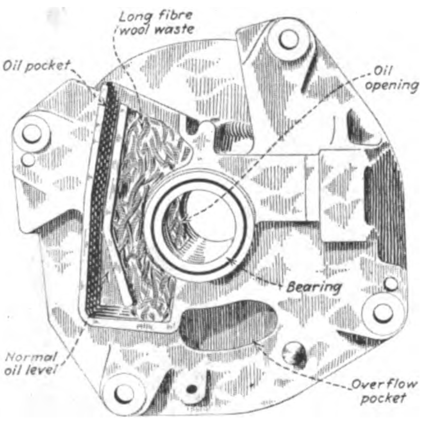


FIG. 7—MODERN SOLID FRAME ARMATURE BEARING

It is true that standard methods for preparing waste and for packing bearings have been developed as much as possible and the oilers have been trained to a rule of thumb standard of proficiency, but every time a bearing is packed there enters a necessity for the exercise of human intelligence and judgment inherent in the method and in its application to the equipment used in service. Bearings differ widely in packing space, end clearance, journal clearance, oil well arrangements and in dimensions and materials. Not all operating conditions or equipments are similar to those of the Capital Traction Company in Washington, which packs its journals, seals the boxes and lets them alone for about a year.

In packing the armature bearings it is the practice of some companies to press the waste firmly into the bottom of the housing, moderately tight opposite the opening in the bearing and with one large long roll of waste placed next the shaft and extending from the top to the bottom of the housing. More waste is then placed in the housing to add to the pressure and to keep the roll in contact with the shaft.

Motor axle bearings are packed solidly from the rear to the front while the truck journal bearings have a roll of waste packed against the dust guard with loose waste under the center of the journal and another roll in the front of the housing.

The proper supervision of the packing of bearings is very important. The degree of tightness or looseness, the arrangement of waste in the housing, the design of the bearing are all elements that require the expert or the foreman to supervise.

OILING AND GREASING

After bearings are packed, the maintenance of lubrication requires that oil be supplied at intervals. Also the compressors must be oiled at intervals, the gears and pinions lubricated and the side and center bearings greased. All these parts must remain in service between inspections and the failure of a lubricant supply will result in damage and a delay in service.

Today, as never before, the lubrication of equipment is essential. Economic pressure has caused the reduction of shop forces to a minimum, has put off the purchase of new equipment and has added to the duty of the old. The shop men, due to crowding, use less care in making and fitting bearings, the tracks give the bearings harder jars and the schedules give them greater loads to carry. An example of this condition is found in the fact that one company now makes armature bearings with 0.01 to 0.012 in. clearances while formerly it used 0.006 to 0.008 in. for clearances—this in spite of better inspection and more accurate gaging. One missed oiling or greasing may result in many direct and indirect costs to the system. It may put a car out of service, cause large repair costs, destroy a schedule and irritate the public.

The oil used in armature bearings, axle bearings and journal bearings is usually of one kind. This oil is changed, however, to conform to summer and winter operating conditions. No definite dates are fixed, but the time is fixed by the weather conditions. Compressor oil is of a better grade than bearing oil, but it also is changed to conform to winter and summer service.

In some ways the seasonal change of lubricant seems unfortunate because during the changeover periods many little troubles arise with equipment and men which have their origin in the cessation of routine lubricating practice. There are, however, so many good economic and lubricating features associated with the practice that the change is warranted.

The direct cost of lubricants is a small item, but the better the quality of the lubricant the greater its cost. However, the better the quality of the lubricant the less the quantity that needs to be used. A system that changes from lubricants of one quality to those of a better quality invariably finds it difficult to get the oilers to use less of the better lubricants.

The advantages to be gained in changing to a better quality of lubricant can only be obtained by carefully training the oilers and by exercising close supervision. Too frequently lubricants are wasted—in some shops the panacea for all equipment ills is a dose of oil and repair gangs dose motors and cars at every opportunity without any reference to the scheduled routine in lubrication.

Oilers try to maintain about 2.5 to 3 in. of oil in the armature axle and journal bearing reservoirs and fill the reservoirs as scheduled by means of the oil tube and a gill measure. It is frequently the practice for the oiler to "pick" the waste also and to see that the bearings are in good condition.

The lubrication of the gears and pinions requires the use of a heavy adhesive lubricant or compound. A supply of this rests in the gear case and touches the lower gear teeth. As the gears revolve the lubricant is carried around due to its adhesive qualities and functions to form a film between the contact surfaces. The chief requirement is that the compound be "sticky" and will not deteriorate in service operation. One company decreased its cost for gear compound from 69 to 49 cents per 1,000 car-miles by adding some resin to the compound and thereby improving its adhesive qualities. Gear compound is wasted by using too much in the gear case or by having loose or leaky gear cases. It is difficult to keep a tight gear case and the compound seems to find every opening.

Cup grease is used at intervals on the side and center bearings, equalizer bars, brake rigging and other slow and infrequently used contact surfaces. No particular skill is required and the only requirement is that such surfaces receive lubrication at proper intervals.

INSPECTION AND LUBRICATION

Lubrication and inspection occur on an 800-1,000-mile basis with most operating companies. At these intervals oil is added to the bearings and to the compressor and gear compound and cup grease are used if needed. Old and special equipment such as older type motors receive lubricant on a half inspection basis.

Other companies state that journal bearings should be lubricated once every thirty days if the cars make under 150 miles per day or, on a mileage basis, about every 4,500 miles. If the service is high speed, the cars making 300 to 500 miles per day, the bearings are lubricated weekly or about every 2,500 miles.

Another company cares for all lubrication by weekly inspection of all cars. The carhouse oilers add the quantities of lubricants needed. This company repacks bearings on interurban cars each three months, on semi-interurban cars each six months and on city cars each twelve months. All the work is done by daylight and the rules for repacking are subject to exceptions to suit special conditions and equipment.

Another company repacks on a car-mile basis—8,000 car-miles for motor and axle journals, 5,000 car-miles for pony axle journals. Still other systems repack at the annual overhauls unless any inspection period indicates a necessity for repacking.

One company uses about ¼ lb. of gear compound about every four weeks on each car and greases the side and center bearings, etc., with cup grease every five weeks. To save money a mixture of curve oil and kerosene is used temporarily to grease the side and center bearings when a hard rain brings about the need of lubrication at other than five-week periods.

ORGANIZATION

Organizations differ for handling lubrication. One typical method is to have an oiler to care for motor and compressor oiling and packing, another for journals and gears and a truckman to care for center and side bearings, etc.

These men are usually units in the inspection or repair gangs who have been trained by the lubricating engineer to do their jobs correctly. The foreman in each carhouse has general supervision of all work, including supervision. It does not pay to keep definite lubrication data in detail for each car in the offices, but some carhouse foremen have found it advantageous to keep records in the carhouse. These records immediately enable them to find what motor or compressor uses too much oil and the resultant investigation may ward off serious trouble with the equipment.

In general each carhouse foreman requisitions one month's supply of lubricants on a form which shows the amount of each type on hand at the end of the month, the amount used and the amount needed for the next month. This requisition, together with mileage and cost records, enables the office force or the oil company to compile unit costs of the form indicated below.

Carhouse Location 54th Street	Motor Oil	Compressor Oil	Gear Compound	Cup Grease	Total for June, 1921
Used	90 gal.	19 gal.	61 lb.	13 lb.	....
Cost	$29 70	$6 24	$3 36	$1 17	$40 47
Cost per 1,000 car-miles	$0 091	$0.019	$0.01	$0.003	$0.125
Mileage	323,340				

These unit costs serve to check each month's operation and can be studied profitably in connection with the monthly report of motor and car breakdowns. If any breakdown may have been caused by faulty lubrication a careful study can be made to determine the relation of lubrication to the trouble.

For example in May, 1921, out of 164 motor troubles on the Third Avenue Railway in New York seven breakdowns were due to worn bearings, one to a hot bearing and the large majority to grounded armatures or fields. The cause of the larger number of troubles might have been either lubrication or heat. Worn bearings might have caused armatures to drop or heat due to overloads and thus resulted in grounds. Hammer blows due to track corrugations or worn special trackwork might also have been contributory causes of trouble. Only a detailed study of the specific trouble could fix the cause, but lubrication is always a decided item in such a study. In the same month only two compressor troubles out of thirty-six could be attributed to lubrication. These two troubles were caused by leakage of oil through the housing.

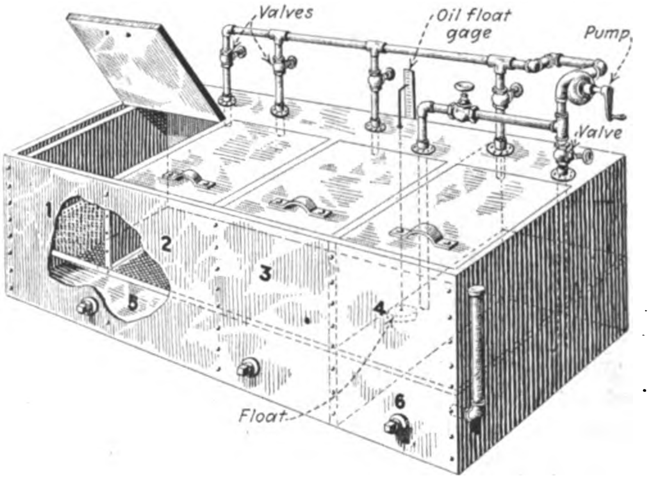


FIG. 8—WASTE SOAKING TANK

Dry waste is placed in sections 1, 2 and 3 and clean oil is pumped from section 5 to the waste sections. After soaking the oil is drained back to section 5. Sections 4 and 6 are used to re-soak old waste with reclaimed oil. Floats on tanks indicate oil levels and wire screens aid drainage.

CONCLUSION

Lubrication practice can never become standardized in the railway industry due to variations in equipment and service conditions and each system has its own problem of lubrication to be solved. An intelligent study of the lubrication problem on any system will result in decreased direct repair and lubricant costs and will secure better equipment and track maintenance and enable better service to be given. No radical changes in lubrication methods or lubricants may be expected to eliminate the necessity for managerial and technical attention to lubrication.

The chief improvements in lubrication methods should be the development of a system of lubrication that does not rely so much on the skill and care of the oiler and packer for its success and changes in methods of maintaining an oil film on friction parts by which such a film is kept uniform in thickness for longer periods of time.

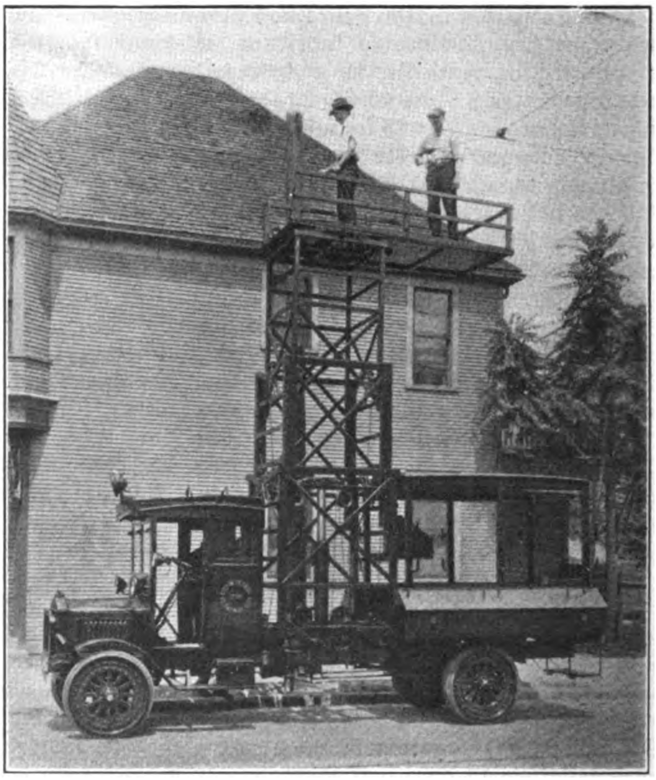
New Tower Truck for Detroit

Three-Section Tower Located Near the Center of the Body Can Be Raised or Lowered Either by Hydraulic Pressure or by Hand

ACCOMPANYING illustrations show a trolley tower truck now being used by the Municipal Street Railways Department of the city of Detroit. It was built by the Standard Motor Truck Company and is the first of this type they have constructed. A three-section Trenton tower is located near the center of the body. The tower is operated by a Wood hydraulic hoist supported on two cross members in the center of the tower. The hydraulic hoist is hooked up with a hand hoist arrangement, so that in case of emergency or when the motor is not running the tower can be raised readily by one man turning a crank. The tower lowers by gravity and the hand arrangement is fitted with a brake to control the downward speed. The operating lever for raising the tower by hydraulic pressure is located within reach of the driver's seat. The tower can be elevated or lowered in less than a minute. The total height from the ground to the tower platform when elevated is 19 ft. 6 in.; when lowered it is 10 ft. 4 in.

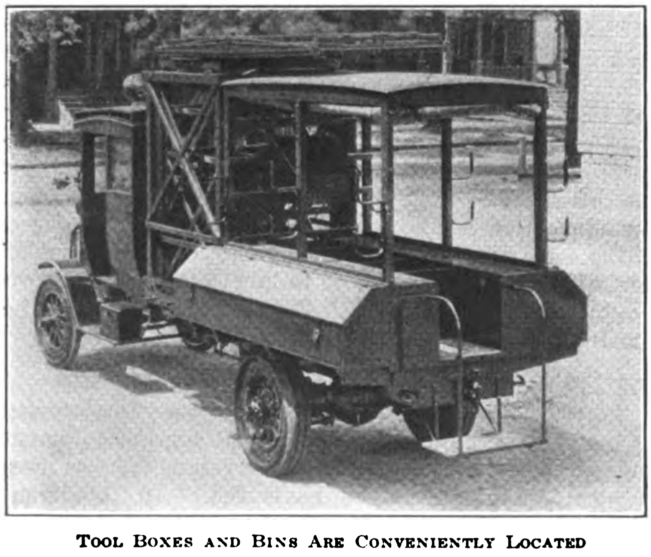
The front portion of the truck is taken up with an inclosed cab. This has sliding doors and is fitted with an auxiliary roof so as to allow the workman to walk on it. A ladder shaped to the contour of the cab side is attached to provide a means of getting on to the tower platform.

The rear portion of the body is taken up by tool boxes and bins. There are four longitudinal tool boxes, two on the inside of the body running the full length and two outside ones. The inside tool boxes can be used as seats for workmen. The passageway between them has provisions for removable partitions so as to make four extra large compartments. The covers of the outside tool boxes are constructed on an angle so as to keep the contents dry in wet weather. A step and a hand rail at the rear end of the body make it easy for workmen to get tools and material from the inside tool boxes and compartments.



LINE TRUCK WITH TOWER RAISED

There are six double 8-in. hooks on each side of the car attached to the body posts. These are for use in hanging on coils of rope and wire. Curtains are provided at both sides and ends, so that the body can be completely inclosed in inclement weather. When not in use the curtains can be rolled up and attached to the top of the body. The chassis is equipped with a pintle hook and both front and rear tow hooks. Suitable electric lighting equipment is provided.



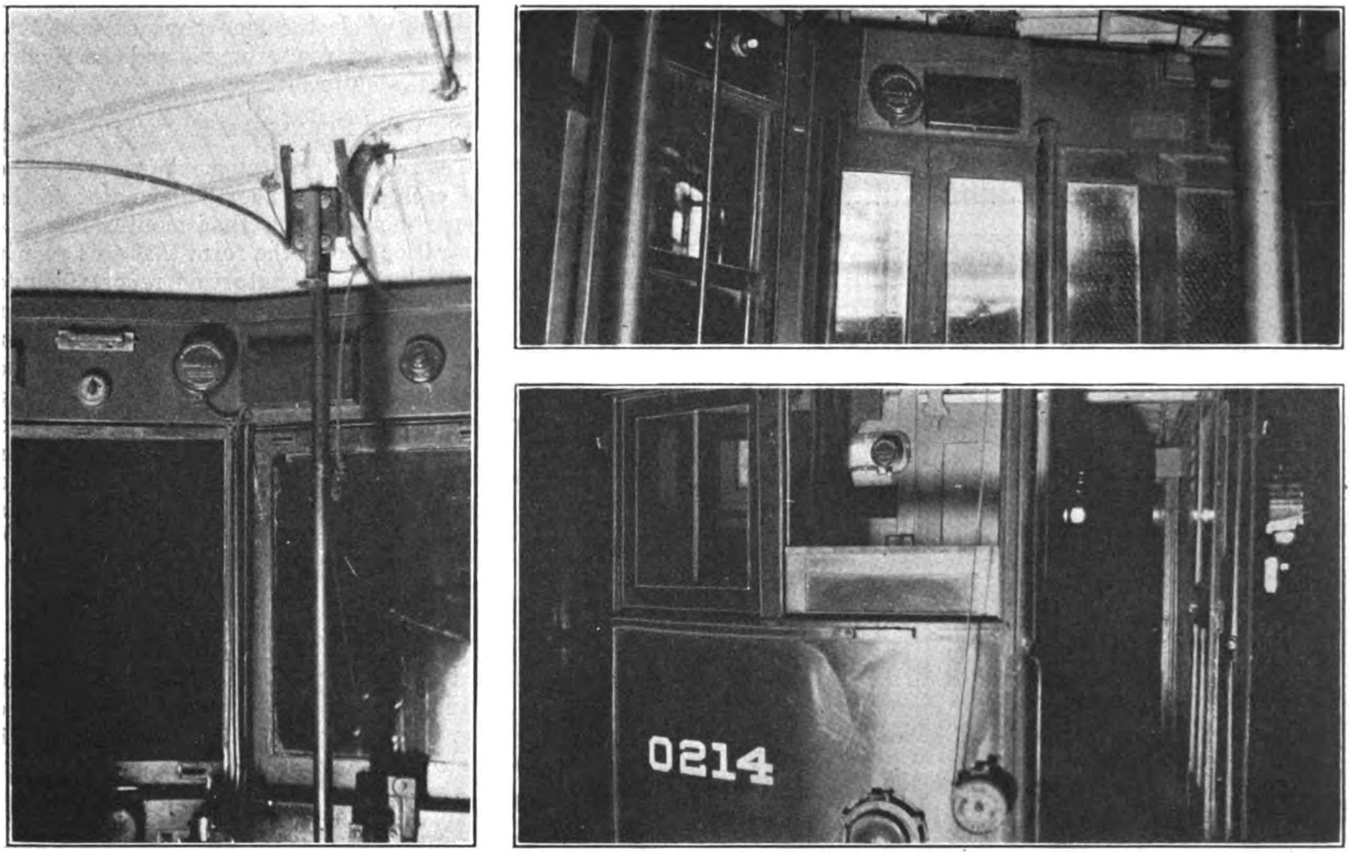
TOOL BOXES AND BINS ARE CONVENIENTLY LOCATED

TOWER TRUCK WITH CURTAINS LOWERED

Follow-Up System for Power Saving

A Description of Methods for Obtaining and Compiling Records, Together with the Various Cards and Forms Which Are Used on the Electric Railway Systems in Springfield and Worcester, Mass.

BY C. VERNER WOOD, JR.
Supervisor of Power Saving
Worcester Consolidated Street Railway, Worcester, Mass.



INSTALLATION OF RECORDERS IN VARIOUS TYPES OF CARS
At left, recorder in vestibule of safety car. At top, recorder in vestibule of standard city type car. At bottom, recorder in vestibule of electric freight car.

THE electric railway systems in Springfield and Worcester, Mass., have a total of 670 Arthur power-saving recorders in service at present. These have been in operation since July, 1919, in Springfield and since October, 1920, in Worcester. All freight cars of both companies have recently been equipped and records for these have been compiled since July. The type of recorder used registers the minutes of actual time that power is on.

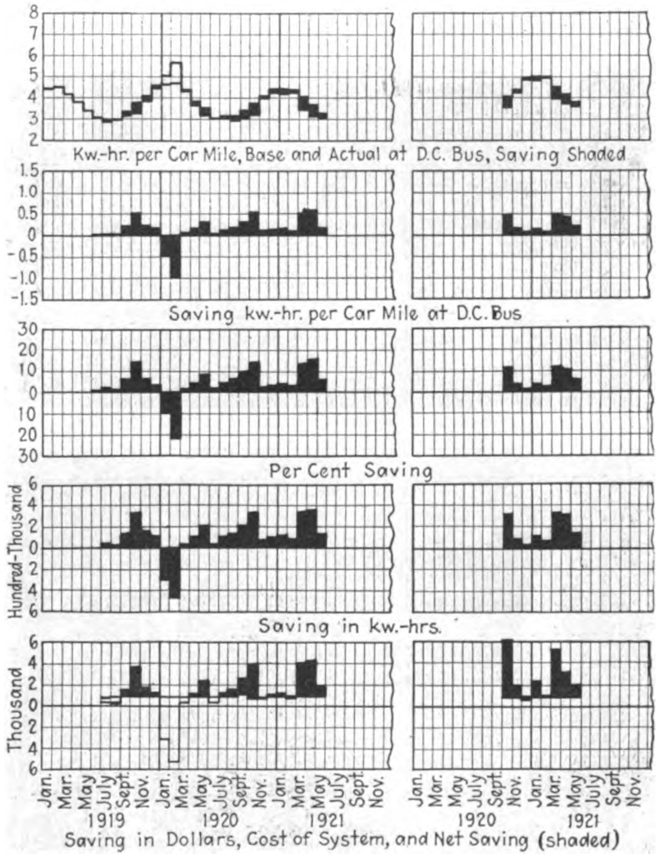
Accompanying illustrations show various record cards and forms used for collecting information and following up the operation. The record card used by the motormen is made of a medium-grade, gloss-finished cardboard. Its size is 5 x 8 in., which is the same as the register cards used on the system. At the top of the record card is a line for the car number, and below this are spaces for entering the motorman's name, badge number, date, run number and route. Each motorman as he takes out his car enters the reading of the recorder as he finds it, and opposite this he puts down the time.

Corresponding information is entered again on the card when the motorman leaves the car. With this system each man's record is checked with the next, and a great deal of care is given by each man to make certain that the "other fellow" doesn't make mistakes. Whenever any difference exists between the two men's readings a careful check is made to ascertain the reason. Printed on the back of this record card are a few suggestions for helping the motorman to improve his power-saving record. Sufficient space is also provided for reporting anything which may have caused the use of power unnecessarily.

CARDS ARE CHANGED EACH NIGHT

Each night the record cards are taken from the cars and new ones are substituted. In Worcester this work is done by the "register checkers" in connection with their regular work. In Springfield the work is done by spare crews using part of their time. The type of recorders used on these systems require winding and this is done twice each week. The same man does the winding that replaces the filled-out record cards with new ones.

All record cards removed are sent to the office of the power-saving department at Worcester, where they are checked and cut up. Each man's record is filed away until the end of a period covering two weeks service, then each man's card is figured and a statement is made up showing the various records. A copy of this statement is presented to each man. Six weeks time is designated as a "prize period," and at the end of this time each man's record for the previous six weeks is figured and a prize statement is drawn up. Men are compared with each other only when they operate on the same lines and under the same general conditions. The prizes given range from $2.50 to $1, $2.50 being for the man with the best average record for his individual line, $1.50 for the next best record, and $1 for all those whose records have been as good or better than the average of the line.



Power Saving Graphs for the Worcester Consolidated Street Railway and for the Springfield Street Railway

Work Done by Power-Saving Inspectors

A power-saving inspector is employed by each company whose duties consist of instructing the motormen as to how to operate properly and also making small repairs and adjustments as they are necessary to the recorder. The results obtained depend to a large extent on the ability of this man, as he forms the point of contact between the company and the men, and his work should be to encourage the good motormen to continue and to assist the others to try harder. This inspector also looks over the record cards each day to learn what cars are reported as poor coasters and to ascertain if all the recorders are working properly. Another form shown in the accompanying illustration is the report blank used by the power-saving inspector for recording observations as he rides on the various cars. On this form are entered the motorman ridden with, operating points noted and the number of seconds required by the motorman to feed his controller to the full parallel position. These daily reports are summarized every two weeks; that is, the names of the motormen who seem to disregard some of the essential requirements for efficient operation are copied off and sent to the division superintendent, who calls these men in to caution and to ask them to do better. It is found that a greater measure of success is obtained by constantly keeping "power saving" before the men and teaching them that the new manner of operation is safer and easier than the old. It is not expected that all men will be as efficient as some, but it is expected that each man will do his best. On the whole the men have entered into power saving with a great deal of spirit and the rivalry on most of the lines is quite intense.

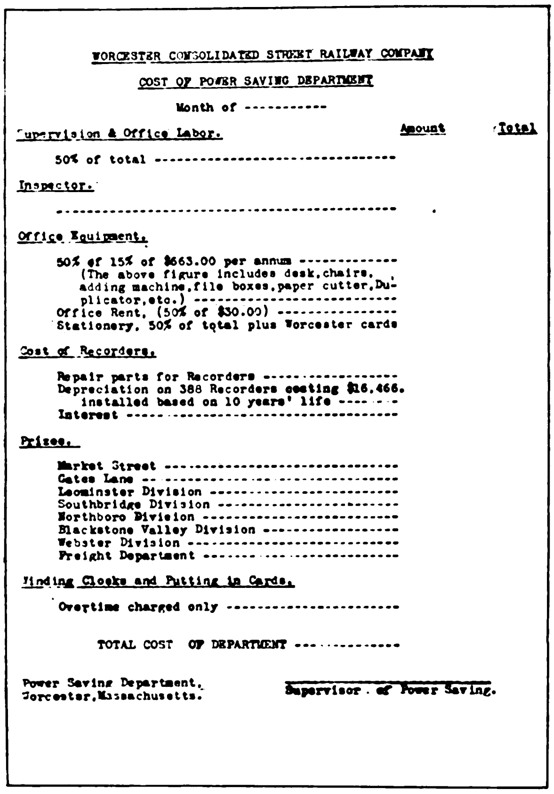
Power-Saving Cost Furnished Each Month

At the end of each month a statement is sent to the various offices of each company showing the cost of the power-saving department during that month. An accompanying illustration shows the form that this report takes. The costs which enter into this report include office labor, salary of power-saving inspectors, cost for office equipment, stationery used, including record cards, repair parts used for the recorders, depreciation on the recorders, interest on the investment, cost of winding the recorders and placing record cards in the cars, and the amount of prize money given out. Our cost for office labor is very reasonable as the total force required to take care of the clerical labor for both companies consists of but two clerks and a stenographer. Blueprints of power-saving graphs of the form shown in two of the accompanying illustrations are sent out with this report. These show the kilowatt-hours per car-mile, the saving in kilowatt-hours per car-mile, the per cent of saving in kilowatt-hours, the saving in dollars, the cost of the system and the net saving. These graphs are arranged to cover a period of five years by months, each month's information being added as it is worked up. This method of keeping the record enables a ready comparison to be made for each one of the important facts entering into the problem.

In figuring the saving made it is not deemed accurate to compare directly the kilowatt-hours per car-mile used from month to month with the corresponding months of the year previous to the installation of the power-saving recorders because of the fact that certain improvements have been instituted which in themselves have produced a saving in power. Also there may be a difference in the number of passengers carried and the schedule speed, which would make a difference in the amount of power consumed. Therefore, a so-called "bogey kilowatt-hour per car-mile" is put into use based on the performance dating back to June, 1918. An adjustment is made on the bogey year with allowance for conditions of the current month as regards schedule speed and average passengers carried per car-mile. Also the estimated saving of power made by the use of lightweight safety cars.

Low Maintenance for Recorders

The cost of maintaining the recorders thus far has been exceedingly low. It is planned to give each recorder of both properties a thorough overhauling once each year. All recorders on the Springfield Street Railway were gone over last fall, and will be due for another examination and cleaning this fall. The Worcester recorders will have their first overhauling this fall. It has not been found necessary to employ additional help for doing this work as the power-saving inspector is able to do it along with his other work. The only part of the recorder requiring much attention while cleaning is the clock movement. To carry out the necessary work ten movements are removed from the open cars which are laid up during the winter months. These recorders are soaked in gasoline. If they are extremely dirty they are brushed with a small brush dipped in gasoline, and then they are allowed to dry thoroughly and a drop of clock oil is put on each bearing surface. After this overhauling these ten movements are substituted for a like number of movements taken from recorders in service, and these in turn are cleaned and oiled. This procedure is continued until all recorders have been properly overhauled. Sometimes the change of movement is made on cars while they are in service, as but ten minutes is necessary to remove a movement and substitute another. The soaking of the movement in gasoline requires but half an hour, unless it is extremely dirty. Any clock movement found out of adjustment or with broken parts is sent to a jeweler for repair. The average cost of such repairs to movements thus far has been about $1. All other parts of recorders have given very little trouble and very few repairs have been necessary. A small stock of supplies is kept on hand and upon failure of any part of the recorder it is replaced by the power-saving inspector.



WORCESTER CONSOLIDATED STREET RAILWAY COMPANY

COST OF POWER SAVING DEPARTMENT

Month of -----------

Supervision & Office Labor. Amount Total

50% of total ------------------------------------

Inspector.

Office Equipment.

50% of 15% of $663.00 per annum ------------
(The above figure includes desk, chairs, adding machine, file boxes, paper cutter, Duplicator, etc.) ---------------------------
Office Rent, (50% of $30.00) ----------------
Stationery, 50% of total plus Worcester cards

Cost of Recorders.

Repair parts for Recorders -------------------
Depreciation on 388 Recorders costing $16,466. installed based on 10 years' life --------
Interest ----------------------------------

Prizes.

Market Street ----------------------------
Gates Lane ----------------------------
Leominster Division ----------------------
Southbridge Division ----------------------
Northboro Division ----------------------
Blackstone Valley Division ----------------
Webster Division ----------------------
Freight Department ----------------------

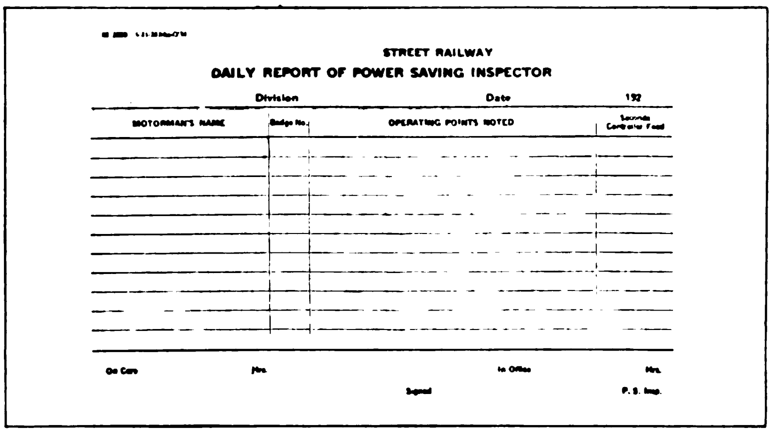
Winding Clocks and Putting in Cards.

Overtime charged only ----------------------

TOTAL COST OF DEPARTMENT ---------------

Power Saving Department,
Worcester, Massachusetts.

Supervisor of Power Saving.



STREET RAILWAY

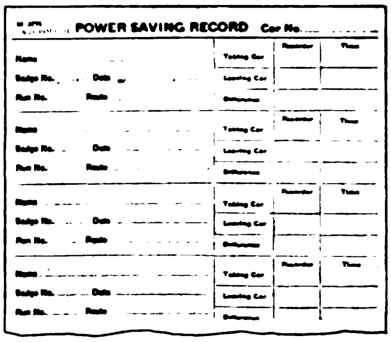
DAILY REPORT OF POWER SAVING INSPECTOR

Division Date 192

MOTORMAN'S NAME	Badge No.	OPERATING POINTS NOTED	Seconds Controller Feed

On Cars Hrs. In Office Hrs.

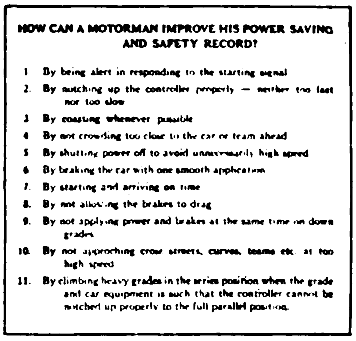
Signed P. S. Insp.



POWER SAVING RECORD Car No.

Name
Badge No. Date
Run No. Route

Recorder Time
Taking Car
Leaving Car
Difference



HOW CAN A MOTORMAN IMPROVE HIS POWER SAVING AND SAFETY RECORD?

1. By being alert in responding to the starting signal
2. By notching up the controller properly — neither too fast nor too slow
3. By coasting whenever possible
4. By not crowding too close to the car or team ahead
5. By shutting power off to avoid unnecessarily high speed
6. By braking the car with one smooth application
7. By starting and arriving on time
8. By not allowing the brakes to drag
9. By not applying power and brakes at the same time on down grades
10. By not approaching cross streets, curves, teams etc. at too high speed
11. By climbing heavy grades in the series position when the grade and car equipment is such that the controller cannot be notched up properly to the full parallel position.

AT LEFT, FORM OF MONTHLY REPORT OF COST FOR POWER SAVING DEPARTMENT. TOP, RIGHT, FORM FOR DAILY REPORT OF POWER SAVING INSPECTOR. BOTTOM, FRONT AND REVERSE SIDES OF POWER SAVING RECORD CARD.

Since the date of installation of the recorders in Springfield up to May 31, 1921, all costs resulting from their operation, including interest and depreciation, amount to $17,500. The gross saving, which is considered to be figured very conservatively, amounts to $34,700. This leaves a net saving of $17,200. In Worcester from October, 1920, to May 31, 1921, the total costs amount to $7,100, while the gross saving is estimated at $23,700. This leaves a net saving of about $16,600. One of the reasons for the Worcester system showing a greater amount of net for a shorter period of time is that the cost of power in Worcester per kilowatt-hour is considerably more. It has been found that, aside from the actual saving made in power by the use of the recorders, many savings which cannot readily be estimated result. These include the saving in electrical equipment, brake shoes, etc., and also the saving resulting from fewer accidents, as it has been found that the use of the recorders encourages carefulness and thus in many instances avoids accidents.

New Skip-Stop Signs for Chicago

SKIP-STOP locations are being painted on 16,000 poles at 8,000 stops in Chicago, the work requiring about five weeks time. Heretofore stop signs hung on the cross-span wires have been used, but there has been some complaint that they could not be seen, particularly at night. An effort was made to speed up the painting of the poles for the new stop signs in order to serve the large number of visitors present in the city for the Pegeant of Progress. The new sign is painted with two coats of white paint on the black tubular steel poles with the inscription "Cars Stop Here" in black letters. It is believed that the new stop signs will be much more readily visible at night. The cross-span signs will be taken down. In addition to the fact that they could not be seen well, they have also proved somewhat unsatisfactory since the swinging in the wind finally wears out the wire supports and the signs drop to the ground. While no injuries have resulted from this, it represents a danger which was a factor in the decision for their removal.

On three streets the company has center pole construction and in order to minimize the danger of automobiles hitting these poles they are all being painted with orange and black stripes.

How the Equipment Man Can Aid in Reducing Costs

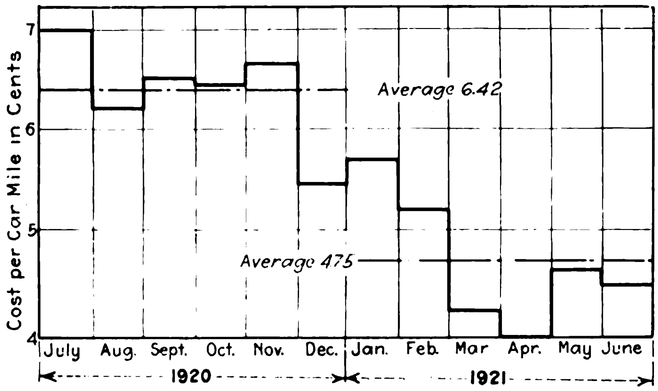
Competition Demands Lowest Possible Car Maintenance Costs, Which May Be Accomplished Through a Close Supervision of Every Detail—Suggestions Given on How Costs May Be Reduced and Interest of Shopmen Increased

BY PIERRE V. C. SEE
Superintendent of Equipment Northern Ohio Traction & Light Company, Akron, Ohio

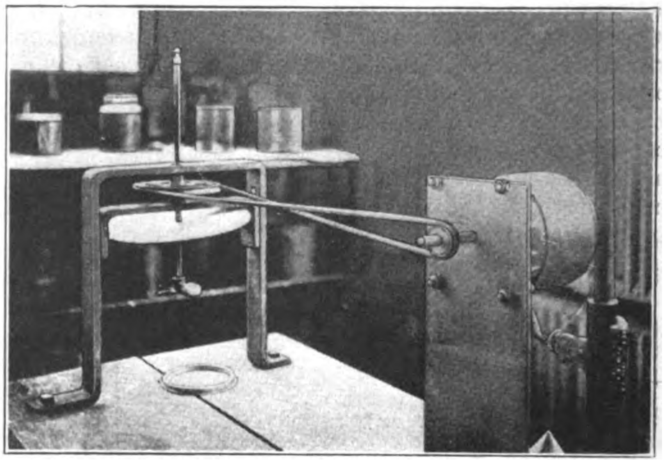
WHEN jitney and motor bus first appeared railway men generally thought they would not be able to compete with the street car and interurban. Maintenance costs, operating expenses and depreciation would soon put them out of commission. It is undoubtedly true that the electric car can be operated more cheaply than the automobile, but we find in many cities that the jitney and bus are still flourishing.

The problem brought before the electric railway by the continued reality of these competitors is to operate at a low enough cost to enable a rate of fare which will discourage if not prohibit such competition. Although the car equipment cost is a comparatively small part of the total expenses of a road, under the circumstances it is essential that car maintenance be reduced as low as possible without incurring deferred maintenance that will ultimately mean greater outlay This is how the master mechanic can best help in merchandising car rides, assuming, of course, that he is keeping the cars in such order as to appear clean and avoid breakdown.

To obtain the minimum shop costs consistent with safe, clean and reliable service requires close following of every detail that goes into the maintenance of cars and shops. The results of a campaign in our shops to reduce the costs of car maintenance are shown in the accompanying curve, where it is seen that the average cost per car-mile was reduced from $0.642 to $0.475. During this period there was a 25 per cent reduction in cost of labor, but practically none in the cost of material, as the old stock bought at the high price period was still being used. This reduction in car maintenance cost was accomplished in spite of a considerable reduction in the mileage. In making this saving the number of men and the length of the working day were cut to the lowest possible point and all overtime was stopped. The reduction in men automatically made a corresponding reduction in the material used. The material reduction was also further followed up and only absolute necessities were drawn from the stores.



CURVE SHOWING REDUCTION IN EQUIPMENT MAINTENANCE COST DUE TO INCREASED EFFICIENCY IN AKRON SHOPS OF N. O. T. & L. Co.



PAINT-MIXING MACHINE, MOTOR DRIVEN, WHICH IS A GREAT LABOR-SAVING DEVICE

The largest single item of expense is labor. A good means of watching this item of cost is a frequent careful analysis of the shop forces so as to determine exactly the necessity for each man employed. This analysis should be compared with previous similar analyses from time to time, to determine what change in the force in each department is being made. A sample form of such a man-hour check-up sheet is shown herewith. This is made on thin drawing paper so that blueprints can be made and given to the foremen for their guidance. The last column shows each supervisor the number of men he is supposed to carry. A check against this chart can be made daily or weekly by the clerical force.

CHANCE FOR WASTE IN CAR CLEANING

The cleaning of cars is an item that may run into considerable money and, to a great extent, the cleanliness of the cars is proportionate to the money expended. On the other hand, there is probably no other class of work that has such a tendency to deteriorate and become humdrum. The best of car cleaning systems if not followed up by the supervising force soon deteriorates and the foreman, or "straw boss," feels that his work is not of importance and is only a daily routine. If he gets that attitude it quickly permeates the entire car-cleaning gang.

In order to keep these forces up to the highest degree of efficiency the car cleaning must receive frequent inspection and criticism. The testing of new materials, even though they may be no better than what is being used, has a tendency to arouse interest on the part of the men. But whatever cleaning material is used, care must be taken that the least possible damage to the varnish and enamel is involved.

Piece work or bonus systems, where they can be used, result in a very material speeding up of the shop work, but unless the inspection of the work is very rigid the man will increase his output at the expense of the quality of his work, until it becomes necessary to limit the amount of work he is permitted to do in a day. This in turn practically nullifies the advantages of the piecework.

Lubrication and brake shoes are two items of expense that most roads are following closely in monthly statements. The reduction of the oiling to as low a point as possible is a good plan not only from the standpoint of economy but in preserving general cleanliness of the shops and roadway. In attempting to lower the oil consumption, however, it should always be borne in mind that a very few hot bearings due to lack of oil will more than offset any saving made in oil costs. So the greatest care must be taken to determine how far economizing in this direction should be carried.

The reduction of the brake-shoe cost must be followed up from several angles. The truck maintenance must be kept up so as to prevent shoes wearing crooked and running off the wheels. The inspection force may also make a big saving by the proper adjustment of brakes and by reversing shoes that are wearing heavily at one end. The changing of shoes from motor to trailer wheels may often help, while a frequent inspection of the scrap brake shoe pile and a return to the inspection shop of shoes not worn out will also have a good effect on the cost. The selection of the proper material for the brake shoes to give the greatest coefficient of friction and longest life without cutting the wheels is also necessary.

GOOD AND BAD PAINT ECONOMY

Painting is sometimes considered as being in the luxury class and in the days of gold stripes on the trucks and fancy figures on the headlinings it probably could be properly so classed. But with the modern, thin, sheet-metal sides and light pressed posts the coating of this metal with paint is an absolute necessity. It is far cheaper to maintain a film of paint than to allow the metal to rust, making it necessary to scrape, sand blast and at times replace the pitted metal when the delayed painting is finally undertaken.

The question of the relative economy of flat colors and varnish, color varnish or the straight enamel system is still open to considerable discussion. The use of the varnish makes a more flexible system. If the varnished car can be brought to the shop before the varnish has perished, it can be touched up and revarnished at a very reasonable cost. The amount of striping and lettering that is done on a car is a matter of personal taste, but it should be borne in mind that the cost of this work is high and if the money thus put out were spent in covering more cars the average appearance of the equipment would probably be better.

If ready-mixed paints are allowed to stand in the cans for any length of time the pigment usually settles out and requires considerable labor to get it properly stirred up. An electric driven propeller, shown in the accompanying picture, has been found to be a great labor saver as it will stir up the hardest paint or putty in a comparatively short time. This machine can easily be made in any shop from materials on hand.

The attached curves show the number of armatures wound and repaired during the last two years. The great reduction in the number of armatures rewound was obtained by introducing a systematic oiling, which reduced the number of hot armature bearings, and by a closer checking of the motor clearance, which practically did away with bands being torn off the armatures, necessitating their rewinding. Putting into service new cars with modern motors and a lower gear ratio, the mild winter, the closing of ventilated motors during the snowy winter weather, improvement in methods of winding, insulating and baking of armatures so as to do the work in the most modern way, and a thorough cleaning up of the armature room, all contributed to this better armature record.

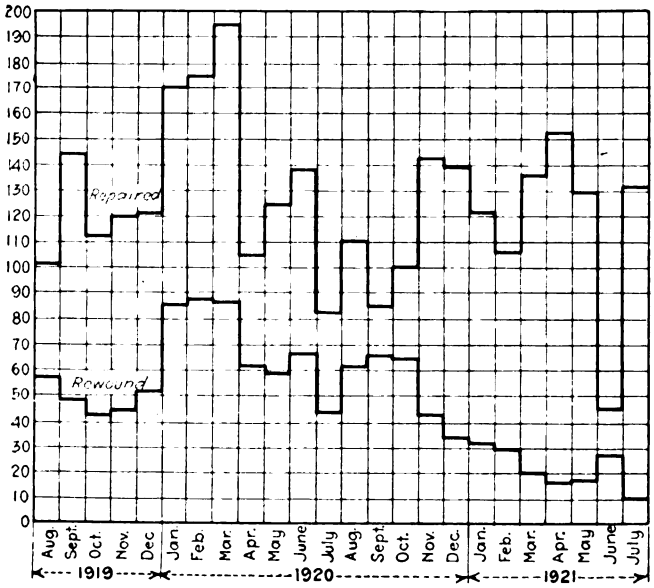
MAN-HOUR COMPARISON

Day Cuyahoga Falls	July, 1920 Number of Men	July, 1920 Hours	August, 1920 Number of Men	August, 1920 Hours	November, 1920 Number of Men	November, 1920 Hours	January, 1921 Number of Men	January, 1921 Hours	March, 1921 Number of Men	March, 1921 Hours
General foreman	1	11	1	11	1	10	1	10	1	10
Carpenters	3	30	3	30	3	27	3	27	3	27
Electrician	4	40	4	40	4	36	4	36	4	36
Truck department inspector	8	80	6	60	6	54	5	45	5	45
Machinist	1	10	1	10	1	9	1	9	1	9
Armature pit	2	20	1	10	1	9	..	...	..	...
Air department	3	30	3	30	3	27	2	18	2	18
Sprinkler inspector	1	10	1	10	1	9	1	9	1	9
Blacksmith	1	10	1	10	1	9	1	9	1	9
Boiler fireman	...	...	..	...	1	12	1	12	1	12
Stove repair	2	20	2	20	2	18	..	...	..	...
Car firemen	...	...	..	...	1	11	1	11	1	11
Headlight-trolley	1	10	1	10	1	9	1	9	1	9
Barn sweeper and yard	1	10	1	10	1	9	1	9	1	9
Sand and coal	1	10	..	...	..	...	1	9	1	9
Car cleaners	8	40	5	40	7	63	5	45	5	45
Cleveland inspectors	...	...	..	...	1	11	1	11	1	11
Cleveland car cleaners	...	...	..	...	2	18	2	18	2	18
Water boy	1	12	1	12	..	...	..	...	..	...
Club room janitor	1	12	1	12	..	...	..	...	..	...
Motor inspector	...	...	..	...	..	...	1	9	1	...
Total	39	355	32	315	37	341	32	296	32	296

Night Cuyahoga Falls	July, 1920 Number of Men	July, 1920 Hours	August, 1920 Number of Men	August, 1920 Hours	November, 1920 Number of Men	November, 1920 Hours	January, 1921 Number of Men	January, 1921 Hours	March, 1921 Number of Men	March, 1921 Hours
Foreman	1	12	1	12	1	11	1	11	1	11
Carpenter	1	12	1	12	1	11	1	11	1	11
Motor inspector	1	12	1	12	1	11	1	11	1	11
Truck and brake inspector	3	36	3	36	3	33	2	33	2	32
Car oilers	2	24	2	24	2	22	2	22	2	22
Sand and coal	1	12	1	12	1	11	1	11	1	11
Car fireman	...	...	..	...	2	22	2	22	1	11
Boiler fireman	...	...	..	...	1	12	1	12	1	12
Headlight repairman	1	12	1	12	1	11	1	11	1	11
Trolley repairman	1	12	1	12	1	11	1	11	1	11
Car cleaners	4	48	4	48	4	44	4	44	4	44
Watchman	1	12	1	12	1	12	1	12	1	12
Total	16	192	16	192	19	211	19	211	17	189
Grand total	55	547	48	507	56	552	51	507	49	485

The value of the acetylene cutting torch and the electric arc welder in shop work can hardly be overestimated. A portable acetylene outfit will make a large saving by using it to cut off loose truck bolts and rivets, while the carbide generator and piping is a great help to the blacksmith and machine shops for cutting out special shapes such as brake levers and hangers.

The use of an electric welder, or "putting-on tool," as it has been aptly called, results in economies in innumerable ways. The welding of broken truck frames, armature cases, gear cases and the building up of brake levers, motor housings, armature shafts and truck parts all produce economies that may easily be figured out in dollars and cents by keeping account of the labor and material and comparing them with the cost of new parts. A consulting engineer who makes a business of inspecting electric roads said that he always judged the efficiency of the shop by the condition of the scrap pile.



IMPROVEMENT IN AMOUNT OF ARMATURE WORK DUE TO BETTER OILING OF BEARINGS AND BETTER ELECTRICAL REPAIR METHODS, NEW MOTORS, ETC.

Standardization has been the millennial dream of the master mechanic, but only a very few roads are fortunate enough to approach this goal. An example of the result of non-standardization is found in the item of car windows. Some 200 different sizes of windows are known to exist on a single road. This requires that twenty or thirty different sizes of glass be carried in stock. If these window sizes were in even inches, so that the glass could be taken directly from the boxes without cutting, a great saving in labor and broken glass could be effected and also a much smaller amount of money need be invested in stores. This same saving would result to a greater or less extent from standardizing any car part, but where cars have been purchased at different times and in a great variety, the cost of standardizing this equipment runs into a discouraging sum of money. A careful analysis should be made, however, to see what can be done toward standardizing cars when they are rebuilt, in case of smashed ends or upon general overhauling.

It may not appear that shop and yard cleanliness has any particular bearing on the economy of maintenance, but a dirty shop means that there is considerable time lost by workmen in stepping over and around material and in looking for tools and car parts. Whitewashed walls and ceilings will often double the amount of light in a shop and correspondingly improve the efficiency of the shop work.

Unemployment Conference Makes General Recommendation

WITHOUT attempting the impossible task of assessing the relative weight of different forces, the Conference on Unemployment now meeting at Washington under government auspices has made the following summary of the more important matters that require constructive and immediate settlement if recovery in business and permanent employment are to be speedily brought about:

1. Readjustment of railway rates to a fairer basis of the relative value of commodities, with specal consideration of the rates upon primary commodities, at the same time safeguarding the financial stability of the railways.
2. Speedy completion of the tax bill with the contemplated reduction of taxes, in order that business now held back pending definite determination may proceed.
3. Definite settlement of tariff legislation in order that business may determine its future conduct and policies.
4. Settlement of the financial relationships between the government and the railways, having in mind the immediate necessity for increased maintenance and betterments, making effective increased railway employment and stimulation of general employment, in order that the railways may be prepared for enlarged business as it comes.
5. Limitation of world armament and consequent increase of tranquility and further decrease of the tax burden not only of the United States but of other countries.
6. Steps looking to the minimizing of fluctuations in exchange, because recovery from the great slump in exports (due to the economic situation in Europe) cannot make substantial progress so long as extravagant daily fluctuations continue in foreign exchange, for no merchant can determine the delivery cost of any international shipment.
7. Definite programs of action that will lead to elimination of waste and more regular employment in seasonal and intermittent industries, notably in the coal industry, in order that the drain upon capital may be lessened and the annual income of workers may be increased.
8. In the field of all the different industries and occupations the rapidity of recovery will depend greatly upon the speed of proportionate adjustment of the inequalities in deflation.

Appended to the summary is a large table of approximate index numbers based on 100 for the year 1913. The report says about these that "If the buying power of the different elements of the community is to be restored, then these elements must reach nearly a relative plane." Out of the large number of index numbers given, the following are quoted as of immediate interest to railways:

Cost of living:	
Department of Labor (May survey)	180
National Industrial Conference Board	165
Average price to producer, farm crops	109
Average price to producer, live stock	113
Average wholesale price, foods	152
Average retail price, foods	155
Construction costs: Cement buildings (Aberthaw Const. Co.)	161
Coal:	
Price, bituminous, Pittsburgh	186
Price, anthracite, New York tidewater	198
Union wage scales about	173
Non-union scale, about	136
Freight rates	187-209
Metal trades, union wage scale: Simple average, 19 occupations	218
Metals:	
Prices—	
Pig iron, foundry No. 2 Northern (Pittsburgh)	137
Pig iron, Bessemer	128
Steel billets, Bessemer (Pittsburgh)	115
Copper, ingots electrolytic, early delivery, New York	75
Lead, pig, desilvered, for early delivery, New York	100
Zinc, pig (spelter), Western, early delivery, New York	80
Day labor, scale U. S. Steel Corporation	150
Railroad, average receipts per ton-mile	177
Bureau Railway Economics estimate of railway wages based on average annual compensation, third quarter	226
General estimate all union wage scales by Prof. Wolman	189

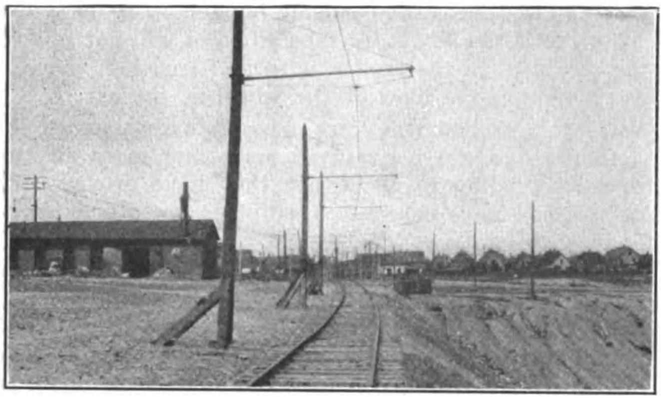
Note—The wage indexes refer mostly to wage scales, not the earnings which necessarily also depend upon regularity of employment.

Overhead Kinks from Cleveland

Two Schemes for Eliminating Half the Usual Number of Poles in Successful Use—Some Temporary Construction Schemes Described—A Movable Track Including Overhead for Car Unloading Dump

INGENUITY and James Scott, for many years superintendent of overhead Cleveland Railway, seem to work well together. In the issues of ELECTRIC RAILWAY JOURNAL for July 14 and July 21, 1917, there were presented a number of overhead construction and maintenance kinks and new ideas in overhead equipment design that had been worked out by Mr. Scott. Herewith is another grist of ideas and kinks from the same source.

When a track is under reconstruction in Cleveland, it is the practice to lay a temporary track on top of the pavement along one side of the street, in order to keep the cars running in both directions without the limitations of single-track operation. For the temporary trolley over this track, Mr. Scott is now using ⅜-in standard steel span wire instead of copper wire, because it is easier to put up and take down, it remains tight and has less sag than copper, and saves cutting up the more expensive copper trolley wire.



OVERHEAD BUILT BY THE CLEVELAND RAILWAY TO BE SHIFTED WITH TRACK AT DUMP

It frequently happens that such temporary track extends close to a corner at which there is special work, including an electrically operated switch, the temporary trolley not joining the main trolley until the overhead contactor has been passed. Under these conditions it is now the practice in Cleveland to install on the temporary trolley a second contactor, which is connected up in parallel with the permanent one by simply running jumper wires over from the permanent contactor, thus keeping the electric switch operative and incurring no more delay than takes place under normal operation.

ELIMINATING HALF THE POLES

Two schemes of overhead construction which require but one-half the normal number of poles are being tried out by the Cleveland Railway, both of which seem to be proving successful. One of these, roughly illustrated in an accompanying drawing and marked A, employs diagonal span wires, zigzagging across the street from one pole to the next. The two poles on the same side of the street are spaced 180 ft. apart, with the intermediate pole on the opposite side of the street half way between. In other words, every other pole, as normally set, is omitted on either side of the street. This scheme is employed purely for the purpose of reducing the first cost.

The other scheme of eliminating half the poles, roughly illustrated at B in the same drawing, is utilized to reduce construction costs and also for other reasons. It is employed at points where for some reason it is impossible to erect a pole at the proper location on one side of the street, such as is illustrated in an accompanying picture. It is also advantageously employed where a new car line is to be built and it is desired to put the overhead up in advance of the track construction and as quickly and economically as possible. The scheme consists of setting poles 180 ft. apart on each side of the street, the locations on opposite sides of the street being staggered. A ⅜-in. stranded steel messenger cable is strung along each side of the street and fastened to the poles with porcelain insulators. A span wire is then erected at each pole, extending across the street and fastening to the opposite messenger by means of a porcelain spool insulator.

AN INSTANCE OF OVERHEAD CONSTRUCTION USED WHERE BUILDING WAS TOO CLOSE TO CURB TO SET POLE

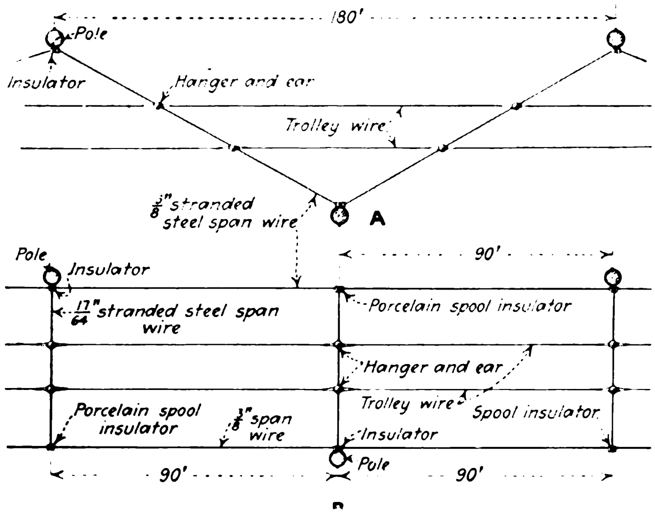
Where the overhead is constructed in advance of a new car line, the messengers along either side of the street are erected and one of them connected to the positive and one to the negative side of the power supply, and thus used to provide energy for operating electric shovels and other track equipment. The span wires and overhead trolley are then installed after the track has been completed. This is a particular advantage for this type of construction, for in addition to saving half the poles and lending itself to quick installation, it affords a power supply and at the same time keeps the space above the street clear of overhead obstructions.

If thought necessary, the other poles opposite the ones set can later be erected without any change in the existing overhead except to extend the span wires to connect to the newly set pole, the messenger cables being then taken down. However, from the experience thus far, it appears that this type of construction using only half the usual number of poles is suitable for permanent construction.

Either of these types of overhead construction makes a long span (180 ft.) for the feeder cable, if one parallels the line, but while this requires the use of a heavier insulator it has involved no trouble.

MOVABLE TRACK AND OVERHEAD AT DUMP

Material excavated from streets and other waste material of the Cleveland Railway is hauled in cars to a dump for filling in a great gully. The track is laid along the inside edge of the bank, and the material is dumped directly over the edge of the bank, rolling down to a position of rest. Formerly, the overhead for this track was supported by cables strung clear across the gully. It was necessary every few weeks to move the track over to the edge of the bank as the hole was filled in, which, of course, made it necessary to slide the trolley out to the new position by moving the hangers out farther on the long cross-spans.



ROUGH SKETCH OF TWO TYPES OF OVERHEAD ELIMINATING HALF THE POLES

The overhead department got tired of this frequent shifting of trolley and so devised a scheme whereby the track department would shift the overhead along with the track. A 4-in. x 12-in. plank about 14 ft. long was placed under the rails and spiked to them at each pole location. The poles were then sawed off and placed on top of these planks and braced with 2-in. x 8-in. pieces of plank. Heavy blocks were spiked to the pole and the bottom plank to keep the butt from shifting longitudinally on the plank. Vertical timbers spiked to the plank and the pole kept it from shifting laterally. Now, as the track department shifts the track to a new location, the trolley moves right along with it. The tension in the trolley is kept uniform and tight by dead ending the wire over a snatch block on the last pole at the end of the track and hanging a couple of car wheels on the end of it, the last pole being guyed. This overhead and movable track are ten spans long.

MISCELLANEOUS PRACTICES

On the high bridges over the Cuyahoga River, on which the Cleveland Railway has four tracks, there is often a very high wind, making overhead repair work exceedingly difficult. To minimize the trouble likely to accompany a broken trolley, each pair of trolley wires is cross-connected at every span. There is also a feed-in tap at every fifth span. With this interconnection of the copper, any break in the wire causing a short circuit will anneal the wire only a very short distance, thus reducing the replacement necessary.

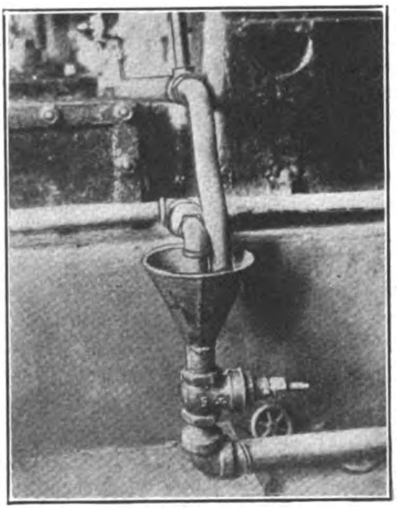
A special spring hanger for use in trolley troughs under viaducts and designed by Mr. Scott was fully described on page 110 of the July 21, 1917, issue. Some of these hangers installed under one of the viaducts have now been in service nearly five years without replacement or repair. The principal feature of this hanger is a long spring suspension, having a good deal of flexibility of movement and being quite effective in reducing flashing. Some of these ears were also used on the high bridge where the cars operate over a lower level with comparatively low overhead. Two other types of spring hangers were also tried out on this bridge.

It is planned to install 100 of these spring hangers on open overhead construction with No. 0000 wire, as an experiment. The wire always breaks at the ear because of the weight of the ear and hanger and the sharp bend that takes places at the ear as the trolley wheel approaches. The spring hanger is to be tried out to see if the flexibility thus afforded will not relieve this strain upon the trolley wire and lengthen the life by cushioning the blow of the wheel at the ear.

Concrete trolley poles are now in extensive use in Cleveland and are being used more and more all the time. According to Mr. Scott, they have proved very satisfactory and require no painting or other maintenance.

All together, fifty-two men are employed in the entire overhead department of the Cleveland Railway, which has about 410 miles of single track and operates 1,065 motor cars, 454 trailers, etc. In the work of this department, two tower trucks and four men do all of the emergency trouble work for the entire system. Five other tower trucks owned by the department are used for renewal and new construction work. Three trucks without towers are used, one exclusively for hauling the fire hose jumper, one for pole painting, and one for general hauling.

Preventing Washing in Waste Water

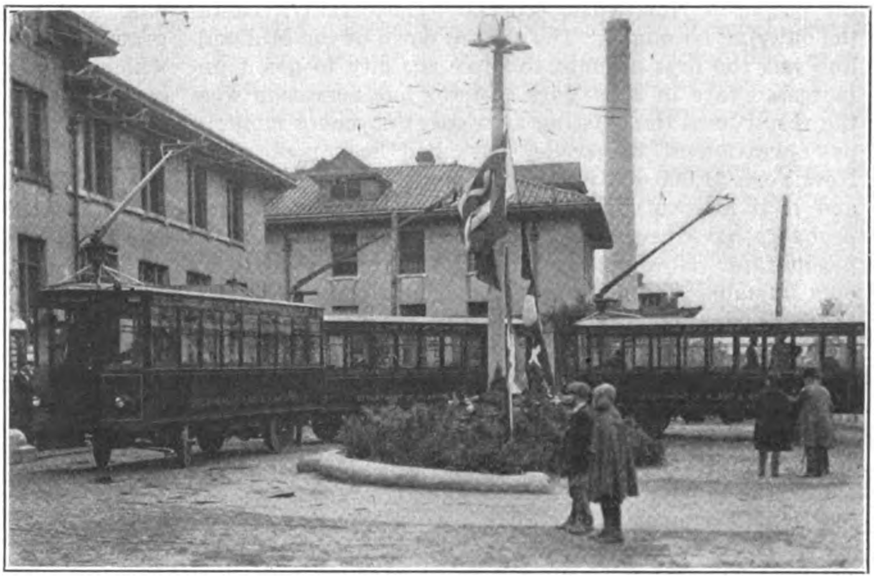


FUNNEL GUARD FOR PREVENTING USE OF WASTE WATER FOR WASHING

THE accompanying illustration shows a funnel type of construction arranged to carry off the circulating water from a shop compressor in the Thirty-sixth Street inspection and overhauling shop of the Brooklyn Rapid Transit Company. Previous to this installation shop men would congregate at this point a few minutes before quitting time in order to wash up in the warm water as it came from the compressor. As this shop is provided with wash rooms and other conveniences for the shop men, this type of construction was devised with the two pipes entering the funnel, so that it is impossible to get the hands underneath the water as it flows from the pipe.

Trolley Bus Operation Commences on Staten Island

Municipally Owned and Operated Trolley Buses of the City of New York Have a Successful Trial Trip—Appropriate Speeches Heard at Sea View Hospital, the Terminus of One of the Routes



THREE TROLLEY BUSES ON LOOP AT SEA VIEW HOSPITAL READY FOR TRIAL TRIP

ON SATURDAY afternoon, Oct. 8, amid a noisy demonstration, assisted by the Police Band, three municipal trolley buses left Sea View Hospital for Meier's Corner and Bull's Head. This was the culmination of exercises held in the auditorium of the city hospital at Sea View at which Mayor Hylan, Grover A. Whalen and Borough President Van Name felicitated each other, told of the development of the trolley bus and urged that it was for the people's interest that the 5-cent fare be maintained. It was truly a demonstration for Mayor Hylan and his cohorts.

In speaking of what led up to the operation of the Staten Island Midland Railway trolley lines by the Department of Plant and Structures, City of New York, Borough President Van Name told how Commissioner Whalen had opened up the trolley car level of the viaduct at St. George to public vehicles after the trolley cars had ceased to operate. This permitted the buses within forty-eight hours to carry their passengers direct to the ferries and allowed them the same privilege of solicitation as the trolleys. Cheap transportation is absolutely necessary for an outlying borough like Richmond, he said, for residents must necessarily pay a fare in Manhattan, another on the ferries and a third on Staten Island. It is therefore a most serious matter to increase local trolley fares.

President Kauf of the local Chamber of Commerce, who presided at the exercises, in introducing Commissioner Whalen stated it was right to celebrate epochs, and the opening of this trolley bus line is surely an epoch in the life of Staten Island and but a forerunner of a form of transportation that will open up all parts of the island. He told how he himself had been looked upon as almost crazy when twenty-five years ago he petitioned for the right to build a passenger trolley line from St. George to Richmond and to give for 5 cents what had formerly cost passengers $1. Many people insisted it would not pay. However, he believed in the law of transportation matters that each new form of service created its own traffic.

This new method of transportation, said Commissioner Whalen of the Department of Plant and Structures, City of New York, which will soon be put into service is a real municipal plant, conceived, designed, and constructed throughout by municipal employees. Much of the credit is due to C. T. Perry, electrical engineer of the department. Commissioner Whalen continued:

"The fundamental proposition in the installation of these trackless trolley systems on Staten Island is to provide transportation for the hitherto inaccessible village of Linoleumville and to provide means of access to a great city institution, Sea View Hospital.

"We feel, however, that we are doing more than merely meeting local necessities. We feel we are introducing and demonstrating a new system of transportation that will enable Mayor Hylan to make still more certain the maintenance of the 5-cent fare and that will be of the utmost practical value to the city administration in making financially feasible the establishment of transportation lines to serve sections of the city that are now without transportation. There are vast areas, not only in Richmond but in Queens and the Bronx, that can be made available for housing only by such lines.

"Our reason for believing that the trackless trolley system is an answer to urgent needs of this city is its comparatively small cost.

"The cost for single-track trolley construction per mile varies from $37,000 to $60,000, according to the nature of the roadway that has to be torn up and relaid. The cost for trackless construction is approximately $4,000 per mile. The trolley system destroys the roadway; the trackless system does not. Its wear and tear on the roadway is no more than that due to automobiles.

"We have studied out all the elements of cost, including initial investment, maintenance, depreciation and operation, and have found that the cost per car-mile of the trackless system figures less than the cost of one-man trolley operation and less than the cost of gasoline buses. The figures are as follows:

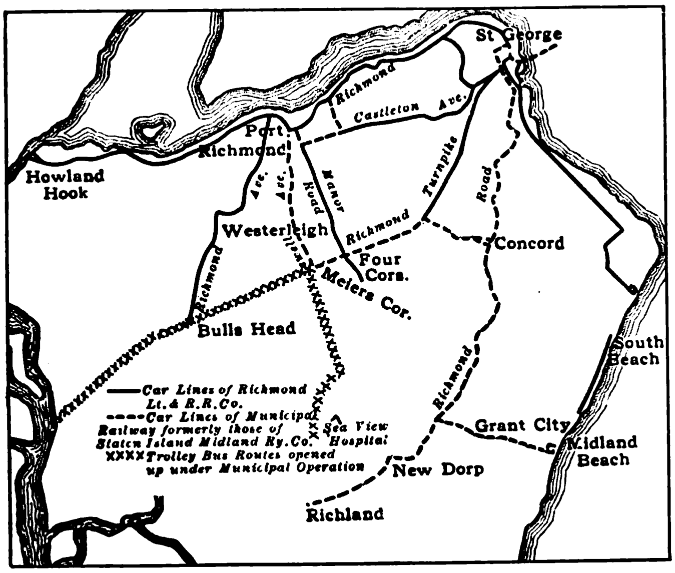
Standard safety car, per car-mile	24.3 cents
Gasoline bus	29.55 cents
Trackless trolley car	20.95 cents

"The department believes, therefore, that in installing these trackless trolley systems on Staten Island the city is inaugurating a method of transportation that will make possible the rapid and economical development of the outlying portions of the city and that will be found of immense practical value in enabling the city to clear its streets of the rails that now encumber them."

In his remarks Mayor Hylan reviewed largely what had taken place during his term of office. With regard to transportation matters, he contended that he had tried to render every possible transportation service to the people of New York, especially those that lived in the outlying boroughs. The closing down of the Midland line was the first attempt to force the city to grant an increased fare in New York. Motor bus operation was the result until the existing agreement covering municipal operation of the trolley cars had been made. In New York $1,000,000 was appropriated for motor buses and if it had not been for an injunction there would probably have been hundreds of them operating at a 5-cent fare. Now the traction agents want to grab the only valuable franchise left, the bus franchise. Even the Transit Commission advocates giving away this valuable bus franchise.

The system comprises two trolley bus routes, both terminating at Meier's Corner. They are really extensions to the municipally operated trolley lines and tap territory without any other form of transportation. While the population is not extremely large, nevertheless some systematic form of transportation was becoming a necessity for the further development of the territory. The accompanying map shows not only the trolley bus routes but the rail lines operated by the Richmond Light & Railroad Company and the city of New York.

One of the trolley bus routes extends from Meier's Corner to the Sea View Hospital via Bradley Avenue and Brielle Avenue, a distance of 2.6 miles. The second line operates over the Richmond Turnpike from Meier's Corner to a settlement called Linoleumville, via Bull's Head. The length of this line is 4.4 miles.



MAP SHOWING LOCATION OF ALL TROLLEY AND TROLLEY BUS LINES ON STATEN ISLAND

The unit rate of fare on each route is 5 cents. No transfers are given between the two trolley bus routes or the municipal trolley cars. Under the plan of accounting in effect between the Midland company and the city of New York for the operation of the trolley lines it is impossible to issue or accept transfers between the two transportation systems. Nevertheless, even with the single 5-cent fare on each system of transportation the car rider will reach his destination at a considerably lower cost than heretofore, for the taxi operators have charged almost any price up to $1.50 to carry a passenger 2 or 3 miles.

Both of these routes follow improved paved roads. Bradley Avenue, on the Sea View line, is paved with bituminous macadam, Brielle Avenue has a concrete subbase and asphalt top and the roads in the hospital grounds are of asphalt brick. Richmond Turnpike, which the Linoleumville route follows, has an 18-ft. concrete roadway as far as Bull's Head, a distance of 2 miles. The remainder is paved with bituminous macadam.

As for grades encountered, there are none whatever along the Richmond Turnpike, but the line to Sea View has some very steep hills. For instance, one hill alone on the outbound trip from Meier's Corner is about 1,200 ft. long and has a grade of between 10 and 11 per cent; in fact, it could be said that the line was almost a continuous climb, for the city hospital is located on one of the highest points on Staten Island. The trolley buses, however, have not so far failed to negotiate these grades, it being possible to climb them on "high."

THE OVERHEAD SYSTEM

Span construction is used throughout with 30-ft. chestnut poles, set directly in earth as was found. In some cases this was gravel or sand. Very little rock was encountered. The poles for the most part have had their butts treated by an application of creosote using the brush method. Spans using 7/16-in. galvanized iron wire were put up at a height of 20 ft. so as to support the two trolley wires 18 ft. above the street level. Where there are four wires over the street a special method of supporting them had to be used to keep the wires of each set in the same horizontal plane. The suspension consists of two span wires one above the other with a strut in the center joining them to take out the sag in the lower wire, the one supporting the trolley wires.

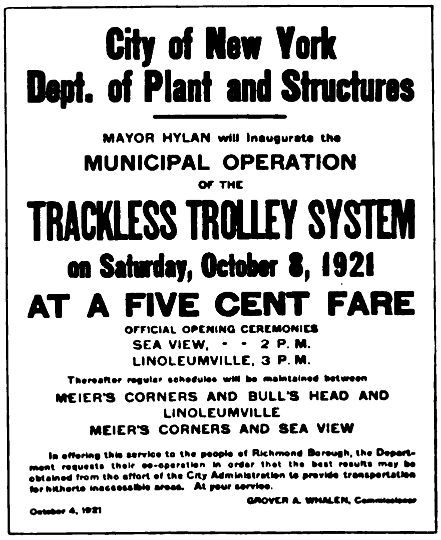
The feeder system consists of two 500,000 circ.mil rubber-covered aerial conductors supported on the pole pins of a 4-pin arm. These feeders extend from the power house at the city hospital along Brielle and Bradley Avenues to Richmond Turnpike, where they are tapped into the Linoleumville trolley wires.

The two trolley wires are hung on 14-in. centers. The route to Sea View has but a single pair of trolley wires strung over the center of the street, while on the Linoleumville route, due to the heavier amount of vehicular traffic to be encountered, two sets of wires, one for use in each direction of traffic, was necessary. Figure eight trolley wire of 00 size with screw clamp ears is used throughout. The trolley hanger hardware is of the type designed by the General Electric Company for double trolley work with double porcelain insulation between the trolley wires and the spans. At the ends of each of the lines loops are provided so as to eliminate the necessity of wyeing on a single set of wires. These loops all have different radii—that in the driveway of the Sea View Hospital administration building has a radius of 30 ft.; that at Meier's Corner 22 ft., while that at the terminus of the line at Linoleumville is 70 ft. in diameter. The type of construction at the hospital loop, which is typical, is shown in the accompanying illustration.

Power is furnished by a two-phase, 220-600-volt motor-generator set especially installed in the main power house of the Sea View Hospital. The installation was made by J. L. Hemphill & Company, Inc., Hoboken, N. J. The two-phase motor is of the G.E. type and has a capacity of 400 hp. at 220 volts and 900 r.p.m. It drives a Westinghouse direct-current generator capable of delivering 250 kw. at 600 volts.

THE ROLLING STOCK

The eight trolley buses which comprise the rolling stock were built by the Atlas Truck Company, York, Pa., and follow the specifications drawn by C. T. Perry, electrical engineer, Department of Plant and Structures, city of New York. An abstract of these specifications was printed in the ELECTRIC RAILWAY JOURNAL, May 28, 1921, page 1002. They have a seating capacity of thirty with a 24-in. center aisle, which affords ample standing room for fifteen more passengers. The electrical equipment, similar throughout to that used on the safety cars, was furnished by the General Electric Company. Two G. E. 258 ventilated railway motors furnish the propulsion force and are mounted in tandem amidships and arranged for series parallel control. Power is transmitted by a Sheldon worm drive to the driving wheels. The car can easily maintain a speed of from 20 to 25 m.p.h. on a level road. A hand-operated controller, type K-63 F, interlocked with a foot pedal safety device or dead man control, is located at the left of the driver, where it can be easily operated by his left hand. The first contact point for operation is obtained by a movement of the foot pedal and acceleration is had by a hand movement. The service foot brake as well as the hand emergency brake lever are located in front of and directly to the right of the driver's seat. At the immediate right is the lever for opening and closing the service door.



City of New York
Dept. of Plant and Structures

MAYOR HYLAN will inaugurate the
MUNICIPAL OPERATION
OF THE
TRACKLESS TROLLEY SYSTEM
on Saturday, October 8, 1921
AT A FIVE CENT FARE

OFFICIAL OPENING CEREMONIES
SEA VIEW, - - 2 P. M.
LINOLEUMVILLE, 3 P. M.

Thereafter regular schedules will be maintained between
MEIER'S CORNERS AND BULL'S HEAD AND LINOLEUMVILLE
MEIER'S CORNERS AND SEA VIEW

In offering this service to the people of Richmond Borough, the Department requests their co-operation in order that the best results may be obtained from the effort of the City Administration to provide transportation for hitherto inaccessible areas. At your service.

GROVER A. WHALEN, Commissioner

October 4, 1921

WINDOW CARD USED ON MUNICIPAL TROLLEY CARS TO ANNOUNCE OPENING OF TROLLEY BUS LINES

The interior finish of the bus body is white enamel, with the exception of the Hale & Kilburn seat frames, which are battleship gray. The window sashes and sills are natural finish. Seat coverings are Spanish leather.

As will be noticed, the collector is of the type first used on the trolley bus designed for Richmond and described in the ELECTRIC RAILWAY JOURNAL, June 25, 1921, page 1160. The hickory pole is supported on a ball-bearing base which allows free play to the pole so that the car can swing 9 ft. 6 in. off the center line of the wires without dewiring. At the base of the trolley pole and inside the body is a hand maneuvering device by which the operator can raise or lower the pole or swing it from side to side to meet the varied operating requirements without leaving the car. Springs in the trolley base furnish sufficient tension to insure suitable contact pressure between the pole head and trolley wires. A different and lighter type of collector is to be tried out in the immediate future.

Illumination is furnished by two five-light circuits from the trolley circuit. In addition there are emergency lights, two at the rear, one each over the step and the driver's seat. These are operated from a six-cell Prestolite battery, which is charged from a generator mounted on the forward end of the armature shaft. A low potential relay cuts into the circuit the emergency lights in case the trolley pole leaves the wire. The battery also furnishes power for the type S-74 Golden Glow headlights, the tail-lights and steplights.

United States solid rubber tires on American Cushion wheels are used throughout. On the rear wheels are mounted 36 x 8 rib tread solid tires and on the front wheels 36 x 6 "Highsize" single solid tires are used.

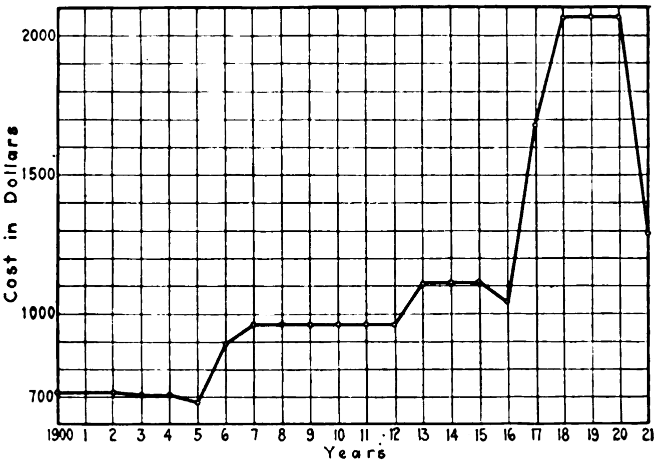
Consolidated Car Company Type A heaters are used. One is located under each of the six cross seats, two on each end of the seat across the rear end of the body and two mounted on the inside of the front dash.

Special Trackwork Prices

THE accompanying graph shows the cost of a double track 90 deg. crossing for any year from 1900 to 1921. Based on this chart, the tabulation for special trackwork costs shown in the accompanying table was worked out. This shows the present variation in price for each year, taking the price of 1900 as a base.

PER CENT VARIATION OF SPECIAL TRACKWORK COST FROM BASE PRICE AS OF YEAR 1900

Year	Increase, per Cent	Decrease, per Cent	Year	Increase, per Cent	Decrease per Cent
1900	...	..	1911	33⅓	..
1901	...	..	1912	33⅓	..
1902	...	..	1913	54	..
1903	...	2	1914	54	..
1904	...	2	1915	54	..
1905	...	5½	1916	44½	..
1906	23½	..	1917	132½	..
1907	33⅓	..	1918	186	..
1908	33⅓	..	1919	186	..
1909	33⅓	..	1920	186	..
1910	33⅓	..	1921	80	..



COST OF DOUBLE TRACK CROSSING—90-DEGREE STANDARD GIRDER HARD CENTER CONSTRUCTION

This chart and tabulation may form the basis for other calculations. Thus, if it is desired to construct a graph for a certain layout or piece of special trackwork, all that is necessary is to know the price paid in a certain year, and use the table. Thus, if a company paid $300 for a tongue switch in 1919, and it is desired to know the price paid in 1914, then by the use of the table the price would be $\frac{800}{286} \times 154 = \$161$.

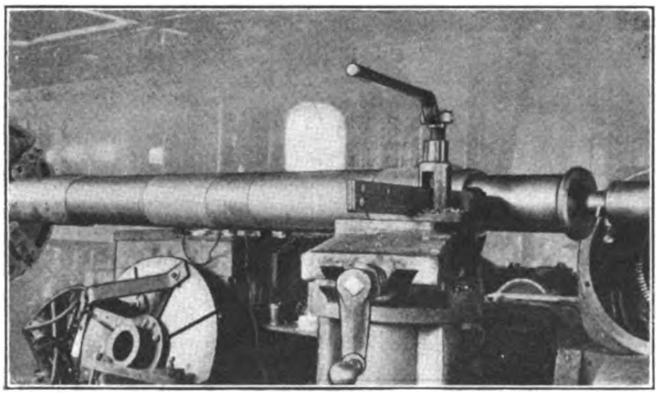
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Shop Notes from Michigan City

Hot Boxes Are Eliminated by Rolling New Journals—This Had Formerly Been a Common Cause of Trouble—Simple Tension Machine Facilitates Armature Banding

THE DIFFICULTY with hot bearings, which has been common with the very heavy single-phase cars on the Chicago, Lake Shore and South Bend Railway whenever a new axle was installed, has apparently been completely eliminated by a simple process of rolling the journals. Formerly, the bearing surfaces of the axle were smoothed up to an apparently even surface by filing and the use of oil and emery paper. It was a common experience, however, to have to change the babbitted shell-type bearings two or three times before the surfaces became worn so that the bearings would not run hot.

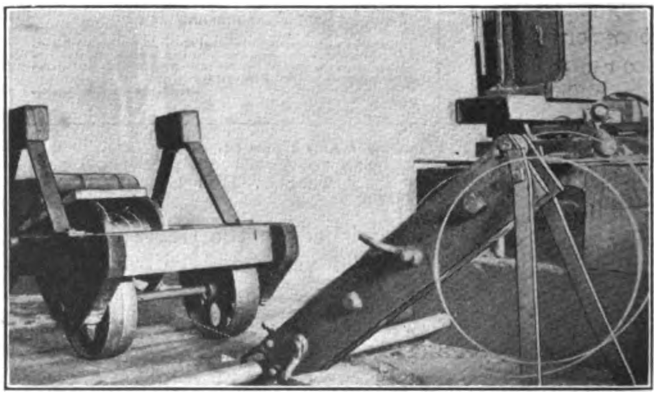


The Rolled and Unrolled Portions of the Axle Surface Can Be Seen at the Left of the Tool

The scheme now followed is to run a case-hardened steel roller over the bearing surfaces. After the last finishing cut on the axles is taken, the roller is substituted in the lathe tool post for the cutting tool and forced up against the bearing surface of the axle by means of the cross-feed screw, as much as can be done by hand. The lathe is then started and the roller run back and forth once over the surface, using the regular lathe feed. The roller is about 2¼ in. in diameter with a flat face ¾ in. wide and having the edges rounded off. In passing over the surface of the axle, this roller seems to compress the metal ridges left by the cutting tool, leaving a smooth and polished surface. No further smoothing of any kind is done. Of forty-six new axles started off after finishing in this way, no hot boxes have occurred.

M. M. Lloyd, master mechanic, who originated this practice at the Michigan City shop of this high-speed single-phase line, states that the idea is not original with him but is one followed by many steam road shops. The motor axle bearings are rolled in the same manner and also the armature bearings.

Having had unsatisfactory results from various tension machines for use in banding armatures, Mr. Lloyd had the machine built which is pictured herewith. It has worked out very satisfactorily in providing uniform tension of whatever amount desired. This machine consists of four grooved-steel pulleys, 3 in. in diameter, supported on ¾-in. posts between two pieces of ½-in. x 4-in. x 30-in. steel bars. The pulleys are turned with a shoulder on each side and leather washers are inserted between the pulley and side frame. On one end of each bolt is a lever type nut, with which the tension on the banding wire may be adjusted by loosening or tightening the nut. Two of these levers are on one side of the frame and the other two on the opposite side, and approximately equal tension is set up on each.



Home-Made Tension Machine Which Has Improved the Armature Banding Work

At each end of the supporting frame a small steel block is provided with a hole through which the wire is fed. The back end of the frame is hooked over a pipe which is strapped to the floor, while the end of the frame nearest the lathe on which the armature is mounted is supported on a triangular shaped leg. The rear connection holds the machine at a fixed distance from the lathe but makes it possible to shift the machine laterally so that it will line up with the proper position of the banding on the armature. The triangle support at the rear end makes it possible to adjust the height of the tension block so that the wire pulls approximately straight out of the block to the armature. This triangle is 14 in. high when standing vertically. The whole machine is mounted on the floor behind the lathe.

TAKING UP END PLAY IN ARMATURE BEARINGS

End play in armature bearings on the South Shore Line is kept to a minimum by the use of galvanized iron or heavy tin stampings which are slipped over the brass up against the collar to take up the wear on the inside end of the bearing shoulder. These stampings are very cheap and come in various thicknesses, and sometimes two or three of them are inserted. This scheme is used only with bearings having a keyway.

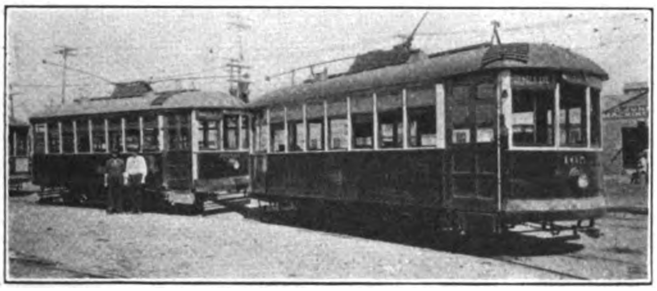
More than a year ago one of the Davis steel wheels used to a certain extent by this company chipped out on the tread, leaving a hole which acted much like a slid flat. As an experiment, the hole was filled up with an acetylene welder, and while the metal was still hot it was hammered out as near to the proper contour of the tread as possible. A wheel-truing brakeshoe was then used on this wheel for one trip, and thereafter the car continued in normal service. Fourteen months later this wheel came in with another spot chipped out and inspection at that time showed that the former weld could be scarcely found. As nearly as could be ascertained, the welding had not injured the metal at all, so the new spot was filled in in the same manner and the wheel put back in service.

TELEPHONE SIGNAL SYSTEM

An effective signal system for calling the master mechanic or shop foreman to the telephone from any part of the shop is in use in the Michigan City shop. A whistle connected with the shop air supply is fitted with a magnet for opening the valve and electrically connected to the dispatcher's office. The dispatcher presses a button once or twice, giving one or two short blasts of the whistle to signal whoever is wanted to the telephone.

Safety Cars Built by Texas Railway

THE Texas Electric Railway has just completed and placed in service eight single-truck safety cars of a type illustrated herewith. These cars were built in the company's shop and cost complete $3,600 each.



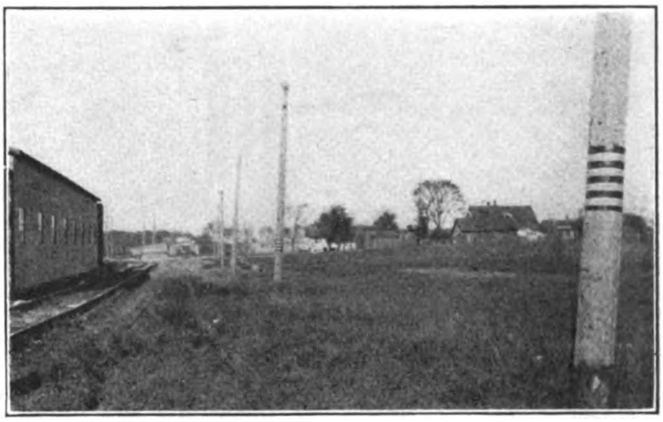
NEW SAFETY CARS OF THE TEXAS ELECTRIC RAILWAY

They are operated on the same schedule and same lines as the "Birney" safety cars owned by the company. Second-hand trucks were purchased and remodeled for use with air brakes.

These cars have wooden underframes and posts with steel dashers and sides. The bumpers are of angle iron and angle reinforcements are used for platform knees. The underframe, posts, plates, belt rail and interior finish are long-leaf yellow pine. The roof carlins, sash and doors are straight-grained white oak. Native woods were used in the construction of these cars as previous experience had shown that they are less subject to decay than imported material. The cars are 27 ft. 10½ in. over bumpers, 17 ft. 8 in. over body, 8 ft. 1½ in. wide over belt rail and weigh 16,800 lb. equipped. Some of the equipment used consists of Brill 21-E trucks, CP-25-C air compressors, International R-5 registers, Johnson fare boxes, "Golden Glow" SM-95 headlights, Consolidated 92-T heaters, "Keystone" destination signs, Heywood Brothers & Wakefield seats, Crewsome pneumatic gongs, US-15-B trolley bases, K-63-B controllers, GE-81-A and 201-G motors, curtains, "Fabrokoid," and air brake and safety control, Safety Car Devices Co.

Poles Painted to Indicate Positive Stops

POSITIVE stops for the cars of the Detroit municipal system are to be indicated and the motormen forewarned by a system of painting the poles adjacent to the stop. On the fourth pole from the stop appear four white stripes painted with aluminum paint on a black background. The next pole has three such stripes, the next two and the last pole before the stop one. Because of the nature of the paint these markings show up from the headlight and street lights very well at night.

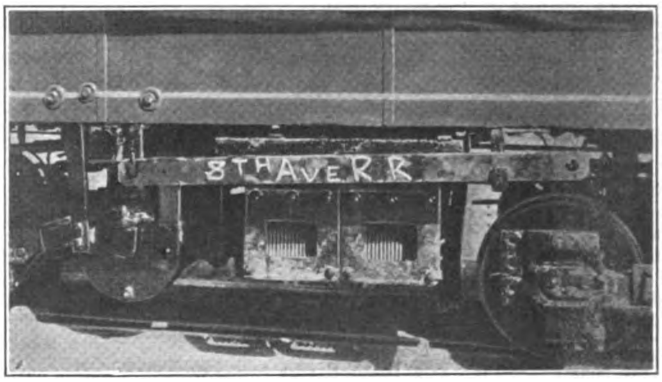


SCHEME OF PAINTING POLES TO FOREWARN MOTORMEN OF POSITIVE STOPS

Having these warning signs, there is no excuse for a motorman not having ample time to make the stop or knowing when he is approaching a stop and how far from it he is. The idea originated with the Connecticut Company, where it is extensively used on the interurban lines. It is to be adopted for the Detroit city system.

Marking Drawbars to Prevent Theft

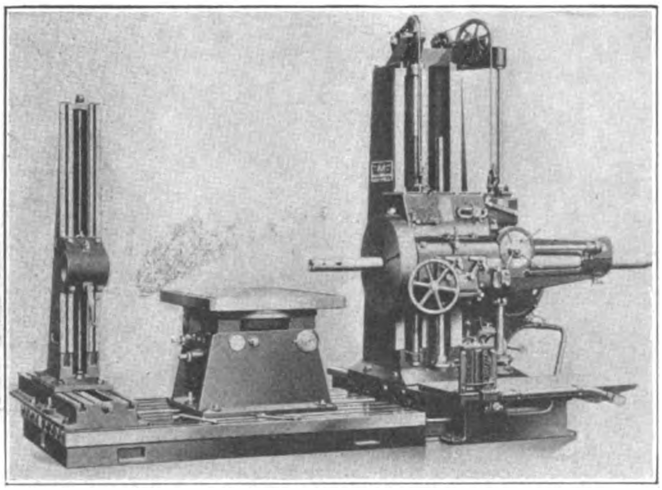
THE Eighth Avenue Railroad, New York City, experienced considerable difficulty from the theft of drawbars from its cars. C. P. Westlake, supervisor of equipment, evolved the scheme of lettering these by the addition of metal through electric welding. This method has proved very satisfactory and has effectively remedied the trouble. The lettering can be added in a very short time, and as the metal burns into the surface of the drawbar there is no effective means of removing it from the car. The halftone view shown above illustrates one of these drawbars as lettered installed on the side of a car.



DRAWBAR LETTERED WITH ELECTRIC WELDING

Boring, Drilling and Milling Machine

A NEW line of horizontal boring, drilling and milling machines has been developed by the Pawling & Harnischfeger Company, Milwaukee, Wis., of which the 4-F machine shown in the accompanying illustration is the smallest size. This machine is especially designed for very heavy milling and large boring operations. Some of the special features are: All feed screws in tension; all sliding parts with take-up for wear; saddle fully counterbalanced with counter-weight located inside of the column; centralized control; all milling feeds actuated through quick pitch worm and bronze worm wheels, revolving on quick pitch screws in tension; interchangeable; externally and internally driven face plates; back gears close to spindle, making all drive shafts high speed; automatic stops for saddle and column for machines electrically driven.



HORIZONTAL BORING, DRILLING AND MILLING MACHINE

New Metropolitan Electric Locomotive

THE Metropolitan Railway of London has under course of reconstruction twenty of its existing electric locomotives. High-capacity electrical apparatus is being installed and arranged on supports in a central position down the cab of the locomotive, ending in a main switchboard at each end and surrounded by a hand rail which leaves ample space on either side for cleaning and inspection of the equipment.

The control is the automatic multiple-unit electric type, with sufficient steps on the master controller to allow of easy switching. Below the electric equipment in the cab are situated two motor-driven vacuum pumps and one air compressor, together with their respective reservoirs.

The company's standard arrangement of brake-tripping device is being considered with an improved electrical interlocking arrangement as a safeguard by means of which it is impossible for a driver to set his locomotive in motion without first having the brake apparatus ready for immediate application.

To enable the driver always to have a clear view in wet weather an automatic window wiper is being installed, operated from inside the cab. Either the vacuum or the air brake apparatus is available for use according to the class of work.

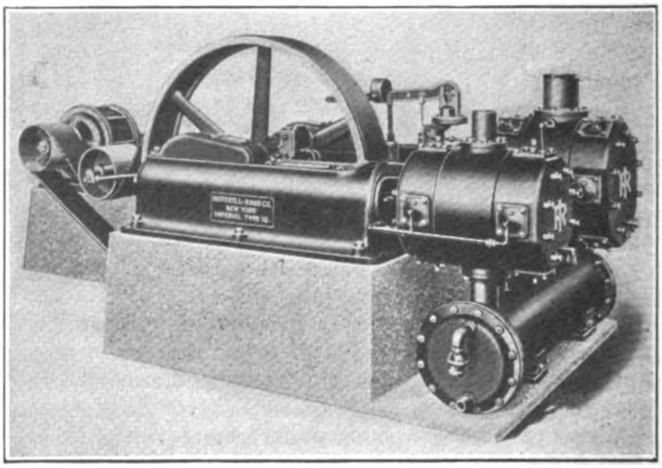
In order to give more even haulage and acceleration the locomotive takes current from the main power positive and negative bus lines coupled up electrically with the passenger rolling stock. These through-train lines connect with collector shoes on the first and last coaches. This provision enables the locomotive to collect the current when the collector shoes on the locomotive itself are bridging gaps in the conductor rail.

There are four motors mounted on the two trucks, each of 300 hp. capacity. The motor is carried on the axle by means of suspension bearings and a portion of the weight is transmitted by means of a nose on the motor castings which rests in a yoke sliding vertically up and down in guides fixed to the truck transom. A slight elastic support is obtained by means of rubber cushions. The running wheels are of the disk center type, having the brake shoes acting on both sides of the wheels. All pin joints in the brake gear are bushed with renewable bushings and case-hardened pins. The truck frames are of solid construction and consist of plate frames well stiffened with cast steel corner castings. Advantage has been taken of the latter for supporting the brake beams and levers. Side louvres are provided in addition to roof ventilators.

New Belt-Driven Air Compressors

THE Ingersoll-Rand Company, New York, has announced a new line of belt-driven air compressors, known as the "Imperial" Type "XCB." Features of construction include plate valves, for both the air intake and discharge, and five-step clearance control for regulating the compressor's output.

The plate valves used in this type of compressor are the result of a complete analysis of the light-weight plate type of valve. They include features which have been found necessary to the functioning of this type of valve, the most important of these being that the valve is supported throughout its entire operation in perfect alignment without any form of wearing guide.



BELT-DRIVEN AIR COMPRESSOR

With the clearance control the compressor is automatically loaded or unloaded in five successive steps, these steps being obtained by the reduction or addition of clearance space to the air cylinders. The compressor will operate at full, three-quarter, one-half, one-fourth and no loads.

In the four cities clustered together on the east side of San Francisco Bay 3.353 residential building permits were issued during the eighteen months ended June 30, 1921, notes the *Engineering News-Record*, and of these 85 per cent were within three blocks of street car lines. The estimated cost of this 85 per cent was $15,030,412, as against $1,433,355 for the remainder.

Accountants' Association Proceedings

Three-Day Session Covers Wide Range—Discussion Centered Around Electric Railway Cost Accounting for Both Operating and Capital Accounting—The Question of a Standard Material Classification for Storeroom Records Also Brought Up

THE opening session of the twenty-fifth annual convention of the American Electric Railway Accountants' Association convened at the Chalfonte Hotel, on Monday, October 3, and at 2:50 p.m. F. E. Webster, first vice-president and acting president of the association, called the meeting to order.

The rather novel idea of each delegate introducing himself and his company affiliation gave the meeting a touch of friendliness not often found at convention meetings. Following this, Vice-President Webster addressed the convention. An abstract of his remarks follows:

ADDRESS OF MR WEBSTER

"It was with a feeling of deep regret that we learned of the passing of our president, John J. Landers, on Friday, Sept. 9, 1921. Mr. Landers was elected an officer at the 1916 convention, and has always manifested a keen interest in making a success of our meetings. Aside from the loss of a friend and associate the association will miss his wise counsel and his unselfish interest in matters affecting the welfare of our organization. A special committee on resolutions will be appointed, which will report at this meeting.

"The street railway industry has not, as yet, emerged from the severe shaking which it received during the period of depression and the intrusion of many factors which operated to unsettle the foundations upon which a railway is built—the rendering of service to the public. Business depression has caused a curtailment in many lines of industry, producing an immediate cessation in travel, which is quickly reflected in gross revenues. Jitney service and bus transportation have also appeared as disturbing factors. The accountants have aided materially in the solution of their company's troubles by having available, or have taken prompt steps to establish them, such facts and data as were needed as a guide in the adoption of such ways and means as were necessary to formulate plans whereby corrective measures could be established.

"The burdens experienced in the process of readjustment have not been of our own choice, but I believe such a crisis is not without its compensations in that we now realize the inestimable value of the data furnished by the accountants and their departments. The advantage of following a standard classification of accounts has proved its value, and our records of operations have mapped the courses that our systems should follow.

F. E. WEBSTER

Vice-president and treasurer Massachusetts Northeastern Street Railway, vice-president Accountants' Association 1920-21, presiding officer Accountants' Convention 1921, president Accountants' Association 1921-22.

"In this connection there is presented a situation to which our organization should give serious thought. Committee assignments are made and to these committees important matters are referred for consideration and report. To those appointed on committees a duty is attached, and such duty is quite often rendered at a real sacrifice, but the importance of it is found in their results which become accepted as standards as they reflect the judgment of experts and authorities. I believe, also, that the members in attendance at the annual conventions should freely enter into a discussion of the papers that are presented in order that there may be such an expression of ideas that the maximum benefit will be received.

"Regulation by public authorities has been prescribed by practically every state in the Union, and uniformity in practices will go far toward co-operation which is so essential. The annual convention of the National Association of Railway Utilities Commissioners will be held at Atlanta, Ga., Oct. 11 to 14, and the president of that association has been generous in his invitation to utility organizations to be represented. In such collective action a common benefit is a certainty.

"Following the 1920 Convention the Transportation & Traffic Association did not reappoint the joint committee on Collection and Registration of Fares which has been functioning for the past two years. In due course the accounting members of this committee resigned and it is now suggested that your Executive Committee discontinue that committee.

"The general plan of co-operation between affiliated associations of the American Electric Railway Association is a highly desirable feature, and there is one of our committees to which I direct your attention. For several years the joint committee on engineering accounting was active but with the advent of the war this committee was apparently abolished. I suggest that consideration be given during the present convention to a revival of the activities of this committee.

"It is interesting to review the various subjects of papers presented at former conventions, which are printed in the proceedings. This year's subjects are timely as well and carry out the high plane of previous years.

"An extract from an editorial in a recent issue of the ELECTRIC RAILWAY JOURNAL emphasizes a certain obligation:

> If there was ever a time in the history of the American Electric Railway Association when intimate counsel and discussion . . . was necessary and valuable it is at present. . . . The industry today is on the mend. But this fact does not remove the other fact that it is still in a critical condition and needs and deserves the leadership which can develop and grow as a result of constructive discussion of its problems.

"The selection of the subjects for this year's meetings, and the presentation of them by their authors is the result of a great deal of work on the part of the program committee, and I trust that due appreciation will be shown by real discussion following each paper.

"In taking up the work of the convention, which I trust will be of interest to us all, we should not lose sight of the fact that we owe a duty to the companies which we represent. This can be fulfilled only by a faithful attendance at all of the meetings. My wish, is that you all enter into the spirit of making this a real meeting and take an active and enthusiastic part in the discussions."

REPORTS OF EXECUTIVE COMMITTEE AND SECRETARY-TREASURER

The report of the executive committee, covering its activities in detail for the year, was read by Secretary F. J. Davis. He also presented his own report as Secretary-Treasurer, which showed there were fifty-two individual members and 105 company section members allied with the association. Expenses incurred for the eleven months ending Sept. 30, 1921, totaled $873.54, divided as between the cost of printing the papers and proceedings $750.34 and mid-year meeting expenses of $123.24.

Following the reading of these reports acting President Webster appointed, in accordance with executive committee action, a special committee to draft resolutions on the death of President John J. Landers, consisting of I. A. May, chairman; F. J. Davis and C. W. Stocks. The personnel of the regular convention committee in resolution was also announced as M. R. Boylan, chairman; J. S. Pardoe, and E. M. White. The chair also announced the personnel of the committee on nominations as follows: M. W. Glover, chairman; A. M. Curtis, W. E. Jones, H. L. Sanders, and W. K. Zinsmeister.

The report of the committee on standard classification of accounts was presented by Secretary Davis. An abstract of this report follows:

STANDARD CLASSIFICATION OF ACCOUNTS

During the year the committee has been called upon to give more than the average number of decisions to questions submitted to them, most of which have come through Director Wylie of the Bureau of Accounts of the Interstate Commerce Commission.

On May 20, 1921, Mr. Wylie released for publication in *Aera* and the ELECTRIC RAILWAY JOURNAL answers to seventy-eight questions that had been submitted and passed upon by his department and your committee. They were released with the understanding that these answers had not had the formal approval of the Commission and were therefore subject to such revision as might be thought proper before final publication in an accounting bulletin.

Under date of Nov. 17, 1920, the notice was received advising of the amendment to Section 20 of the interstate commerce act under date of Feb. 28, 1920. The section as amended provides that,

> The commission shall, as soon as practicable, prescribe, for carrier subject to this Act, the classes of property for which depreciation charges may properly be included under operating expenses, and the percentages of depreciation which shall be charged with respect to each of such classes of property, classifying the carriers as it may deem proper for this purpose. The Commission may, when it deems necessary, modify the classes and percentages so prescribed. The carrier subject to this Act shall not charge to operating expenses any depreciation charges on classes of property other than those prescribed by the commission, or charge with respect to any class of property a percentage of depreciation other than that prescribed therefore by the commission. No such carrier shall in any case include in any form under its operating or other expenses any depreciation or other charge or expenditure included elsewhere as a depreciation charge or otherwise under its operating or other expenses.

The notice also stated that for the purpose of carrying out these requirements the commission has created a depreciation section of the Bureau of Accounts in charge of Frank S. Fowler. The duties of this section will be devoted exclusively to the consideration of matters pertaining to depreciation covered by the amendment and it will, as quickly as possible, proceed to call upon the carriers for such information as it may require to aid the Commission in determining the classes of property subject to depreciation and in fixing just and reasonable percentages of depreciation to be applied thereto.

This notice was promptly acknowledged and your committee stated that it stood ready to confer or assist Mr. Fowler in any way.

Realizing the importance of this subject the committee called it to the attention of President Gadsden and after consideration by the Executive Committee of the American Electric Railway Association the committee was made a special committee of that association to handle matters in connection with the Depreciation Section of the Interstate Commerce Commission.

The committee immediately took up the subject and held a meeting in New York on Feb. 25, 1921. This meeting was attended by Lewis Lillie, vice-president of the United Gas Improvement Company, representing a joint committee which was considering the same subject in the interest of several industries that also come under the control of the Interstate Commerce Commission.

It was the opinion of the committee that the question so far as it related to electric railways, could not with advantage be linked up with its application to other public service companies.

On March 8 the committee met in New York with Mr. Fowler to determine the procedure to be followed in submitting the views of the electric railways. It was decided to submit, as soon as practicable, a brief embodying its views.

Accordingly the committee under date of March 18, 1921, submitted to Mr. Fowler a brief covering each of the following subjects: Original construction good or poor, physical decay, use, wear and tear, climatic and soil conditions, maintenance and deferred maintenance, age, inadequacy, obsolescence, franchise regulations, the human element, public demand, financial condition, and size of property. The brief concluded with the statement: "We are strongly of the opinion that . . . each electric railway company should be permitted to work out from its own experience such charges for depreciation as its own experience determines to be reasonable and proper, such rates to be subject to review and any manifest errors or irregularities to be corrected."

It is the understanding of the committee that before any rules are finally promulgated by the Interstate Commerce Commission, that those interested will have an opportunity to be heard if they so desire.

The report was signed by H. L. Wilson, chairman; William F. Ham, William H. Forse, Jr., R. N. Wallis, and P. S. Young, as members.

REPRESENTATIVES AT COMMISSIONERS' CONVENTION

The report of the delegates representing the association at the 1920 meeting of the National Association of Railway & Utilities Commissioners was likewise read by Secretary Davis. The committee stated that the reports presented at that meeting covered a number of subjects vital to all public utilities and that the report of the committee on statistics and accounts at that meeting dealt entirely with gas and electric accounting systems. The committee, however, has during the past year taken up the matter of a standard form of annual report required of electric railway companies, by public authorities. Of the forty-seven State commissions addressed, New Mexico failed to report; two (Iowa and Mississippi) reported no jurisdiction; twenty-nine reported the adoption of the Interstate Commerce Commission form of report; three (Montana, Nebraska and North Carolina) reported a more simplified form of report; five (Illinois, Wisconsin, New Jersey, New York First and Second Districts) have adopted forms requiring utilities to report more data than is demanded by the Interstate Commerce Commission form, while eight do not require the filing of a financial report. Of the latter, the Commissions of Louisiana, Minnesota and Tennessee expect to prescribe a form of report in the near future, and this committee is endeavoring to have them adopt the Interstate Commerce Commission standard. The State of Delaware does not have a public utility commission. The Railroad Commission of the State of Arkansas has no jurisdiction over street railway companies operating within incorporated limits and therefore requires no annual reports filed.

The report was signed by C. S. Mitchell, chairman; B. W. Fernald, and John M. C. Horn.

In view of the fact that none of the members of the committee could attend this year's forthcoming convention in Atlanta, acting President Webster was empowered to appoint a special representative.

A letter was also read from B. W. Fernald, Oakland, Cal., urging the committee to take such steps as possible toward having the annual reports made up from loose-leaf forms and afterward bound. Such a procedure he claimed would materially cut down labor costs in their preparation, for now it is necessary to fill in these seventy-two page reports entirely by hand. With the loose-leaf system the work could be typewritten and copies run off on a duplicating machine.

ELECTRIC RAILWAY COST ACCOUNTING

In introducing J. H. Bowman, Acting President Webster stated that he believed the time had come when cost accounting should be considered an important matter and perhaps within a short time the accountants would be called upon to furnish such information from their files. It was a question of how far to go into details and he hoped that Mr. Bowman's address would prove of much interest. An abstract of Mr. Bowman's paper on "Electric Railway Cost Accounting" is given elsewhere in this issue.

Following the presentation of the foregoing paper, George F. Dinneen, Holyoke (Mass.) Street Railway; M.

W. Glover, West Penn Railways, Pittsburgh, Pa., and Elmer M. White, Binghamton (N. Y.) Railway, discussed it.

Mr. Dinneen stated that he was of the opinion that the synthetic system as outlined by Mr. Bowman goes a little farther than the expense of maintaining such a system would warrant. It is questionable if the majority of electric railway companies would desire, at the beginning, to carry the cost system along to the point of allocating the cost of service per car seat unit. The benefits accruing from the synthetic system, he believed, would be more quickly attained by first ascertaining the cost in detail of maintaining the property and its relation to the investment.

It was his opinion that a cost system based on the second classification formulated by Mr. Bowman would furnish accurate cost data making possible the efficient management of the property. Information relative to the other classes could be derived from this information.

Many electric railways have already installed cost systems covering the maintenance using the Specific Job plan of cost-keeping. In the division of Maintenance of Way and Structures, the track, and roadway, and power distribution system could be divided into geographical sections, each section to be covered by a specific job. Bridges, structures and buildings could be treated in like manner. Superintendence and miscellaneous expenses could be allocated to the specific jobs on the basis of percentage of total expenditures on each job, with the exception of salaries and expenses, which should be charged directly to the job. Each job could be subdivided to show the cost of ballast, ties, rails, rail fastenings and joints, special work, paving, etc., and labor. By using a decimal system of numbering, track and roadway labor could be further subdivided into cost of excavating to bottom of ties, excavating below ties, handling ballast, ties, rails, rail fastenings and joints, alignment of track, paving, etc. Labor cost of cleaning and sanding track could be divided between the geographical sections applicable and material and miscellaneous expenses apportioned on their percentage to labor costs. Cost of removal of snow and ice could be treated in like manner.

In the division of maintenance of equipment, general practice calls for cost records of the different types of equipment used, the purpose in mind being to determine the type of equipment best suited for any specific use. While it is essential to know the comparative cost of maintaining different types of motors, controllers, air equipment, trucks, etc., the knowledge of maintenance costs of each individual car is most important, and may be obtained without interfering with the record of costs of parts or types of equipment.

To obtain such costs and still have a knowledge of maintenance costs of different types of equipment, a specific job number could be placed upon each car body and electric equipment therefor, exclusive of motors, and also a job number for each set of trucks, including motors. By dividing the car into two jobs, confusion will be eliminated upon transfer of trucks and motors from one car body to another.

Jobs covering car bodies and electric equipment, exclusive of motors, could be further subdivided if desirable into cost of painting, repairs to car bodies, floors, controllers, trolley parts, trolley wheels, air equipment, etc., and jobs covering trucks and motors could be subdivided into repairs to trucks, wheels, axles, journal boxes, armatures, fields, etc. These subdivisions would permit the ascertainment of the cost of any type or parts of equipment by summarizing such types or parts of each job.

Allocation of the cost of shop equipment, shop and miscellaneous expense could be made to each specific car job by still a further subdivision by basing the use of machinery on the machine-hour plan.

The item of depreciation, Mr. Dinneen said, has been given very little attention by the electric railways in general, for but a few companies have made adequate charges to cover this item, due partly to the fact that, through lack of cost data, they assumed that depreciation was being fully cared for by renewals and replacements. With a cost system, similar to the one as outlined, no difficulty would be encountered in arriving at the item of accrued depreciation applicable to each unit. Such a segregation of expenditures would give a flexible and sound system of cost finding for these two maintenance divisions and would permit of unlimited detail for the larger electric railways, and of more concise information for the smaller companies.

M. W. Glover said it was difficult to add anything to the excellent paper presented by Mr. Bowman. It clearly shows the desirability of a system of cost accounting for electric railways, yet points out the danger of going to too great an expense in securing the information. It also shows that while the present classification of accounts is not primarily a cost accounting system, it can be adapted to that purpose, and it is the duty of accounting officers to find the means of determining costs of operations accurately as this information is needed by operating officials and they are entitled to it. He thought the plan should have a fair trial.

Mr. Glover then pointed out that when a statement of the cost of power is made, and it includes only the costs as shown in the classification under the general account "Power" and does not take into consideration taxes, depreciation, interest, damage costs, general overhead, and similar items, the statement is misleading. It may result in a small power house being continued in operation under the mistaken idea that power can be generated at less cost than if purchased from a large power company. In any cost studies, however, the engineering department must cooperate with the accounting department in order to obtain satisfactory results.

Elmer M. White told of the shop accounting system recently installed in Binghamton. The shop time cards are filled out usually by the workman to show the cars worked on. In some cases when the workman cannot write the foreman does it. The card also indicates whether the work was done on the car body, trucks, motors, etc. The time cards are later posted by a cost clerk on a distribution sheet. Individual car card records show the time worked as well as the material used. On the reverse side of this card is the daily car mileage record so that at the end of the year the maintenance costs of any individual or type of cars can be determined. A similar system is kept for special trackwork layouts. Depreciation can be figured either monthly or yearly and for each car or group of cars as may be desired.

The meeting ended in an informal round table discussion on the methods involved in charging off depreciation and the practices of allowing for depreciation in income tax reports.

Tuesday Afternoon's Session

At the opening of the meeting on Tuesday afternoon, I. A. May, Comptroller the Connecticut Company, read a resolution to the memory of former President John J. Landers, of the Accountants' Association, which was passed by a rising vote of the delegates.

Arthur Robert Weston then presented the joint report of the stores accounting committee of the Accountants' Association and the committee on purchases and stores of the engineering association. This report was printed as a part of the proceedings of the Engineering Association last week.

W. L. Davis, auditor Lehigh Valley Transit Company, in discussing the report said in part:

"Although the work of the Committee is described very fully in the Joint Report as submitted, it may be well to supplement the report in a few particulars.

It should be remembered that the report has been prepared with a view toward establishing certain recommendations as to fundamentals, and does not attempt to set forth any suggestions as to accounting methods to be used in arriving at final results as reflected in the general ledger; neither has it been drawn up for the purpose of establishing any particular accounting system. I understand that these features were purposely omitted, as the opinion among the individual members favored the consideration of the principles involved in the Material Classification and the standard methods to be used in maintaining records of physical stock before the subject of the relation between the storeroom material records and the general books, as we feel confident that a general discussion of the former matter would tend to bring out facts which would be of material assistance in the preparation of accounting systems and basic data for financial reports.

The standard Material Classification is, we believe, almost a necessity, but it may lose much of its value unless, upon installation, it is thoroughly explained to and understood by the various individuals responsible for distribution of accounts. If the stores account is subdivided in accordance with the classification as recommended, it will be necessary to classify not only the debits from vouchers, payrolls, etc., but also the stores credits from material issued. A misunderstanding of the classification on the part of one or more clerks or foremen might easily destroy its efficiency and make the final figures not only valueless, but positively misleading. This situation will require considerable "missionary work" on the part of the chief accounting officer, and his immediate subordinates, as erroneous application of sub-account numbers could soon transform a very useful and valuable classification into a veritable nuisance. This factor should also be considered in connection with the recommendations as to standard material reports, for obvious reasons.

While the standard Material Classification will be very desirable for the larger roads, it might be well for the members of the Association to make suggestions as to an abridged classification to be used by companies whose requirements might not be quite so extensive. Such a classification might be prepared in the same manner as the interstate commerce classification has provided for Class B and Class C roads, and could be considered by the committees.

I believe I am expressing the opinion of the committees in connection with the recommendations as to stock books in saying that these stock books are suggested with a view toward supplementing the "amount" or "value" ledgers with a record that will enable the storekeeper to establish a method of maintaining a permanent check between the ledgers and the physical stock, and are not intended to be considered as a substitute for the ledgers.

Personally, I feel that the work of the Stores Accounting Committee has just begun and that it will be able to render valuable service to the Association in the future if its work is continued.

FURTHER DISCUSSION ON STORES ACCOUNTING

Mr. Boylan suggested that it would be well for an additional column to be added to exhibit C to make space to carry an inventory. Mr. Cass of Philadelphia commented that the stock book had been adopted by the Philadelphia Rapid Transit Company, and had been found to be very helpful and of greatest service to the storekeeper. For this reason the order of items in the record is so arranged to give a sequence which will aid him in visualizing the stock on hand. The question was raised as to difficulties in securing the use of a uniform name for any material or equipment. Several expressed difficulties along this line, and one delegate said that his company is trying a cross index system, giving the nickname and after it the correct name. It would then be a duty of the stores clerks to supply the correct name.

The convention then took up the question of a Past President's badge and decided to authorize the executive committee to adopt a design of Past President's badge to be presented to all present and future Past Presidents.

ROUTINE ACCOUNTING

A paper was then presented by H. C. Hopson of New York on the "Adaptation of Routine Accounting Results to Particular Uses." This paper is presented elsewhere in ELECTRIC RAILWAY JOURNAL. Mr. Hopson took occasion to amplify by example some of the statements in this paper.

In discussion of this paper I. A. May said he was glad to hear Mr. Hopson urge that all accounting be done in the office which makes a business of accounting. Mr. May said he felt very strongly on this point. He said he had recently read several articles by engineers advocating perpetual inventories of physical property and some advocating a special department for such work. He said he had tried to answer this type of argument in a recent article in the ELECTRIC RAILWAY JOURNAL (see issue of Sept. 10, page 398) in which he pointed out that all records should be kept in the accounting office. M. R. Boylan, Auditor Public Service Railway, called attention to the standard classification of accounts as an answer to how the matter of what is included in the tax account should be interpreted to commissions. Mr. Boylan said that if accountants would always emphasize that their accounts are kept as defined in the Interstate Commerce Commission text there should be no difficulty.

Mr. Hopson pointed out that income tax is a part of the tax account and should be subtracted the same as other expenses before net income is figured. Mr. Hopson thought it was unfortunate that Congress refers to the present ten per cent and proposed fifteen per cent corporation tax as a "normal tax." Of course, a commission examines the operating account and a commission may disallow any tax item it may choose to disallow just as it may choose to disallow what it calls an excessive manager's salary or any other item of expense which it questions as being unreasonable.

Next on the program was the paper on "Construction Accounting" by W. L. Davis, auditor Lehigh Valley Transit Company, Allentown, Pa. This paper appears in abstract elsewhere in ELECTRIC RAILWAY JOURNAL.

CONSTRUCTION ACCOUNTING

C. E. Yost auditor and assistant treasurer, Wilmington & Philadelphia Traction Company, in discussing Mr. Davis' paper, said, in part:

"The manner in which Mr. Davis has handled the subject of construction accounting leaves very little for the rest of us to talk about. Every phase of the subject has not only been touched upon, to use his own language, but has been so clearly and completely set forth that if copies of his paper were put in the hands of all of our timekeepers, distribution clerks and bookkeepers, it would probably do more good than paying for special courses in accounting.

"It may be that the accounting department is at fault in continually trying to educate the various foremen and other employees from whom we receive the original records of material and labor distribution. In many cases after incessant hammering on the subject during the summer and early fall months, we see signs of embryo intelligence, but so soon as the first flakes of snow are scurrying through the atmosphere there comes an order from the operating head to stop all construction work for the winter, and before the accounting department is aware of any change in plans the 'hopeful' has gone from the property.

"Would it not pay in the end to have the accounting department furnish the necessary timekeepers and material clerks from our own force and keep them employed on some other work during the winter? No doubt the engineers in charge of construction work would resent having around on the job employees who would not be responsible to them. Yet how often do we find that on Jan. 1, the engineer himself has accepted another position and with him have gone valuable field notes and other data which he regards as his personal property.

"One of our Wilmington men once made a suggestion that each department keep a diary of its work throughout the year and in January turn them over to some one who would compile a complete history of the year's doings. While we have not taken up the suggestion, there is no doubt but that such a work if kept up each year would be invaluable fifteen or twenty years from now, especially at such time as a revaluation of the property might be required.

"The present accounting practice is to have various operating departments furnish assistance of various kinds at cost in the construction of new lines and extensions. No doubt the commissions would object to the inclusion of a profit on such labor, but if the work was done by an outside contractor not only would the actual cost be greater but the contractor's profit would be accepted without question as a proper capital expenditure. Reconstruction of existing lines should perhaps be excepted in taking profit on services rendered by other departments, but does it not seem unfair to compel auxiliary departments to do the construction work at cost and often at the expense of allowing their own regular work to suffer by reason of their transfer?

"There are no doubt numerous cases where in the past, especially during a change in ownership, capital has been charged with items which were at least questionable, but the practice now seems to be that when reconstruction is necessary, operating expenses should stand as much of the cost as possible. It is not fair, because a tie was in a certain place years ago and that there will be a tie in the same place after reconstruction, that the cost of the new tie should be considered as maintenance. If your roadbed was reconstructed in 1920, you should be entitled to a return on the actual present cost of the new road with ties at $1.50 each rather than 25 cents for those placed in 1900 and on labor at 50 cents per hour rather than the 10 cents or 12 cents paid twenty years ago for the original installation. It seems that we owe some consideration to the stockholder as well as to the bondholder.

"We are very apt to look with disdain upon the simplicity of the old methods of accounting, yet with all of our ingenuity for creating suspense accounts, sub ledgers, work orders, executive authorizations and control accounts, it is doubtful whether the accountant of 1950 will be able to glean much more essential information from our books than is found in the records of the previous generation. The supporting records will be so voluminous that in time they will be considered as junk and destroyed, leaving only the control accounts in the general ledgers.

"Most of our electric railway systems have gone through several consolidations, each one producing its crop of connecting special work and short links of track so that without maps distinctly showing the ownership of each foot of track, it would be impossible to tell what property is covered by the various bond issues. These maps should be made in sections and reduced to sheets 8½ x 11 in. for convenience in binding. One set should show all of the various items of material used in the construction of the track and overhead with as much information as possible concerning the type of the material used, by whom manufactured, etc. Another set should show the various deeds or rights of way together with notation of fencing, crossings and other requirements as to where same can be found both in the company's document files and in the county offices. On a third set of these maps should be shown each time the property was reconstructed, the job order on which work was done and the cost thereof. These sectional maps bound in book form would be worth their cost several times in their convenience and time saved over an ordinary index to locate the proper agreement relating to any section of property or the necessary details for the write off if retired from service or reconstructed.

"One other suggestion I would like to make and that is, the establishment of some method of segregating in a special memorandum all costs, no matter in which classified account they may be charged, pertaining to expenditures made for the benefit of the community as a whole and which may be considered as taxes, such as street paving, assessments toward the building of bridges, relocation of sewers, etc. While a great deal of money has been spent for these purposes in the past the amount which cannot be accurately determined, we can make a start now and it will be surprising how large will be the total in the next few years and it may be the means of preventing considerable increases in our future tax burdens."

Wednesday's Session

The greater part of the Wednesday afternoon session of the Accountants' Association was taken up with joint meeting with the T. & T. Association, the report of which was published in the issue of Oct. 8 in connection with the report of the T. & T. Association. At the end of that joint session the accountants reassembled for their final meeting.

After the meeting had been called to order, Mr. May, of New Haven, urged greater interest in the Question Box in *Aera*. Mr. Glover indorsed Mr. May's suggestion, and said that he had urged accountants to take an interest in the Question Box, but it fell flat. Continuing, he said that members of the association do not always take the trouble to answer letters. M. R. Boylan explained that many of them have been tied up in rate cases which have been frequent recently.

The chair then announced that W. L. Davis would probably be the representative of the association at the Atlanta convention.

The report of the committee on resolutions was then presented by M. R. Boylan. The thanks of the association were extended to the parent associations, its committees, the chairman of the program and other committees of the Accountants' Association, the technical press and the speakers at the Accountants' meetings.

The committee on nominations then presented the following as officers for the ensuing year:

President, Frederick E. Webster, vice-president and treasurer Massachusetts Northeastern Street Railway, Haverhill, Mass.

First vice-president, W. G. Nicholson, secretary and auditor Omaha & Council Bluffs Street Railway, Omaha, Neb.

Second vice-president, E. M. White, treasurer Binghamton (N. Y.) Railway.

Third vice-president, W. A. Doty, auditor Denver & Intermountain Railroad, Denver, Col.

Secretary-Treasurer, F. J. Davis, auditor's department, Public Service Railway, Newark, N. J.

For members of the executive committee, J. J. Duck, general auditor Chicago Surface Lines; R. N. Stevenson, chief clerk to comptroller, the Connecticut Company, New Haven, Conn.; Wallace L. Davis, auditor Lehigh Valley Transit Company; G. H. Caskey, auditor Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.

These officers were unanimously elected. Each of the newly elected officers who were present made a short address, and the meeting adjourned.

C. E. R. A. Engineering Council Meets

THE first meeting of the Engineering Council of the Central Electric Railway Association was held in the association offices at Indianapolis, Ind., on Sept. 26, 1921. The purpose of this meeting was to formulate a working basis in order that the different local sections and the general organization might properly function. It was decided that the sectional meeting would be a one-day session only, to be held three times each year, the first meeting to be held some time during the first half of November, the second during the latter part of February and the third during the month of May. There will be one general meeting of the entire organization at the annual meeting of the Central Electric Railway Association, at which time a half-day session shall be allotted to this organization on the program. In the holding of sectional meetings it is the general purpose that each section send a representative to the meetings of the other sections, in this way keeping in closer touch with the work throughout the entire territory. All the meetings of the local sections will be in the nature of a round-table discussion, as it is believed in this manner that the members will be more spontaneous in the discussion of engineering problems and better results will be obtained. Questions for discussion are to be supplied by the various members attending, but as an outline for the first meeting questions have been proposed by the Engineering Council.

Another meeting of the Engineering Council will be held the latter part of November in order to go over the work of the various sections and formulate a report to be rendered at the annual meeting of the C. E. R. A.

Snow Removal Problems Discussed

AS A result of a recommendation for a discussion on snow removal made by Henry L. Doherty after last February's severe storm, the material handling section of the American Society of Mechanical Engineers in New York discussed this on Sept. 23. The discussion centered on various snow-removal devices, including mechanical loaders, rotary plows and snow-melting devices. Plans were presented for briquetting snow so as to reduce its volume and enable the material to be piled along the street in small areas. Mr. Doherty expressed confidence that a practical scheme would be developed.

Electric Railway Cost Accounting*

Manufacturers' Cost Accounting Systems Can Be Adapted to Electric Railway Operations to Determine Cost of Operation by Divisions or Routes When Results Obtainable Warrant Expenditure

By John H. Bowman, C. P. A.
Price, Waterhouse & Company, New York

"COST accounting" as the term is used in manufacturing describes a formal system of accounts wherein the cost of each product at each stage of its process is determined. There are two plans of cost accounting. The first may be called the "analytical" method, as it consists in analysis of the determined cost of the operations as a whole; the second may be called the "synthetic" method, as it builds up the cost of each operation separately as a collateral procedure to the compilation of the aggregate cost of operations.

Scientific cost accounting in manufacturing organizations is a development of the last twenty-five years. At first estimates of cost were thought sufficient, but as competition became keener it was found to be dangerous to rely only on these cost estimates. The desire to determine more accurately the annual profits also furthered the development of cost accounting. A further benefit, not fully realized at first, derivable from the cost records is the guidance that they afford to the management in indicating waste and inefficiency.

Modifications of Cost Accounting in Transportation

In the adaptation of the manufacturers' idea of cost accounting to transportation certain fundamental differences in the two lines of enterprise have to be kept in view. It is not unreasonable to conceive of transportation service as a commodity in the production of which the processes are comparable with manufacturing processes. To the manufacturer all of the information which he ordinarily requires is provided when he secures the cost of each of his products so compiled as to show the cost of each of the various progressive stages in its process; the factory cost before providing for selling and administrative expenses furnishes the figures required for inventory purposes and the full cost, those necessary for price fixing, etc. Transportation cost on the other hand, while it affords the necessary information for comparative study whereby losses, waste, etc., may be detected and localized, does not provide sufficient information to be of real value in connection with many questions of management policy, or for comparison with rates. The reason for this is that a very large element in transportation service consists in providing, for the use of the patron, exceedingly costly facilities in the form of road, equipment, etc. The value of these facilities is vastly greater in proportion to the actual cost of the service provided than the value which a manufacturing plant bears to the total cost of its output. The relative importance of this factor is, of course, widely variable in transportation enterprises according to the location of lines, the density of traffic and many other factors, but to indicate roughly how important an element it is, it may be mentioned that a study, made on the basis of pre-war conditions, for certain large electric and steam road properties, for which I was able to secure approximate appraisal values of the property, indicated that a return of 1 per cent on the value of the property used in operations was equivalent on the average to about 5 per cent of the total operating expenses and taxes in the case of the electric railways chosen, and to a substantially larger percentage in the case of the steam roads. The data, therefore, which an electric railway company needs are not plain cost data, but should include also corresponding data relative to return on the investment. It is neither necessary nor desirable in the practical application of this principle to merge the two sets of figures at any point.

JOHN H. BOWMAN

Another fundamental difference between manufacturing and transportation cost accounting lies in the fact that the product in manufacturing is the commodity which is sold, whereas the product in transportation is the service provided, which may or may not be sold according to whether or not the traffic offers itself. Still another difference lies in the nature of the product and processes and the consequent methods of apportionment of common expenses. In manufacturing much of the greater part of the expenses ordinarily consists of the material which enters into the product and the labor cost of fabrication. The remaining expenses are very largely in the nature of supervision or are so closely related to the processes of fabrication as to render direct labor cost a sound basis of apportionment of most common expense. In the case of transportation or of the electric railway, in particular, there are certain operations, such as power production or shop work, which are fundamentally of a manufacturing character and to which the principles of manufacturing cost apply, but in many of the most important apportionments, as say between individual lines, statistics of use afford a very much more nearly correct basis for apportionment than do labor costs. For example, if a section of track be used in common by two or more lines, the most nearly correct basis for apportionment of the cost of its maintenance among the lines is probably a composite of two factors, which are best described as "beneficial use" and "destructive use," a basis in which due consideration is given through the former factor to natural deterioration and through the latter to the relative track-wearing qualities of the cars operated over the several lines which use the common track. This principle bears on a considerable number of elements of transportation cost, which it is impracticable to take up in detail within the limits of this paper.

Other distinctions between the manufacturing and the transportation cost accounting problems could be developed, but those mentioned sufficiently indicate the fact that manufacturing cost methods cannot be transferred bodily for application to electric railways and that the cost methods for the latter must be developed along their own, though somewhat parallel, lines, and further should be considered always in conjunction with the element of return on investment.

Limitations of Cost Data Obtainable by Electric Railways

The possibilities in the application of cost accounting to electric railways are first, as regards the extent to which the operations as a whole may be subdivided into individual operations or "products" (if the manufacturing analogy be kept in view), and, second, as regards the minuteness with which the elements or "processes" which go to provide the service may be subdivided.

Considering the subdivision of the operations we may take, as an illustrative case, an electric railway system operating both street and interurban lines and maintaining its own facilities for power production, car repairs, etc. On such a line the ultimate services rendered are, say the transportation of passengers and express over various lines. There are two plans under which the subdivision might start; first, by separation of the costs of different classes of service, and second, by subdivision by districts of the costs of handling all traffic. In any separation by classes of the cost of handling traffic over the entire system, where a considerable part of the separation has to be made on district or line figures, it is reasonably apparent that the separation into classes should be the last, or almost the last, stage in a subdivision.

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*Abstract of paper presented at annual meeeting of American Electric Railway Accountants' Association, Atlantic City, N. J., Oct. 3-5, 1921.

The logical first step in subdivision, therefore, may be taken to be that into districts. Next, the service in a district is obviously the aggregate of services on numerous lines in the district, so that subdivision of the district into lines is the logical second step. The operation of each line is the aggregate service rendered by various car runs, some of which very likely may be operated for a shorter distance than others through the cars being turned at points short of the end of the line. It seems clear, therefore, that the logical third step in subdivision is into individual runs. It is hardly worth while following the logical subdivision beyond this point because it is doubtful whether there are many cases in which run costs are worth determining excepting as a means of separation by classes of traffic. Ignoring, then, possible further subdivision by movement, the final step is the separation among the various classes of traffic on the line, or whatever other unit the subdivision is extended to.

Turning to the question of elements of operation which go to make up the cost of the chosen units of service, it may be said that the classification of accounts, as prescribed by the commissions, must be used as a basis in order that the relationship of the cost and general accounting systems may be maintained. A certain complication, however, is offered by the various charges, which are becoming more and more frequent in common practice and which are provided for by the commissions, to effect an equalization as between years of certain types of expense. Notable illustrations of these equalization charges are the provisions for deferred maintenance and for accidents and casualties, according to the generally accepted theory of the present day, it is proper that provision should be made for maintenance charges when the maintenance itself is deferred and for accidents and casualties to provide as a sort of insurance against the more serious accidents which ordinarily occur only at intervals of years. The idea underlying this is primarily to avoid misleading the investor by reporting excessive net income when there is reasonable prospect of abnormally large expenses in a period to follow. It has the defect, however, of concealing the actual operations of the year, except to a mind trained to consider financial statements. For administrative purposes the prime concern is, of course, with the actual outlays and not with the equalized figures. Perhaps the most practical way of meeting this condition is the preparation of the company's monthly income accounts in three column form—the first to show the actual operating expense without equalization charges, the last to show the equalized amounts in the form in which they are presented in the published accounts, and the middle column to show the difference between the first and last, and thus reflect the net effect of the equalizing charges on the accounts of the month. Under this arrangement the cost accounting system will support the cost of operation as presented in the first column. In such a treatment of the problem, however, it is probable that an exception should be made in the case of depreciation as distinct from provisions for deferred maintenance. It would seem that depreciation, if on a sound basis, is more closely akin to actual outlays than are the other equalization charges or credits. This whole question of equalization charges, however, is an open field for consideration.

To summarize, it is practicable to formulate a synthetic cost system that will provide the cost of the traffic as a whole, or of each class of traffic over each district or individual line, or even individual car run, and (provided a detailed valuation of the properties is available) to show collaterally the corresponding return on the investment in facilities used in the operation. It is practicable in the course of this compilation to maintain cost accounts for each individual sub-unit of operation, such as power production, car repairs, etc., and for maintenance in as much geographical detail as is desired. Finally, it is practicable to maintain these cost accounts in such a way that the aggregate cost of all of the services provided for carrying the several classes of traffic over the several lines in a given period will equal in the aggregate the total cost of the transportation service provided by the company.

BENEFITS OBTAINABLE BY THE ELECTRIC RAILWAY

The facilities afforded through cost accounting cannot be listed in detail as almost every company has problems of its own which may be met by this means, but the most important will probably fall under one or other of the following four classes:

1. Comparisons of costs with tariff rates or other revenues to disclose whether and to what extent a service is profitable, or the reverse, and why it is so.
2. Comparisons of details with those for other services, or for the same service in other periods, to localize losses through waste, irregularities, incompetence of sub-officials, or mismanagement and to facilitate and guide administration generally.
3. Information for use in connection with existing or proposed contracts or negotiations.
4. Information for board or stockholders or for publicity.

Comparisons of costs with traffic rates is the logical development of a principle that has been recognized in cases before courts and commissions for many years but, in the lack of adequate cost data, it has either been confined to the cost of the operations of a group of lines as a whole or has been developed by an analytical cost study, which is usually difficult to establish to the proper satisfaction of the judges or commissioners if, as is usually the case, there is active opposition.

Whether or not relinquishment of the plan of averaged fares within the cities, under which the street railway systems, as distinct from the interurban, have grown up, is under consideration as a possibility, it seems almost self-evident that for the information of the management full particulars should be available to show the profit or loss on the operation of each line.

The calculation of return on the investment in property used in operation, made along with the cost computations and accompanying them, contributes materially to the value of the results by lines. There are obvious advantages in making these return calculations on the basis of 1 per cent on the value of property used in the various operations, inasmuch as this rate involves a simple calculation and does not commit the company to any fixed rate of return as being an adequate one. There is a variation in what constitutes a fair rate of return from year to year and what is a fair rate from one point of view may not be a fair rate from another. The results can be converted to any rate desired by mere multiplication.

The possibilities of the use of costs for comparison of one service with another or with the same service in another period increase up to a point, with the minuteness of detail, but apart from the limitations of expense, cost details can be carried to a point where they cease to be useful for practical purposes. For ordinary use in comparisons the computations of return do not add much to the usefulness of the detailed cost data, but when the broader policies of operation are under consideration the return data may become of prime importance. For example, if there is a question as to the best location for a new carhouse as between two points, one at a central point in a city and the other at a somewhat out of the way point, it is obvious that the comparison to be made is between the additional operating cost entailed by the out of the way location and the additional return element resulting from the greater investment in the central location. The value of cost data in connection with the arrangement of a joint facility or lease agreement needs no argument and it is obvious that the element of return must be available along with the cost data to render them of best use in such cases. In matters such as negotiations with a city over a franchise involving maintenance or other undertakings, or in negotiations with labor organizations, detailed cost data are of more or less value according to circumstances.

For the purpose of information, whether for the use of the board, or the bankers, or for the publicity department, it is doubtful whether as a general rule it is necessary to add materially to the information which is made available by the cost accounting system necessary to provide the benefits already described. Further data required for any of these purposes can be better made by special cost studies.

There are certain underlying principles that must be met if the system is to be of value. These are, first, that there must be an ultimate allocation of all expenses without duplication; second, that the cost accounts must be built up logically and intelligently step by step, and, third, that the system must be a continuous one consistent in its methods from month to month.

One procedure whereby cost computations can be made is along the lines that have been prescribed by the Interstate Commerce Commission for steam railroads. The development of this procedure is traceable through certain decisions of the Wisconsin Commission in 1907 and 1908, through computations by the Post Office Department relative to various mail service costs in 1909, and to its promulgation in 1915 by the Interstate Commerce Commission as a basis for the separation of freight and passenger train expenses on steam railroads. This procedure applied to electric railways would call for successive subdivisions and apportionments until the desired degree of detail should be attained. In the first subdivision expenses would be allocated direct to the operating units if directly assignable, and if not they would be treated as common expenses. Common expenses would in turn be apportioned among the various operations on the basis wherever possible of ratios determined from closely related statistical data, item by item, and finally those not apportionable in this manner would be treated as general overhead expenses and apportioned on some general basis such as the ratio of the other expenses of the group to which they pertain, or as a whole. Further reapportionments along similar lines would perhaps have to be made for further subdivisions as has already been noted. This method is distinctly an analytical one. For special cost studies, or for approximate regular determinations, it serves fairly well provided the object is merely the entire cost of each of the several services. The method does not afford the sort of detailed information that is necessary to furnish really valuable aid for adminstrative purposes. To secure data which will be useful the synthetic procedure, which has already been roughly outlined, seems to be requisite. In a synthetic method it is possible to avoid the progressive compounding of the elements of error that are unavoidably entailed by averaging or other arbitrary apportionments.

COST FROM SUB-UNIT ACCOUNTS

In the practical installation of a synthetic system there should be opened a cost account for each principal unit or sub-unit of operation, to which charges are to be made direct from the vouchers, payrolls, etc. At the end of the month the process of closing the sub-unit accounts entirely into the principal unit accounts should be effected sometimes, perhaps, through the opening of additional sub-unit accounts for assembling and distributing costs. In all of these accounts provision should be made for cost figures and for the 1 per cent return on the investment in parallel columns. In closing out the sub-unit accounts the use of performance or statistical data would be necessary and provision should be made for the careful compilation of what data of this type are to be required. In some cases mechanical devices would be found worth while, as for instance in the matter of the consumption of power. If operating conditions as regards grades, loads, etc., are practically uniform over the lines of a system, it would probably be correct to apportion the power consumption on a car-mile basis over the lines, but according as the conditions on the several lines become more and more dissimilar the importance of ascertaining the actual power consumption on each line increases and the benefit derivable from the installation of the necessary devices to determine such consumption becomes more marked. As has already been mentioned, statistical data involving the traffic that is actually offered should be avoided in cost computations. It should be kept clearly in mind that the cost of the service provided is the immediate aim and that the traffic that offers itself is a factor distinct and separate. Neglect of this principle introduces one of the most confusing of all types of variation in cost data, namely, the composite result of two variables.

Perhaps the most practical question in the whole cost problem is that of how to establish a scientific cost accounting system without a radical increase in the expenses of the accounting department, the justification for which cannot become evident through results for some time after the increase begins. The formulation of a standard system by a committee is not at this stage of experience a procedure to be advocated. It is better that each of the more progressive companies should develop its own system to a point and thereby be in a position to discuss, knowingly, the problem of standardization, which can then be advantageously assigned to a committee for recommendations. Meanwhile general discussion of the basic principles and procedure is invaluable.

Gradual development of a scientific cost system along synthetic lines is practicable because of the elastic character of the synthetic plan. To a great extent the shop and power cost systems which are now commonly kept can be incorporated in the system with a minimum of change for the time being, and pending the full development of the system many apportionments can be made approximately on an analytical basis. For example, the distribution of power cost may be made temporarily on, say, a car-mile basis and the basis of actual consumption deferred to a later stage of development of the details of the cost system.

The simplest practical plan would perhaps consist in, first, choosing as principal units of operation, not each line, but a limited number of distinctive lines, the costs for which gave reasonable promise of affording especially valuable information, and treating the other lines as one or more groups. Separation of cost as between classes of traffic might be undertaken at this stage or not according to the local importance of the question. Cost accounts would, of course, have to be kept from the outset with the more important sub-operations, such as power production, car shops, carhouses, etc., but the distribution of these charges might be made for a time on an average cost basis direct to the principal units of operation.

The services and activities re-reflected by the general and overhead expenses, which are also most conveniently to be treated as sub-units of operation for cost purposes, could be similarly apportioned. The results would be a fair approximation of the cost of operation of each principal unit and should aggregate the total cost of operation. The basic plan would be synthetic, but many of the steps analytical, and while the profit or loss on operation of a chosen unit would be indicated approximately, the details would be of but limited value as a means of administrative control of operations.

Offsetting the shortcomings mentioned would be the facility with which more precise methods and further subdivision of operations could be substituted one by one without disturbing the continuity of the system. Similarly as regards the element of return on investment, provision should be made from the outset for return computations along with the cost figures, and used if the figures are available. If not, a partial computation may be practicable. Most companies, for example, have the investment value of rolling stock at least. "Car service" must be provided for as a sub-unit of operation to be charged with maintenance, cleaning, supplies, housing expenses, etc., and the total cost distributed among the several lines on an appropriate basis. If valuation data are fully available, there should be shown in the space provided for return on investment, the figures in respect of the cars themselves, the shops, the carhouses, etc. If the valuations are only partially available, it may be feasible to base on actual figures the return on the investment in equipment and on rough approximations, that on the investment in shops, carhouses, etc., which are properties of a type for which some sort of value estimates are nearly always on hand.

CONCLUSION

It is imposible with so broad a field to do more than sketch an outline of the thoughts that seem to have a most direct bearing. There are certain principles which I have endeavored to develop which seem entitled to special consideration in the development of a general plan of cost accounting for electric railways and I shall conclude this paper by repeating them.

First, what the electric railway needs

to correspond to the cost accounting system of the manufacturer is what may, pending the discovery of a better term, be described as a "value accounting system," embracing not only the determination of the costs of the various services but also the return on the investment in property used in rendering these services.

Second, that the electric railways through cost accounting methods can practicably secure benefits of great value.

Third, that in the formulation of a cost system the attractions that are offered by the analytical method are by no means equal to those offered by a synthetic procedure, which, in addition to being more accurate and more illuminating in its results, is more elastic and, therefore, better adapted to gradual establishment as a part of the company's accounting system.

Finally, it must be borne in mind in all considerations of costs or their derivation that cost figures are approximate and not absolute. The more minute the detail with which they are prepared and the more we come through experience and study to understand them the nearer they can be brought to the theoretical, though never quite attainable, true costs, which we are always seeking to obtain.

Construction Accounting*

The Author Outlines the Practice to Be Followed from the Beginning of the Work to Its Conclusion and Points Out the Pitfalls to Be Avoided

By W. L. Davis
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THE charges to construction costs may be divided into direct and overhead.

In direct charges, the fundamental principles of distribution should receive earnest attention. The most elaborate accounting and cost systems, together with the most complete classification of accounts, are absolutely useless without a thorough knowledge of the elementary differences between construction and operation on the part of those responsible for the distribution of accounts. In this connection, it may be said that the foreman (to whom is often delegated the duty of assigning account numbers to payroll and material records) is not an accountant nor even a bookkeeper, and cannot be expected to be an expert along those lines. However, this condition can certainly be obviated to some extent if he is carefully instructed as to fundamentals, and if he has the opportunity of receiving from the general office advice along those lines. It is clearly the duty of the chief accounting officer of an electric railway to see that the matter of distribution is properly cared for at the source, and if this is accomplished, some of the problems involved in construction accounting will have been solved. In a large corporation this responsibility must necessarily be delegated, and the time of one man, if not more, can be profitably spent on the subject.

Another matter which is of considerable importance (and often of trouble) is the education of those responsible for original records from the field along the subject of proper description of labor performed and of material used. If the work is not described properly, or, as is sometimes the case, not described at all, errors in distribution and inaccurate cost analyses will surely follow. This feature may present some practical difficulties, but they can be reduced to a minimum by means of careful and constant supervision on the part of the accounting department.

W. L. DAVIS

The educational work should not be confined to the field offices and field supervisory employees but should be extended to every employee of the accounting department as well. The employees in the general office should not be expected to be familiar with physical conditions to any great extent, but they should have a thorough knowledge as to what construction means and should be able to identify charges which are clearly in error and which have been erroneously distributed by someone else.

The direct charges to construction accounts are made up of payroll distributions, material distributions, a proportion of the garage and stable expenses and miscellaneous items through the voucher record. The payroll and material distributions are originated by the construction men in the field, and the accounting department must rely to a great extent upon the accuracy of the basic charges, but these items should be investigated from time to time by the general accounting department, and tests of their accuracy should be made. This branch of the work may be facilitated to some extent if the payroll and material distributions are summarized in the general office, but if the organization of the company provides for this work to be handled in division or district offices, considerable outside accounting supervision is necessary. A portion of the garage and stable expenses should be allocated to the construction costs, with due regard for commission requirements, and this result may be obtained by a monthly distribution of the automobile costs, based upon the mileage records. The garage and stable expense account should be carried as a deferred item and cleared to the various accounts as soon as the monthly mileage is determined. It may be necessary to carry this account over the closing period as a suspense item, and in such a case the suspense account will be cleared in the following month. The charges to garage and stable expenses may be subdivided in order to arrive at such detailed costs as may be considered desirable, but this feature is not absolutely necessary. A number of charges to construction are made on special vouchers, and these items of course can be readily distributed and charged to the proper accounts through the accounts payable record.

DISTRIBUTION OF OVERHEAD COSTS

Indirect or overhead construction costs should receive most careful consideration, as it is just as erroneous to pursue an ultra-conservative policy as to make mistakes in the opposite direction. Construction costs should clearly include some general expense items other than such charges as are made direct, the most important item being interest. This can easily be provided for during the time of construction and before the property is turned over to the operating department, as construction funds used during that period are usually borrowed for the purpose and the cost of this money is easily determined. When money is borrowed for a particular construction job and is not used for any other purpose, the capitalization of such interest does not present any difficulties. If, however, funds are borrowed for general construction purposes, and not for use on any one piece of work, the question of proper allocation will naturally arise, and the monthly accruals or amortization of interest may be charged to the various construction jobs in the ratio that the various direct charges during the same periods bear to the total. Still another circumstance may be mentioned (with particular reference to the troubles during the past few years), when the operating company is required to use its own funds, in the absence of borrowing capacity, to finance necessary and obligatory construction. In this case, it is clearly proper to include in the monthly charges to construction, an amount representing interest upon the money so used, this amount being credited to the interest account. This same procedure could be followed during the time that an operating company is providing for its construction requirements from its own funds pending the sale of bonds, which are usually certified and delivered by the trustee only after construction requirements as outlined in the mortgage have been fulfilled. If it is possible, however, for the company to sell its funded securities covering certain construction work before such work is completed, it may be possible to capitalize the interest thereon (less any interest accretions upon unused construction funds), but care should be taken not to duplicate interest charges. The rate at which the construction interest is taken into the accounts of an electric railway will depend altogether upon the cost of the money during the period of such construction.

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*Abstract of paper presented at the annual convention of the American Electric Railway Accountants' Association, Atlantic City, N. J., Oct. 3-6, 1921.

Other indirect costs which should be considered are represented by general salaries, general office expense, accounting department expense, purchasing and stores expense, insurance and the like. Although the classification dated July 1, 1914, states that no charge can be made for incidental services, it does permit the carrier to capitalize a proportion of such expense when employees devote a substantial part of their time to construction work. In such cases the company should determine the proper ratio represented by the time of its office employees and should apportion its general expense accordingly, with due regard, however, to any direct charges either to operation or construction which could be eliminated before the allocations were made. The cost of purchasing and the storeroom expenses may be allocated (with due regard for the requirements of the classification) upon the basis of the monthly storeroom issues. In arriving at the basis of such an allocation, however, it might be well to consider any items appearing in the stores distribution which might not be subject to a charge for purchasing and storeroom expense. Insurance may be allocated on a basis which would follow the consideration of the facts involved, but this may present some difficulties. In connection with liability insurance or workmen's compensation insurance, or other insurance based upon payrolls, the premium may be apportioned after analyzing the distributions of the payrolls upon which it is based, and applying the standard or policy rate for construction labor to payrolls representing construction costs. Other indirect or overhead charges should be allocated upon due consideration of the conditions.

HANDLING OF CONSTRUCTION COSTS

While it would be possible to charge construction costs direct to property accounts, it is far more desirable to handle them through the medium of construction authorizations, or, as they are sometimes called, authorities for expenditures, improvement requisitions, etc. Under these construction authorizations it would be well to issue supplementary work orders covering the charges to each property account, in order to facilitate distribution in the field. These construction authorizations and work orders should be prepared by the engineering department upon recommendation of the department head concerned and should show a complete description of the work to be done, estimate of cost, material on hand, cash required, reasons for expenditures, benefits derived therefrom, and any other information considered necessary or desirable. After being signed by the department head recommending the work and the chief engineer (or someone delegated by him) the work orders should be sent to the accounting department for verification of the distribution. This distribution should be based upon the description as given, and must show not only the approval of the chief accounting officer as to the total charge to construction, but the sub-classification as to property accounts as per the work orders. If a construction authorization describes a job which involves a replacement, a supplementary authority should be prepared and should follow the same course, on the theory that all new work be charged to property account in total, and the value of material retired or replaced in connection therewith be credited to property account in total. Upon receipt of the authority for retirement, the book value of the property should be determined. If this is impossible, an engineer's estimate as to the book value may be used, but his substitution should not be made unless absolutely necessary. If the construction accounts of an electric railway are kept properly, the book value of any plant unit should be available.

The accounting department will assign numbers to the construction authorizations and work orders, but will see that they bear the necessary executive approval before they are returned to the originating department. No construction work should be begun until the authorizations have been properly recorded and approved.

HOW THE WORK IS CONDUCTED

As soon as the work under an authorization is begun, the accounting department will arrange to keep a detailed analysis of its cost. All charges to the authorization must show the number of the work order and the property accounts affected, and will be reflected in the monthly payroll and material distributions accordingly. These distributions should be prepared in such detail as will enable the accounting department to maintain a monthly analysis which may be readily made to parallel the original estimate as reflected by the construction authorizations, and if this analysis is compared with the periodical progress reports usually prepared by the engineer in charge of the job, the charges may be checked at intervals before the completion of the work.

This analysis should take the form of a subsidiary ledger, controlling a general ledger account, reflecting the total cost construction work in progress, the subsidiary ledger being in balance with the general ledger at all times. The postings to this ledger should reflect as much detail as possible, but it may be difficult to accomplish this result in connection with the payroll and material charges without a detailed distribution. It will be found advantageous to incorporate in the payroll accounting system a method by which the time chargeable to any construction job may be analyzed in detail, and if this is done, it will be possible to reflect in the monthly analysis a complete description of such labor charges. This result may be effected by a columnar form used in the daily distribution of the time tickets with the various charges representing similar work being entered opposite the column showing the necessary descriptive information. A system of this kind would require a separate sheet for the charges to each account during a semi-monthly accounting period. Thus it may appear to involve some extra work, but the value of the monthly analysis of the construction charges will more than offset the additional expense. A similar method may be incorporated in the stores accounting system whereby the charges to each account may be summarized on a daily or monthly recapitulation sheet upon which the quantities of material might be posted opposite the description of each article, the totals being priced and extended at the end of the period. A summary of this kind would not only provide a permanent analysis of the material charges, but would also establish a much easier method of posting the credit side of the stores ledger.

In order to handle construction accounting properly in the general office, it is absolutely necessary that these monthly analyses be kept up to date. They should not only reflect the details of all direct charges, but they should also contain such proportions of the indirect charges as may be applicable to them, these entry charges being applied monthly. A simple method of allocating the indirect charges to the various work orders may be established by means of a separate construction authorization to which all indirect or overhead items should be charged during the month, this authorization to be cleared before the construction accounts are closed and the total thereof divided among the various work orders upon the basis of the direct charges thereto (with due regard for such conditions as may arise in connection with any work orders as would be chargeable with any specific indirect cost item). The greater portion of the indirect charges represent credits to various items in the operating expenses and fixed charges, and if such items are not credited to the income account and charged to construction regularly, a distortion of the former is sure to result.

As soon as the work in connection with an authorization is completed, the accounting department must be notified and steps should be taken to secure all outstanding bills pertaining to the job and enter them promptly. As soon as it is determined that all of the charges have been entered, the accounting department will prepare a cost analysis of the work and submit it to the engineering department for comparison with the physical data and the original estimate. If the final cost exceeds the original estimate, a supplementary authorization covering the difference must be prepared by the engineering department and sent to the executive department for approval before final entries are made to property accounts. When the cost analysis is finally agreed upon by the department head concerned, the cost of the work should be transferred from the "Work in Progress" account to the plant account.

The routine work in connection with an authority for retirement should be handled in a somewhat different manner. As soon as the accounting department determines the original (or estimated) book value the authorization should be sent to the executive department for approval, and then returned to the accounting department, where copies should be made and sent to the various departments concerned. The accounting department should assign a number to the retirement authorization, and should debit a special account under the construction authorization (offsetting the depreciation reserve) with the full amount of the book value, crediting it to plant account as soon as the property is taken out of service (this information being furnished by the department head responsible for the work), the cost of any work incidental to the removal of the plant material having been charged to the special account in the meantime. After the final disposition of the property, the amount realized should be credited to the special account and the difference charged to the depreciation reserve. If the depreciation reserve has been set up on the basis of the estimated depreciation of each property unit, and the difference between the plant value and the salvage value of the property retired be over or under the amount set aside for it, the balance would be properly applicable to operating expenses. This method is recommended in order to provide for a credit entry to plant account before the property retired has been sold or otherwise disposed of.

If the construction accounting records are kept up to date, and the monthly analyses compared with the progress reports made by the engineers performing the work, monthly summaries of the charges to the various construction jobs may be made to determine the cash requirements of the corporation.

Adaptation of Routine Accounting Results to Particular Uses*

Routine Accounting with a View to Obtaining Actual Instead of General Results Provides the Basis for Furnishing Cost Figures Pertaining to Construction or Operation

By H. C. Hopson, C. P. A.
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H. C. HOPSON

NOT so many years ago, street railway accounting, in fact all public utility accounting, was comparatively simple. It was accomplished with a limited force and required little beyond a knowledge of sound bookkeeping principles. Usually the rate of fare was fixed by franchise or by a specific statute and was seldom if ever changed. The properties were usually small and self-contained, and the practical operating man prided himself upon his ability to know all about the property by watching the people ride on the cars, maintaining constant contact with his employees, ascertaining how much cash there was in the bank from time to time, and giving the statement of receipts and disbursements a cursory examination "some time after" the close of the month. This "some time after" used to range from two weeks to three months depending upon the willingness of the accountant to put in extra time at night after he had finished checking and accounting for collections, counting transfers, making up payrolls, etc., which constituted his duties.

The type of accountant needed today in the public utility industry is a man capable of acting as a general business adviser who can stand on an equal footing with the lawyers, engineers and other technical men in the organizations. To be all that he ought to be and in order to be able to claim this standing in the organization, an accountant must be equipped to furnish the various kinds of information needed and to furnish it on short notice. I could not hope to set forth in detail all of the different kinds of records which a public utility accountant might keep to meet particular needs but will only attempt to cover some of the more general conditions which exist, not with a view toward urging the addition of any system blindly but instead in order that the suggested group of examples given may serve as a stimulus to constructive thought as to the instances where the idea involved in this paper, rather than the substance of it, may be made effective.

ROUTINE ACCOUNTING FUNDAMENTALS

Before dealing with particularities, there is a fundamental which should first be emphasized. Unless routine accounting is laid out on a sufficiently comprehensive scale you cannot, regardless of the time and money available, meet many particular needs. To illustrate: the time when you must prepare to furnish information as to the cost of particular service is from day to day, as the distribution is put on the vouchers or material issues. If this is not done, the only basis for the distribution of such costs in a few months is the recollection of those who approved them. Such a basis is of course entirely unsatisfactory, emanating from a department which is supposed to deal with provable facts. Having this in mind, it is well to say that the first and most important fundamental is that certain basic principles for the classification of items must be laid out and kept day by day.

A second point, is that so far as possible the routine accounting results which are summarized in the current monthly statement should be kept in such form that they will require as little restatement as possible. To illustrate: we all know that taxes, except possibly income taxes—and they ought to be—are treated the same as are operating expenses for purposes of testing the adequacy of rates. Yet, on the income statement for some street railways taxes are shown as an income deduction along with bond interest and to determine the amount of the remaining revenue available for a return upon the capital investment it is necessary to make a deduction. The statement might as well have treated taxes as a revenue deduction, as is customary, so as to show at a glance the amount available for return.

Similarly, we all know that the amount of the allowance for renewals and replacements frequently varies, being an item which is very largely dependent upon judgment, method of computation and other circumstances. Hence, in the comparative statements which we ordinarily set up, the amount included in operating expenses in one accounting period may be radically different from that in the other accounting period with which the comparison is made, thereby entirely destroying the comparison. As a general thing such reports must be taken from your books, yet it is impossible, if the best use of the routine accounting results is to be had, that in each particular instance the books should be examined to ascertain the fact, and perhaps the man who is attempting to make use of the statement has neither the time nor the knowledge of the intricacies of the reports to be able to assemble together all of the so-called depreciation items in order that he may ascertain the fact for himself. Hence, to get the best use of the routine accounting result for the particular purpose, an income account comparison should show on the same page in a convenient place the relative amounts included for renewals and replacements in the respective accounting periods. This saves time and makes the statement much more usable.

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*Abstract of paper presented at the annual convention of the American Electric Railway Accountants' Association, Atlantic City, N. J., Oct. 3-5, 1921.

INVENTORY VS. PROJECT CLASSIFICATION

There is another general observation with respect to harmonizing particular requirements with routine accounting. After the receipts and disbursements stage was passed, some effort was made to segregate current expenditures between capital and income but usually at the beginning all the capital charges were lumped into a single account. This lumping into a single account, however, did not suit anyone. It cast suspicion upon the legitimacy upon the whole capital account, and other than showing that the total charges, made in a particular period, were a given amount, it meant nothing. The engineer wanted to know how much a particular extension cost. The master mechanic wanted to know how much a lot of cars cost, or more difficult still, to know the cost of putting a new type of brake on a particular car or group of cars. The banker cared nothing about these details but wished to know the amount which was expended for rails, ties, ballast and paving, etc., or perhaps in less detail, the amount expended for track, rolling stock and power supply. The executive, being interested both in specific projects and also in group expenditures, wished information as to both.

The conflict between the advocate of the inventory classification and the project or job classification led in many cases merely to an unsatisfactory compromise so that it was not unusual to find on the balance sheet, representing work long since completed, expenditures of the same nature carried under both inventory and project nomenclature. Subsequently, with the advent of regulatory commissions, requirements were made enforcing the inventory classification. This led, in some cases to a complete abandonment of any routine accounting on the job basis, with the result that engineers and master mechanics attempted to inaugurate their own subsidiary clerical or accounting departments, which purported to keep so called cost records. This practice has been a bugaboo wherever it has appeared because of the many items of cost which they failed to include on account of the necessarily incomplete sources of information from which they were derived. This was and is entirely unnecessary. Such records can and should be kept in the accounting department without materially increased work if the work is initially laid out on the right basis.

The inventory or commission classification is known to all. It should be in the hands of every employee of the company who authorizes work or approves vouchers or material slips. This, therefore, is taken care of. For a project classification every well-regulated, economically conducted corporate enterprise today has a budget with systematically arranged authorizations, jobs or projects, known by ordinary numbers or decimal designations. The accounting department should have the key or master list and make it its business to see that all departments of the company, having to do with these matters, are advised of all existing authorizations, to the end that as expenditures are made, in addition to carrying distribution showing the proper commission classification account, they should also carry the appropriate project number.

AUXILIARY PROJECT RECORD

The results of the recorded distributions on the individual vouchers and material slips when assembled may be either kept for the time being in a construction work in progress account or debited direct to the appropriate road and equipment accounts, being distributed by journal entry at the conclusion of the work, or, as I prefer, "second posted" into an auxiliary project record which is in continuous balance with the net increase in the road and equipment account in the general ledger. The uses to which such data may be put are manifold.

There has been a great deal of argument between commissions and courts of late as to whether present value or original cost should be the proper basis for rate making. While this is a very important question a great many street railways would even now be very much pleased if they could have a recognized fair return upon their original cost and leave present value for the future. The great difficulty, however, is that the original cost of much of their property is subject to fully as much speculation as is claimed with respect to the estimates of their engineers. In such a case even if all the records are available, it requires perhaps a month to analyze the cost of the respective cars so that a simple list can be furnished giving merely car number and amount. I know of no means which affords as accurate a check upon a perpetual inventory, which is practically a necessity in any public utility where costs are made use of, than properly kept routine capital records.

THE ACCOUNTANT SHOULD LOOK INTO THE FUTURE

One of the elements most vital to the financial health of a public utility is an adequate structure of rates. Except in rare instances, however, adequate rates are only secured at a vast outlay of money and labor and in the face of what is sometimes very difficult and involved litigation. Sometimes this litigation and the studies attendant upon progressing it, consume so much time that the credit of a corporation is seriously impaired before relief is secured. Therefore, one of the first duties of the accountant should be to grasp in a broad way and set before his executive officers the need for additional revenue before such need becomes acute. This need for revenue may be on a system as a whole or merely on one of its parts. If the accountant is to be the business adviser a detailed study of revenue and cost trends should enable him to anticipate the net results from operation from three to six months in advance.

Assuming for a moment that the accountant has demonstrated that with the existing rate of fare the revenues will be insufficient to provide the requisite fair return, it becomes necessary to collate data in such a way as to sell the idea to the regulating authority. In this, the importance of the work of the accountant cannot be regarded too highly. To have its maximum value and effect before a regulatory body, it should be exact and correct. The psychology of rate litigations is such that there is a great deal of magic in the word "actual." For an accountant to state on the witness stand that the results which he is presenting are actual, frequently produces a distinct sense of relief and sympathetic consideration on the part of the judicial officer who is hearing the case. In view of this, the keeping of records upon an actual basis is not only highly desirable, but is apt at any time to be worth a great many more dollars than are expended upon it.

Most public utility accountants have considerable experience and training in the keeping of revenue records upon an actual basis and little need be said on this subject. There doubtless are instances however where an advantage can be gained by devoting a little attention to the subject of a better arrangement for the keeping of revenue records by geographical subdivisions of the property or by such natural subdivisions as suggest themselves in the light of possible revisions in tariff structures. In given cases where it is not, methods may be adopted whereby revenues collected on interurban cars within the confines of cities and fares collected on suburban runs by cars which also operate on city lines, might be devised and made effective use of.

In connection with operating expenses, there is even greater opportunity for the effective use of actual results than in the case of revenue. Public utility commissioners and judges who hear cases of this character cannot but be impressed when evidence of operating costs is presented from the standpoint of actual outlay, especially if they have been listening to a good deal of testimony upon so-called allocations of expense on a per car mile or other basis. There will always be some expenses of a general character which must be allocated upon a more or less arbitrary basis, but it is frequently possible to isolate certain expenses of this sort so that the element of approximation will enter to a lesser degree than it would otherwise. Where operating costs as a whole are arbitrarily divided by car miles, car hours or any other of the generally utilized media for allocation, it almost inevitably follows that one branch or the other of the company's business suffers and not only does it suffer in fact, but in a controversy in which so-called facts thus arrived at were severely disputed, a whole case might suffer even more. In the following I will refer to some of the things which may be done to obviate this condition.

THE JOB ORDER SYSTEM FOR ALLOCATION OF EXPENSE

It is possible without tremendous effort to keep all of the maintenance of way expenses upon an actual basis through the adoption of the job order system which would cover all maintenance work in a given district for each year. Where this simple method is adopted, no allocation of direct maintenance of way expenses whatever is necessary except, possibly, the time devoted to superintendence, which is small in relation to the aggregate.

In the case of maintenance of equipment expenses, subdivisions are frequently kept, usually by car units. These can be tied into the respective classes of service and districts from a knowledge of the equipment units utilized. Further attention to this feature cannot help but develop means by which even more exact segregations can be made.

Power expenses are frequently apportioned upon an arbitrary basis and the best that can be said for some of these allocations is that they might be right. A careful study of this situation will disclose, in some cases, that the location of the company's transmission or distribution lines was such that it would be possible to measure the amount of current utilized in the operation of each of the property's major subdivisions.

The most frequent method of allocation employed in connection with transportation expenses is a subdivision on a car hour basis. As regards wages of motormen and conductors, this method of allocation is probably better than any other, the only possible criticism being that it might not accomplish a correct allocation of the amount paid for extra time. There are many expenses in the transportation group, however, where exact results are not secured if only this car hour basis is used.

Traffic expenses are usually of minor importance and need not be referred to specifically.

The element of joint cost is more present in the group of expenses coming under the head of "General" than elsewhere. This is not true, however, of all of the general expenses. On many properties officers whose compensation is chargeable under the general group, have specific duties which they perform in connection with separate parts of the property. This is particularly true of many of the clerks. Most of the clerical compensation is charged to General Expenses. Of course if some effort is not made, a little care used, legal services may come in in the form of a lump sum bill once in a year, with no satisfactory segregation. When the importance of being able to assign actual costs to the particular services becomes clear to the legal advisers it is possible to get a reasonably satisfactory segregation of bills.

Insurance, particularly insurance against property damage, can be readily segregated where there has been a valuation of the property. Injuries and damages almost always can be separated. In fact the surprising thing about these so-called joint costs is that while when first surveyed they seem to be almost all joint, upon analysis of the individual items, a sound logical basis for allocation of many of them becomes apparent to even junior clerks to whom cost accounting is a stranger.

Taxes usually fall into two general classifications, those relating to a specific property and those levied upon the corporation's rights to do business as a whole or upon the results of its operations as a whole. The taxes levied upon specific items of property can usually be allocated directly to the services to which those properties are devoted. Even taxes of a more general character can usually be subdivided upon some basis of fact and even if they cannot be exactly subdivided, they certainly can be allocated upon a more correct basis than would otherwise be the case if a correct statement of fact as to the company's situation and income (for each of the company's respective parts) has been maintained.

SEGREGATION OF PLANT ACCOUNTS IS ESSENTIAL

In addition to the necessity for keeping operating results in such a manner as to record actual rather than estimated facts very real advantage can be secured by a proper segregation of the plant or fixed capital account. The ideal arrangement would be where the fixed capital investment in each zone was carried separately and could be set forth on short notice. (The word zone here used is intended to mean any natural subdivision of the property for which a separate fare might need to be established.)

In most rate proceedings, two elements in connection with the physical property are usually considered. One is the actual cost or investment, and this is peculiarly within the province of the accountant to demonstrate. The ascertainment of the value of the property usually falls to the lot of the engineer. Experience has demonstrated that the accountant with his set of well kept records showing actual costs of actual property can be of inestimable value to the engineer in aiding him to ascertain the property's value.

While all the foregoing matters have their definite place and value in rate proceedings, the use of these data is by no means limited to proceedings of this kind. They can be made to locate operating efficiency or inefficiency and the causes responsible for either. They can also be utilized effectively in instances where unwarranted demands are made for additional service, where it is desired to postpone burdensome street repairing or repaving requirements, where prospective or existing jitney competition must be met, in instances where there is public clamor for extensions which are bound to prove unprofitable and in other instances too numerous to mention.

COST ACCOUNTING WILL GIVE THE BEST RESULTS

To accomplish the best results, the street railway accountant should always seek the unit and maintain his records so that the function and relation of the unit to the whole can be ascertained. This suggestion savors of cost accounting but that is one of the more recent developments of street railway accounting. The unit to be used, whether it be the line, the zone, the division, the type of track, the car or the repair part, should be carefully selected with a view toward the present and future requirement of the particular property involved and its problems. After the unit has been selected, it should be adhered to with reasonable consistency. It is only in this way and through the use of comparative units and periods that the best results can be secured. To do the most effective work along these lines, the accountant should be in complete control of the accounting situation, subject only to executive direction.

Regulation has its faults, but it also has its advantages, and not the least of these is that it has taught the sponsors for and participants in the electric railway industry that this industry is a business and a very real and essential business. The successful operation of a successful business contemplates that at the end of each operating period there will be left an adequate amount of wages for the dollars which were employed in producing the service which was furnished. Here lies a duty which devolves particularly on the street railway accountant who should do his utmost to insure that this net income will exist and will continue to exist. He is not only the watch dog for the company's receipts, but should also be the critic of its expenses.

Utility Commissioners Urge Improved Methods in Electric Interurban Operation

National Association of Commissioners Opposes Government Ownership and Discusses Safety Methods on Interurban Electric Railways and Post-War Regulatory Problems

THIRTY-TWO states were represented at the opening session of the annual meeting of the National Association of Railway and Utility Commissioners, held in Atlanta, Ga., on Tuesday to Friday of this week. James A. Perry, president of the association, vigorously opposed centralization in Washington, in the Interstate Commerce Commission, of control over all railroad rates, thereby destroying the power of the states to regulate their domestic commerce. In discussing the local problems of utilities, such as electric light, street railway and gas companies, Commissioner Perry asserted that the rates have been too low, generally speaking, throughout the country for the past two years, and he predicted that a continuance of this policy of dealing with local utilities will very soon drive capital entirely away from utility investments, if, indeed, it has not to a large extent already done so.

PUBLIC SHOULD REALIZE UTILITY SITUATION

The time has come, declared Commissioner Perry, for the public to realize that it is equally interested with utility stockholders in adequate service and adequate returns upon the value of the properties devoted to the public use. It is time for the public to realize that community growth is dependent upon utility growth, and that utility growth is dependent upon the investment of capital, and that investors of capital will not put their money into utility property when utilities are not allowed to earn as much as the legal rate of interest in the states where they operate.

Public or government ownership was strongly opposed in the report of the public ownership and operation committee, and after an exhaustive inquiry into matters concerning government and private ownership, both in the United States and abroad, it went on record as favoring privately owned and privately operated public utilities, with the proviso that all utilities should have public regulation.

> "Such regulatory governmental bodies, however," the report said, "must be sufficiently wise and fair and far-seeing to stand between the utility in question and unthinking, hasty public clamor not based upon full knowledge and careful thought. They must operate successfully in order succesfully and adequately to fulfill their duty of service to the public.
>
> "It therefore follows that, in order to maintain a just, equitable balance, and even to keep such utilities out of bankruptcy, it is necessary to maintain their higher rates longer than would to the layman seem necessary judging by the surrounding decline in commodity prices. To follow any other policy would be to put such utilities out of business and to discontinue that service to which the public is so justly entitled and which is now more necessary to the return of the vast bulk of private business to the desired goal of normalcy."

Improved safety methods in the operation of interurban electric railway lines were strongly urged by the committee on safety of railroad operation, whose report was devoted to a discussion of interurban electric lines.

As pointed out by the committee, the interurban electric lines have become important factors in the transportation system of the country, but "there has not been adequate advancement or improvement in operating methods or practices, with the result that many such systems, particularly trunk-line railroads, are today operating under primitive street railway rules and regulations which constitute a serious menace to life and property."

SAFETY METHODS RECOMMENDED

As the first requisite of safety on interurban electric lines, the committee recommended the adoption of timetables and the strict requirement that motormen and conductors learn them thoroughly; next, that the double-order system of dispatching trains be put in effect on all important lines, this system consisting in the issuance of all train orders in writing and in duplicate, one copy going on the dispatcher's file and one being delivered to the crew.

The committee recommended that the block system be required on all electric roads where two or more trains are operated simultaneously, indorsed very highly the use of platform doors, preventing the ingress and egress of passengers until cars have come to a full stop, and particularly stressed the importance of careful selection, training, supervision and probation of motormen and conductors.

PROBLEMS OF REGULATION DISCUSSED

Wednesday afternoon was devoted to a round-table discussion on after-the-war phases of regulation, presided over by Henry G. Wells of the Massachusetts commission. In opening the discussion he pointed out that regulation should not penalize efficiency and place a premium on inefficiency. He referred to financing of utilities as one of the great problems and related how a solution was brought about in his state by adequate legislation. Other commissioners dwelt on the need of fairness and truthfulness in presenting cases to them in order to inspire confidence in the basis for the argument of the utility. Customer-ownership companies were viewed with much favor by commissioners and considered to afford a solution to a part of the financing problem. They urged that harmony be sought by every method.

On Wednesday evening a banquet was tendered the association by the Presidents' Club of Atlanta, which is a club comprising presidents of some fifty-two civic bodies. Mell R. Wilkinson was toastmaster, and addresses were made by prominent business men, including Carl D. Jackson, president-elect, and James A. Perry, retiring president of the association; Hartford Powel, editor of *Collier's Weekly*, and Joseph B. Eastman of the Interstate Commerce Commission. Arrangements for the banquet and other entertainment features were carried out by J. Prince Webster, formerly a member of the Georgia Railroad Commission.

Thursday's and Friday's proceedings will be reported in a later issue of the ELECTRIC RAILWAY JOURNAL.

Conference on Railroad Ties

A CONFERENCE on railroad cross ties and switch ties is to be held on Tuesday, Oct. 25, 1921, at 11 a.m., in Room 206, Atlantic Building, 928 F Street, N. W., Washington, D. C. The purpose of the conference is to decide:

1. Whether the unification of specifications for railroad cross ties and switch ties shall be undertaken.
2. If so, what the scope of the work shall be.
3. How the work shall be organized.

The details of existing specifications will be discussed in order to develop the lines along which the committee organized to carry on the work will consider the problem under the various local conditions.

This conference has been called in accordance with requests received by the American Engineering Standards Committee from the American Railway Engineering Association and the Forest Service of the United States Department of Agriculture for a conference of the bodies interested to determine the desirability of undertaking the standardization of a specification for railroad cross ties and a specification for railroad switch ties. In connection with its request for the conference the Forest Service made the following statements: "The railroads of this country use in the neighborhood of 100,000,000 ties per year. Before the war there was a wide variation in specifications. Much was accomplished toward standardization during the war, and since then further progress has been made. The American Railway Engineering Association and the National Association of Railroad Tie Producers have both adopted standard grades for railroad ties. The Forest Service is, of course, interested from the standpoint of conservation, as well as from that of standardization of forest products."

Invitations have been sent to the following national organizations: American Electric Railway Association, American Railway Engineering Association, American Society of Civil Engineers, American Society for Testing Materials, Forest Service, United States Department of Agriculture, Hardwood Manufacturers' Association of the United States, National Association of Railroad Tie Producers, National Hardwood Lumber Association and National Lumber Manufacturers' Association.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Des Moines Franchise Presented

Measure Looking to New Deal Provides for Sliding Return and Graduated Fares

Negotiations looking toward the end of the Des Moines railway controversy received a serious set back during the week ended Oct. 15 through failure of the owners of the Des Moines City Railway and the McKinley interests to arrive at an agreement relative to the power clause contained in the proposed railway franchise. Local officials of the Des Moines Electric Company, which is owned by McKinley interests, announced that inclusion of a power clause in any new grant to the railway would mean increased electric rates in Des Moines. They opposed the inclusion of the clause in the grant.

Members of the City Council sided with the McKinley representatives and at the session of the Council on Oct. 10 passed a resolution instructing the Corporation Counsel to notify the railway receivers that the power clause must be eliminated. The Mayor and members of the Council declared that the section as to whether the Des Moines City Railway is to be empowered to sell light and power should be submitted to people separately from the franchise. However, when the final draft of the franchise was presented on Oct. 12 the power clause remained.

M. H. McLean, representing the Harris interests controlling the Des Moines City Railway issued a statement on Oct. 12 to the effect that the company's reason for desiring the power clause was that the rate of fares may be reduced through the profit from the sale of surplus power. He called attention to the fact that the franchise would not permit earnings on the common stock until the fare had been reduced.

Mr. McLean further stated that in the past the railway had received applications for the purchase of power from it and that the company desired to take advantage of the legitimate demands which exist. He emphasized the fact that the Harris Company did not want to engage in the light and power business in competition with the McKinley interests. He also stated that unless his company was permitted to use its full facilities it could not be compelled to put new money into the property.

The final draft of the franchise, which has been pronounced acceptable by Harris interests, was presented to the Council on Oct. 12, but no definite action was taken. There are few changes from the draft as it stood after Corporation Counsel Miller's original alterations. A new motor bus clause bars the buses only from streets on which railway lines are operated. Buses are permitted to cross car line streets at right angles, to cross bridges with car lines and to have down-town terminals. Arbitration of labor troubles is to be by a board of three members of the State Railroad Commission or by three judges from outside Des Moines chosen by the Chief Justice of the Supreme Court.

The grant provides for the operation of one-man cars on certain lines and makes possible one-man cars on all lines at certain hours. The clause requiring city car supervisors to be graduate engineers has been eliminated.

An initial fare of 8 cents is provided, with no return on the common stock until the fare is reduced to 7 cents. The allowance provided is for a 3 per cent return to the company on a 7-cent fare, 4½ per cent on a 6-cent fare, 6 per cent on 5-cent fare.

The Council at its meeting on Oct. 12 ordered the Corporation Counsel to petition Judge Wade to order immediate resumption of service and by vote of four to one defeated resolutions offering a three-year bus franchise.

Sentiment is steadily crystalizing in favor of the return of the electric railway cars. Ten Connecticut buses left the city last week and the number of buses now operating in the city is under 100.

Wants Ten-Year Bus Franchise in Saginaw

A conference was held on Oct. 12 attended by George R. Bidwell, New York, president of the Trackless Transportation Corporation, members of the Council of Saginaw, Mich., and the Board of Commerce Committee relative to organizing bus lines in Saginaw. To show an 8 per cent return on the investment, in addition to a suitable sinking fund it would be necessary to charge an 8-cent fare. The plan is to sell half the $500,000 stock in Saginaw, Mr. Bidwell's company to subscribe the balance.

The cost of operating thirty-five buses figured on the car-mile basis of the Saginaw-Bay City Railway, now in hands of a receiver, would be 28½ cents a bus mile. Mr. Bidwell's company could not attempt to finance a local company in Saginaw unless it was assured an exclusive privilege.

Mr. Bidwell after making survey of Saginaw and studying the conditions under which the Saginaw-Bay City Railway was compelled to operate did not express surprise that the local company had gone into the hands of a receiver. In order to go ahead Mr. Bidwell would have to be assured of a 10-year franchise and the elimination of all competition.

Pacific Electric and Los Angeles Railways Announce Cut of Four Cents an Hour

Wages of trainmen on the Pacific Electric Railway Lines were reduced four cents an hour, effective Oct. 1, 1921. This cut is made up of 2½ cents an hour in rates of pay and 1½ cents additional through discontinuance of the $5 a month bonus paid trainmen for a clear record. Under the new wage schedule trainmen will receive one cent more an hour than the wage prior to Aug. 16, 1920, as the last increase was 5 cents an hour.

The present annual vacation and transportation arrangements will be maintained, whereas after one year's service annual vacation of 12 days each year with pay is allowable, as well as certain transportation privileges as covered by the company's circulars of Dec. 17, 1918, and June 20, 1919. The Pacific Electric Lines are among the last of large employers of labor in Los Angeles to make reductions in pay and the cut has been made reluctantly to correspond with previous readjustments of hours and pay in other departments.

In comparison with other California lines the wages on the Market Street Railway Lines in San Francisco were reduced 4 cents an hour in August; 6 cents on the Oakland Traction and Key Route Lines in July. The old and new rates of pay in cents per hour on the Pacific Electric Lines are as follows:

	Rate	
Street Car Service	Old	New
First year	50	46
Second year	51	48½
Third year	52	49½
Fourth year and thereafter	53	50½
Interurban Service		
First year	52½	48½
Second year	53½	51
Third year	54½	52
Fourth year and thereafter	55½	53
Single Track Line		
First year	55	51
Second year	56	53½
Third year	57	54½
Fourth year	58	55½
Freight and Work Train Service Flat Rate		
Motormen and conductors	62	60
Trainmen and switchmen	57	54
Trolleymen	52	49
Yard foremen	62	60

Announcement of a reduction of 4 cents an hour it is reported was received with little protest by the Los Angeles Railway trainmen, while the trainmen of the Pacific Electric Lines, it is said, took the news in the same spirit since rumors had been afloat for some time that the company's financial status, owing to motor bus cumpetition, might make a reduction in wages necessary at any time.

In connection with the Los Angeles Railway's new scale of wages the merit system and bonus, amounting to about 2 cents an hour, will continue in force.

Proposal Renewed to Handle Freight in New York Subways

Freight transportation in the New York subways during the early morning hours, to increase earnings and help keep the fare at 5 cents, has been proposed by the Transit Commission to the Port Authority controlling harbor transportation, of which Alfred E. Smith, Lewis H. Pounds and E. H. Outerbridge are the New York members.

The Transit Commission's engineers, it was announced, are working out a plan for handling freight trains in the subway between 1 and 5 a. m. to transfer freight between terminals in Manhattan, the Bronx and Brooklyn, thereby earning a large profit during a period in which the subway trains now do not pay for their operation.

It was announced by the Transit Commission representatives that this proposal does not aim at any interference with the Port Authority's plans for organizing freight handling for the whole harbor, but is to be directed toward supplementing the harbor freight system with highly effective freight distribution on this side of the Hudson. The new terminals to link the subway with the railway freight systems, they said, would quickly be paid for out of the profits of operation of freight trains in the subways.

Another Commissioner for City Participation in Utility Ownership

William A. Prendergast, chairman of the New York Public Service Commission, whose opinion in the Utica fare case attracted state-wide attention, emphasized the need for immediate city participation in utility affairs and ultimate municipal ownership in a speech which he made before the Empire State Gas & Electric Association at its meeting at Lake Placid on Oct. 7. In his address Mr. Prendergast said:

> The time has arrived for some constructive effort to correct present conditions. There is no use in permitting their continuance. If this is attempted, public disfavor will exhibit itself in demands for more drastic remedies. The principle of municipal operation has its main support in a desire for a change, rather than in any inherent belief in the efficacy of the principle itself.
>
> I am suggesting a working partnership between a unified gas corporation and the city. There are precedents for this. It is not a new experiment. The exact basis for this partnership I am not prepared to discuss definitely at this time, but will say that in the recommendations of the surpassingly able report of the Transit Commission issued on September 30 there is considerable suggestive matter that would apply to the gas company situation. On one point however, I wish to be absolutely specific at this time and say that the City of New York must have a positive voice and representation in the management of such an enterprise. Legislative sanction would be required and this, I feel assured, could be obtained.
>
> I am not suggesting municipal operation. On the contrary, I would deprecate it. For the city to have representation in an enterprise is one thing. For a city government to have the responsibility of conducting a great and intricate business is quite another. The political changes that take place in a city government absolutely preclude the possibility of successful municipal operation. Further, the city could not buy the companies outright, for it has not the credit for such a gigantic operation.

According to Mr. Prendergast the New York city public is "strongly critical, suspicious and unfriendly" toward practically all public utilities, and in suggesting the creation of the gas consolidation he emphasized that only "the genuine value of the present great investment in the gas business need be protected" in consideration of his ideas.

Municipal Tangle Discussed

Nothing Tangible Will Be Accomplished While Company and Council Fight

Unless the Minneapolis Street Railway can have the confidence and cooperation of the City Council in its efforts to provide better service for the people of the city nothing will be accomplished and car riders will be the sufferers. This opinion was recently expressed by Horace Lowry, president Minneapolis Street Railway, to the Council's special committee on street railway matters and road extensions.

Mr. Lowry in commenting on the activities of the company during the current year said that $528,700 had been spent in improvements though the revenue had decreased. He alluded to the city's opposition to the Railroad & Warehouse Commission in authorizing a 7-cent fare with four tickets for 25 cents and said that the city took the stand that the company would not be required to make further paving or extensions this year, yet a few days later a mandamus action was begun by the city to force the company to pave Johnson Street northeast.

In his plea for co-operation Mr. Lowry said in part:

> The company wants an opportunity to show the members of the City Council and the Mayor what it is trying to do. The company is on its toes and ready to provide the best of service that its revenues will permit. It is now providing the best service at lowest cost of any city in the United States, and I challenge anyone to dispute this fact.
>
> The company wants to establish good credit. It cannot get credit now. The company will have to pay 8 per cent to renew its mortgage bonds due January 1.
>
> To show what we are doing, and attempting to do, we invite the members of Council and the Mayor to visit our shops, take lunch, and after inspection there, make a tour of the system in one of our new double-unit cars. We want your confidence and co-operation in aiding us to get enough money to maintain good service, and establish proper credit.

The committee voted unanimously to accept Mr. Lowry's invitation.

Outlook Good for Reorganized Lines

The committees which have been soliciting subscriptions to the stock of the new Brunswick & Interurban Railway, Brunswick, Ga., report that much progress has been made and they are confident that they will secure sufficient funds for the operation of the line. The Brunswick & Interurban Railway is the successor company to the City & Suburban Railway. Reference was made to the reorganization of the property in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 17.

Trolley Bus an Evolution, Not Revolution

Thomas S. Wheelwright, president of the Virginia Railway & Power Company, Richmond, Va., recently issued a statement designed to refute some erroneous thinking about the place of the trackless trolley or trolley bus and its relation to the present electric railway system. As a certain amount of this kind of talk is passing around in the industry as well as among laymen, the following extracts from the statement should be considered.

Mr. Wheelwright points out that since July 1 successful demonstrations of the trackless trolley have been made in Richmond and Norfolk, Va., in the smooth-paved residential districts, where the right to operate noisy track lines had been denied. During the demonstrations, the public as well as public officials of these two cities were most generous in their approval of this new method of transportation. In their references to the new trolley bus many of its enthusiasts have carelessly remarked that it is a revolution of the present street railway system, which is all wrong. It is an evolution, not a revolution, Mr. Wheelwright emphasizes. The trackless trolley is a means for the development of the present street railway system whereby transportation service can be made to grow and expand with the development of the community. The use of the term "revolution" in connection with the trolley bus has already fixed in the minds of some the idea that the present street railway system is to be discarded and the tracks torn up and trolley buses substituted for street cars.

Mr. Wheelwright points out that neither Richmond nor Norfolk nor any other city is much concerned about changing the mode of its transportation where it already exists. What should concern every growing community is how to keep the transportation lines it already has and how to get service into those sections not now served. The evolution of street paving from cobblestones to Belgian block, to asphalt and concrete, has suggested a type of transportation vehicle that will be in keeping with the quiet and comfort of the new smooth paving. This has brought the trolley bus, which is especially designed for operation in those smooth-paved sections where regular transportation service is not now available. Its function will be to reach out into the unserved sections.

Thus the trolley bus is an evolution or development, not a revolution or overthrow. It is a means by which the electric trolley can be made a greater factor in community growth of the future than it ever has been in the past.

Men Accept Cut. — Employees of the Springfield (Ohio) Railway have voted to accept a wage scale of 42, 44 and 46 cents an hour. The former pay was 53, 55 and 57 cents. The cut became effective Oct. 1.

Suggests Subway for Montreal

The plan and route for an underground railway in Montreal, Can., have been outlined by F. S. Williamson, prominent engineer, whose paper on subways read recently at the Town Planning Convention, has caused considerable comment.

In Mr. Williamson's opinion a subway system in Montreal would cost about $25,000,000. It should be operated by the Montreal Tramways. With such a system in force transportation carriers in Montreal could handle 300,000,000 passengers a year.

Wage Cut Accepted "Under Protest"

A 12 per cent wage reduction ordered by the Omaha & Council Bluffs Street Railway, Omaha, Neb., has been accepted by the union "under protest." The reduction was 7 cents an hour. The old scale was 53 cents an hour for first three months of service, 55 cents for next nine months, and 57 cents after the first year of service. The new scale is 46, 48 and 50 cents an hour, respectively, for the periods mentioned.

The men voted three to one against taking a strike referendum of the union. Anton Rubeck, president of local union No. 807, stated that the men adopted the right course when they voted against taking a strike vote and accepted the decrease of wages.

The action of the company in reducing the wages was in line with a recent recommendation of the Nebraska Street Railway Commission, which denied the company's application for an 8-cent rate, with a special ticket rate. The wage reduction has been extended to all branches of the company's service. J. A. Munro, vice-president, accepted a cut of 25 per cent in salary, and the chairman of the board of directors was similarly reduced.

The saving in wages under the reduction will amount to nearly $200,000 a year.

Trainmen—Take Heed

George J. Plummer, superintendent of transportation for the Dallas (Tex.) Railway, has contributed "Transportation Department Hints" in the last issue of "Partners," the semi-monthly organ published by the traction company. In part they are as follows:

> I want better service for myself and for the public. I am not unselfish in this, for better service will result in increased car riders, and increased car riders will mean increased car revenue. Bear in mind that an increase or decrease in revenues will affect your condition.
>
> Do your duty by everyone and when the day comes to a close you can spend the evening at home with the folks in content. Violate the rules, circulate grouch, and things won't be pleasant at home nor here. You may have your likes and dislikes; leave your dislikes at home, for there is nothing to be gained by bringing them on the job.
>
> Every patron on our lines stands on an equal in the service you are to give. That service is gauged only by the passenger's every need; if lame, aged, or child, it is service to assist them on and off the cars, to a seat, and to a safe place on the curb.
>
> Representing the company you will understand that cleanliness in person, appearance, language and mind is most essential.
>
> A motorman who starts and stops his car with a jerk has no friends among the passengers or conductors. He makes life miserable for himself and everyone else. He wastes power in starting with a jerk, and tears down equipment in stopping with a jerk. He causes accidents and pain. We have no room for him on the job.

Railway Would Swap Its Right-of-Way for Power Rights

The Niagara Gorge Railway, Niagara Falls, N. Y., has applied to the New York state waterpower commission for permission to utilize water in the lower Niagara Gorge for power development purposes. It offers to deed to the state its right-of-way along the lower Niagara gorge between Niagara Falls and Lewiston for a scenic motor highway in return for the power development privilege below the American falls.

Although several other corporations have made application for power rights in the lower gorge, the offer of the Niagara Gorge Railway to give up its right-of-way to the state for a great scenic motor highway has impressed the state commission and a hearing on the proposal will be held before the board in Albany at an early date. The offer of the company was made by its president on behalf of the board of directors.

The route of the Niagara Gorge Railway between Lewiston and Niagara Falls is at the base of the rocky cliffs and alongside the lower Niagara River. Through Gorge Route cars operate over the line in conjunction with the Park & River division of the International Railway, which operates along the cliff of the Canadian side of the river.

Company Unable to Finance Extension

"The Ohio Valley Electric Railway will pay anybody in Huntington 8 per cent on a $40,000 loan, give the best of security and build at once the Norway Avenue extension," was the challenge flung by George I. Neal, counsel for the company, during his argument at a hearing before the board of commissioners in support of the company's application for more time in which to fulfill an obligation of its franchise. W. R. Power, general manager of the railway, discussed unreservedly the company's financial affairs and the same readiness was manifest in statements by H. J. Crowley, general manager of the American Railways, Philadelphia, principal backer of the local company, of which he is also the vice-president.

The extension in question was to have been completed by Oct. 23 next under penalty of $20,000 forfeiture. The railway has petitioned the commission to extend the time for one year, although definitely planning to begin the work early next spring. The protestants are not insistent nor desirous of the commission exacting the forfeit, but they take the position that the company should get the money and finish the work before cold weather. The company says it is unable to finance the project at this time.

After listening to the arguments the commission reserved its decision.

Another "Five-Cent" Candidate

Henry H. Curran, Republican Coalition candidate for Mayor of New York City, made public on Oct. 10 his first statement on the traction situation since the plan of the Transit Commission was made public. He declares that the plan as indicated by its own words is of a preliminary nature, but that it holds out definite hope of several things for which the city has waited for many years. He urges, however, that the validity of the transit law be tested, and that it be amended next winter to "give back to our local government the power that it took away from us." Mr. Curran said:

> I am for the 5-cent fare. I believe in it. As long as I am Mayor I shall fight for it. I know it is enough and I know also what a hardship it would work on the whole city if the unit of fare should be increased even 1 cent beyond the nickel.

Mr. Curran's statement gives a definite promise that when he is Mayor he will endeavor to co-operate with all the forces and agencies working for the good of the city.

The attitude of Mr. Curran toward any traction relief plan will not be determined, he says, by any consideration of the source of the plan.

Right to Inspect Buffalo Books Denied

Herbert G. Tulley, president of the International Railway, Buffalo, N. Y., has refused the city permission to inspect its books as the first step in the attempt of Frank C. Perkins, municipal commissioner of public affairs, to start proceedings for the restoration of the 5-cent fare in Buffalo. George Watson, an accountant, and Director Macomber of the bureau of public utilities, were authorized by the City Council to inspect the books of the company. In his public statement denying the request to inspect the books, President Tulley quoted from the latest reports of the company filed with the Public Service Commission showing it is not operating its city lines at a profit.

Commissioner Perkins, the Socialist member of the board, explained:

> What we particularly want to find out is the amount that the company is saving through the cut in the wages of its employees; what its receipts have been in the last eighteen months and how much more it has been collecting than it would have collected if the fare had remained at 5 cents as provided in the franchise.

It also has been proposed by the City Council that proceedings be brought to have the railway sell weekly or monthly tickets.

Function of a Railway —To Educate

When you are in doubt ask the Dallas (Tex.) Railway. It can handle all your queries—how often are motors oiled, how many agents are employed to take care of the accident claims, etc.

The company established this "know-it-all" reputation on Sept. 19 when it had charge of the meeting of the Dallas Electric Club. The meeting was turned into an educational rally where 200 club members learned a thing or two.

Mayor Couzens Urges Action

Urges City to Proceed to Take Over the Day-to-Day Lines of the Detroit United

The taking over of the day-to-day lines of the Detroit (Mich.) United Railway according to the decision of the board of arbitration is favored by Mayor Couzens. On its part the Detroit United Railway has indicated its willingness to expedite the transaction leading to the city's acquiring the lines under arbitration. By taking over these lines the city will be enabled to add another cross-town line to its system in a very short time. This, the Clairmount-Owen line, with the Grand Belt which will be taken over, will make three cross-town lines in the municipal system.

Included in the matters to be arranged are the necessary release of the mortgages, by court action, on the Detroit United Railway tracks and the working out of an agreement for the interchange of running rights on the Detroit United Railway and municipal tracks or a system of transfers. It is understood that both the company and the city favor an interchange of running rights rather than a system of mutual transfers. The arrangements to be made involve the working out of details as to the amount to be paid by each party for the privilege of running over the other's tracks.

Further negotiations are under way relative to the extension of the municipal railroad lines into the village of Hamtramck, which is entirely surrounded by the city of Detroit. The clause in the ordinance providing for municipal ownership, which permits the city to build and operate lines up to 10 miles beyond the city limits, was inserted to provide for municipal lines into new territory as the city limits are extended. It is expected that eventually Hamtramack will become part of Detroit.

According to a report from Lansing the Supreme Court has affirmed the action of the Wayne County Circuit Court in refusing to grant the motion of the Detroit United Railway to dismiss the ouster proceedings started by the city in 1918. A Council resolution of July 30, 1918, provided for legal proceedings to obtain a judgment of ouster against the Detroit United Railway on all lines where franchises had expired. Shortly after this resolution was passed, the Kronk ordinance was passed fixing the rate of fare at 5 cents on all lines. The company took the matter of the Kronk ordinance into the Federal Court on the ground that it was confiscatory and that the Council was without authority to pass it.

The company sought to have the ouster case dismissed, claiming that the ouster proceedings should have been started by ordinance and not by resolution. It was further claimed that the Kronk ordinance amounted to a franchise renewing the company's rights in streets where franchises had expired.

The Supreme Court decided that the Council was within its rights in acting by resolution instead of by ordinance, and according to the Fort Street case decision, no Council action was necessary to justify the Corporation Counsel in proceeding with the ouster. It further held that the city had a right to reasonable control of its streets.

Paving Dispute Serious

City Uses Strong-Arm Methods in Seizing Funds of London Street Railway

Following a brief resort to law the City Council of London, Ont., and the London Street Railway have arranged an armistice in their paving dispute. The company, operating under a franchise agreement made in 1895, is held to fares which according to its president are the lowest in America. Shareholders have received dividends averaging only 4 per cent and since 1917 their investment has earned nothing.

The Ontario Railway & Municipal Board, after operating the property for a year relinquished it to the company and advised the City Council that without an increase in fares the company cannot improve the service or comply with its admitted obligation to pave its right-of-way.

Two years ago the city paved Rectory Street and billed the company for $7,500 for its share. This amount remained unpaid. On June 10, 1921, the city obtained judgment for the full amount by default, the company admitting liability but pleading inability to pay. On Sept. 16, in exhibition week, a deputy sheriff seized all cash in the company's offices, amounting to $1,550 to satisfy the judgment, and thereby forced the company to pass its pay day. On the following Monday the sheriff repeated the raid, but could find no money.

Subsequently R. G. Ivey, the company's legal adviser, negotiated a truce with the City Council on the understanding that the company will attempt to pay off the balance of the debt in monthly installments of about $500 each. By another transaction the City Council decided, without prejudice to its legal rights, to accept President Currie's offer to regrade tracks, and to pave right-of-way on various streets with crushed stone and tarvia, though the city uses asphalt. On Stanley Street the city paved with asphalt and the company graded with gravel, employing men with brooms to sweep back loose stones, as the city threatened suit alleging that the company was responsible for mutilation of the new pavement. Under the settlement that section is also to be treated with tarvia.

The union of employees at a mass meeting decided not to press the company for payment on the regular pay day, under the circumstances, and President Currie has asked the Council for another conference on increased fares in the interests of better service.

News Notes

Freight Service Established. — The South Carolina Light, Power & Railway Company has started a freight service on its Glendale line. When the volume of business warrants it an extra number of cars will be pressed into service.

Railway Affairs to be Investigated.— A committee consisting of three city officials of San Diego, Cal., will be formed to look into the difficulties facing the San Diego Electric Railway and to offer suggestions for a solution of the transportation problem in that city. It was agreed that the committee should have the power to call in the assistance of outside statisticians and experts if that course were found necessary.

Hudson Valley Railway Wages Cut.— H. B. Weatherwax, vice-president of the Hudson Valley Railway, Glens Falls, N. Y., interviewed at Albany, N. Y., on Oct. 12 by the resident correspondent of the ELECTRIC RAILWAY JOURNAL, advised that the wages of the men were cut from 60 cents an hour on Oct. 1 to 55 cents an hour and that on Nov. 1 the wages are to be cut to 50 cents an hour.

Submits New Franchise.—The draft of a new franchise for the electric railway in Champaign, Ill., was recently submitted to the city officials by officers of the Urbana & Champaign Railway, Gas & Electric Company. The provisions were not made public, but it was reported that certain changes would have to be made before the city authorities would accept the proposed franchise. The official answer of the city is expected to be given out in a short time.

Extends Lines By Buses.—The City Council of Minneapolis, Minn., has ordered the Minneapolis Street Railway to extend its Second Street Northwest line several blocks to the Northern Pacific Railroad shops. This will be provided in about a month with buses. This will be subject to permanent determination by the Council. The company will give service on certain extensions next spring with trackless trolleys if the city will pave the streets, it is planned.

May Electrify Line.—Miami, Okla., will be the terminal for a new electrified line which will be an extension of the Miami Mineral Belt Railway. This announcement was recently made by H. M. Levy, superintendent of the above mentioned property. The line will run through the business section of Commerce, entering Miami from the northeast. Through service will be established between Miami and Baxter Springs, Kans. A preliminary survey is being made.

Financial and Corporate

Municipal Railway Financing Again Causes Concern

To provide funds for the purchase of twenty-five new cars for the Seattle (Wash.) Municipal Railway, to pay the city's present indebtedness to the Western Washington Power Company for the Greenwood car line in Ballard, and to provide funds for the retracking of First Avenue and First Avenue South, an ordinance was recently introduced in the City Council authorizing the sale of bonds in the sum of $680,000.

The bill is a new draft of an old proposal which has been contemplated for a long time, but before being voted on it will be sent to the city's bond attorneys in New York City for approval, although they have already stated they would acccept such procedure.

The Council will also undoubtedly await the report from D. W. Henderson, general superintendent of the railway, as to the possibilities of the trackless trolley, which he recently went East to investigate. The trackless trolley has been proposed as a measure to obviate the necessity of purchasing new rails for First Avenue.

The City Council finance committee has suggested through Chairman C. B. Fitzgerald a plan to change the character of the $15,000,000 of bonds issued to the Stone & Webster interests in payment for the street railway system. The plan involves the cancellation of the present bonds and issuance of new securities, probably maturing in forty years.

The plan is offered as one of the ways by which fares may be reduced. It would greatly diminish annual payment on bonds, and together with added revenue resulting from the elimination of jitney competition, might aid in decreasing the present 8⅓-cent fare. The city is now under obligation to redeem in seventeen years the bonds issued in payment for the railway system. The annual payment under this plan is $833,000, the first installment of which falls due on March 1, 1922.

Detroit United Financing Reported

It was stated at Montreal, Que., on Oct. 7 that the Detroit (Mich.) United Railway has practically completed disposal of $4,000,000 of twenty-year notes to its own bankers and other interests. The issue replaces various short term issues shown in the last balance sheet as notes payable. It is also stated that the May 1 maturity of $855,000 of subsidiary bonds and Aug. 1 of $1,400,000, or $2,255,000 in all, have been extended to Jan. 1, 1932, when the consolidated mortgage bonds expire. This financing together with conservation of cash through payment of scrip dividends, places the company in a more favorable position, the sale of 29 miles of trackage and other equipment to the municipal road also making for a generally easier financial position. It is stated that cash dividends will be resumed in the near future.

Surprise Element Introduced

$2,433,067 Over Physical Value asked by Toronto Railway in Arbitration —Hearing Continued

W. J. Hagenah, expert witness for the Toronto (Ont.) Railway, occupied the stand during the week ended Oct. 1 in the arbitration proceedings to determine the value of the Toronto Railway system.

Evidence similar to that reported in the ELECTRIC RAILWAY JOURNAL previously was given in detail with respect to track and roadbed, overhead structures, and rolling stock. The summary of appraisal based on labor and material prices as of Sept. 1, 1921, showed a reproduction cost of $26,110,044 and present value of $20,032,837, made up of the following principal items:

	Reproduction Cost	Present Value
Way and Structure..	$9,649,321	$7,759,834
Equipment	9 609,915	6,969,781
Power	3,259,951	2,157,249
General	1,819,857	1,374,973

In each case an additional value of the actual and tangible property was made of $1,751,000.

The power plant on Front and Frederick Streets was given a reproduction cost of $459,630 and present value of $252,474. The structural efficiency of the building was estimated at 88 per cent. Substation equipment reproduction cost $1,678,305 and present value $1,265,488.

The steam plant on Front Street is not proposed to be taken over by the city, which intends to use hydro-electric power from Niagara.

An element of surprise was introduced into the arbitration when counsel for the Toronto Railway presented a claim aggregating $2,433,067 over and above all the physical assets of the company. The total was arrived at by the addition of various items which the company claimed would have to be incurred if the present road had to be newly constructed. These items would include injuries to workmen during construction, salaries of executives and officials during period of construction, interest on capital during construction and legal cost.

The arbitrators decided, Sir Adam Beck, arbitrator for the city dissenting, to allow counsel for the company to present valuation estimates on a basis of the three-year period ending Sept. 1, 1921. The decision, however, is not final as to acceptance of such evidence as a basis of determining the value of the property.

Progress Slow in Providence

Business Depression and Jitneys Keep Down Earnings of Successor to Rhode Island Company

It is reported unofficially that the receipts of the United Electric Railways, Providence, R. I., the successor of the Rhode Island Company, during the first three months of operation were sufficient to pay operating expenses, taxes and fixed charges, but not sufficient to pay a 6 per cent dividend on the stock, to which it is entitled under the law. The earnings have been affected by the business depression, the competition of the jitneys and the motor buses. Receipts for the quarter recently ended were 15 per cent below those of the corresponding quarter of last year.

It is estimated that motor competitors are depriving the road of $1,000,000 income a year, and this in spite of the ordinance passed by the Providence City Council early this year. This ordinance provided that jitneys and buses must run on specified routes during regular hours and subject to police inspection and control. It gave the City Council authority to bar motor vehicles from any street upon presentation of sufficient evidence that the public was being adequately served by other conveyances on that street.

Since this law has been in effect, there has been no decrease in the number of jitneys and buses operating in Providence. Last March, when the ordinance became operative, there were 281 licensed motor vehicles in the city. To day there are 286. The opinion prevails, however, that if the law had not been in effect there would be 1,500 jitneys and buses in Providence today instead of 300. The present regulations are too stiff for the fly-by-night operator to meet.

The permissive part of the ordinance has never been availed of to keep motor carriers from certain routes. There is at present no indication that the City Council will be in any hurry to act under it.

Gold Bonds of Georgia Property Offered

Stone & Webster are offering $1,750,000 of Savannah Electric & Power Company's, Savannah, Ga., first and refunding mortgage 7½ per cent gold bonds. The bonds known as Series A are dated Oct. 1, 1921, and are due Oct. 1, 1941. The price is 97½ and interest to yield about 7¾ per cent. Coupon bonds are in denominations of $1,000, $500 and $100.

The Savannah Electric & Power Company will purchase under the plan of reorganization all properties and franchises owned by the Savannah Electric Company and its subsidiaries, comprising a large part of the electric light and power business and the entire electric railway business in the city of Savannah. This issue of $1,750,000 bonds has received the necessary approval of the Railroad Commission of Georgia.

Master's Report Condemns Management Contract

Management Contract, in Case of Columbus Railway, Power & Light Company, Declared to Be Against Public Policy and Illegal—Fees Held to Be Excessive—Profits from Engineering Service and from Sale of Securities Judged Reasonable and Legitimate

Declaring that "the executive operation and management of the street railway company by the banking house at Philadelphia was a plain usurpation of the powers and business of those corporations, in violation of the meaning, spirit and intent of Sec. 8660 of the General Code," Master Commissioner George B. Okey, of Columbus, Ohio, holds the management contract between E. W. Clark Management Corporation and the Columbus Railway, Power & Light Company to be illegal and against public policy. This case is one which, when finally acted upon by the higher courts, to which it is almost certain to be appealed, is apt to have a very important effect upon similar management contracts with public utilities all over the United States. The present report, being only the finding of a Master Commissioner, is, of course, not conclusive, but is important.

THE case in question is one which originated from a suit by one Augusta M. Slaymaker, a stockholder in the company, against the Columbus Railway, Power & Light Company, and others, including E. W. Clark & Company Management Corporation and various individuals who have been or are directors of the first named company. The original case soon lost its significance, however, in a cross petition filed by the Columbus Railway, Power & Light Company, against the E. W. Clark & Company Management Corporation and C. M. Clark, requesting an account and suing for restoration of certain funds totaling more than $2,600,000.

The points at issue were fees charged under the management contract; fees and profits from financing operations for the company; loss claimed through the exchange of capital stock at times of reorganization; engineering and construction fees charged and collected by the Management Corporation; unvouchered expenditures of the company's treasurer; mismanagement as evidenced by voluntary surrender of franchises.

The master reviews the allegations of the Columbus Railway, Power & Light Company at length, and gives his conclusions of facts with reference to the points enumerated above, the sums involved as deduced from testimony all being listed. It is important to note that the master's final conclusion of facts is that in all of the negotiations the board of directors acted in perfect good faith and with ordinary care and prudence.

Coming to conclusions of law, the only transaction involving any question of illegality or excessive fee is held by the master to be the management contract. In all of the other transactions the E. W. Clark Management Corporation and E. W. Clark & Company are upheld. Under this management contract the E. W. Clark Management Corporation received from 1912 to 1919 1½ per cent of the gross income of the company for its services. Previous to 1912, the master points out, C. M. Clark was a vice-president and director of the street railway company, and was a partner in the banking house of E. W. Clark & Company, which for years had handled the securities of the Columbus property. The master says:

> The association was beneficial to the railway company and profitable to the banking house. The banking house received the annual salary of $5,000, paid to C. M. Clark for his services as vice-president of the company; it received $3,000 annually for its services in auditing its books and paying dividend and interest coupons; it received fair and reasonable banker's profits from handling its notes and securities; it was enabled to realize excellent profits from the services rendered to the company by its engineering organization which it maintained on the ground.

But the management contract, the master goes on to say, "was a radical step. By its terms E. W. Clark & Company were 'to assume the management of the company.' It was carried out in practice and interpretation to mean both executive operation and financial management."

The master then points out that E. W. Clark & Company, from April, 1912, to January, 1913, received $345,166 for the management service and $165,187 as construction fees for services rendered by the engineering department; in the same years they realized a profit of $109,033 in handling notes and securities of the company.

In view of the "receipt of these large sums of money" the master commissioner gives his opinion that the management contracts "were unconscionable," and upon that ground should be regarded and treated as nullities, aside from the questions of corporate power upon the part of a company to enter into them and of invalidity by reason of the fiduciary relations above referred to. (The master had previously gone into great detail to point out the fiduciary relations of C. M. Clark as an officer of both company and banking house.)

The commissioner says that he cannot see that the services of C. M. Clark were of any greater value subsequent to 1912 than they were before that time, and the same thing may be said of the auditing or banking services of the banking house. Aside from these charges, and the salary of the president of the railway company, the master claims there was no consideration whatever passing from E. W. Clark & Company to the street railway company, and in his conclusion states that a decree should be entered for a judgment against E. W. Clark & Company for $345,166, subject to a credit of the annual sum of $8,000, together with certain sums that were paid to the president of the company during that time. This virtually would annul the value of the management contract as such, substituting therefor the mere salaries of certain representatives of the Clark company holding official positions in the railway company.

The discussion and condemnation of the management contract is in such general language as to be applicable to most such contracts in the country. The master said:

> As an abstract proposition, standing alone, there is nothing sinister in a fiduciary relation. On the contrary, no position in life is more commendable. A large part of the business of the world is transacted by those holding positions of mutual trust relationship. The mere fact of the existence of such relationship does not vitiate a transaction. Courts of equity do not interfere with agreements and transactions upon that naked ground. The books disclose hundreds of cases in which transactions were upheld, notwithstanding the existence of a fiduciary relationship, where full consideration was paid, where no advantage was taken, where full disclosures were made, and where no elements of fraud or wrong were found.
>
> All such transactions, however, are subjected by courts of equity to the most painstaking scrutiny, to ascertain whether any element of unfairness or wrongdoing may be found to exist. If such proves to be the case the equity powers are ruthlessly enforced. They do not stop short of full and complete restoration of the *status quo*. If real estate had been received by the fiduciary, the conveyance is set aside; if money had been received by him, a decree for its recovery results.
>
> The fiduciary relationship becomes a deciding factor in the "management contracts" in question, because of their wrongful character. Before and during the entire period of their existence, the defendant. C M. Clark, was a member of the board of directors and vice-president of the street railway companies, and also a member of the banking firm of E. W. Clark & Company, with which the contracts were made. By reason of his remarkable personality and character he exercised a dominating influence in the affairs of the board.
>
> As practically interpreted and carried out the "management contracts" operated as delegations of corporate powers by the boards of directors, with respect to the business and property of the corporation, which under the provisions of Sec. 8660, were impossible of delegation. It is no answer to this view to say that a corporation cannot, as a corporate entity, carry on its business, and that it must employ officers and agents for that purpose. The case here is wholly unlike the appointment, by a board of directors, of an officer, such as a president or superintendent, and the prescribing of his powers and duties. There is no analogy between such an appointment and the delivery by a corporation, of its entire executive and business management, to a foreign banking house. The directors are not the corporation, but only its agents. Such agents cannot delegate authority requiring the exercise of discretion or judgment.
>
> The contracts were opposed to public policy, as well as in express violation of the statute. They were without consideration and are vitiated because of the fiduciary relation of the defendant, C. M. Clark, to the parties to them. They are not binding upon the *cestuis que trustent*, the stockholders. The interest of C. M. Clark as a director of the street railway and as such representing the stockholders, was opposed to the interest of C. M. Clark as a partner in the banking firm of E. W. Clark & Company.

As stated above, with reference to all other points, the master finds no error in action or excess in amount. Profits on bonds of $180,000; for the resale of those bonds, of $97,419; on resale of notes, of $20.422, or for redemption of underlying bonds, $200,583, are called just, fair and not excessive profits to the company. Engineering fees of $165,087 are called not excessive, and E. W. Clark & Company are said to have carried out this contract honestly, efficiently and faithfully.

At another point it is interesting to note that the master holds that it is not necessary for an accounting to be given by a treasurer who is given discretionary power in the expenditure of reasonable sums of money. The master goes on to say regarding this:

> A public service corporation has a right to expend reasonable sums of money to protect itself against threatened attacks, sinister in character, and calculated to affect injuriously the proper and successful operation of its business. It may expend such a sum in published propaganda, educational in character, with the end in view of planting in the public mind a just and fair comprehension of the relation which should exist and prevail between the citizen and such a company. We live in a practical and not a theoretical world. It is important and necessary for our service corporations to make expenditures every day, not at all improper in themselves, which it would not be wise to shout from the housetops.
>
> The mere fact that the books and accounts of such a company are kept in such a manner as not to disclose the minute purpose of each expenditure furnishes no presumption of illegality or impropriety.

The entire case will probably come up for review before Judge Kincaid before the end of the current month. No matter what his decisions are with reference to the master's findings, it seems evident that the case will be appealed by one side or the other, if not by both, until a decision on the various facts involved is obtained from some court of final resort.

Purchase Review Case Argued

The appeal of the Puget Sound Power & Light Company, Seattle, Wash., against a decision of the District Court, denying an injunction against S. B. Asis and thirteen other taxpayers, asking for a review of the purchase of the lines now included in the Seattle Municipal Railway System, was argued recently in the United States Circuit Court of Appeals in Seattle. The matter was taken under advisement by the appellate judges. Arguments were confined to legal points of the matter.

Financial News Notes

New Hearing Date Arranged.—Judge Julius M. Mayer in the Federal District Court on Sept. 30 postponed the hearing on the application for a receivership for the Interborough Rapid Transit Company, New York, N. Y., until Oct. 27. This is the fourth adjournment in the matter.

$182,525 Loss in Boston in August.—Operation during the month of August, 1921, resulted in a further temporary set-back for the Boston (Mass.) Elevated Railway. Revenue failed to meet expenses by $182,525. As a matter of fact, the total business was $151,064 less than during August last year. The outstanding deficit, therefore, on Sept. 1 was $193,026.

Railway Sells Land.—The application of the Public Service Railway, Trenton, N. J., for the sale of a parcel of land in Paterson to James J. Murner, was sanctioned by the Public Utilities Commission recently. It was declared that the land was not necessary for the immediate or future corporate use of the firm.

Interurban Fares Permitted to Stand. — The Detroit (Mich.) United Railway will be permitted to continue to collect on its interurban lines the fare charged under the act of the Legislature in 1919. The United States Supreme Court on Oct. 10 declined to review the case and the decision of the Supreme Court of Michigan permitting increases will stand.

Old Niagara Interurban to Be Abandoned.—The International Railway, Buffalo, N. Y., has informed the municipal authorities of North Tonawanda that it has decided to abandon its old Niagara Falls interurban line between North Tonawanda and the Niagara Falls city line. All traffic will be diverted by the railway company to its new high-speed Buffalo-Niagara Falls line.

Interest Paid on General Mortgage Bonds.—H. A. Ferrandou, treasurer for the receiver of the New Orleans Railway & Light Company, New Orleans, La., announced recently that the July 1 coupons of the 4½ per cent general mortgage bonds of the company would be paid on and after Sept. 30, upon presentation at the office of the New York Trust Company.

Exchange of Securities Nearly Completed.—Of the approximately $24,000,000 of United Railroads of San Francisco 4 per cent certificates issued by the depositaries against the general first mortgage 4s of 1927, all but about $2,000,000 issued by the Equitable Trust Company and Guaranty Trust Company, New York, have been exchanged for securities of the Market Street Railway under the plan of reorganization.

Sale Under Foreclosure Ordered.—G. Ray Craig, special master commissioner, has announced the date of sale of the property of the Plymouth & Shelby Traction Company. The sale will be held on Oct. 29, in Plymouth. The court has ordered the master commissioner to have the bidders post $5,000 before being allowed to submit a bid, and no bid for less than $20,000 will be accepted. C. G. Taylor is receiver of the company.

Foreclosure Expected to Be Averted.—Representatives of interests affected by filing of suits appeared in United States District Court and asked for order of foreclosure on the St. Louis & Suburban Railway, St. Louis, Mo., because of default on $2,000,000 first mortgage bonds. The withdrawal of lines from the United Railways system will be averted, it is believed, as holders of underlying securities may advance funds to protect their interests. No date has been set for a hearing.

Line to be Discontinued.—The Georgia Railway & Power Company, Atlanta, Ga., will discontinue service on its line from Oglethorpe University to Camp Gordon. The State Railroad Commission ruled recently that it had no authority under the conditions under which the Camp Gordon was built to prevent this discontinuance. There were no franchise obligations, the extension having been made and restricted to the period of the maintenance and continuance of Camp Gordon as a training camp for federal troops.

Railway Holding Its Own.—In the opinion of W. H. Sawyer, receiver of the Alton, Granite & St. Louis Traction Company, Alton, Ill., the railway is keeping up very well despite the period of depression. In the month of August the company made $300 in Alton though of late there had been no profit at all on the Alton lines. The installation of one-man cars, the receiver believes, is the reason for this gain in revenue. However, the interurban business has fallen off considerably, due, in the receiver's opinion, not to higher fares but to the increasing number of automobiles.

Interborough Prepares to Pay Manhattan Dividend.—The New York Stock Exchange has received notice from the Manhattan Railway of the declaration of the regular quarterly guaranteed dividend of 1¾ per cent distributable to holders of record of Oct. 7. The payable date has not been fixed as yet. The committee on securities of the Stock Exchange has ruled that the stock shall not sell ex-dividend on Oct. 7, and that all deliveries after that date must be accompanied by a due bill for the dividend. The dividend is guaranteed by the Interborough Rapid Transit Company under the lease of the Manhattan (Elevated) Railway to that company.

Montreal Tramways Contemplates Financing.—E. A. Robert, president of the Montreal (Que.) Tramways, at the close of the meeting of the directors on Sept. 14 stated that he had no definite information to give out regarding the proposed new financing. He admitted, however, that negotiations were in progress with leading American and Canadian financial houses, and that now it was largely a matter of waiting for a more favorable money situation in order to secure the necessary capital at a rate more commensurate with pre-war terms. It is stated unofficially that from $6,000,000 to $8,000,000 will be required to meet obligations during the next year or two, in order to permit the management to carry out a program of betterments and extensions affecting the entire system. This amount will be required to buy in maturing bonds in 1922 to the extent of about $3,250,000, while at least $2,000,000 will be required for capital expenditure already made, and at least another $1,000,000 or thereabouts will have to be provided for 1922 under the same heading.

Traffic and Transportation

Results of Decreased Fare Not Satisfactory

Just what has been the result of the decreased fare, or 7-cent charge which went into effect on Sept. 1 on the lines of the Washington Railway & Electric Company, Washington, D. C., is seen in an estimate made public recently by W. F. Ham, president of the company.

For the first three weeks in September of this year there has been a loss in passenger traffic of 214,950 passengers with a 10 per cent cut in revenue as compared with operation for the same period a year ago. Mr. Ham states that if this reduction in travel continues for the eight months for which this order is effective at the same rate of reduction as in the first three weeks the company will suffer a loss in revenue of approximately $650,000 a year. A similar loss has been suffered by the Capital Traction Company, the other operating company in Washington. This property carried 3,975,365 passengers for the first three weeks of operation under the 7-cent fare against 4,073,475 hauled in the similar period in 1920. The revenue collected amounted to $285,015 against $309,003 for the same period of last year.

Cities Win on Five-Cent Fare Issue

The existing contracts between the cities of Decatur and College Park with the Georgia Railway & Power Company have been held valid, thereby sustaining the 5-cent fare between these municipalities and Atlanta. This opinion was recently handed down in the Supreme Court of Georgia as a result of the railway's efforts to extend the 7-cent fare.

Passengers who have been paying the extra 2 cents can now be reimbursed by the railway if they hold receipts. The ruling means that between Decatur and Atlanta and between College Park and Atlanta no more than 5 cents per passenger can be charged as provided in the original contracts.

President Shannahan Protests Against Jitneys

John N. Shannahan, president of the Newport News & Hampton Railway, Gas & Electric Company, Newport News, Va., is up in arms against the jitney. He insists that the auto pirate shall be put on a footing with the electric railway as regards its obligations to the public and has asked the Council to take steps to this end. According to Mr. Shannahan his company is losing about $150 a day in revenue to the jitneys.

As a result of Mr. Shannahan's protest City Manager Thom has been requested by the Council to make a complete investigation of the entire situation and to recommend at the next meeting of the Council, if possible, what action the Council should take to remedy the situation.

The patrons of the jitney are recruited largely from those who are rankled at the continuation of the charge of 7 cents for fare by the railway in the face of lowered costs for a great many commodities and of lowered wages generally among the manufacturing classes.

Bus Petition Allowed

Receiver of Interurban Scored by State Commission for His Unprogressive Attitude

The Illinois Commerce Commission has granted the Smith Bus Line Company the right to operate motor cars on regular schedule between Aurora and Big Rock. The Aurora, Elgin & Chicago Electric Railroad, through its receiver, Joseph Choate, opposed the authorization of the bus line. The Commerce Commission held, however, that the railway was not giving adequate service and that the bus line, especially between St. Charles and South Elgin, would not compete with the railway.

The bus line between these points is required to operate its cars on the west side of the river, whereas the railway is on the east side to a point close to South Elgin. The bus line expects to put cars in operation at least by Oct. 15. Before it can give authorized service it must furnish a $10,000 bond on each automobile to protect its patrons in the event of accidents.

The commission says that although the railroad receiver had been requested to extend its line from the corner of Wilson Street and Batavia Avenue, east on Wilson Street, across Fox River, approximately one-half mile, the company refused to extend the line and serve the public on the east side of Batavia. A substantial part of the business district of Batavia is situated in that district where there is a population of approximately 4,000 people.

In commenting on this attitude of unwillingness of the railroad to meet the public demand for service the commission said:

> When a public utility is serving a district under conditions which amount to a monopoly and declines or omits to extend its service to additional territory where it appears, as it does here, that it will greatly convenience the public and that a necessity exists for such service, such public utility should not be heard to complain that if another is permitted to enter the field and furnish substantially the same or better service, its revenue will be materially reduced because of the competition that will be created between the two public utilities.
>
> Modern methods employed in furnishing service to the public generally should and will be encouraged when it appears that substantial justice requires it and that the public will be permanently benefited.
>
> An examination of the evidence indicates clearly that the service of the Aurora, Elgin & Chicago Railroad is inadequate.

City Extends Its Bus Operations

After receiving temporary permission from the city utilities committee to operate buses to the Cowen Park district of Seattle, Wash., jitney drivers were two days later again driven from the streets, after a stormy session of the City Council at which five councilmen of the eight voted permanently to oust the jitneys from all Seattle streets, except, where they serve as feeder lines. The drivers were forbidden to load or unload passengers within areas served by city street cars, except at their downtown terminus, but this did not prevent the city from rescinding its order.

Residents of the districts protested against the withdrawal of jitney service with the result that Councilman Carroll has proposed the installation of bus service such as is now used in Carleton Park and Laurelhurst, where the residents have purchased and donated to the city the buses in use on these lines. A fare of 10 cents is charged on these buses, with transfer privileges to and from the Municipal Street Railway with which they connect. This plan has also been arranged for another section of the city, South Beacon Hill, not now served by city cars, where the residents have purchased a truck and the city is constructing a body for the vehicle, so that it may be used for passenger service.

Three-Cent Fare Plan Opposed by Property Owners

The proposed plan of Oliver T. Erickson of the City Council of Seattle, Wash., to meet all operating and maintenance costs of the Seattle Municipal Railway by taxation, charging only extensions and betterments against operating revenues, has met with strong opposition by property owners. The Seattle *Times* states that analysis of the plan shows that property owners in the city will be paying into the city treasury $11,659,078 in taxes instead of $6,647,303 levied for next year. The Erickson plan is known as the 3-cent fare plan. It is proposed in an initiative ordinance now being checked by city registration clerks to ascertain whether it contains sufficient names of qualified voters to compel its submission on the ballot at the next municipal election in May.

According to statements made by State officials, the above estimate of increased taxes would be further enlarged by an item of approximately $900,000 for interest on outstanding warrants and bonds, as the classification of accounts for the Municipal Railway, prescribed by the Bureau of Inspection and Supervision of Public Offices of Washington, effective on Jan. 1, 1921, requires that interest on outstanding warrants and bonds be made an operation and maintenance charge. The interest paid by the railway on outstanding bonds and warrants during the first six months of this year totaled $434,312. In a year, this sum would be approximately $850,000 or $900,000.

City's Case Closed

Chicago Ends Argument By Which It Hopes to Secure Return of Five-Cent Fare

Hearings were begun on Oct. 4 before the Illinois Commerce Commission on the city's petition to restore the 5-cent fare on the Chicago Surface Lines. With the evident intention of getting a prompt ruling the city closed its case after four days and an adjournment was taken until Oct. 11 when the company began putting in evidence to show why the 8-cent fare should be continued in effect.

The main contention of the city is that the valuation of the properties fixed by the previous commission is too high by $80,000,000 and that by proper economies the companies could exist on a 5-cent fare. It was shown that the city's share of earnings from the surface lines would amount to $29,573,144 by next February. These payments have been made annually since 1907 under the ordinance provision by which 55 per cent of the net receipts of the railway goes to the city.

It was contended that the following items should be deducted from the capital account of the companies: Franchises, $9,016,971; organization and other intangibles, $8,000,000; property superseded in rehabilitation, $14,794,666; 15 per cent for engineering and brokerage, $12,739,080; patents, $56,193; horses, $34,100; bridges, $996,733; cars renewed in 1915, $1,026,033; interest and discounts, $2,379,294; total, $50,105,215. It was also claimed that the companies gave a lower valuation of the properties for taxation purposes.

MOVING PICTURES SHOWN AT HEARING

A feature of the hearing was the exhibition of moving pictures showing crowded cars. The city claimed that the conditions portrayed were typical of service conditions. President Henry A. Blair was called as a witness by the city to testify about certain expenditures during the 1918 campaign for a new franchise.

George W. Jackson, special traction engineer for the city, was also called. He proposed various economies which he said would enable the companies to operate at a profit on a 5-cent fare. He said that by re-routing and other changes there could be handled a 50 per cent increase in revenue passengers, but he did not show where these would come from or how they could be taken care of on present equipment. His plan for re-routing would mean the abandonment of about half of the downtown trackage and simplification of loops. He would use loading platforms 300 ft. in length and would abandon the use of river tunnels which are now the principal inlets and outlets from the loop district.

Mayor William Hale Thompson was also used as a city witness and gave it as his opinion that a 5-cent fare would be practicable on the surface lines even without wage reduction. He insisted that some other large cities are giving good service on a 5-cent fare.

One of the newspapers published a statement showing how the 8-cent fare of the surface lines was distributed for the month of July, 1921, as follows:

	Per Cent	Cents
Wages	54.12	4.299
Materials, power and other expenses	17.26	1.371
Taxes	3.50	.278
Damages	4.13	.328
Companies' 5% return	13.78	1.095
City's 55% of net	3.97	.315
Companies' 45% of net	3.24	.258
Total	100.00	7.944

This raised the question as to how the road could be operated without reduction of wages on a 5-cent fare.

Eight-Cent Jersey Fare

United States Court Restrains Utility Board from Enforcing Its Seven-Cent Fare Order

The plea of the Public Service Railway, Newark, N. J., to the courts for an increase in fare over that allowed recently by the Board of Public Utility Commissioners was passed upon on Oct. 12. Pending determination of the company's litigation for a 10-cent fare, Federal Judges Woolley and Rellstab have granted the company permission to increase its rate from 7 to 8 cents, with an additional charge of 1 cent for a transfer. The order also grants a temporary injunction restraining the State Board of Public Utility Commissioners from enforcing its decision of last July, fixing the fare at 7 cents, with 2 cents extra for a transfer. Judge Davis filed a dissenting opinion.

The opinion by Judges Woolley and Rellstab holds that the Utility Board underestimated or excluded from its valuations approximately $20,000,000 of the company's properties, and as the rates fixed by the board provide no return on these excluded properties, they are confiscatory. The only question, the majority opinion says, is whether the rate fixed by the State body is confiscatory "because based on a valuation of the property less than its worth at the present time." The Judges hold that the rate is confiscatory and therefore in violation of the Federal Constitution.

The rate fixed by the Utility Board, Judge Davis points out, gives the company a return of $5,842,500, which, after paying all operating costs, is nearly 5¾ per cent on the increased valuation fixed by the court itself. Judge Davis said:

> Assuming that the board did underestimate or wholly exclude the properties to the extent of $20,000,000 in view of the rate of return that the board's order permits, I should hesitate to say on a preliminary application, without the benefit of a full hearing, with many questions in doubt, that it was confiscatory. The Interstate Commerce Commission, composed of men of ability and experience and having at their command an advisory board of noted experts, allows the railroads a return of only 5½ per cent. If the court in this case is right, the Interstate Commerce Commission has confiscated the property of every railroad in the country—a most unlikely assumption.

To grant the increase to 8 cents, Judge Davis figures the court has added $20,000,000 to the value of the property of the Public Service Corporation, although the Public Utility Board had already allowed $12,000,000 appreciation to go into the final valuation.

The court's order will give the company additional earnings of approximately $1,400,000 a year, which is 7 per cent on $20,000,000 of property. Adding this latter sum to the valuation of $82,000,000 already allowed by the Utility Board, the court's action brings the valuation to $102,000,000.

The Utility Board placed the cost of the physical property at $70,000,000 and the figures are accepted by the court. The Utility Board, Judge Davis holds, "might have authoritatively said that it would be unfair to the public to base rates on an appreciated value to abnormal war prices, but it did not, and in its efforts to be fair allowed $12,000,000 appreciation to go into the final valuation for the purpose of fixing a rate of return."

The injunction is not permanent, but only allows relief pending the granting of a permanent restraining order. Under the 8-cent fare allowed by the court, four tickets are to be sold for 30 cents. Refund slips are to be issued for the extra cent over the fare of 7 cents fixed by the commission.

Jitney Injunction at Albany Gets Setback

Due to the fact that the attorneys for the United Traction Company at Albany, N. Y., failed to comply with the rules of court procedure, the injunction restraining jitneys from competing with the United Traction Company in Albany and vicinity has been made non-operative pending an order to show cause granted by Justice Gilbert D. B. Hasbrouck.

The rules of the court and of practice require that when an injunction order is granted in court a copy shall be filed in the office of the county clerk of a county in the judicial district, and whenever service is made of a copy of the injunction upon a party affected, that a certificate of the county clerk shall be attached thereto showing the filing of the original injunction in his office and that the original signature shall be exhibited to the person upon whom the order is served.

This for some strange reason the attorneys for the traction company failed to do, the service consisting simply of a printed copy of the injunction restraining order.

As the situation now stands, the justice before whom the appeal is taken, will undoubtedly rule that no injunction exists against the persons served and that service will have to be made again to conform with court rules.

The practical effect is to restore the jitneys, which had been practically driven off the streets, until the court and the attorneys can untangle themselves. It really means renewed jitney service for another month at least.

Public Utility Body Denies Ten-Cent Fare

New Jersey Commission Rejects Company's Estimates and Denies Plea of Suburban Line

The New Jersey & Pennsylvania Traction Company was recently denied a 10-cent fare by the Board of Public Utility Commissioners. This company is known as the "Johnson Line." It was founded by the late Tom L. Johnson. It operates its cars between Trenton, Lawrenceville and Princeton, N. J., and a number of points adjacent to the Delaware river opposite and north of Trenton in Pennsylvania.

Some months ago the Public Service Commission of Pennsylvania granted the company a 10-cent fare on each of its zones, while the New Jersey board in June of this year issued an order on an application of the concern for increased rates, in which an 8-cent fare on each of four zones between Trenton and Princeton was allowed, with four tickets for thirty cents.

At a rehearing of the fare matter before the Utilities Commission it was contended by counsel for the company that there had been errors in the report of the board previously made. It was pointed out that in making an estimate of the number of passengers to be carried on the lines of the company for the ensuing year, the board erred in basing its calculations upon the number of passengers for the years 1913 to 1920 inclusive. The company contended that the years 1913 to 1916 could not be used as a basis of comparison because the number of zones between Trenton and Princeton had been changed from time to time.

Replying to the claim of the company on the conclusions of the board in relation to the number of persons carried, the board showed that there had been an increase in the number of passengers carried in 1918 and 1919 as against 1917.

It was estimated by the railway that the 10-cent fare for each zone would entail a loss in the number of passengers transported, amounting to 5 per cent, and it claimed further that under the schedule of rates permitted by the board, four out of five passengers would take the ticket rate of 30 cents for the entire trip between this city and Princeton, or vice versa.

The board declared in relation to this estimate that as this amounts to about ten per cent increase, as compared with upwards of 40 per cent increase under the 10-cent fare, it is apparent that the company would not lose 5 per cent under the schedule permitted by the board, and that an estimate of 1,655,000 passengers carried by the company in a year, as shown in the report of the commission in June, was based on facts.

The board emphasized the fact that the Johnson company would, under the 8-cent zone fare, receive 32 cents per rider between Trenton and Princeton, while the Trenton & Mercer County Traction Corporation, the competing company, receives but 24 cents for the same trip.

Regarding the alleged error by which the company contended it would meet with a deficit of $6,000, the board asserted that even if this were true, it would be offset by a saving of that amount made by the company by a reduction in wages of its employees.

Charlottesville Sells Transportation

The Charlottesville & Albemarle Railway, Charlottesville, Va., can well be proud of its record—it has never stopped paying dividends on either its common or preferred stock and is still operating on a 5-cent fare. The retention of the nickel ride has increased patronage, especially in small towns with short rides. With the aid of newspaper ads the company has been putting across to the public the important rôle of the electric carrier.

Over one million passengers carried on the street cars during the past year with no accident of any kind to any of them.

The street cars are the safest and cheapest means of transportation in Charlottesville. Use them often; we appreciate your patronage.

Don't envy the man with the automobile, when you can use a 70-horsepower electric limousine, all lighted, heated and ventilated, for one nickel, five cents. No radiator to freeze, no tires to replace. Use the street cars, we appreciate your service.

C. & A. Ry. Co.

Safety Work Alive on Interurban

During the last five years the Chicago, North Shore & Milwaukee Railroad has decreased its fatal accidents 77 per cent and decreased its accident costs to less than one-third of the average for all electric railways of the country. How extensively safety work is being cultivated by the employees of this railway is shown in the following letter which was received recently by a trespasser on the tracks of the railway between Chicago and Milwaukee. As an electric train whizzed past him at the rate of 60 miles an hour the motorman threw out this communication:

> Don't you realize there is serious danger to any one walking these tracks, owing to the fact that our cars are run at high speed? If the motorman should fail to see you in bad weather, or while rounding a curve, or for some other reason, you would be placed in imminent danger of being killed or injured.
>
> It is our desire to cultivate the safety work on this road to a point where every accident of an avoidable character will be eliminated, and we hope that you will at once discontinue walking on these tracks so that the chances of your being injured or killed will be done away with.
>
> Yours truly,
>
> CHICAGO, NORTH SHORE & MILWAUKEE RAILROAD.

School Ticket System in Force

Bulletin of Cincinnati Traction Company Describes Regulations Prescribed by Ordinance

Regulations to govern the method of selling the 5-cent fare strip tickets to children attending Cincinnati's public and parochial schools as required by an ordinance recently adopted by the municipalities of Cincinnati and Norwood are contained in a bulletin issued by the Cincinnati (Ohio) Traction Company.

The 5-cent school tickets will be sold only in blocks of forty rides for $2 or in blocks of ten rides for 50 cents. The forty-ride tickets are intended to supply two rides each day for twenty school days in the month and will be sold on certain days in each month at the several high schools, by a representative of the traction company.

Walter Draper, vice-president of the traction company, said that by selling a month's supply at a time to the high school pupils the confusion of frequent sales and interference with classes as well as the employment of many additional agents by the company would be avoided. It can readily be understood, Mr. Draper said, that the school pupil tickets could not be put in the hands of the conductors for sale.

The tickets are good on all lines of the Cincinnati Traction Company and the Ohio Traction Company for school children ten years and over and under eighteen years of age and for use in going and coming from school.

The ordinance under which the tickets will be sold does not provide for the use by children attending private schools. The ordinance states that the school children's rate of fare shall be good for all children under eighteen years and the company in its regulations which must be approved by the city is compelled to adhere to this restriction. The ordinance specifically provides that the school fare shall be only by ticket. Conductors cannot accept cash less than the current cash fare for adults and children.

Mr. Draper said the tickets will be sold under the regulations previously outlined, which are temporary and may be changed later if found necessary to meet conditions. The plan for selling the tickets has been approved by Jerome Kuertz, director of street railways.

If at any time when the company's representative visits a school for the purpose of selling the month's supply of tickets any pupil has not used up the full number of rides on a strip already held, and the number of rides so unused is not sufficient for the succeeding twenty days, the unused portion of such ticket may be redeemed by being credited on the purchase of the new ticket.

Each pupil will be furnished with a certificate which must be filled out and signed by the principal of the school. This application must be presented to the representative of the traction company when purchasing tickets.

Railway Offers Motor Bus Service

Judge John O. Chapin, attorney for the Niagara Gorge Railway, Niagara Falls, N. Y., has returned to the village of Youngstown a proposed franchise for running regular trolley service between Niagara Falls and Youngstown during the winter months. The company claims there is not sufficient patronage to continue more than two round trips daily between the two points. The Gorge line proposes to run two-hour motor bus service if the village will give the line a permit.

Trackless Trolley or Buses, Which?

Negotiations are under way between the City Council of Buffalo and the International Railway for the operation of trackless trolleys in Bailey Avenue between Broadway and the north City line, a distance of almost 5 miles. Residents in the so-called Kensington-Bailey section of the city appealed for railway service, but the company says it cannot finance the laying of tracks in the street at this time and has suggested the use of trackless trolleys or large motor buses. There is said to be some objection on the part of residents to the use of buses.

Transportation News Notes

Will Charge Ten Cents.—A 10-cent rate of fare went into effect on the lines of the Aberdeen (S. D.) Railroad on Oct. 3. Coupon books are sold at the rate of 7½ cents.

Temporarily Suspends Increased Rates.—The Illinois Public Utilities Commission has suspended until Feb. 2, 1922, the proposed advances in freight rates sought by the Rockford & Interurban Railway, Rockford, Ill.

Mail Service Established.—United States mail service has been established on the Illinois Traction System's limited trains between Springfield and Peoria, saving twelve hours as compared with the steam road schedule. Two limited cars each way daily between Peoria and Springfield will carry the mail.

"Stop" Signs to Be Installed.—In order to help residents of Atlanta, Ga., to know where to board the electric cars of the Georgia Railway & Power Company 2,400 stop signs are being put up in all parts of the city. It is estimated that it will take one month before final installation of these signs.

May Try Trolley Bus.—After a conference with Sir Adam Beck, chairman of the Hydro-Electric Commission, Toronto, Ont., on the transportation problems of Peterboro, a deputation of Peterboro's City Council has returned and has announced that the trackless trolley may be installed in Peterboro as an experiment.

Freight Service To Be Abandoned.—The Philadelphia (Pa.) Rapid Transit Company has filed a new tariff with the Public Service Commission discontinuing all freight service on its line effective Oct. 31. No reason has been officially assigned for this, but it is believed that the profit is too small to warrant its continuance.

Buses Must Have Two Doors.—Interurban bus operators in Ohio were notified recently of a new ruling of the Public Utilities Commission that they would have to provide two doors for each bus before Dec. 1. There must be one each side or one side and rear. This is one of the first regulatory measures taken by the commission under the Graham law.

Railway May File Rates.—The State Railroad Commission has given permission to the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to file its present interurban rates between Kenosha and Racine as a permanent schedule. At the same time the commission authorized the 7-cent rate in Kenosha and a maximum of 10 cents for travel outside of city.

Lower Jitney Fares in Effect.—Jitney fares in Youngstown, Ohio have been lowered to conform to the reduced rate of fare on the lines of the Pennsylvania-Ohio Electric Company, which operates in that city. The tickets which will sell at three for 25 cents, six for 50 cents and twelve for $1, will be effective on all jitneys driven by members of the Elm Street Jitney Association.

Contenders Must File Briefs.—The Grand Rapids, Grand Haven & Muskegon Railway, Muskegon, Mich., an interurban, is having its troubles with the jitneys. It has sought an injunction to restrain the buses from operating. Judge Cross of the Ottawa Circuit Court has refused to grant the restraining order but has given both sides ten days in which to file briefs.

Wants Lower Fare.—The City Council of Niagara Falls, N. Y., will make an attempt to have the international Railway lower its rate of fare between Niagara Falls and Buffalo over the new high-speed interurban line. The round-trip fare is now $1.30 compared with 50 cents before the war. The question of filing a complaint with the Public Service Commission is now with Corporation Counsel R. J. Moore.

Reduced School Fares.—The Augusta-Aiken Railway & Electri Corporation, Augusta, Ga., has reduced its rate of fare for all bona-fide school teachers and pupils to 5-cents a ride. The company will sell books of forty-four tickets for $2.20. At the present 10-cent cash fare the books at $2.20 represent a saving of $2.20 and for those using the 8-cent tokens the saving will be $1.32.

Railroad Will Operate Stages.—The first example of a steam railroad operating autos became public when the California State Railroad Commission authorized the Pajaco Valley Consolidated Railroad to operate stages in place of some of the unprofitable trains. Between Salinas and Spreckles paralleling the rails auto stages will be run on the highways. Passengers, baggage and express will be carried at the same rate as on the trains.

Plan Offered for Through Service.—Operation of through electric cars between Toronto and Buffalo by way of Niagara Falls and the high-speed electric line of the International Railway is proposed by the Ontario Hydro-Electric Commission of Canada. T. A. Wilkinson of the provincial hydro commission's engineering staff, has been making an investigation of the feasibility of such a plan. A report soon will be made to the commission.

Must Perform Extra Services.—Supervisors of the Los Angeles (Cal.) Railway are now required to be capable of working on the emergency telephone board as well as handling traffic in the streets. The telephone men, formerly called dispatchers, now rate as supervisors. Arrangements have been made whereby all supervisors will spend a certain period in the emergency telephone work and an equal period in outside traffic work.

Decrease in Freight Rates Announced.—The Northwestern Ohio Railway & Power Company has filed a freight rate decrease on its lines from Ryan, a Toledo suburb, to Marblehead, Ohio. The decrease will be 20 per cent effective Oct. 13. Rates from Toledo remain the same on account of terminal rates. It is believed motor truck feeders and enlarged freight handling facilities at Ryan will enable much Toledo freight to take advantage of the decrease in rates.

No Fare Increase at Present.—Despite the fact that the stabilizing fund of the Toledo, Bowling Green & Southern Traction Company lines at Findlay has fallen from $20,000 to approximately $10,500 under the service-at-cost franchise granted a few months ago, there will be no raise in fare at the present time. The present fare is 10 cents cash, seven for 50 cents, or two for 15 cents. Increase fall business is expected to fill the stabilizing fund again.

Jitney License Transfers Attacked.—The Public Service Railway, Newark, N. J., will ask the Supreme Court to decide if the intent of the law passed last winter regulating jitneys is that license transfers should be treated the same as new applications. The company contends that they should be. The upholding of its view would mean that each transfer applicant would have to prove that continuance of the bus on a street through which electric railways run is a necessity and convenience. The commission has held that existence of the bus on a line justified its continuance if the ownership were unchanged. A writ of certiorari will be asked from the Supreme Court to test the question. The case of Carl A. Becker of West Orange, to whom the board recently granted a transfer of a Newark-West Orange line bus, will form the basis for the suit.

Personal Mention

Mr. Wakelee Assumes Additional Duties

Edmund W. Wakelee has assumed the title of general solicitor of the Public Service Railway in addition to his duties as vice-president of the corporation and its subsidiaries. The position was made vacant a short time ago by the death of L. D. Howard Gilmour.

Mr. Wakelee joined the Public Service law department about nine years ago as assistant general solicitor. He has represented the company in its dealings with municipal bodies, state agencies, etc. He became at once a member of the executive committee of the operating companies and of the public relations committee of the corporation.

During the formative period of the New Jersey & Hudson River Railway & Ferry Company (now the Bergen division of the Public Service Railway) Mr. Wakelee was its legal representative and was receiver for one of the underlying companies. He was also head of the legal firm of Wakelee, Thornale & Wright.

George H. Blake has been appointed assistant general solicitor. Mr. Blake has for years been one of the trial attorneys in the Public Service organization, devoting his time principally to the handling of claim department cases. Mr. Blake has been a member of the bar since 1908.

Retires After Fifty Years With I. R. T. and its Predecessors

Thomas Gerehart, general claim agent of the Interborough Rapid Transit Company, New York, and the company's oldest employee in the point of service, retired on Aug. 31. His initial connection with railways began shortly after the close of the Civil War in 1867 when he entered the employ of the West Side & Yonkers Patented Railway as a timekeeper, paymaster and bookkeeper, at which time the method of propulsion or operation was by means of an endless chain. In 1871, when steam engines were first used on the elevated, he acted as conductor and bookkeeper and when the New York Elevated Railway purchased the West Side Company he became cashier and bookkeeper. He was promoted to the position of assistant secretary and treasurer in 1878, which position he held up to 1890 when the Manhattan Railway took over control. He was retained by the Manhattan Railway as assistant secretary and treasurer until 1895, when he was appointed claim agent and continued in that capacity for nine years, when he was appointed general claim agent of the Interborough Rapid Transit Company.

During his long career he inaugurated a number of principles in the investigation and adjustment of claims which have retained their value against changes of time and conditions.

Mr. Titcomb's Successor

D. W. Pontius, Manager of San Diego & Arizona Railway, Elected to Pacific Electric Post

D. W. Pontius has been elected vice-president and general manager of the Pacific Electric Railway, succeeding H. B. Titcomb, recently made president of the Southern Pacific Railroad of Mexico and the Arizona Eastern Railway. Mr. Pontius will be in full charge of all departments of the railway and will also be president of the Pacific Electric Land Company.

Mr. Pontius has been connected with Southern Pacific interests about thirty years, filling successively the positions of telegraph operator, station agent, trainmaster, district freight and passenger agent, and was first connected with the present Pacific Electric lines as traffic manager of the Los Angeles Pacific Railway, which consisted of the electric lines now serving the west coast beach resorts, Santa Monica to Redondo Beach, inclusive.

D. W. PONTIUS

On Nov. 1, 1911, when the several electric lines of Southern California were consolidated with the Pacific Electric Railway, Mr. Pontius was selected as traffic manager, and filled that position until four years ago, when he was appointed general manager of the San Diego & Arizona Railway at San Diego. That company is owned jointly by the Southern Pacific and J. D. and A. B. Spreckels, representing an investment of $18,000,000.

Mr. Pontius's task was to complete construction of the line, with its attendant engineering difficulties, arrange for the purchase of the equipment and place it in operation for the handling of transcontinental traffic between San Diego and the East. A greater part of this work was carried on during the World War and the resultant financial stringency, but was finally accomplished and means much to Southern California as a whole and San Diego and the Imperial Valley in particular.

Mr. Pontius will be succeeded as general manager of the San Diego & Arizona Railway by A. T. Mercier, who is superintendent of the Oregon lines of the Southern Pacific, which comprise 1221 miles of steam-operated railroad; three electric railway systems located at Salem, Eugene and West Lynn, and 150 miles of interurban railway radiating out of Portland.

Dean Cooley Heads American Engineering Council

Mortimer E. Cooley, dean of the Colleges of Engineering and Architecture of the University of Michigan, has been chosen by the organized engineers of the United States to take up the task laid down by Herbert Hoover when he became Secretary of Commerce. In announcing Dean Cooley's election as president of the American Engineering Council of the Federated American Engineering Societies, the executive board of the council outlines some of the problems which will face the new President.

Among these questions are unemployment; government reorganization, involving the establishment of a Department of Public Works and reform of the United States Patent Office; legislation by the various states on the registration of engineers; elimination of industrial waste and regional organization of the engineers of the nation along lines marked by Secretary Hoover and his associates in the council.

Dean Cooley is perhaps best known in the electric railway field because of his pioneer work in making valuations. In 1902 Mr. Cooley assisted in the appraisal of the mechanical equipment of Newfoundland railways, and in 1903 acted as consulting engineer in the Wisconsin railroad appraisal. In 1906 he was a member of the Traction Valuation Committee, Chicago; in 1907 appraised Michigan telephone properties; in charge of appraisal of hydro and steam-electric properties and railroads for the Michigan Railroad Commission since 1910. More recently he was in charge of making a valuation of the Public Service Railway, New Jersey. The total value of the property with which he has been concerned in appraising is about a billion and a half dollars ,of which 85 to 90 per cent has been devoted to the public use.

It is understood that Professor Cooley has made arrangements which will enable him to give one-fourth of his time to active work for the organization, while leaving him sufficient opportunity to maintain his progressive upbuilding in the University of Michigan, which he has served forty years.

Frank G. Whitney, for the past fifteen years superintendent of substations, electric division, New York Central Railroad, has resigned to become superintendent of the Dutch Point Power Station, Hartford (Conn.) Electric Light Company. A farewell banquet was given in Mr. Whitney's honor on Sept. 22 by one hundred of his associates and employees of the New York Central Railroad. Mr. Whitney was presented with a handsome watch and a traveling bag as tokens of their esteem.

Obituary

L. E. Purnell, manager of the Cleveland office of the Ajax Metal Company, Philadelphia, died suddenly on Oct. 6. The Cleveland office will be continued in charge of an assistant until Mr. Purnell's successor is appointed.

E. M. Musier, cashier and paymaster of both the Eighth Avenue and Ninth Avenue Railroad Companies, New York, since they were returned to their original owners for operation on Aug. 1, 1919, died on Sept. 14. Mr. Musier had previously been with the Brooklyn (N. Y.) Rapid Transit Company for many years and prior to that was connected with the West Shore Railroad.

Henry C. Moore, formerly president and general manager of the Trenton (N. J.) Street Railway, died in Boston on Oct. 5. He was a member of the board of directors of the United Power & Transportation Company, Reading, Pa., which operated the traction lines at that place and at Trenton, N. J. Twenty-six years ago he was sent to Trenton to become president and general manager of the Trenton Street Railway. Mr. Moore was born in Philadelphia sixty-nine years ago and received his education there.

William Otis Chapman, Jamaica Plain, Mass., died on Oct. 6. He was born in Canton, Mass., seventy-one years ago. Mr. Chapman early in life, through his father, who was one of the organizers and builders of the Union Pacific Railroad, became interested in railroad enterprises, and more particularly in street railway and interurban railway construction. He was prominent in the building of the Braintree & Weymouth Street Railway, Braintree, Mass., and was part owner of the company until some years ago, when he sold his interests. He later became associated with the firm of Stone & Webster, and during his connection with that company he was in charge of the construction in Massachusetts of the old Blue Hill Street Railway, the Plymouth & Kingston electric line and also the Canton Street Railway. In 1890 Mr. Chapman built the electric railway between the towns of Hancock and Houghton, in the copper regions of Michigan, which was considered an extremely difficult piece of engineering.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Governor Harding Thinks Business Has Turned the Corner

In an extended article in the November issue of *System*, W. P. G. Harding, governor of the Federal Reserve Board, explains why he thinks business has turned the corner. He says among other things that since the first of the present year up to Aug. 31, loans of the federal reserve banks to their member banks have decreased about $1,200,000,000, and as the notes discounted with federal reserve banks have been paid off, the federal reserve note currency has come back to the banks and in the absence of a demand for it has not been reissued. Other facts which he cites are as follows: The movement of prices, which has been steadily downward, has checked itself; the public has a great deal of buying power left and buying power begets buying power; the wholesale price index number which reached 272 now stands near 148; the total volume of federal reserve notes in circulation which showed an almost continuous upward trend during 1920 since then has been greatly reduced; when one important industry resumes, others automatically revive and industries are reviving.

Unfilled Steel Orders Increase

The United States Steel Corporation has just reported the first increase in forward business that has taken place since July, 1920. Unfilled orders as of Sept. 30 amounted to 4,560,670 tons, as against 4,531,926 tons on Aug. 31, an increase of 28,744 tons. While the increase was not large, the very fact that there was an increase was considered as one of the outstanding factors indicating a turn in the industry. The gain in forward business indicated a distinct picking-up in demand, for operations of the Steel Corporation were at a much higher scale than in the preceding month, and consequently for an increase in bookings to be recorded there had to be a decided expansion of demand.

The scale of activity of the corporation during September ranged between 30 and 40 per cent., the latter figure having been attained toward the close of the month. Production was probably in the neighborhood of 450,000 tons of finished steel during the period, so that incoming orders may have reached 500,000 tons, since some of the business during the month probably represented shipments from stock. The major portion of the new business taken by the corporation was in light products, notably sheet and wire goods. For some time sheet mills have been operating at a scale much higher than other departments.

The peak of unfilled tonnage was reached in April, 1917, when bookings amounted to 12,183,083. There was practically a steady decline until May, 1919, when bookings increased, ultimatly advancing to 11,118,468 in July, 1920. Another decline set in, which continued until September of this year.

Insulation Market Stronger

With the higher prices ruling for cotton yarns and cloth, the insulation market is on a little stronger basis and buying has been reported more active. The principal increase in buying has been noted in the field concerned with repair and maintenance work rather than in new manufacturing. Electric railway properties have shown considerable activity in this respect in the last three weeks in comparison with the light buying from that direction during the summer. Cotton insulation and cotton and rubber tapes are also moving well, and a noticeable increase in the purchases of mica is found. This is not only in insulation but also in tubes and washers for grid insulation, undoubtedly in anticipation of the winter's needs.

Some further price advances since Sept. 20 have been noted in varnished tapes and cloth. These have been around 10 per cent. Cotton yarns and gray goods at the mills have gone up again, and when insulation manufacturers come into the market for further supplies it is expected that still further advances in the price of finished insulation will result. Then, too, stocks of cotton cloth at the mills have been reduced and a temporary shortage may result. Mica prices have risen but slightly.

Copper Demand Still Strong

Copper is 13 cents a pound delivered to domestic consumers for October and November. Several million pounds of copper were sold in the export trade recently. Domestic demand continues good. Most producers are rather unwilling to sell at present quotations, so that it is becoming quite difficult for other than the larger buyers to obtain November deliveries at 13 cents. How much further prices will rise on the present buying movement would seem to depend upon how much of present buying is for early consumption and how much is advanced buying to take advantage of present prices on the supposition that producers will during the coming year adopt a wiser and more farsighted price policy than during the first nine months of the present.

Upward Trend in Coal Production

For four weeks in succession the production of soft coal has climbed steadily upward. The total output during the week of Oct. 1, including lignite, coal coked at the mine and railroad fuel, is estimated at 8,876,000 net tons. Compared with the week preceding this was an increase of 348,000 tons, or 4 per cent. The week's production was the largest since last January.

Electrical Sheet Prices Steady

Sheet production is running pretty high, one mill operating at about 85 per cent capacity. Electrical sheet operation is on a low basis, on the other hand, in line with the buying by electrical apparatus manufacturers, with considerable stock still on hand. Prices on this material are holding, no advance having been made with the September sheet advance and not immediate advance being contemplated, it is reported, on a newly announced rise of five dollars in sheets in several districts.

Buying Increased in Some Quarters

Slightly larger orders, more of them and a generally firmer tone to buying have been the characteristics of late of conditions among those dealing in electric railway supplies. This tendency of increased activity has been manifested by more numerous inquiries for material on which the frequency of replacement is necessarily rather high. The principal activity is seen in the standard items of gears, gear cases, brake-shoes, trolley wheels. etc. With respect to equipment and supplies which depend essentially for their sales on the purchase of new rolling stock, there have been practically no changes in the volume of sales recorded or number of inquiries received.

One manufacturer states that the prices of car equipment, especially motors, controllers, etc., have reached a level as low as present costs will permit. When it is considered that both copper and steel prices seem to be on an upward trend and that the average of wages paid to labor is but 40 per cent above the pre-war scale, it appears as though equipment prices cannot be lowered appreciably.

Electric railways, according to several manufacturers, have responded to the decrease in line and overhead material announced over a month ago by a favorable increase in buying. This condition exists notwithstanding that demand for line supplies has been somewhat above the average for a considerable period. Railways are undoubtedly anxious to benefit by reductions that have followed lowered copper prices, which they realize will probably not soon fall to such low levels.

Also the demand and sales of armature coil winding machines and other labor saving shop tools are reported to be still very active.

Manufacturers, in general, are optimistic over the volume of business which they think should develop in the near future, for with improving financial conditions that are being announced almost daily the long-delayed yet necessary rehabilitation of rolling stock will result in good buying of equipment by car builders.

Rolling Stock

Brooklyn (N. Y.) Rapid Transit Company recently placed an order for 400 illuminated curtain signs to be used on its new subway cars, an order for 100 of which was placed some time ago.

Pacific Electric Railway, Los Angeles, Cal., has just added thirty new interurban cars to its service. Some of them will be put on the Los Angeles-San Bernardino line and others will be run from Los Angeles to the beaches. The cars, costing $48,000 apiece, are the latest type of interurban electric railway cars. They are practically the same as the cars on the Los Angeles-San Bernardino line, with the exception that they are equipped with leather-cushioned seats instead of plush cushions. All the interurban cars of the Pacific Electric are to be equipped with leather seats as the cars go into the shops for repairs.

Track and Roadway

Valdosta (Ga.) Street Railway has replaced all of the old cross ties with new ones in the northern part of the city.

Tri-City Railway & Light Company, Davenport, Ia., is replacing its present light rails with heavier rail, the relaying being done between Clinton and Davenport with 85-lb. rail.

Eastern Massachusetts Street Railway, Boston, Mass., is doing a great amount of track improvement work. A 75 lb. rail is being laid for a half mile on the Lawrence line, taking the place of the old 48 lb. rail. On the Reading line to State Street, Tewksbury, the rails are being welded. The company also hopes to relay the rails in Central Street. Work is also in progress between Merrimack and Market Streets.

Public Service Railway, Newark, N. J., may be compelled to raise and maintain the trolley tracks in North Broad Street, Hillside, N. J., from the Elizabeth city line, during the repairing of that section of the thoroughfare. The Union County Board of Freeholders has filed a petition with the Board of Public Utility Commissioners to this effect. The trolley company refused to do the work, claiming that it did not have the necessary finances.

Pittsburgh (Pa.) Railways are seeking permission through the receivers to make the following repairs. New flooring in the Fleming Park Bridge at a cost of $31,000; reconstruction of double tracks on West Carson Street between the Point and Smithfield Street bridges. This repair would require 2,100 ft. of double track at a cost of $96,800. Permission is also sought to lay 1,700 ft. of single track in Wabash Avenue from Plank to Independence Street at a cost of $24,200 and for placing 410 ft. of single track along Independence Street to Woodville Avenue at a cost of $6,600.

San Diego (Cal.) Electric Railway began, on Sept. 6, relaying its tracks and paving on Broadway between Third Street and the Union Station. The new work will cost approximately $100,000 and all possible man-power will be employed to complete the work with as little delay as possible. The section of track to be relaid and repaved is approximately ½ mile long and, being double track throughout, will make a total of about 1 mile of new track. The type of construction will be of the most modern and approved character so far undertaken by any electric railway on the Pacific Coast, according to William Clayton, vice-president and managing director. An innovation so far as the San Diego Electric Railway's construction is concerned will be the incasing of the steel ties in solid concrete, eliminating entirely the use of the loose rock ballast heretofore employed with the wooden ties. The rails will be 114-lb. section. The use of the solid concrete incased ties is expected to produce a superior roadbed and add to the life of the track.

Power Houses, Shops and Buildings

Toronto (Can.) Transportation Commission, which took over the railway system on Sept. 1 last has a force of approximately 2,000 men engaged in the work of reconstructing various lines. At the Coxwell Avenue carhouse drainage, trackage and and switches have been installed and forty of the new cars ordered by the Commission are on sidings ready to be operated as soon as a wider devil strip is available. New car routes are also to be constructed on Blantyre Avenue, Coxwell Avenue, Carlaw and Pape Avenues and Broadview Avenues all in the east end. It is also expected that the commission will be able to complete arrangements with York Townshop Council for the extension of the crosstown lines running east on Danforth, Gerrar, Dundas and Queen Streets,

Trade Notes

Walter R. Pflasterer, railway sales engineer of the National Carbon Company in the Chicago territory, resigned on Sept. 1 to enter business for himself. He has organized the District Sales Company and is general sales manager with headquarters at 431 South Dearborn Street, Chicago. The District Sales Company will act as manufacturerers' representatives handling railroad accounts in the Chicago district. Mr. Pflasterer has been connected with the National Carbon Company since 1914 when he entered their employ as sales engineer in the railroad sales department.

Sidney G. Down was appointed, effective Oct. 1, to the newly created office of general sales manager of the Westinghouse Traction Brake Company and Westinghouse Air Brake Company, with headquarters at Wilmerding, Pa. Mr. Down was formerly Pacific district manager of the Westinghouse Air Brake interests and president of the Westinghouse Pacific Coast Brake Company. Mr. Down joined the Westinghouse Air Brake organization twenty years ago, coming from the Michigan Central Railroad where he was employed as general air-brake inspector and instructor. He spent several years as instructor on the Westinghouse Air Brake Company's instruction car and was later appointed mechanical expert, with headquarters in Chicago. Eleven years ago he was appointed district engineer and transferred to San Francisco. Shortly afterward he was made Pacific district manager. Mr. Down was largely responsible for the organization of the Westinghouse Pacific Coast Brake Company located in California, and when it was formed was placed in charge of its activities with the title of vice-president and later president.

New Advertising Literature

American Insulated Wire & Cable Company, Chicago, has completed arrangements for circulating the new leather-bound vest-pocket catalog on its "American Brand" wire and cable.

Elliott Company, Jeanette, Pa., has just issued two new bulletins. N-1 is on the "Deaëration Process" as applied to power, central-station and heating plants to prevent corrosion, and N-2 is on the "Deaëration Process" for hot-water service.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., produced, primarily for distribution prior to and at the recent convention of the American Electric Railway Association, a publication, entitled "Review of Electric Railway Problems." This publication covers the subjects of mass transportation, multiple-unit control, recent railway motor developments, interurban service, freight haulage, snow fighting, automatic substations, the safety car, the trolley bus, replacements of obsolete equipment, maintenance of electrical equipment, and there are several pages devoted to a description of various items of Westinghouse equipment such as electrically heated ovens, solder and babbitt pots, electric-arc welders, electric glue pots, etc. The last two pages of the book are devoted to a brief description to each of the important up-to-date railway publications available for distribution by the Westinghouse company.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative

Volume 58 New York, Saturday, October 22, 1921 *Number* 17

One-Man Operation of Present Equipment Justified

ONE-MAN operation of street cars has been most successfully introduced heretofore where the change was accompanied by the installation of new cars of the safety type, a shortening of the headway between cars and in many cases a faster schedule speed. This plan gave the patrons better service in safer cars at the same time that it provided reduced operating expenses for the company. When conditions are such that this plan can be followed out it is undoubtedly the best course to pursue.

But under the condition of materially less riding which now prevails in many cities it is often a justifiable procedure to change over present equipment for one-man operation without giving more service and simply in the interest of self-preservation on the part of the company. This drastic economy measure is applicable particularly in the smaller cities. Even where there is an exacting rush-hour traffic, with fairly light traffic the remainder of the day, the judicious use of street collectors during the heavy periods will enable one-man operation to be installed successfully with large savings. Some companies are boldly coping with the present situation by replacing two men with one on single- and double-truck cars and thus obtaining the principal saving that can be derived from standard safety cars without waiting until new cars of that type can be financed. In some cases safety devices are installed to compensate in safety for the absence of the second man.

The Cleveland Railway has been operating forty double-truck cars with one man since June 1. The Eastern Massachusetts Street Railway is operating 426 double-truck cars with one man in addition to 251 standard safety cars. In Spokane, Wash., the Washington Water Power Company and the Spokane Electric Railway & Power Company are both operating all cars with one man. In Seattle, Wash., twenty-seven double-truck cars seating sixty people are being successfully operated with one man, as noted in this paper on page 940, May 21, 1921. The Tri-City Railway & Light Company is well along with its plan to operate all cars in Davenport, Rock Island and Moline with one man, as related elsewhere in this issue, and the same management is operating all cars with one man in Muscatine, Cedar Rapids and Mason City, Iowa. In other words, this practice has been successfully established in a number of places.

With gross revenue substantially lower than last year and with a further fare increase now usually untimely and undesirable for several reasons, companies should put into effect such measures as will keep operating costs well below the income, even though this may mean some radical departures from former practices. About the biggest saving that can be made is the elimination of one man on a car. There are many cities with population of less than 100,000 where it appears quite evident that this can be done, and should be done in view of the exigencies of the time, rather than to go on accumulating a deficit. Furthermore, there are many lines in cities of over 100,000 population on which the cars could be satisfactorily operated with but one man. Incidentally, if such one-man operation of present equipment makes possible a reduction of fare later on, this should be welcomed, particularly where the competitive situation is a matter of concern.

Broad Vision and Statesmanship Needed in Labor Readjustment

THE readjustment with labor in the railroad field is of such nationwide importance, is on such a huge scale, that it attracts the attention of the entire country. It emphasizes dramatically the necessity for real vision and statesmanship in dealing with the most important subject before the nation today—the economic and social readjustment, which cannot be evaded. And this much is certain, that the balance which will finally obtain will not and should not be the *status quo ante*, the mere return to conditions of 1913, good as they may have been. Actual progress must result, and this is the reason, above all, that real statesmanship is needed.

In the electric railway field the problem is as great and as serious as in any other. While the entire industry does not meet the problem as of one date nor as an entity, nevertheless the individual readjustments, each with its own local variations, have a vital effect on the entire labor situation. There is the same opportunity and necessity for leadership and vision in the labor problems of this industry as elsewhere. Will the industry measure up to the hour? Will it produce the leaders who will look to future conditions rather than past policies? There is reason to believe so. While at times there are signs of shortsightedness, there are also instances of the opposite nature.

One of the leading executives in this industry, an officer of a large holding and managing company, was recently approached by one of his local managers with his labor readjustment problems. "Now is the time," the latter said, "when labor is plenty, for us to break up the combination against us, to squeeze back as we were squeezed on our last agreement. The men have to take what we will give." "No," said his broad-minded superior, "now is the time, rather, for us to show that we deserve to be managers by showing a better vision ahead. Now is the time, when opportunity exists, to go to the men and improve our working rules, to place our relations with the men on a higher plane. They are willing to talk now, let's do something constructive; not something which will merely be an invitation to further radical action by the men if the tables turn again."

The local manager was converted to a trial of the broad policy. He went home and tried it. It worked. He wrote his superior that, by approaching the men in a constructive attitude, he had been able to make many improvements in working rules, make many changes in operating conditions, make a satisfactory reduction in wages, and still leave the men with their self-respect and, more important, with their respect for, and loyalty to, the management much strengthened.

It is this sort of leadership and vision, in dealing with labor, that is needed.

The Labor Situation and Coal

But even when management does seem to show the right attitude, it cannot always be assumed that labor will do so. An example seems to exist now in the coal industry which should make coal users sit up and take notice, as well as those who are interested in the general subject of labor relations.

No one minimizes the unfortunate effects of the seasonal occupation of the average coal miner. But individually, his rate is high. His working conditions are the subject of much debate. But he has apparently refused to arbitrate his condition when his present contract expires the first of next April. The quite possible result is a coal strike next spring, now freely predicted and more probable than a railroad strike.

Management, in this case, seemed at first uncompromising, but finally agreed to arbitrate. The miners, by their recent action, hold that the strike is their only weapon and refuse to arbitrate. The public feels that coal is high and will be impatient, but yet rather powerless, in case of a strike.

Meanwhile, industry is affected in unpleasant anticipation. An immediate remedy is to lay in large coal stocks. It seems wisdom to do this and certainly railways and other utilities will do much to maintain community life if they can assure the community of no cessation of activity on account of coal shortage. A few months stock of coal is good business just now.

Let Us Have More Material Specifications

The practice of purchasing railway materials and supplies on accurate and practical specifications is becoming more and more extensive. The standing committees of the American Electric Railway Engineering Association presented at the recent convention a number of such specifications which were approved. Every encouragement should be given to the committees to prepare and increase the number of such specifications which can be adopted as standard.

One way that railways can reduce costs is by using better material for making repairs. It costs no more to apply good material than poor, and when the latter fails in service additional material must be purchased, and the labor cost of one application and removal is lost. This adds to the maintenance cost and, in addition, the increased number of failures and delays in service will cost the company much in the loss of good will from its patrons.

Another advantage arising from the use of specifications is that railway companies are enabled to go into the open market for material and thus profit by trade competition and also have a greater variety from which to select. Manufacturers in general prefer to furnish material to intelligently drawn specifications, as they know in advance exactly what requirements are expected and can supply materials that will prove satisfactory. During the war it was frequently necessary to use inferior materials in order to keep equipment running, but now this practice should be discontinued.

To obtain the minimum maintenance cost consistent with safe, clean and reliable service requires close following of every detail that goes into the equipment. Whether or not material is standing up in service and producing the desired results can be best determined by a periodical checking of the amount ordered, the amount on hand and the amount used. It always pays in the end to purchase durable material, owing to the reduced maintenance and operating costs. No matter how cheap the first cost may be, any material requiring frequent repair, patching or renewal is expensive.

Self-Preservation Is the First Law of Nature

The natural instinct for existence is the reason that citizens in a number of communities are organizing to supply volunteers if necessary to help operate the railroads after Oct. 30. The proposed strike of the railroad employees threatens the stoppage of a necessity of our civilized life. The spirit behind the offer of services to keep the railroads in operation is accompanied by no desire, in most cases, to pass upon the merits of the controversy over wages. The answer would undoubtedly be the same if the owners of the roads withdrew their equipment because they considered their remuneration unsatisfactory.

The organization of the community at large to act in labor troubles of this kind is the natural result of the size of existing labor unions. Formerly the largest strike on a railroad or a coal mine or other public utility involved an isolated property or a single community only. Then the rights of the public were preserved, if order was maintained, because men could be brought from outside to do the work. But many of the present unions are so large that a strike threatens a national stoppage of work, and they can be opposed only by an equally widespread organization of citizens.

Time lends perspective to the view—even to the labor view—and the belligerency so much in evidence now may subside with the passing of a few days and with a growing appreciation of such ideas as are expressed above. It is hoped that the present strike will not occur, but if it does the result will undoubtedly be a failure, as with the railroad strike and the coal strike in England.

Electric Railways Ready in Railroad Emergency

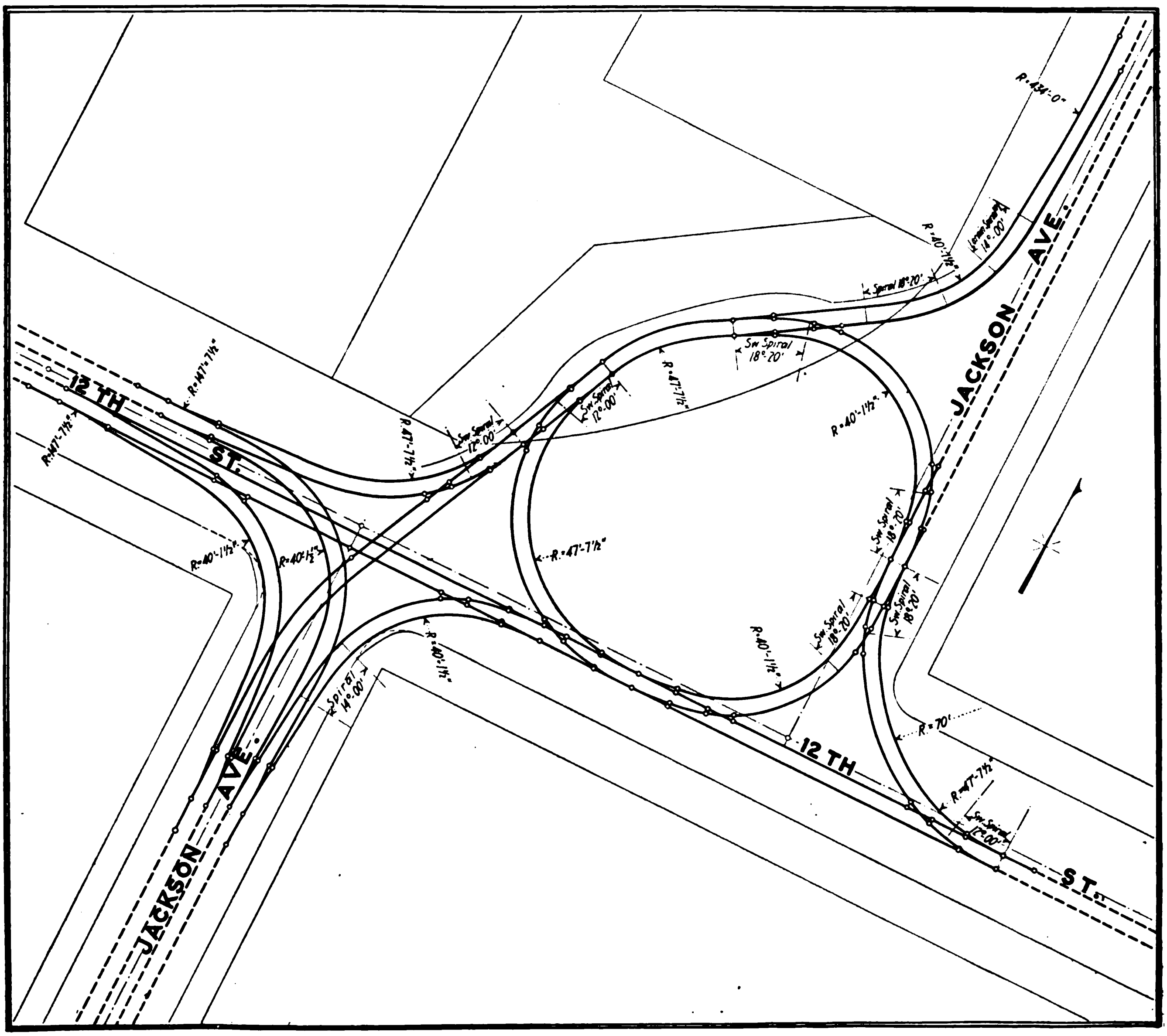
Of ALL the agencies that will be called into play in the emergency of a strike, the electric railways hold out large prospects for being converted into an important agency in helping to meet the contingency that a cessation of activities on the railroads would create. Particularly is this true in the Central West. Already inquiries are beginning to be made of this paper as to the extent and location of the electric railways. All these data are on file with the authorities in Washington, for whose benefit they were carefully noted during the war-time period through the foresight and planning of the American Electric Railway Association. It is sincerely to be hoped that the steam railroad labor leaders will see the error of their ways in time, but in the emergency of a strike the electric railways offer a means quickly available of handling both passengers and freight to an extent perhaps little realized except by official circles in Washington and by the regular users of such lines.

Universal Loop for 118 Cars an Hour

Extensive Special Work Layout Installed on the Kansas City Railways to Facilitate Operation of Cars on New Routing Plan and Avoid Congestion and Likelihood of Accidents Which Were Involved in the Old Layout

CONDITIONS from an operating standpoint have been rather congested at the corner of Jackson Avenue and Twelfth Street, Kansas City, Mo., for some time back. At this point, the Jackson Avenue crosstown line of the Kansas City Railways intersects with the Twelfth Street line, which terminates at this point. The intersection of these two lines has heretofore involved a fairly complicated layout of special work on account of a jog in Jackson Avenue and the facilities necessary for wying the Twelfth Street cars, which carry the heaviest traffic and run on the closest headway of any line on the system. Extending east from Jackson Avenue, a single-track line on Twelfth Street has been operated with double-end cars, which have been turned back at this point.

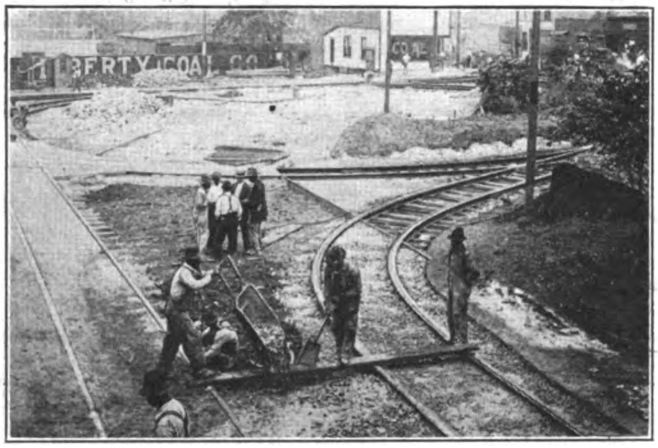
The installation of the rerouting plan devised by John A. Beeler was seen to involve further complications at this point, from the standpoint of track facilities. This plan provided for the through routing of the crosstown line on Jackson Avenue south of Twelfth Street with the Roanoke line, which is routed east over Twelfth Street from this intersection. In order to operate this through route, it was neccessary to have a double curve in the northwest quadrant of Twelfth Street and Jackson Avenue. The new routing plan also provided for making Twelfth Street the southern terminus of the Hardesty-Jackson line except during rush hours. A further complication was brought into the problem by the desirability of operating single-end cars instead of double-end cars on Twelfth Street east of Jackson, which would then have to be wyed at this point. It was also necessary to maintain track connections at this intersection to enable cars housed at the Brighton carhouse to pass through and take up their routes.



New Universal Loop at Important Terminus and Intersection Point, Recently Installed in Kansas City

While the layout of the old special work was such that most of these movements could be made, it was evident that with three lines terminating here and with the wying back of single-end cars, there would undoubtedly develop very considerable congestion and liability of accident to both the company's equipment and vehicular traffic. The problem would only partly be solved by putting in the double curves from Twelfth Street on to Jackson Avenue south, and there was not sufficient room in these street intersections for putting in a proper loop. The study made of the situation finally developed that the best solution was the installation of a universal loop so connected as readily to serve all lines.

In order to build this universal loop it was necessary to lease 5,930 sq.ft. of property adjoining in the northwest quadrant. Fortunately, the lease of this property appeared to the owners to be an advantage, inasmuch as it increased their frontage considerably and permitted them to build shops facing a heavy transfer and terminal point. The new layout of track was such that it was practically impossible to use any of the old track to advantage, although it was in good condition. It was therefore salvaged and an entire new layout purchased from the Lorain Steel Company.



DOUBLE TRACKS AND UNIVERSAL LOOP AS SEEN LOOKING SOUTH IN JACKSON AVENUE

It was quite a problem to install the new track. The layout was such, and the service at this point of such character, that it was found impossible to install all of the work under traffic. Such parts as were not complicated by continuous service were therefore put down before the final installation, which was arranged to be done in a single night. This required the employment of a gang of more than 100 men. Service was cut off at 9 p.m. and the owl car used the loop at 3:30 a.m. A. E. Harvey, chief engineer, writes that "The work went together without trouble of any kind; there was not ⅛ in. variation to be taken up in any part of the work, so perfect were the computations, the manufacture and the staking out of the new alignment, which is somewhat remarkable, taking into consideration the size and character of the layout and the fact that various pieces of it were installed before the final connections were made."

The track in the layout is built of 7-in. T-rail, Lorain section 375, Trilby rail section 467, and the guard section 468. The switches, mates and frogs are of cast bound construction. The track was laid with wood ties on ballast and thoroughly tamped. Various types of paving were used to conform to the paving of the adjacent streets. Six of the thirteen switches were equipped for electrical operation.

The large expenditure involved for trackage at this point is justified by the fact that it is an important intersection and transfer point where there would undoubtedly exist a great deal of congestion unless cars could always be moved in a forward direction. The new layout makes this provision for all lines entering the location, and the importance of this location from a traffic standpoint will undoubtedly increase from year to year. The maximum number of cars using this loop is now 118 per hour.

While it would be very difficult to arrive at an estimate of the actual operating saving effected by the installation of these extensive loop facilities, the company officials are satisfied that it is considerable, on account of avoiding the delays that would occur not only through the normal operation of cars of the various lines throughout the day but the delay that would occur in putting cars from the Brighton carhouse which have to pass through this important intersection en route to five lines were proper connections not available. To carry out the larger rerouting scheme, which meant a very material saving, it appeared necessary to provide all the track connections installed with this loop, and careful investigation developed no other combination that would answer all purposes.

UNIVERSAL LOOP AND CONNECTIONS AS SEEN LOOKING WEST IN TWELFTH STREET

Electrolysis Report Nearly Ready

DURING the past month the final editing work on the report of the American Committee on Electrolysis has been completed and the report placed in the hands of a printer. This work will bring up to date the conclusions and recommendations that have been agreed upon as a result of a joint study of the electrolysis problem by the Bureau of Standards and the utility interests represented on the American Committee on Electrolysis.

During the month also the final experimental field trials of the earth current meter have been completed, and the completion of these field trials has definitely established the utility of this instrument for practical electrolysis survey work. A description of the principle of the method and apparatus has been prepared for early publication and plans are now being made to use several of these instruments in connection with the co-operative work of the bureau and the research subcommittee of the American Committee on Electrolysis.

One-Man Operation Saves $110,000

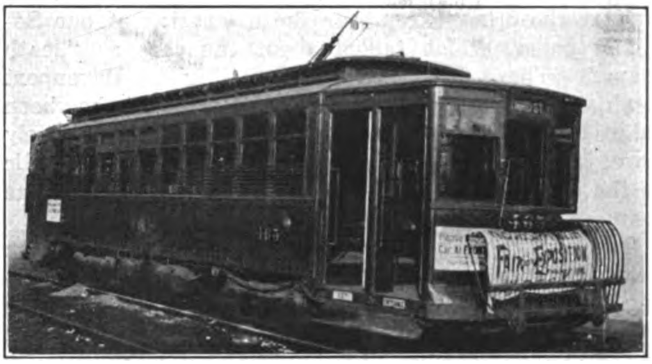
All Cars in Davenport, Iowa, Now Operated with One Man—Experience in Several Iowa Cities Confirms Practicability of Using But One Man with Large Cars—Separate Entrance and Exit Provided

ON JUNE 1, 1921, the Tri-City Railway of Iowa, Davenport, Iowa, began one-man operation of its cars, reduced wages from a maximum of 70 cents an hour to 50 cents, with 5 cents additional for one-man operation, and voluntarily reduced the rate of fare from 9 cents cash, with three tickets for 25 cents, to 8 cents flat. By Aug. 6 all cars had been rearranged and were being operated with one man on the same schedule that had been in effect with two-man operation. The reduction in fare was virtually a trade with the public for one-man operation, though from the standpoint of net earnings the reduction was not justified. The company is looking to the future when business improves to derive the real benefits of the reduction in platform expense. At present the saving figures out to be about $4,500 a month net.

The company operates 20,400 car-hours a month. Reducing the platform cost by 45 cents an hour means a monthly saving of $9,180 and an annual saving of $110,160. The reduction in fare was not of a nature to have any appreciable effect in stimulating riding, so that it entailed a loss in revenue of approximately $4,500 a month, leaving a net improvement of some $4,600 a month in the net earnings. Of course, because of the time required to prepare the cars for one-man operation, the reduction in fare with only partial one-man operation in June and July actually produced a loss. The saving in operating expenses in June was $1,800 and in July $4,000. August and succeeding months will produce the full saving of over $9,000.

This drastic change of all of the two-man, forty-four-seat, double-truck cars in Davenport to one-man operation was preceded by experience in Mason City, Muscatine and Cedar Rapids, Iowa, where the local street railways are operated by the same interests, the United Light & Railways. All cars in these cities have been operated with one man for some time past. Standard safety cars are being used entirely at Mason City except for the single-truck old type cars used for extras, and some safety cars are used at Muscatine. Half the cars in Cedar Rapids are of the safety type and the remainder are double-truck cars operated with one man without any safety equipment. These include ten double-truck cars weighing 26,500 lb., seating forty people and equipped with 24-in. wheels, and four cars which weigh 40,000 lb. and seat forty-four passengers. B. J. Denman, president Tri-City Railway, stated that "Our Cedar Rapids officials and men prefer the large cars to the small ones, and so do the public."

While the company was satisfied that the cars could be operated with one man in Davenport, it was prevented from doing so by the Socialist City Council, which based its position on an ordinance prohibiting one-man operation that has been on the statutes some thirty years. Affidavits were secured from companies throughout the country to show what other cities think of one-man operation of street cars, and a temporary injunction was secured against the enforcement of this ordinance. The main contention of the city was that the cars were unsafe when operated with one man, and the local company agreed to equip the cars with safety devices. The safety devices installed on the cars are of a special design developed by John Sutherland, master mechanic, and comprise a scheme for doing electrically practically what is normally done by air in the standard safety devices. The details of this equipment and its functioning are not yet available, but are expected to be made public in the near future. The average cost of equipping the first twelve cars for one-man operation was $315.98 for labor and $283.49 for material, making a total of $599.47. The cost ran as low as $459.36 and as high as $635.90. It included the cutting of a new door in the vestibule at each end of the car, putting in a new post between doors, dividing rails to separate the entrance and exit passage ways, new air-operated hinged doors, and, in some cases, the trussing of platforms and other rehabilitation work in the vestibule structure. The new exit door for one-man operation was cut in the vestibule just behind the former front exit door, which now serves as the one-man entrance. Both door openings are 29½ in. wide. These cars weigh 40,000 lb., are 44 ft. 8 in. long and seat forty-four passengers. The bridge cars operating from Davenport to Rock Island are of the same capacity and dimensions but weigh 30,000 lb. These cars are now one-man operated, but the extra door was not cut in.



TYPE OF CAR AND ARRANGEMENT OF DOORS FOR ONE-MAN OPERATION

TRAFFIC IS LIGHT AND WITHOUT BAD PEAKS

To give an idea of the traffic handled in Davenport, it should be said that the base schedule calls for thirty-seven cars on seven lines. The headway on all lines is fifteen minutes except one, on which it is ten minutes. This schedule remains the same all day throughout the eighteen hours, since there is practically no rush-hour of any consequence to be handled. The average schedule speed in May was 8.77 m.p.h. for the entire system and for June 8.64. This same speed has been maintained with the one-man cars, which have been uniformly on time except for delays at railroad crossings, etc., and there have been no more cars late than there were when operated with two men.

The absence of any particular rush-hour period is partially due to the very great falling off in the number of passengers to be handled, due to the almost complete shut-down of the industry of the city, 92 per cent of which is devoted to agricultural implement manufacture. In 1919 the Davenport company carried 15,000,000 passengers, while in 1920 it carried 13,000,000, and this year is going on the basis of approximately 10,000,000. In May, 1920, the number of passengers carried was 1,168,878, which is compared with 782,251 in May, 1921. In June last year the number of passengers was 1,118,758, as against 746,925 this year. The number of revenue passengers per car-mile was 4.4 in June, 1921. The fourteen extra cars which are run from the Rock Island arsenal to various points in the tri-cities each evening are also being operated with one man, the total traffic to be handled from here now being about 700 employees. Altogether, fifty-three cars were changed over for one-man operation.

CONDUCTORS USED AT START

For the first three days on each line, after the cars were rearranged, a conductor was placed in the front end to collect fares. The operators thereafter were a little slow at first, but soon became familiar with the equipment and their duties in collecting fares. The reaction of the public to the new plan of operation was practically nil and there was no newspaper comment one way or the other except for the discussion of one Socialist paper, which talked about the cars as "death traps." There has been some feeling in Davenport against the standard one-man safety car, as it has been talked that it would be a step backward, but absolutely no objection has been raised on the part of the public to the operation of the present car equipment with one man.

The change to one-man operation was of course an economy measure, made particularly urgent by the falling off in traffic. In speaking of deriving the advantage of one-man operation but utilizing present equipment, Mr. Denman made this significant statement:

"I would not ask an investor to put money in a railway property for new equipment under present conditions, when the largest saving due to the use of one-man cars could be obtained by the use of the present equipment, and especially when there is absolutely no question that there will be a very substantial reduction in the price of small cars in a year or two. Even if we desire to put smaller cars in service at some future time, the present equipment would be extremely useful on the heavier lines and for use during the peak hours."

Work has been started to change over the sixty-six cars in Rock Island, Moline and East Moline, Ill., for one-man operation. The base schedule in these cities calls for thirty-eight cars, and as soon as the necessary changes in equipment can be made, one-man operation will be started and the 9-cent fare, with 8⅓-cent tickets, reduced to 8 cents flat. A little later then, all of the cars on the Tri-City properties will be one-man operated.

The American Engineering Council has just made public a report on eye accidents that have occurred in various industries. The protective methods as applied in various plants have effected a great reduction in injuries. The report stresses the importance of correcting subnormal vision among employees, stating that excess eye fatigue results in conditions which must produce a time labor loss from the reduction in quantity and quality of the work produced. The importance of proper lighting is also dealt with.

The Human Side of Energy Saving

Experiences and Observations in Winning the Support of the Trainmen and the Results Obtained on an Interurban System

By R. E. LUELLEN
Safety Engineer, Union Traction Company of Indiana, Anderson, Ind.

WHEN the general manager called me into his office one day eighteen months ago and said, "Ross, we've decided to buy kilowatt-hour meters for installation on 105 of our interurban cars; how would you like to take charge of our power-saving efforts?" I did not at once answer. I was a claims and safety man, if anything, in the electric railway business. Could I succeed as a power-saving man? Could we actually save power under our operating conditions? Would a man who had never operated a car or even worked a day as an operating man be able to instruct skilled trainmen in better methods of operation? I doubted. But I had faith that the boss would not be asking me to attempt something that seemed impossible of attainment; so my affirmative answer was finally given. Then my experiences in a new phase of electric railway operation began. Installation of the meters was started on March 11, 1920, under the direction of an engineer from the manufacturers.

STARTING THE CAMPAIGN

The dials of the meters were masked as the meters were installed and these masks were not removed until we were ready to begin use of the meters. This was done to ascertain the amount of power normally consumed by the cars.

During the installation we prepared a booklet for the trainmen, dealing with proper methods of economical car operation. Cards were also developed, on which the motormen could record and report the meter readings and train movements, as well as record forms for use in the office.

Beginning on May 6, a series of meetings with the trainmen was held at which the purpose and use of the meters and manner of making reports were explained to them. At these meetings the instruction matter in the booklets was elaborated verbally. I was beginning to see the light by the time these meetings were held and was able, therefore, to inject some little enthusiasm into my discourse on economical operation.

Following these meetings, on May 10, the masks were removed from the meter dials and the motormen began reporting meter readings and experimenting with various sorts of operation, taking keen interest not always prompted by belief. After a few days' trial, I felt that most of them came to a uniform conclusion, which is summed up in the following literal quotation: "Maybe it can be done on some runs, but it can't be done on mine."

We found, as time went on, that the really big part of this work is that of inducing the motormen to disabuse their minds of the belief that on *their* run there is little or no chance to coast or otherwise to save power. However, a considerable number of men, principally those in service only a few years, maintained a permanent interest and belief which could not be ignored by the disbelievers, and as months passed a constantly increasing number of the men came to appreciate the worth of the efforts and to practice better operation in varying degrees.

To overcome the very human tendency of the motormen to lose interest in this work various means have been resorted to in co-operation with C. S. Keever, our superintendent of transportation. In addition to the periodical statements of showings of the motormen, which are posted in the trainmen's rooms, matter has been published each month in our employees' magazine, *Safety*, calculated to build and keep up interest and belief. The condition of equipment, we have learned, has a most vital bearing on power saving; for no motorman, no matter how well intentioned, can save power if his car does not roll freely from any cause, the principal one being tight brakes. Instances have come to my attention where tight brakes have caused an increase in power used, amounting to more than 25 per cent. M. F. Skouden, head of the motive power department, has been a firm believer in the possibilities of power-saving, and has co-operated in every possible way toward keeping the cars in the best condition.

On a system such as this, where the cars are heavy, speed high and stops few, we have found that the greatest saving is obtained by coasting the cars over considerable distance at high speed. Lately we have been able to stimulate greatly the trainmen's power-saving efforts by the inauguration of occasional days of special effort. On these days the men have been requested to make the utmost possible effort and to note such results as lowered power consumption, better voltage conditions when all men are making extra efforts to conserve power, count of the number of poles coasted, stops made, etc.

The surprisingly large amount of coasting that can be done is shown by the fact that on one day the aggregate number of miles coasted by all men totaled 36 per cent of the total mileage operated on that day. At the same time we noted a definite and satisfactory reduction of power consumption by the cars and in the output of the power plants. Is it any wonder that results such as these should change skeptics to firm believers in the possibilities of power-saving?

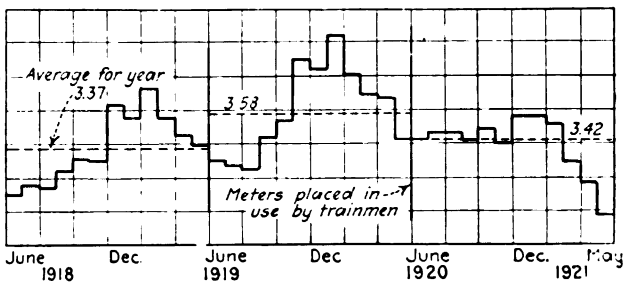
While we could not, of course, go into such a mass of detail for every day's work, we found that these days of special effort have a lasting effect on the power consumption in two ways. First, and most important, the men found it could be done on their individual runs and hence were encouraged to try harder afterward; second, even the skeptics would experiment on different methods of operation, so as to be ready for the next day of special effort. This all helped at the power house.

DOES ENERGY SAVING AT THE CAR MEAN COAL SAVING?

Have we really saved any coal? We have. Due first to power plant improvements and second to efforts to save power at the cars, the coal consumption has been greatly lowered and continues to drop, without any appreciable reduction in miles operated. Taking the figures from our auditor's records of the direct current output of the power plants, together with total miles operated, we find that the unit power consumption during the last seven months of meter operation has decreased more than 10 per cent from the figures for the corresponding months of the previous year. That this saving is reflected at the coal pile is clearly indicated by the fact that a large and satisfactory reduction was made in the consumption of coal per kilowatt-hour generated during the period the meters were in service. This reduction is due, in part, to power house improvements, but they show that the decreased power output did not increase the coal rate.

We have also noticed a very gratifying decrease in the cost of maintenance of equipment since the meters have been installed. While I do not have at hand exact figures on car maintenance, there is clearly a reduction in cost of such items as brakeshoes, motors and other electrical equipment. Mr. Skouden states that we are getting more mileage from our brakeshoes and, that whereas at this time last year we had a number of bad order field coils and armatures awaiting repairs, at present we have a reserve of as many good order coils all ready for trouble, despite a reduction in the number of men at the shop.

Two interesting by-products of our meter installation are the inspection of equipment on the kilowatt-hour basis and the data afforded by the meters on the amount of power used in various kinds of service. Our shop department has found that the inspection periods for different kinds of equipment may be easily regulated through the use of the inspection dials on the meters, which give them a very flexible and easily adjusted unit for inspection purposes. The data as to the amount of power used in different kinds of service have been very valuable in determining the power costs of the various kinds of service, such as freight, express, work train, etc., and have also made it possible for us to determine the amount of power used by our trains.



POWER CONSUMPTION AT D. C. SWITCHBOARD IN KILOWATTS PER CAR-MILE

Mechanical failures of the meters have thus far been so few as to be quite negligible. We have a plan of cleaning and calibrating the meters once a year and this, as well as other maintenance work, is assigned to one of the regular shop employees, who devotes all necessary time to it. The total expense for maintenance is averaging about $10 per month for the 105 meters.

The results which we have obtained have been very satisfactory and have been achieved with very little additional expense. We have had no road instruction for the men, but have relied upon securing their co-operation entirely through our initial meetings, instruction booklets, and the constant encouragement and advice of the operating officials. The response of the trainmen to these efforts has been excellent. We have been able to maintain their interest in power saving and we believe that our trainmen are constantly improving in economical car operation.

Looking back over the year's work, I can see how the steadfast belief of our operating officials that our power bills could be reduced has gradually worked down through the rank and file of our men, myself included, until the results obtained have justified that belief and accomplished the fine results shown in the accompanying curve. I believe that in this branch of work, as in any other requiring co-operation, results may be expected directly in proportion to the degree of faith and enthusiasm plus amount of thought and energy put into it by the officials.

How Some of the Principal Railways in the United States Construct Their Track

DATA COVERING STANDARD TRACK CONSTRUCTION ON SOME OF THE PRINCIPAL RAILWAYS THROUGHOUT THE UNITED STATES

COMPILED BY THE SAN FRANCISCO-OAKLAND TERMINAL RAILWAYS — APRIL 1921

Name of Company	City	State	Type of rail	Type of joint	Tie rod	Tie plate	Cross ties	Ballast	Drain tile	Type of paving	Excavation	Tamping	Joint grinder
Boston Elevated Railway Co.	Boston	Massachusetts	132 lb.-9" girder 122 lb.-7" girder, 100 lb.-6" tee.	Lorain, Thermit, Arc weld.	2¼" x 11/32"	⅜" rolled steel. 1" cast iron.	Southern pine treated by Roeping process. A few Internat'l twin steel.	Broken stone 4" to 6" deep below bottom of tie.	6" to 8" vitrified pipe	5" granite block and 3½"x4" wood block laid on concrete.	Hand, and electric Type "0" Thew Shovel.	Air	Atlas, Universal.
International Railway Co.	Buffalo	New York	124 lb.-9" girder	Continuous	Flat	Flat	Yellow pine, 90% Heart, in paved Sts. Oak in open track. Some Carnegie M-24.	8" concrete sub-base, 2" broken rock for tamping.	4" tile	Sandstone block on 6" concrete base	Hand and machine. Keystone shovel.	Hand	Atlas, Reciprocating.
Dallas Railway Co.	Dallas	Texas	103 lb.-7" girder, 80 lb.-7" tee.	Apex, Indianapolis.	None	R.R.S.Co.	Long leaf yellow pine.	Gravel.	4" tile	Bitulithic and brick.	Contractor.	Air	Reciprocating.
United Traction Co.	Albany, Troy, Cohoes, Capitol District	New York	122 lb.-7" girder, 95 lb.-7" tee.	Continuous	Flat	None	Yellow pine.	Crushed stone and concrete.	None	Granite block.	Hand.	Hand & air.	Rotary Reciprocating.
Cincinnati Traction Co.	Cincinnati	Ohio	140 lb.-9" girder	Arc welded channels.	Rail brace	⅜" flat.	Oak, 2' centers. Carnegie steel M-25, 3' centers.	Concrete 7" below bottom of tie.	4" tile	Granite block.	Thew shovel.	Stone-air. Conc-hand.	Indianapolis, Reciprocating.
Chicago Surface Lines	Chicago	Illinois	129 lb.-9" girder, 122 lb.-7" girder 91 lb.-7" tee, 85 lb.-7¼" S.B.	Lincoln, Lorain electric weld.	2" x 5/16"	½" shoulder	Long leaf yellow pine, s4s. Some Carnegie steel M-25.	Concrete from 2⅞" above to 6" below tie. Special construction 8" crushed rock tie.	None	Granite block.	Hand and machine. Electric & steam shovels.	Hand, air, electric.	Atlas, Kerwin.
New Orleans Ry. & Light Co.	New Orleans	Louisiana	105 lb.-7" girder 100 lb. A.S.C.E., 80 lb. A.S.C.E.	Channels on girder. Angles on tee. Some Lincoln weld.	⅞" round.	Brace plates	Long leaf yellow pine, creosoted. Few Internat'l twin steel;-experiment.	Concrete with girder rail. Crushed rock with tee rail.	Small amount.	Granite and creosoted wood block.	Hand.	Hand	Atlas.
Omaha & Council Bluffs St. Ry. Co.	Omaha	Nebraska	97 lb.-7" girder	Continuous, Thermit, Arc weld.	None	Brace plates	6"x8"-7' red oak treated with creosote, 2 gallons to each tie.	Standard construction 6" crushed stone. Concrete slab where necessary.	Small amt. 6" tile	Vitrified brick block (also granite block) on 7" concrete base.	Thew Auto Shovel.	Ing.-Rand. Duplex air.	Reciprocating.
Detroit United Railway	Detroit	Michigan	91 lb.-7" tee	Solid cast weld,- (molten metal poured in molds)	⅝" x 1¼"	None	Johnston steel tie proved failure. 6"x10"-6'8" No. 1 white oak.	Concrete slab under ties, 6:1 mix 8" deep.	6" vitrified crock	Granite nose block adjacent to gauge of rails, with brick between.	Rough grade-steam shovel, finished by hand.	Hand	Kerwin-Detroit
The Capital Traction Co.	Washington	District of Columbia	80 lb.-5" tee	Bolted	⅝" x 1½"	None	Oak and chestnut.	Stone.	6" tile	Asphalt and macadam.	Hand.	Hand	None.
The Milwaukee Electric Ry. & Light Co.	Milwaukee	Wisconsin	100 lb. A.R.A., 95 lb.-7" tee.	Cast weld, Thermit weld, Elec. weld.	5/16" x 2"	Shoulder	Long leaf yellow pine, white oak, some steel.	Rolled crushed stone, 8" deep.	6" tile	Various, according to city requirmt.	Type "0" Thew Electric Shovel.	Air	Atlas, Goldsmith, Reciprocating.
Kansas City Railways Co.	Kansas City	Missouri	91 lb.-7" tee	Gailor, Thermit, Lorain, Indianapolis.	Unnecessary with rail used. ⅝" x 2"	None	International twin steel-favorable. Untreated white oak.	Crushed stone 6" to 8" deep Solid concrete 6" deep.	6" tile	Special dressed granite blocks. Brick with granite flangeways, & conc.	Hand.	Hand, air.	Own design.
Indianapolis Street Railway Co.	Indianapolis	Indiana	95 lb. 8 13/32" girder, 91 lb.-7" tee.	For past 3 years, Thermit. Formerly: Cast, Lorain, Elec. welds.	⅝" x 2"	None	Steel used experimentally 6"x8"-8' white oak.	6" to 8" concrete slab with 3" dry mix concrete ballast.	Some 4" tile	Granite block, or brick.	Type "0" Thew Electric Shovel.	Hand, air.	Atlas, Universal.
Georgia Railway & Power Co.	Atlanta	Georgia	103 lb.-7" girder, 80 lb. A.S.C.E., 70 lb. A.S.C.E. 80 lb.-7" tee, 70 lb.-7" tee, 7" trilby.	Abbott base plate elec. welded, Continuous, plates, Thermit.	⅝" x 2"	Flat	6"x8" sap pine, creosoted.	Crushed granite, 6" deep.	6" unglazed tile	Granite, wood, or brick on concrete base. Asphalt on concrete base.	Hand.	Ingersoll-Rand air.	Ry. Trk. Wk. Co. grinder, Reciprocating, Atlas Rotary.
The Connecticut Co.	Operates throughout State. New Haven	Connecticut	9" girder, 95 lb.-7" tee 80 lb.-5" tee, 100 lb. A.R.A.	Continuous 24"-4 bolt for tee rail. Cont. 32"-12 bolt for girder. Arc weld.	⅝" x 1½" on girder, only.	Lundie, tilted type.	6"x8"-8' wood. (Kind not stated.)	6" of gravel or crushed stone under tie.	Some 6" tile	Concrete compressed, Hassam patent. Various block, brick and bitumen.	Hand, Thew Elec. Shovel, Keystone steam shovel.	Ing.-Rand, & hand.	Atlas Rotary, Reciprocating.
Philadelphia Rapid Transit Co.	Philadelphia	Pennsylvania	141 lb.-9" girder	Lincoln Rail Welding & Bonding Co. Nichols zinc and electric weld.	None	None	5"x9"-8' yellow pine.	No ballast used in city work.	None	Granite block on concrete.	Hand	Hand, air.	Chicago Little Giant, Own design.
Pittsburgh Railways Co.	Pittsburgh	Pennsylvania	134 lb.-9" girder	Thermit insert welded joint.	⅝" x 2"	Plain flat. Shoulder.	6"x8"-8' white oak.	8" crushed rock below tie.	6" vitrified farm tile	Block stone.	Type "0" Thew Electric Shovel.	Air	Atlas, Universal.
The Memphis Street Railway Co.	Memphis	Tennessee	105 lb.-7" girder	Plain 8 hole bar with base plate, welded to rail.	⅞" round.	⅜" x 5½" Various types	Creosoted pine, white oak.	6" to 8" crushed stone.	6" tile	Asphalt, brick, and wood block.	Hand.	Hand	Metal Thermit Co., Universal.
Portland Railway, Light & Power Co.	Portland	Oregon	80 lb.-7" tee, 72 lb.-6" tee.	Continuous	None	None	Narrow gage:-6"x10"-6' fir Standard gage:-7"x9" fir.	6" concrete slab with 2" of 1" rock.	4" tile	Now using concrete. Formerly Belgian stone block & vitrified brick with conc.	Hand.	Hand	Atlas, Stow.
The Columbus Ry., Power & Light Co.	Columbus	Ohio	122 lb.-7" girder (A.E.R.A. standard)	Columbus joint, Arc welding.	Only in Macadam.	½" x 6½" under Special Wk.	Carnegie steel M-25 for standard trk. 6"x8"-7½' white oak for special work.	Concrete and crushed rock.	6" tile	Granite block in heavy traveled streets, and brick in others.	Hand, steam shovel, (prefer Thew shovel)	Hand	Universal, Reciprocating.
Birmingham Ry., Light & Power Co.	Birmingham	Alabama	105 lb.-7" girder, 80 lb. A.S.C.E.	34"-8 bolt plates, 26"-6 bolt plates.	Brace plates	Brace plates	Internat'l twin steel, estimated cost same as wood. Creosoted yellow pine, std.	6" crushed rock under ties in open trk. 6" slag conc. under ties in paved trk.	None	Straight concrete paving to top of rail. Brick on concrete with asph. filler.	Hand.	Hand	Atlas Rotary.
The Denver Tramway Co.	Denver	Colorado	80 lb. A.S.C.E., 65 lb. A.S.C.E.	Continuous, in dirt streets. Arc welded in paved streets.	None	Shoulder	Int. steel about $2,000 per mi. cheaper in new con. Wood about $3,000 per mi. cheaper in reconstr. Internat'l twin steel, Oregon, long leaf Texas.	Gravel and broken up concrete paving base, 12" to 15" deep.	None	Standard concrete slab.	Hand.	Air	Universal, Reciprocating.
Public Service Railway Co.	Newark	New Jersey	116 lb.-7" girder, 101 lb.-7" girder	Lorain electric weld.	⅝" x 2"	Brace plates	Long leaf yellow pine, creosoted. Mixed varieties of oak.	6" stone.	Some 4" & 6" tile	Various kinds. Mostly granite block with cement grout.	Hand and Thew shovel.	Hand, air	Lorain, Kerwin, Gherky Reciprocating, Seymour.
Cleveland Railway Co.	Cleveland	Ohio	95 lb.-7" tee	Riveted and welded, top & bottom. Seam welding with rail wldg. & bdg. mach.	None	None	Cut steel and Carnegie steel, combined. Saving of about $3,000 per mile.	12" concrete below rail.	6" tile	Granite.	Hand and Thew shovel.	Stone-air. Hand	Kerwin.
Brooklyn Rapid Transit System	Brooklyn	New York	122 lb.-7" girder (A.E.R.A. standard)	Cast weld.	⅝" x 2" D.E.	None	Steel ties experimentally. Rough sawed yellow pine "Heart".	Natural soil in trench.	None	5" granite blocks, cement joints.	Hand.	Hand	Atlas, Reciprocating.
United Railways Co. of St. Louis	St. Louis	Missouri	132 lb.-9" girder 103 lb.-7" girder, 100 lb. A.R.A.	Nichols. (Few Lorain during war).	Round and flat.	Flat	Oak. Steel ties in special construction, only.	Solid concrete foundation in pavemt. Stone in unpaved streets.	6" tile	Concrete or bricks where possible. Wood blocks laid under protest.	Thew shovel.	Hand, air.	Modified Indianapolis
Twin City Rapid Transit Co.	Minneapolis and St. Paul	Minnesota	Former standard 91 lb.-7" tee Present standard L.S.Co. 93-507	Cast weld, generally. Some Thermit. Arc weld for repairs.	⅝" x 1½"	Flat	6"x8"-8' sawed. (Kind not stated)	6" crushed rock under ties, rolled with 8 ton steam roller.	None	Granite blocks prefered. Creosote blocks, asphalt & brick unsatisfactory.	Thew Elec. Shovels (3 in use).	Ingersoll-Rand air.	Detroit-Kerwin, Phila-Reciprotg.
The United Rys. & Elec. Co. of Baltimore	Baltimore	Maryland	122 lb.-7" girder 105 lb.-7" girder, 100 lb. A.R.A.	Rail Welding & Bondg. Co. Cleveland, O. Weld fish and base plates to rail.	None	6"x10" with shoulder.	International twin steel, experimentally. 6"x8"-8' untreated wood.	6" crushed stone under ties.	6" & 8" tile	Sheet asphalt with granite block -liners. Granite block paving.	Hand and Thew shovel	Hand, air.	Ry. Trk. Wk. Co. grinder, Phila-Recipro.
Los Angeles Railway	Los Angeles	California	132 lb.-7" girder on curves, 116 lb.-7" girder	Rail Joint Co's continuous.	None	Brace plates	6"x8"-6' redwood.	6" crushed rock below tie.	4" tile	2" asphalt surface on 6" concrete base.	Hand and Keystone Excavator.	Air	Vixen planer.
San Francisco-Oakland Terminal Rys.	Oakland	California	141 lb.-9" girder on curves, 106 lb.-9" girder	Rail Joint Co's continuous.	⅝" x 2½" 6'-0" o.c.	Shoulder	6"x8"-8' redwood.	9" crushed rock below bottom of tie.	6" tile	1½" asphalt surface 2" asphalt binder } 6" concrete base.	Hand and Keystone Excavator.	Air	Kerwin, Vixen planer.

THE TABLE given above was compiled in April of this year by the San Francisco & Oakland Terminal Railways, which operates the greater part of the local railway service in Oakland, Alameda, Berkeley and other neighboring cities in California, as well as a high-speed line, the "Key Route," with boat connections, to San Francisco. The purpose of this table was to give information in regard to standard track construction in paved streets in some of the principal cities throughout the United States. A questionnaire was sent to thirty leading companies, operating track in paved streets, and the data, as tabulated by the San Francisco-Oakland Terminal Railways, are given in the accompanying table.

The data supplied, as shown, are type of rail, type of joint, tie rod, tie plates, cross ties, ballast, drain tile, type of paving, excavation, tamping and joint grinder.

A Study in Human Nature

Reasons for Labor Turnover—Back-to-the-Farm Movement —War Reaction Evident—Some Go to School— Interesting Data for Alert Managers

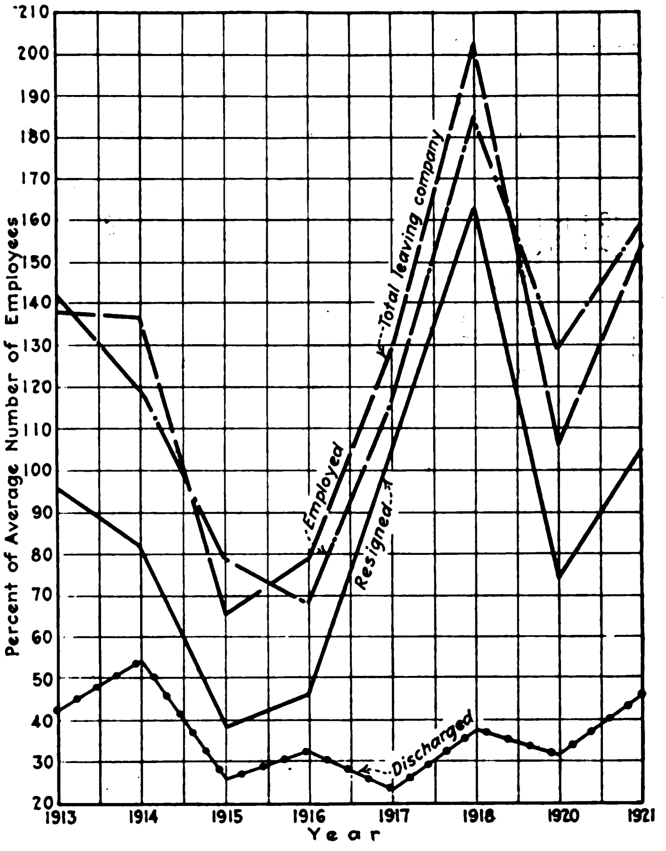
MAN is an animal of strange characteristics, particularly the employees of a street railway in the Middle West that has an average of between 550 and 650 conductors and motormen on its payroll. The accompanying is a remarkable document for use in the study of labor turnover and the railway company has a good psychologist in its organization.

The time and labor necessitated in the keeping of such a record should not be compared to its value in handling labor, to say nothing of its value to industry in general. Little things grow into large ones if neglected and the crews are the transportation salesmen in the railway industry. Any data that help the industry to understand the psychology of its crews are welcome.

STATEMENT SHOWING CAUSES OF MEN LEAVING SERVICE
1913 to 1920 Inclusive

Resigned Cause	Motormen and Conductors 1913	1914	1915	1916	1917	1918	1919	1920
Sickness	79	49	32	21	30	21	16	20
Sickness in family	43	45	9	8	6	..	2	2
To go home	52	108	89	88	194	273	189	278
To go to school	9	21	3	10	4	6	15	18
Short of funds	..	..	..	..	..	..	1	2
Don't like the work	94	81	26	11	22	39	31	70
Can't stand the work	19	20	15	6	2	12	3	4
Can't make a living—Can't get enough work	18	15	8	9	10	6	6	4
Can't stand the climate	..	..	..	..	..	2	2	6
Can't stand cold weather	6	..	..	..	2	2	1	..
To take another position—Going to farm	78	28	23	78	146	237	140	199
To attend to personal business	..	..	..	..	..	..	..	..
Dissatisfied	61	8	5	4	1	2	1	4
Too much responsibility	..	..	..	..	..	..	..	..
To keep from being discharged	11	15	..	3	9	31	23	55
Tired of work	11	5	..	..	2	..	1	..
Don't like the run	6	4	..	..	..	1	..	9
Wrong end	3	3	3	1	1	3	2	2
Could not learn	8	7	5	..	2	12	6	11
No reason given	11	7	..	..	7	39	4	10
Army and Navy	..	..	..	..	48	38	2	..
Miscellaneous	20	8	1	20	37	25	12	18
Total resigned	529	424	219	259	523	749	457	712
Discharged:								
Incompetent	54	..	..	1	23	25	14	22
Short register—Register irregularities	26	99	42	22	10	19	72	80
Drunk	..	12	8	11	2	4	2	1
Drinking on duty	5	4	..	..	4	7	1	..
Lied on application	6	14	10	7	4	3	11	7
Gambling	..	..	3	..	..	..	..	5
Immorality	..	..	..	..	1	..	2	2
Failure to make accident report	..	2	2	2	1	1	1	1
Failure to get witnesses	..	..	..	..	..	..	..	..
Failure to enforce rules	6	14	9	13	4	..	8	12
Undesirable	33	31	31	8	3	4	12	10
Discourteous to passengers	2	7	2	1	..	..	..	..
Running late	..	..	..	..	..	1	..	..
Laying over at end of line	..	..	..	..	..	..	..	2
Failure to report—Misses	..	..	..	3	5	7	1	2
Defective eyesight	..	..	..	..	1	1	..	..
Smoking on duty	..	..	..	..	..	..	3	5
Riding on front end	..	..	..	..	..	1	..	1
Insubordination	21	20	9	5	3	3	1	5
Quick bells	..	..	..	..	..	..	..	..
Short changing passengers	..	..	..	..	..	1	..	..
Laying out	10	3	1	1	..	15	19	38
Carrying passengers on front end	..	..	..	..	..	..	..	..
Refusing to obey orders	8	7	..	2	2	20	4	15
Continually short in settlement	..	..	..	..	..	..	..	..
Indifferent	..	6	4	1	..	..	2	3
Using wire for fuse	..	..	..	..	..	..	..	..
Misappropriation of articles left on car	..	..	..	..	..	5	..	12
Manipulation of transfers	..	..	..	..	..	..	..	..
Car collision	19	17	21	30	21	23	27	47
Train collision	1	2	..	..	1	..	..	..
Vehicle collision	22	29	4	13	2	1	6	10
Reckless	5	6	..	..	1	2	..	2
Account of accidents	1	4	1	3	3	6	4	5
Abusing car	1	4	..	..	1	1	1	2
Running railroad crossing	..	..	..	..	2	1	2	2
Agitators (later reinstated)	..	..	..	50	..	..	..	..
Miscellaneous	13	3	..	13	23	22	7	26
Total discharged	233	284	147	186	117	173	200	317
Promoted and transferred	1	5	2	..	2	6	1	4
Deceased	1	3	2	..	1	4	3	2
Grand total	764	716	370	445	643	932	661	1,035
Employed	783	621	446	387	580	841	800	1,067
Average number of regular employees	551	521	567	564	500	458	620	674

The curves show the labor turnover for a period of several years and reflect countrywide psychological and business conditions. The business depression in 1915-1916 is reflected in the labor turnover—men held on to their jobs, although in 1916 a back-to-the-farm movement started. The war ebb and flow shows in the curves for 1917-1918-1919. Resignations increased for the purpose of going home or going back to the farm or joining the army or navy. Why did so many men go back to the farm? Living costs, wages and the boom in farm products no doubt answer the question. Very remarkable is the fact that few men were discharged as undesirable in this period, honesty was at a premium and collisions at a minimum. Even the Volstead law functioned well according to the data on the accompanying table.



GRAPHS FOR LABOR TURNOVER FOR EIGHT YEARS

Then from 1919 to 1920 the reaction from the war begins to have its effect as well as the high costs and wages as reflected in the table. The men still remained sober, but began to joy ride and feel their oats as evidenced by the increase in the number of collisions, the large number laying out and the failures to enforce rules. Register irregularities increased and an increase in turnover occurred because of going home, going to farm, going to another job and quitting to keep from being fired. A general "don't care" attitude in 1920 in all industry is reflected in the labor chart of this company.

A table of this sort is a valuable thing for an alert manager to study and more tables of this kind should be available.

The Five-Cent Fare as It Affects the Electric Railway Employee

BY ALFRED A. GREEN
New York, N. Y.

KNOWING something of the electric railway game, obtained through intimate connection with railway work for the past fifteen years, I wish to express a few thoughts in regard to the awful howling about increasing the 5-cent fare that comes from the different political aspirants of the great city of New York. It is quite evident that none of them ever depended long on a pay envelope for services rendered to an electric railway or they would have gained sufficient knowledge to know that if the wages paid to men on cars and in the shops were sufficient to care for their families and educate their children as they should be the railways could not operate successfully on a 5-cent fare.

Newspapers during the past two or three months have contained items stating that the men on this or that road have accepted a reduction in pay so as to help the railway company which employs them to meet its operating expenses, and why? Because the low rate of fare does not bring in enough income and the politicians cannot permit an agreement made during the old horse car days to be changed for fear they would lose the vote of some poor mortal whose thinking capacity cannot carry him beyond 5 cents no matter what the results may be. There are hundreds of such people who would deprive the railways even of their 5 cents.

The men on the old horse car lines received less compensation for their labor and worked longer hours than men on any other known employment, and it was these men who were taken over to operate the cars and to do the repair work when the street railway systems were changed from horse to electric propulsion. The amount paid to the different classes of workmen varied from $1.25 for twelve hours work to a maximum amount of $2.25 paid first-class mechanics for ten hours work. It is also a fact that wage rates on electric railways did not increase in proportion to other trades during the years previous to America's entering the war, and the greatest increases received were during the last two or three years, and still the wages cannot be compared with those received by other men doing work less arduous and having less responsibility.

In many cities outside of New York there must be men of broader intelligence and less bigoted who have realized that the electric railways cannot pay the increased cost of material and labor with the same 5 cents that previously permitted them to exist by paying their labor the smallest wage possible. Fare increases have been allowed and in many instances the fare has been doubled in order that the railroads could pay their honest debts and still pay the men on the cars and in the shops a living wage.

Reducing pay does not make faithful employees, but under circumstances that exist in New York City it is the only alternative, as these railways have not been permitted to raise fares because the men at the head of the city government decided that there is more political pull with the masses than with the men and their families that depend upon the railways for an existence.

The motorman, the conductor, the pitman, the overhauler and all the other classes of workmen necessary for the operation of the railway have not entered into the scheme of things as far as the politician is concerned, and the one thing that blights the politician's vision to all else in this vast universe is a 5-cent piece.

The question that each electric railroad employee should ask himself today is: "What can I as an individual do to bring about improved conditions for myself and the company that employs me, because its success is intertwined so closely with mine that neither can win alone."

This is a positive fact. A trainman or shopman may be only a small unit of the whole on a large property, but the success of the whole depends upon the success of its smallest unit. So it is necessary for each man to learn from the past and present as to what his duty is when the opportunity comes for him to express his will as to who is a real friend and who is broad enough to look beyond the nickel to a point of fairness to all.

Letter to the Editors

Baltimore's New Type Safety Car

STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITY COMMISSIONERS
NEWARK, October 4, 1921.

To the Editors:

I have noted with very great interest the article contained in the issue of Sept. 10, 1921, entitled "Baltimore's New Type Safety Cars." I note that while these cars are practically of the same general design as what might be called the standard one-man safety car, yet it has been found perfectly practical to equip them with a wider door opening and wider aisle, thus providing a means for more rapid passenger interchange with only a minor change in the seating arrangement.

Ever since the one-man safety car was first put in operation I have been a very strong advocate of providing a wider door opening, an objectionable feature of the car having been, to my mind, the fact that passengers cannot board and alight at the same time. This has also been a source of much complaint on the part of the patrons of the cars, according to my experience and observation, and it has of course been detrimental to the successful operation of the car as far as running time is concerned.

I am very glad to learn that at least one company has undertaken this desirable change in the design of these cars, and am further pleased to note that the result has been a considerable saving in time of loading and unloading, which, of course, was to be expected. I trust that other companies will see fit to follow the same method of improving the use of the one-man safety car.

H. C. EDDY, Street Railway Engineer.

Standards for Consideration

THE American Engineering Standards Committee announces that the American Society for Testing Materials has submitted eleven standards for consideration and approval. Among those of interest to electric railways are the specifications for steel forgings, methods of analysis of manganese bronze and gun metal, steel specifications and drain tile specifications. The American Society of Safety Engineers has been designated as sponsor for a safety code for compressed air machinery. This code will include rules for the construction and use of compressors, tanks, pipe lines, etc.

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

A Variable Speed Polyphase Motor

THE forced draft fan equipment with push button and pressure regulator control recently put into operation at the Springdale Station of the West Penn Power Company by the Westinghouse Electric & Manufacturing Company is of special interest as it includes a comparatively new type of polyphase, alternating-current, variable speed, brush-shifting motor. This motor eliminates the objectionable poor efficiency and limited number of speed points inherent with slip-ring induction motors and provides a satisfactory and easily controlled alternating-current fan drive which can be applied to power plants. The installation is the first application of the motor to this type of work, with full automatic control.

The forced draft equipment for each boiler consists of one centrifugal fan having a capacity of 90,000 cu.ft. per minute at 5.9 in. water gage pressure, 65 deg. F., and 770 r.p.m. The fan is driven by a motor which is rated normally as a 150-hp., 720-r.p.m., 2,200-volt, three-phase, 60-cycle motor, with push button and pressure regulator control.

The motors are capable of operating at over synchronous speed and have sufficient capacity to drive the fans at 865 r.p.m. intermittently and 825 r.p.m. continuously. The lowest operating speed required is 355 r.p.m. This results in a total speed range of 2.4 to 1. The maximum limit of 865 r.p.m. corresponds to full load speed of 900 r.p.m. for slip-ring induction motors which permits direct comparison with the latter.

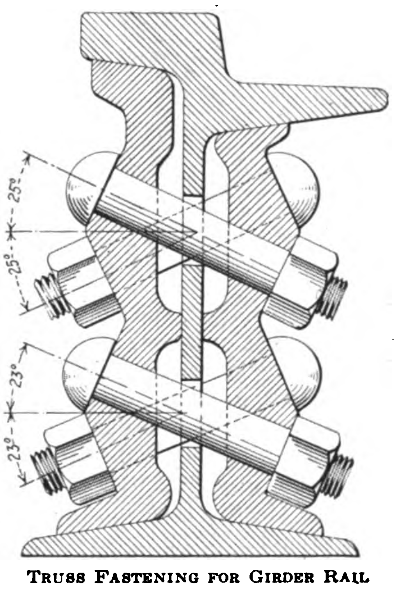
The motor consists of the stationary member or stator, the rotary member or rotor and a transformer connecting the rotor in series with the stator. The stator has a distributed winding and is similar to the ordinary induction motor. The rotor is in appearance and design essentially like that of a direct-current motor except that for the brush shifting motor the armature voltage is considerably lower, being approximately 80 to 90 volts. The rotor transformer is simply a series transformer with the primary in series with the stator of the motor and the secondary connected to the rotor through brushes and commutator. This transformer not only supplies a lower commutator voltage but also, by its ability to become saturated, limits the no-load speed of the motor.

The control required for operating the motor is extremely simple, consisting merely of a switch for connecting the motor stator to the line and some mechanical means of shifting the brushes, the starting current being determined by the position of the brushes. The control at the Springdale Station provides for over-load and under-voltage protection with push button start and stop in addition to automatic speed control from a pressure regulator or from two push button stations. Another feature is that the motor stator is connected for pole changing with automatic reshifting of the brushes to compensate for the accompanying change in speed. The actual equipment necessary to provide these features consists of a primary control composed of a line contactor panel with necessary interlocks, and a secondary control composed of the brush-shifting pilot motor, gear train and drum control switches, arranged for pressure regulator control through the rope wheel or for push button control.

From actual test data in comparison with a standard slip-ring 900-r.p.m. motor of the same size under the actual fan load and for the same range of speed this motor shows a very much higher efficiency and power factor.

New Splice Bar for Girder Rail

THE accompanying illustration shows the Heinle rail joint which is now being marketed. With this type of joint the bolts are placed at an angle with the intention of taking care of the principal stresses more effectively. Some of the economies claimed for this type of splice bar are that it can easily be rolled and punched, weighs less per pair, gives greater efficiency and eliminates structural fracture due to bending stresses. The bolt arrangement can be supplied to various types of rail joints and other fabricated joints.

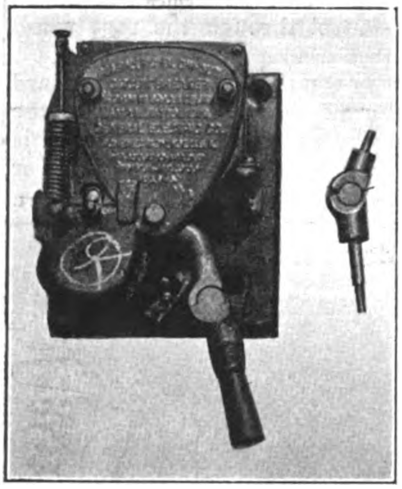


TRUSS FASTENING FOR GIRDER RAIL

New English Trolley Stand

A NEW trolley stand has been brought out in England which is fitted with roller and ball bearings and among other advantages it is claimed it is superior in strength and has extremely lightweight, few wearing parts, is easily adjustable and has an absence of friction. It is further claimed that damage due to rebound is reduced to a minimum. A considerable number of these have been in service for some time and have proved successful, having cost practically nothing for maintenance. This is due to the introduction of a roller bearing around the center pivot, which not only reduces friction to a minimum but renders the standard practically perfect for either straight, under running or side running, the dewiring of trolley heads being almost eliminated. The relation of the pivot end of the pole sockets to the axis of the pivot end—to which the spring ends are connected—is so arranged that although the inclination of the pole to the vertical increases, the tension on the trolley wire remains constant. Instead of one or two large springs being used, this stand has two batteries of springs, which by special arrangement make the standard very flexible and compensating at all points. It is also provided with a special buffer spring mounted in such a manner that should for any reason the trolley come off the wire, the blow to the standard caused by the pole rising is very considerably lessened. The trolley stand is the product of Brecknell, Munro & Rogers, Ltd., Bristol.

Hinged Circuit Breaker Handle



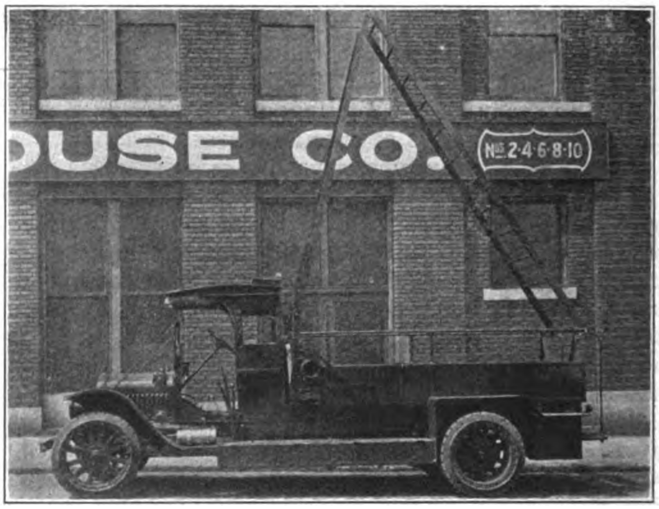
CIRCUIT BREAKER WITH HINGED HANDLE

THE use of two kinds of circuit breakers on the same system, one that can be knocked out with the handle, and the other that requires tripping at the magnetic trip, is very confusing to motormen, who are likely to make a mistake and hit the handle of the trip breaker. This frequently breaks the handle or at least loosens up the various parts and causes delays in service as well as frequent repairs. The Portland Railway, Light & Power Company has overcome this difficulty by putting a hinge in the handle of its trip breakers as shown in the accompanying illustration. This hinged handle is arranged so that it will push the breaker closed, but if it is pulled in the opposite direction the hinge will allow the handle to swing back so as not to break the catch. The use of this type of hinged handle has done away with trouble of the nature described.

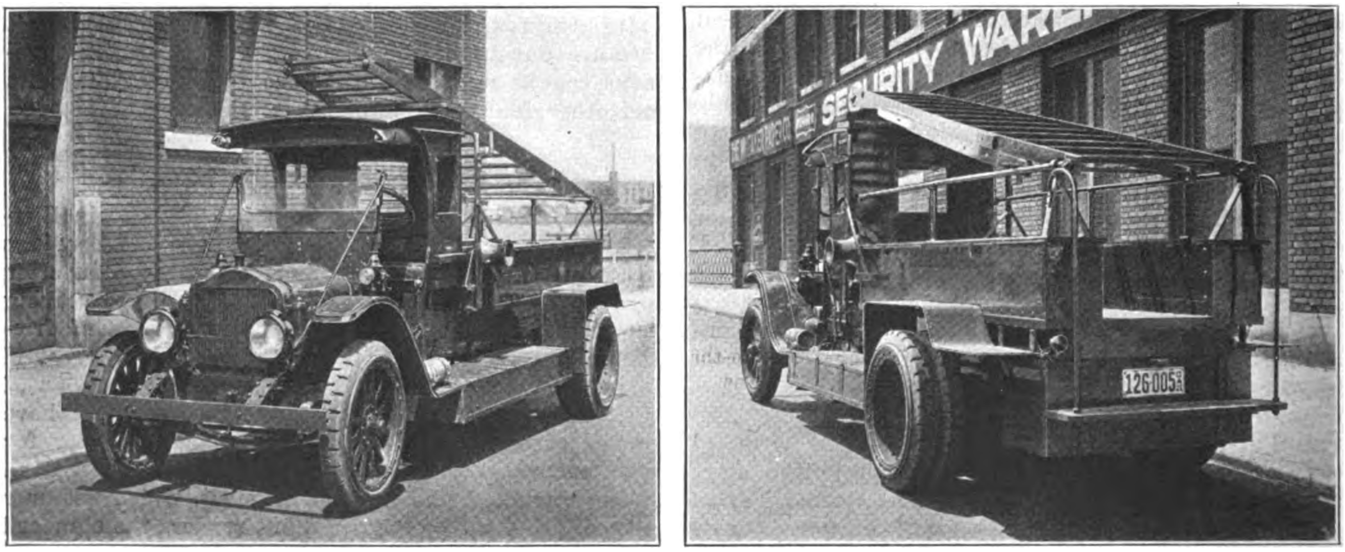
Atlanta's New Emergency Truck

A NEW emergency truck equipped for service in almost all classes of emergency has just been put into service by the Georgia Railway & Power Company, Atlanta, Ga. The truck is built on a 2-ton White chassis. The body is entirely of steel and was built at the shops of the company in Atlanta.

As noted in the accompanying illustration, the truck is substantially built and is equipped with an "A" ladder to be used by linemen in event of trolley break. It is also equipped with a winch for use in rerailing cars or removing obstructions from the tracks. The box on each side of the car carries within it one hose bridge for spanning six lines of hose and a complete outfit of jacks, blocks, plates and other tools necessary for use in clearing obstructions, rerailing cars, etc. In the event of the truck going to a derailment accident, it passes one of the main carhouses in Atlanta and picks up whatever additional help is required. The truck is manned twenty-four hours per day by one lineman and one competent driver. The latter is in charge of rerailing cars. The truck answers all fire calls in order to lay its hose bridge if required and is otherwise under the call of the railway company's central dispatcher's office at all times during the twenty-four-hour period.



EMERGENCY TRUCK WITH "A" LADDER IN POSITION FOR LINEMAN'S USE



TWO VIEWS OF ATLANTA'S NEW EMERGENCY TRUCK

Proceedings of the Claims Association

J. J. REYNOLDS
President, 1920-21

The Discussion at the Atlantic City Convention of the Claims Agents Centered on Methods of Handling Complaints—Some Delegates Urged a Close Follow-Up, Others Preferred Waiting for Claimant to Present Case—Other Topics Considered in Interesting Sessions.

C. G. RICE
President, 1921-22

THE American Electric Railway Claims Association held three sessions at its annual convention in Atlantic City, Oct. 3-5. Of these meetings, one, that on Tuesday afternoon, was a joint meeting with the Transportation & Traffic Association and was reported in the issue of this paper of Oct. 8. Reports of the meetings on Monday, Oct. 3, and Wednesday, Oct. 5, appear in this issue.

Monday's Session

John J. Reynolds, claims attorney Boston Elevated Railway, as president of the American Electric Railway Claims Association, called the convention to order for its first session on Monday afternoon. An abstract of the presidential address by Mr. Reynolds follows.

ADDRESS BY PRESIDENT REYNOLDS

"When a number of men, keen, openhearted, sympathetic and observant, as claims men are, come together from different places with widely different notions and freely mix with each other, they are sure to learn from one another. They gain for themselves new ideas and views, fresh matter of thought, and there is much to generalize. Generalities, it is true, get us nowhere, but it is just as true that we get nowhere without generalities.

"I wish particularly to emphasize the importance of the Claims Association in the general development of our relations and work. This association is practical in character and aim. It is the voice of the American electric railway claims departments, becoming articulate through its members. Every phase of claims department work is represented in its activities, hence the association exerts a vital influence on claims men.

"If there is a better way of doing our work than the way we are doing it, we want to know it; therefore it is surely worth our while to keep in touch with what of merit is being done along our own particular line. If we fail to do this, then our department is not running at its highest efficiency. Through this association we may share in the very latest ideas and progress in claims department work and thus prepare ourselves to enter aggressively on those duties, the details of which positively demand long and expert training. What we want is not passive acquiescence, but active co-operation.

"There is no body of men affiliated with the electric railway industry more capable of promoting the special interest of the industry than the men who go to make up the claims association. It should be of some interest to note that through the instrumentality of the claims association the everyday work of the claims man is now developed to a point where it embraces problems, apart from the mere settlement of claims, which add to the protection, safety, comfort and convenience of the car rider and of the traveling public generally. One of the supreme interests of claims men, whether representing a property which is large, small or otherwise, should be concerned with developing safe methods of operation and conduct. There is not a moment, nor circumstance, that can minimize this ever-present and all-important fact and duty. What is perhaps not quite so obvious, but nevertheless equally certain, is that this association takes the larger, the higher and the broader view of accident prevention education.

"We all appreciate the fact that the one great agency for the perpetuation of our effectiveness as a body is team play. Neglect of this fact results in an obscured vision of our duty and in an improper conception of basic principles. It is also a dangerous portent that half-hearted interest is a communicable disease.

"The 'up-to-the-minute' member will find in the papers, addresses and discussions in our annual reports an abundance of topics of large practical significance which may be used to advantage and with which he may stimulate with sound principles the departmental life of his immediate organization. Nothing yields better results than an intimate acquaintance with the thought-output found in those reports, for there is material already prepared for us. Speaking of these reports suggests to me the advisability of the association considering the compilation of this large body of information into an index or digest. Much has been written by claims association members which, were it classified and arranged under proper heads and titles, would make a volume that would be of service to claims men, a systematic arrangement that would take the form of a digest or an analyzed summary of the papers, committee reports and certain matter contained in our former question boxes, much of which contains matter of immediate practical value. This could be arranged and the work separated and classified under the various subjects which have been treated. The titles, divisions and subdivisions of relative principles and subjects could be cross referenced, thus making unnecessary those useless repetitions which now take so much time if one wishes to find a particular point or question which has been treated.

"The deep concern of the claims association for the state of the industry leads me to remind you that there probably was never before in the financial history of the electric railway industry in this country a graver moment than the present. This lays a responsibility upon each of us to determine in shoulder to shoulder action to lighten the burden of the railways as much as we can. This should be one of the chief aims of both the individual and the association.

"The Claims Association has a mission, and it is fulfilling it. It could be ill spared from claim department life. Open to criticism at many points it may be, yet I venture to state it has done more for our professional future than any other agency, and it has served to mark for all time a high measure of solid advance and the disappearance of a retrogressive period. In conclusion, I gladly seize this occasion to make known to the members my deep gratitude for the great help given me by their readiness and willingness to execute any suggestions or commissions given them during my administration. This applies with special emphasis to Mr. Kubu, the efficient secretary of your association during my term of office."

COMMITTEE REPORTS

The report of the executive committee was then read. This was followed by the report of the secretary and treasurer. The latter gave the income and expenses of the association, which are shown in the report of the secretary and treasurer of the American Association, published in the issue of Oct. 8, page 610. The report of the committee on interchange of claims statistics was then read.

The committee reported that owing to the small number of requests which had recently been received for this information the data would not be compiled for this year at least. The committee also reported that the old form of questionnaire, known as Data Sheet No. 7, could not be materially improved until the various companies could agree upon a uniform method of accounting in their claims statistics. The report was signed by H. E. Briggs, chairman; W. F. Weh and J. S. Kubu.

FOLLOWING UP PROSPECTIVE CLAIMANTS

The paper by Louis H. Butterworth, attorney Boston Elevated Railway, on "Constructive Argument as Opposed to Destructive Contentions in Accident Investigations and Adjustment," was then presented. This paper is published in abstract on another page of this issue.

The discussion on this paper centered largely upon a statement in the paper that it was desirable to give a copy of the complainant's statement to him when it was given after an accident, and the extent to which the department should follow up injured claimants before suit.

A prominent claims attorney, arguing it was not necessary or desirable to give such a copy, declared that if the complainant is acting in good faith he will stick to his statement on the stand later, even if he does not have the statement. On the other hand such a copy would permit a complainant not acting in good faith to know just where he can deviate from the statement without contradicting himself. This claim agent did not agree also with the author of the paper that the claim agent should always decline to entertain any claim where a medical examination was refused. While he thought a medical examination is desirable, it is not always necessary, as with a broken leg, nor is it always possible. He did, however, often show to the attorneys of a claimant, when he knew them well, copies of the statements of four or five of his witnesses. In this way, by putting his cards on the table he has been able to make settlements and avoid lawsuits.

Another claim agent declared that he gave reports to no one. His position was that it was desirable to impress on the public the desire of the company to act fairly in every way, and when it came to an actual suit the plaintiff was allowed to understand that he should take care of his own case and the defendant would do likewise. He opposed the idea of frequent calls from the adjuster on an injured claimant. Claimants, he said, who are petted too much by a zealous claim adjuster or investigator have an exaggerated idea of the extent of their injuries. His idea was a single visit unless for final adjustment. He urged, however, the settlement of suits for small amounts, even where the company was not clearly liable, as cheaper than paying the cost of a trial.

Another claim agent, in speaking about the reference to psychology in Mr. Butterworth's paper, said much depended upon the ability of the adjuster to get in touch with claimants. One of his adjusters began railway service as a conductor on the horse cars, but has special ability to understand human nature and get the claimant's point of view. This man is one of the best adjusters in his department.

Another speaker said that a man well informed on the principles of constructive psychology was bound to make a better claim agent than one who had not made such a study. He agreed with the first speaker that it is not desirable to give a copy of the complainant's statement to him. In regard to the refusal of a medical examination, his experience was that this refusal occurs a great deal more frequently than most people realize. An examination may be made immediately following the accident, when it is less liable probably to be refused than at any other time and for that reason that is the important time to obtain it, if possible, or it may be made when the lawyers for the two sides are having the matter up for discussion, or it may be requested while the case is actually on trial. A competent doctor should always be employed so that the report shall be complete. He urged that the fact that an examination by a medical man employed by the company has been made gives the claimant or his attorney a very good excuse for refusing another. This means that a competent and experienced physician should be employed. Moreover, to have a medical examination worth anything it should be complete. He cited a case where a medical examination had determined that the patient, a woman, was the victim of neurasthenia due to some long standing pelvic disturbance. This fact proved very useful when a claim was made by her that her backache, headache and other general troubles were caused by an accident. He disagreed with the suggestion of the previous speaker that it is desirable to compromise non-liability cases because it is cheaper to do so for a small amount than to fight them.

The next speaker approved the idea of giving to complainants copies of the statements made by them. His experience in life has been that people like those who like them, and when a man goes into a house and the people like him they will like his company and will tell him all about the accident. It may be wise to call again or it may not be. In some cases he has called a dozen times because he wanted to know how the people were getting on and also because he hoped to adjust the case. He added, sententiously, that no one knows whether the company is to blame until after the case has been tried.

The paper by Mr. Green on "Essential Points to Cover in Accident Investigations" was then read by the secretary. In the discussion which followed a variety of opinions was expressed on the plan of giving statements to claimants and making medical examinations, several taking the ground that no universal rule could be followed, and some that no doctor should be sent unless his services are requested by the injured person. One advocate of the principle of calling said that he thought the injured person would often be willing to settle if the company's representative called, but because they didn't he often would take up the case with the ambulance chasing lawyer.

Wednesday's Session

The session on Wednesday of the Claims Association was held in the morning by resolution of the executive committee and the first action was the appointment of a committee to prepare resolutions on the death of Mr. Carpenter, formerly president of the association. The chairman then announced a paper by Walter E. Robinson, claim agent Cincinnati Traction Company, on "What Should Be the Method of Claims Department in Handling Accidents and Claims." An abstract of this paper appears on another page of this issue.

METHODS OF HANDLING CLAIMS

After the presentation of the paper, Mr. Robinson, in answer to a question, said that there was very little "ambulance chasing" in Cincinnati. At one time there had been, but it had about disappeared because the company had declined, as the speaker said, to do "ambulance chasing" itself.

The discussion which followed related principally to the extent to which it was thought desirable for the claim agent to follow up a claimant or possible claimant after an accident.

One delegate, who thought accident cases should be followed up promptly, said that while he believed that a claim department should not be overmanned, there should be a sufficient number of employees so that the department will take care of its work as expeditiously as possible. Time in a claim department, according to him, repays all the dollars for every minute that goes by after an accident has happened, because when a person is injured, his injury seems to increase in his mind with the passing of days. The doctors have often said that "the gold cure" is one of the most effective for the early cure of a patient suffering from a railroad injury. It is not necessary to have all the men on a salary basis. If responsible men are on call, that will answer. The speaker had found young lawyers to make the best kind of claim assistants as they understand the points and facts which relate to the case.

The latter statement was taken up by another delegate who declared that an assistant in the department who is not a lawyer is often better because he is less apt to be technical in his testimony. He added that he encouraged claimants to come to his office and thought that this was the natural thing to occur to them to do rather than to stay at home and wait for the agent from the company to call.

Other speakers then urged the advantages of waiting for claimants to call, while still others urged a prompt following up of possible claimants.

One prominent claim agent referred to the effect which circumstances have on settlements in claim cases. They may be influenced, he said, by an apparently insignificant act or word. When a jury, getting ready to return a verdict, was attracted by a collision outside, it brought in a very large verdict. Other factors are topographical conditions, climatic conditions, the history of the company and whether its attitude toward the public as a corporation is antagonistic, friendly or intermediate, the character, nature, experience, occupation of members of the jury, etc. The attitudes of the attorneys who try cases, in the speaker's opinion, have also a material bearing, as has the attitude of the newspapers during the past and the present, and the nature, kind and variety of the accidents that occur on the property. The speaker believed the practice used in Cincinnati referred to in Mr. Robinson's paper was a desirable one, but he was doubtful whether many other companies could follow it.

Another speaker said many cases were overinvestigated and many investigations were misdirected, though in general he recommended making a very exhaustive investigation. He questioned Mr. Robinson's argument that ambulance chasing proceeds from an effort to get ahead of the claim agent and that if the claim agent does not act the ambulance chaser will cease his activities. He thought that the activities of the ambulance chasers were caused by competition with each other, rather than by competition with the claim agent.

The claims representative of a large company in the Middle West thought there was some danger in magnifying in the mind of the injured person the seriousness of an accident by too frequent visits. On the other hand he believed that certain cases ought to be followed up most thoroughly, especially if there is any suspicion of fraud. He said that a successful claim agent with whom he was acquainted followed the policy that if a case showed signs of liability on immediate investigation quick settlement was the cheapest in the end, though it costs more than the case was worth. At the other extreme, a case where there was no liability should be fought to the bitter end regardless of cost. In the doubtful cases, individual judgment had to be used. If all cases were on the square, the speaker doubted if claim agents would be needed. Again, as regards visiting the claimant, much depends on the character of the road. On a road extending from, say, New York to Chicago, it would be impracticable for the claim agent in his office to wait for claimants to call.

OFFICERS FOR NEXT YEAR

At the conclusion of the discussion the nominating committee presented the following nominations:

President: C. G. Rice, superintendent claim department Pittsburgh Railways.

First vice-president: Wallace Muir, claim agent Kentucky Traction & Terminal Company, Lexington, Ky.

Second vice-president: W. H. Hyland, claim agent Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y.

Third vice-president: Howard D. Briggs, assistant general claim agent Public Service Railway, Newark, N. J.

Secretary-treasurer: E. L. Lindemuth, claim agent Wilkes-Barre (Pa.) Railway.

Executive committee: G. B. Proctor, claim agent Memphis (Tenn.) Street Railway; W. G. Fitzpatrick, general claim attorney Detroit United Railway; T. B. Donnelly, claim agent West Penn Railways, Pittsburgh, Pa.; S. J. Harrell, claim agent Knoxville Railway & Light Company, Knoxville, Tenn.

Mr. Rice, on being escorted to the chair, expressed his honor at the election and solicited the co-operation of the members in making the work of the Claims Association a success during the coming year.

Conducting Accident Investigations*

An Investigator Should Acquaint Himself with the Employee's Theory of an Accident as Well as the Physical Features Surrounding It—Ingenuity in Interviewing Plaintiffs Often Uncovers Fraudulent Claims

BY R. C. GREEN
Attorney Cleveland (Ohio) Railway

DURING the past decade there has grown up in our midst, especially in the larger centers of population, a business which in its return of profits has exceeded the dream of the most sanguine. I refer to the personal injury damage business. And in this connection the word "business" is used advisably. This particular branch of the law is no longer regarded as it was in times past but in the personal injury field today we find law firms devoting their time exclusively to this particular branch of the practice, with well-developed organizations for the securing of business, the adjustment of cases and their preparation and trial in court.

The adoption by most of the states of workmen's compensation laws has robbed this field of much good business and the result has been that many cases which heretofore would have been given little, if any, attention have been exaggerated and built up into what appeared to be real damage suits. This has fallen more heavily perhaps upon public carriers than upon others.

Confronted by this condition of affairs the question necessarily presented is how may one who represents the interests of a carrier of passengers most effectively meet this situation and cope with it. Many answers are presented, but it would seem that the thing most essential is an honest, comprehensive and intelligent investigation; one that will withstand the rigors of an action at law, for the possibility of litigation should always be considered in every case under investigation.

It goes without saying that the ultimate object of every investigation is the truth concerning all the essential facts surrounding an accident. In most instances these facts are ascertainable from the public alone, and one going out upon an investigation is called upon to meet and interview men and women in all stations and callings of life. An investigator to be successful should study human nature. He should be a person of good address, capable of meeting and securing the attention not only of the man in the factory, but the business or professional man as well. His errand is one which means nothing to the person being interviewed. He is not only there securing certain information, but is taking up the time of the interviewed as well. He, therefore, must cultivate a pleasing manner which will gain him entreé with all. Brevity, conciseness and going straight to the point covering the essentials are always appreciated by our ever busy public.

The great majority of the claims that arise from the operation of a street railway system are those made by passengers. In a myriad of ways injuries to this great class are claimed to occur.

GET THE EMPLOYEE'S STORY

If possible the investigator before starting out on a case should have before him not only the theory of the employee as to how the accident occurred, but the alleged claims of negligence set forth by the injured party. If the matter be in litigation, he is, of course, supplied with the petition, as it is called in our jurisdiction, which sets forth the claimed injuries and the alleged negligent acts. If not, the signed statement of the injured party is of great benefit. Aided by this, he is able to go to the very crux of the controversy and secure from the disinterested spectators the information which should be determinative of the matter at issue.

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*Abstract of paper presented at the annual convention of the American Electric Railway Claims Association, Atlantic City, N. J., Oct. 3-6, 1921.

In the investigation of the claims of passengers, the inquiry might be divided into three heads:

First: What were the physical features concerning the accident?

Second: What was the conduct of the employee against whom the negligent act is directed?

Third: What was the conduct of the claimant himself?

The physical features concerning every important accident where time might have the effect of destroying this evidence should always be preserved by photographs. Many cases where such evidence is lacking are lost to the defendant by the adroit argument of plaintiff's counsel that were the facts contended by the defendant true, they would have been supported by photographic evidence. This silent, irrefutable evidence in an investigation, which defies impeachment, has a value far in excess of human fallibility.

A large percentage of the platform men either have forgotten or else have never known, that the good will of the riding public is a valuable asset and that courtesy is about the only means they possess of acquiring it. It therefore follows that when their conduct is under scrutiny they and their employer labor under a handicap, the statements of witnesses often reflecting their feelings toward the employee. This, therefore, becomes a matter for the investigator to overcome, and of course he must rely upon his own initiative with suggestions tending to placate, if possible, the feelings of the hostile witness. On the other hand, the injured party having the natural sympathy of a fellow passenger usually loses no advantage in the telling.

As to what should be elicited from a witness in a given case, or class of cases, little can be said without resorting to the elementary.

The advent of the automobile has had the effect of bringing into existence certain traffic legislation which heretofore was unknown, and in many cases it is not at all difficult to discover where the driver, for instance, of an automobile has been guilty of the violation of certain traffic ordinances which may have been a contributing cause of his accident. An investigator should, therefore, thoroughly familiarize himself with the traffic ordinances of the city. He should have a knowledge of the law of negligence generally applicable to street railway cases, and he should keep posted, if possible, on the late decisions. Not only that, but he should know the layout of the streets; the fact as to whether or not buildings or open lots are on the corners where an accident is said to have occurred, in order that he may intelligently discuss the matter with the witness. Nothing puts an investigator to so great a disadvantage as a lack of knowledge of the physical features surrounding an accident.

What has been said with reference to vehicular traffic holds true with reference to accidents to pedestrians, and, like passenger cases, the points he is to cover are too varied and too rudimentary to admit of discussion here.

FRAUDULENT CLAIMS

The bane of all investigators is the unreported accident. A suspicion that the claim is fraudulent and has no real basis in fact, and, on the other hand, doubting the statement of the employee to the effect that he knows nothing of the alleged affair, the investigator is often catching at straws in the hope that he may secure a clew that will lead to a satisfactory solution of the irreconcilable stories. Here the ingenuity of the investigator is called into play. It is often helpful in this class of cases to take the deposition of plaintiff if the matter be in suit, and go carefully into plaintiff's history. In this way much valuable information may be obtained, and leads secured, which otherwise would be impossible of ascertainment. He must make a thorough investigation of claimant among employers, neighbors, and those who have had an opportunity to observe and know the actions of the claimant for a period antedating the alleged accident. What has been his or her standing in the community; is he occupying a moral plane that is above the suspicion of attempting to foist upon the street railway company a claim for damages which grew out of injuries received, in fact, in an entirely different manner; has the physician in attendance in times past been connected with similar unreported cases, and if so, to what extent; have other members of the family or close friends been the recipient of money paid in settlement of damage claims; does the presence of the corroborating witness, if one be furnished, check up with his movements on the day in question? All these, and many other methods, may be resorted to by the investigator before the claim finally, unless satisfactorily proved to be bona fide, finds its way into the hands of the secret service bureau.

In cases where the objective evidence of the injury has disappeared at the time of making claim, and where the physical evidence does not seem to warrant the seriousness of the claim presented, then there arises another important phase of an investigation—the extent of the disability; the permanency of the injury, if any; and the damage the claimant will suffer by reason thereof.

In many jurisdictions we are confronted with what is known as the "scintilla rule," and it therefore follows that most personal injury cases in these jurisdictions are submitted to the jury for their determination, and the sympathetic jury, running true to form, immediately loses sight of all other evidence except that pertaining to the physical condition of the plaintiff. It, therefore, becomes of the utmost importance that all the evidence possible bearing upon the plaintiff's physical condition, both before and after the alleged accident, be secured. Of course, in the defense of these cases we may call to the witness stand high-priced medical experts to testify as to their findings in the hope that we may show to the jury the exaggeration that is being attempted, but in the jurisdiction from which I come the money might better be spent in paying the judgment. Experts today can usually be secured on either side of a case; those, on the one hand, finding everything, and on the other nothing. And while this may be aside, it will be conceded by all that until such time arrives as the court appoints an impartial examiner, our medical expert testimony is more or less a farce. Were I preparing a case for trial—one, for instance, of a woman who claimed some serious injury, the objective evidences of which were negative, I would feel more assured of satisfying our counsel were I able to present in court the testimony of neighbors who had seen her on occasions doing things which would seem preposterous in view of her claimed disability.

In all cases where there is a suspicion that the accident under investigation was not the cause of the physical disability alleged, there should be a careful inquiry made concerning the claimant's actions prior to its occurrence.

It is true, of course, that where one case is uncovered and the fraud shown, many others go undetected. But this fact should only inspire an investigator to greater efforts. His task is no sinecure. It is an easy matter, indeed, to deal with a case where the injury is conceded and the facts surrounding it clean cut, but the ones which require the real effort, brains and ingenuity are those shadowy, unreported cases where not only is the question of the occurrence of the accident in doubt but also the injury alleged is more or less fake.

SIGNED STATEMENTS CARRY LITTLE WEIGHT

How should the investigator best preserve his evidence? Dictated interviews are not to be depended upon. Signed statements should always be secured in every instance where they can be taken, using as nearly as possible the language of the witness. Many a signed statement has been held up to ridicule before a jury and successfully argued out of the case by an attorney's contrasting the language therein with the apparent intellectual endowments of the witness.

After an investigation is completed and before filing it away it should be arranged in logical order; the statement of the claimant coming first, those of the witnesses next, and following should be the evidence bearing upon the physical condition of the claimant, together with the medical evidence. A well-ordered and arranged investigation is appreciated by all who are called upon to consult it, from the adjuster to the trial attorney. A brief summary of what the investigation shows may be made up and filed with the papers to show at a glance the procedure followed.

Method of Handling Accidents and Claims*

The Good Response to Requests from Witnesses for Written Statements Has Caused the Adoption on the Ohio Traction Company of the Letter Plan of Investigation as Against the Personal

By Walter E. Robinson
Claim agent, Ohio Traction Company, Cincinnati, Ohio.

IN CONSIDERING the organization of claims departments I am convinced of a marked tendency to overman them. The result of this is increased cost and decreased efficiency by overlapping of duties, duplication of effort, lack of interest due to uncertain responsibility, indecision, confusion, unnecessary friction, waste and a generally unfavorable comparison between the cost of maintenance and the accomplishments of the department. From the standpoint of economy and effectiveness, the foregoing reasons have caused me to operate with a comparatively small force, and I believe effectively.

W. E. ROBINSON

Witness' Statement Versus Investigation

We are not influenced nearly so much by the number of witnesses or the length of an investigator's report as we are by the quality of the investigation. A lot of time spent on an investigation does not necessarily mean that the work is well done, nor does a maze of collateral matters covered add any value to it. I would rather have a two-line description of an accident from a witness in his own handwriting and over his own signature, than to have a two-page account prepared for him by an agent of the company. The former is not open to the same line of attack to which the latter is often subjected. No explanations are required, or necessary, of the circumstances under which the statement was obtained. We can not be charged with giving the witness no opportunity to read his statement before signing it, or with adding anything to it after it was signed. It is the witness' own document, in his own language, expressed without suggestion or interference. It is the witness' state of mind that we want, and if his attitude is friendly, he will defend his views in a way that will carry greater weight than he can if his description is prepared for him. Many embarrassing situations are thus eliminated.

These are some of the considerations, and taken with the further fact that a very large percentage of our witness letters are returned, answered satisfactorily, argues strongly for the letter plan of investigation as against the personal, and has caused me to continue with its use as originally adopted.

The Disposition of Claims

The final disposition of a claim, which consists of making a settlement, rejecting a claim or a law suit, is the one which should interest our management the most because it measures the success of our organization, and has as much or more to do in establishing the standard of the entire company in its public relations, and holding within reasonable proportions the operating costs of the property, as any activity in which any of its departments are engaged.

The influence exerted and the atmosphere emanating from the claim department are responsible, in many instances, for the esteem in which the company is held by the public, and reflect themselves in the jury room by the verdicts rendered and in the amounts carried by the verdicts. It also manifests itself in the feeling that is created in rejecting claims, and is shown in the litigation that ensues after we have declined to give favorable consideration to a claim.

I think it requires greater skill to reject a claim and bring a claimant to your point of view than it does to settle a claim even at a greatly reduced figure from the original demand. I do not hesitate to reject a claim through any fear of its effect on possible future demands or relations, nor is the amount involved any incentive. I have no patience with the oft-repeated statement, "That we must buy our peace with the public," and if I were confronted with that kind of a situation, I surely would not pay the price. In the first place, I do not believe the necessity exists, and if it did, I would certainly see that it was not due to conditions or performances of the claim department, past, present or future.

A well-considered claim, rejected for sound reasons and our position firmly adhered to, will make friends for the company. If it is our intention to reject a claim, and the claimant is so advised and our reasons are sufficient for the action, do not lead the claimant to believe that you will try to find a way to adjust the matter, even though it has no merit. He will accept your money and justify it by saying that you were either wrong in the beginning, or dishonest with your employer in the end, and the company has suffered a loss in time, money and reputation.

An Inflexible Course

We must have some convictions about our work and stand upon them. First, I do not believe that the value of our service is based on the number of releases we can obtain, nor in undue haste in obtaining them. Property damage does not increase with age. Personal injury claims depend on a variety of conditions and circumstances under which a settlement is made.

I prefer to discourage the practice of indiscriminate claim making, and will not allow myself to be placed at a disadvantage while endeavoring to make a settlement.

The company provides offices where our business is conducted, and all matters pertaining to that business are transacted in the offices. Whatever ammunition we have on an accident or claim is there and can be used to a better advantage on our own ground.

I am opposed to hunting prospects, or soliciting new business in our line. It will come without seeking it. I think it is inadvisable to visit the scene of an accident of any kind for the purpose of making immediate settlements. We never send the surgeons to the scene, and rarely to see claimants at their homes. I have never done so, and could not sanction the practice at this stage of our experience.

I am opposed to the policy of adjusting claims outside the office, and under no circumstances do we attempt to do so. I believe the energy expended in this way is misdirected and misapplied, and is one of the causes of the ever-increasing demands on us. It has produced countless impostors, and has been the occasion for the reckless expenditure of enormous amounts, and if a remedy be not found, it will result in further and unnecessary hardships on the property.

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*Abstract of paper presented at the annual convention of the American Electric Railway Claims Association, Atlantic City, N. J., Oct. 3-6, 1921.

Constructive Arguments as Opposed to Destructive Contentions in Accident Adjustments*

An Experienced Claims Attorney Presents in Detail a Method of Adjusting the Every-Day Problems in the Operation of the Claims Department—This Paper Gave Rise to an Extended Discussion at the Convention

By L. H. Butterworth
Claims Attorney Boston (Mass.) Elevated Railway

L. H. BUTTERWORTH

We hear much these days about the "psychology of salesmanship." Now it should be carefully borne in mind that the claims man is not a salesman but a buyer—a veritable "purchasing agent"—at least in the case of the adjuster. The investigator, on the other hand, it would seem, cannot be classed as a purchaser, for he seeks to obtain something—viz., evidence—without, of course, being able to give any "quid pro quo." The adjuster, however, can, and does, make a definite money proposition for what he seeks, namely, a release, but he still differs from the ordinary buyer in that the object of his bid has no liquidated or fixed market value, as do most of the commodities bought by the company's regular purchasing agent. In determining what value would be placed upon this "commodity," *i.e.*, claim, by the final appraisers therein lies the province of the claims agent, and the purchase of the same at a favorable discount is then his object.

If, however, there is a "psychology of salesmanship"—and of this there can be little doubt—then the converse of the proposition is true and there must be a "psychology of buying," *i.e.*, a creation of influences or mental reactions and processes in the brain of the "seller" by suggestion and argument on the part of the "buyer."

Many of the difficulties and contentions with which the claims man is confronted may be anticipated and therefore forestalled by remarks or comments apparently merely incidental to the interview, but designed to produce a definite effect on the mind of the claimant or witness. For the sake of convenience this may be described as the "negative method" of procedure, *i.e.*, the inhibition or repression of a contra opinion or state of mind on the claimant's part, before the same has been openly expressed or formulated. On the other hand, the claimant may surprise by some unusual or unexpected contention or objection, to meet and overcome which an entirely different process must be employed and recourse to affirmative argument had. This we may term the "positive method."

Let us now proceed to apply these two methods to our specific cases.

No. 1. *Refusal of claimant or witness to give signed statement*: This, unquestionably, is the obstacle most commonly met by the claims man and, therefore, one which he should be prepared to inhibit or check by anticipation. Applying our so-called "negative method" it would be well for the claims man to preface his interview with some such remarks as these: that he had called to obtain the story of the accident in the witness' or claimant's own words as nearly as possible; that he therefore desired to write it down in his or her presence and to submit it for approval to insure the correctness of the statement. Having completed the written statement the claims man should then hand it to the person interviewed with substantially this remark: "Now, in order that I may lay this before the company's officials as the true and complete recital or description of your claim or testimony, please read the same and call my attention to any errors, omissions or changes you wish made, then sign your name to the statement, so that I can show that I have correctly reported your version of the affair."

If, as frequently happens, the person shows an unwillingness to comply with this request or flatly "declines to sign anything," then the claims men must have recourse to other tactics and bring into play the so-called "positive method," which is nothing short of marshaling all the reasons and arguments at his command until the desired result is obtained. It may be helpful to remind the obdurate one that his claim will be looked upon with suspicion if it appears that he was unwilling to dignify it with his signature, or in the case of a witness, that his testimony will have less weight in exonerating an innocent conductor or motorman if he refuses to give it the stamp of his personal approval. Then again, in case of both claimant and witness, it may smooth over the objection to state that it is a matter of first importance and clearly to their own advantage to make a written and signed statement at the earliest possible moment and before the facts are forgotten, for a permanent record of their knowledge of the matter is thus made and they are thereby relieved of the necessity of charging their minds with the details of the same; the copy (which should always be given to claimant) being a source from which they can at all times refresh their recollection.

No. 2. *Refusal to permit medical examination*: This, at least in the writer's experience, is the least frequent obstacle in claims work. A refusal to allow a medical examination should never be anticipated, but consent to same always assumed, and honest surprise and astonishment expressed when such consent is withheld. In those few instances, however, where refusal is made, the claim agent should decline summarily to entertain the claim any further, and should inform the claimant that the latter can hardly hope to be paid money for something which he refuses to show. This should be sufficient to bring the objector to terms, and in case an attorney is handling the claim a proposal to comment before the court or jury upon his refusal to allow medical examination may properly be made.

No. 3. *Refusal of reasonable settlement without the advice of an attorney, or a threat to employ a "shyster" or a professional negligence attorney*: Whether such a difficulty should be anticipated and hence sought to be banished from the claimant's mind is a matter of considerable doubt. It may do no harm for the adjuster to make some casual remark to the effect that "there is no need of incurring any unnecessary legal expense in this matter, as we can probably fix it up satisfactorily between ourselves," but, on the whole, it would seem wiser to assume the defensive rather than the offensive in this particular phase of the claim man's work. If the attack comes in the form indicated, *i.e.*, expression of a desire for an attorney's advice, it may be promptly met by a recital of the well-known disadvantages of such a course—viz., the additional expense in the way of lawyer's fees, probably resulting in a net loss to the claimant; the fact that with an attorney in the case any payment is made to the attorney and not to the claimant; the delay caused by negotiations between the company and attorney and, in the event of a trial, the year or two which must elapse before the cause can be heard and the heavy expense incident thereto. The adjuster should then show by contrast the advantages of a direct immediate settlement, entailing no delay and incurring no outside expenditures.

If the opposition takes the form of "a threat to employ a 'shyster' attorney," further helpful arguments will immediately suggest themselves—the improper fee and other advantages which an attorney of low standing may take—the probability that the company will decline to have any dealings whatsoever with such an attorney—in other words, that the claim will be greatly weakened and prejudiced by such a course, if indeed not entirely lost.

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*Abstract of paper presented at the annual convention of the American Electric Railway Claims Association, Atlantic City, N. J., Oct. 3-6, 1921.

No. 4. *Refusal of claimant to disclose names of witnesses or attending doctor*: This attitude on the claimant's part is closely akin to that suggested in No. 2, and hence calls for a similar line of argument to that therein employed, to wit—that in order for the adjuster to buy such a claim, we must have the fullest information relative to its merits both as to liability and injury, and in no way can he obtain this without a complete exhibit of the "commodity" offered for sale. The refusal to give the doctor's name is so unusual and obviously unfair to the "buyer" (adjuster) that a change of attitude or, psychologically speaking, a "reversal of the mental condition" ought not to be a matter of much difficulty.

The unwillingness to disclose witnesses' names should be met by a statement that their testimony, if favorable to claimant, will greatly increase the chances of obtaining a speedy and reasonable settlement with the company. If this fails to impress the adjuster or investigator may offer to interview such witnesses only in the presence of the claimant or even to accept signed statements from them. In every way he should endeavor to impress upon the claimant that his chief concern is to obtain information as to the facts and is not in any sense an attempt or desire to take any advantage of the claimant by a garbled or distorted report of what such witnesses may say.

The "negative method" is not desirable here, but the moment there are indications that such information is to be withheld, then the investigator should train the big guns of his "positive method" battery upon the objective sought and let go his "broadsides" until the enemy is won over.

No. 5. *Request for company's witnesses;* No. 6. *Request by claimant for copy of company's report of occurrences*: At the outset and at the risk of being termed revolutionary I am going to venture the opinion that, in the long run, these requests are not such destructive contentions after all. Of course, I do not advocate that such information should be handed out broadcast and as a matter of course whenever a request for the same is made, but I do contend that in many cases it may be done without prejudice to the company's interests.

To get the progressive trend of modern thought on this subject we need only look at recent legislation in certain jurisdictions, notably Massachusetts, where by means of interrogatories a defendant may, at the discretion of the presiding justice, be ordered to furnish the plaintiff the names of witnesses to the accident. We all know, furthermore, that the car crews' report of an accident is competent and admissible in evidence at the trial of the action if the plaintiff's attorney has the courage to ask for it.

The fact that both the above rights or privileges are made use of so seldom by plaintiffs is, to my mind, very significant in showing that not much advantage is derived therefrom.

Before suggesting what the "outside" claims man should do or say when confronted with these requests, let us consider for a moment the mental state of the claimant or his motives for making such a demand. He must desire this information for one or more of the following reasons: (a) because he hopes or expects the witnesses sought will corroborate his story of the accident and thereby strengthen his claim, or (b) because he wishes to find out how strong the company's case is, or (c) because he thinks he may be able to influence or change any testimony unfavorable to him. If, now, we have a case where the witnesses are numerous and very favorable to the company a disclosure of them will (a) blast the claimant's hopes and aspirations, or (b) will fully satisfy his thirst for knowledge and (c) he is welcome to any crumb of comfort he may derive from the remote chance of being able to affect or change their evidence. Certainly no harm has been done to the company and the only logical result of such a disclosure is that the claimant's own opinion of the value of his case has been appreciably lessened. The writer has frequently followed such a course in discussing claims or suits with either claimants or their attorneys.

On the other hand, where such a disclosure will reveal weakness instead of strength, of course, very practical objections at once arise against making known the witnesses or giving a copy of the report. The best way to meet this difficulty is not to meet it at all but to go around it by adjusting the claim for the best figure possible.

If the outside adjuster or investigator meets with these requests for witnesses or a copy of the accident report, his reply should be that he has not such information with him but that the same may probably be had by calling at the company's claim department. His superiors can then exercise their discretion as to the wisdom of granting such requests. If it be contended by the claimant that his request for the company's witnesses is merely the converse of the company's request for his witnesses, it may be pointed out that such is not the case at all and that such a conclusion is wholly illogical. The company desires the claimant's witnesses simply for the purpose of checking up or establishing the accuracy of the various allegations of the claim which the claimant has presented; whereas the claimant himself is presumed to know the facts and to have satisfied himself of the correctness and the justice of his claim before presenting same for payment and should not, therefore, call upon the company (the alleged "debtor") for possible helps in proving the "bill." In general, the adjuster should remind the claimant that the principles of business practice and the rules of law govern in the handling of claims and that the burden is still on the claimant to establish the company's negligence, even if in some jurisdictions his due care is now presumed.

No. 7. *Request that claim department repair damaged property*: In certain cases such as broken windows or torn clothing such a request can sometimes be granted to the company's benefit, inasmuch as it possesses the men and facilities for doing the job at a reduced cost or, in the case of damaged clothing, the knowledge where repairs may be most skillfully and economically made.

It is assumed, however, that this topic refers more particularly to repairs of a mechanical nature, such as are necessitated by damage to vehicles. In such cases, it is not desirable from either the standpoint of the company or the claimant to grant the request. The company's representative should advise the claimant that such a practice is unsatisfactory to both sides in that the company's business is the transportation of passengers and that its mechanical department is devoted solely to the movement and upkeep of street cars; that it maintains no general automobile or wagon repair shop, and even if it did, it would still be unwise to undertake the repair work in question because there might be a perfectly natural tendency on the company's part to discover the least amount of damage attributable to the accident and the result would be a job not satisfactory to the claimant. The adjuster might further very frankly admit that the company did not care to assume the risk of a new liability in case the repairs were unskillfully or negligently made.

If the claimant then suggests that the damaged property be sent by the company to some general garage or repair shop the adljuster may point out what is very likely the strongest argument of all, *i.e.*, that it is literally impossible for the company to spend the time and money necessary to attend to the details of arranging for such repair work. He should then explain to the owner of the damaged property that by far the more satisfactory course for all parties is for the claimant to arrange for the repairing of the vehicle at such shop as he may elect, having first given the company's expert an opportunity to inspect the damaged property. Then when the work is completed the various items may be checked up and compared with the estimate of the company's representative and if no serious variances exist a settlement may be easily and promptly had. The foregoing, of course, is predicated upon the assumption that we are dealing with a "liability" case.

No. 8. *Allegation that unfair advantage is taken of claimant:* This contention is one which the adjuster may largely dispel by his very personality and the mode and tone of speech in which he approaches the claimant. A sympathetic, conciliatory, unbelligerent manner should go far toward inhibiting such an idea in the claimant's mind, or, for that matter, in the mind of any other person. In fact, here is a golden opportunity for the exercise of our "negative method" of procedure, and the experienced and skillful claims man will take care that he create an atmosphere of the square deal before he reaches the dollars and cents stage of the proceedings. If, however, in spite of all his efforts and skill in this direction, he is met by the allegation that it is unfair to the claimant to ask for an immediate release or for a release for such an amount as offered, the adjuster should then employ all the affirmative arguments at his command and point out, for instance, that he is not seeking to rush the claimant into a hurried or hastily considered settlement, but that experience has shown that fairly prompt adjustments are the best medicine; that his offer is based upon the "fair market value" for the injury and liability in question, illustrating his point by citation of similar cases; that the very fact of his being sent to see the claimant shows an attitude on the company's part to do justice and make reparation for the injury done; that a large public service corporation such as the adjuster represents is as dependent for its success upon the good will and opinion of its patrons as any private business concern and, therefore, it does not desire and could not wisely attempt to deal unfairly in the adjustments of its accidents.

No. 9. *Contention that any person injured in car accident is entitled to damages:* This is one of the commonest fallacies which we meet in dealing with the riding public, and occasionally even an attorney seems to labor under the delusion that a passenger virtually receives a policy of insurance when he sets foot on one of the company's cars. Nothing, however, is further from the truth, and whenever an adjuster is confronted with this time-worn contention he cannot do better than meet it in the language of the courts. For years, and in countless decisions, judges have stated, in substance, that the carrier of passengers is not an insurer although it owes its patrons a very high degree of care, which has been further defined as the "highest degree of care consistent with a practical operation of the company's business."

In proportion as this contention of an insurer's liability is one of the commonest, so too is it one of the easiest to overcome and banish when dealing with an intelligent claimant. In the case of a stupid or stubborn one the adjuster must draw upon his inexhaustible stock of patience and by simple every-day occurrences illustrate his point and show the unreasonableness and unfairness of asking the company to pay for damages which it did not cause.

No. 10. *Request for adjuster to make frequent return calls:* Whatever motive actuates a claimant in making such a request, the result of granting it is undesirable from the company's standpoint, because it consumes time which might better be devoted to other and newer cases. While a quick settlement is best, nevertheless, the adjuster should not press the claimant too zealously but should show willingness to call again in a few days after the diagnosis of the attending physician, or the opinion of the company's medical examiner has been obtained. The adjuster should refuse, however, to keep calling at frequent intervals and should tell the claimant that such a course will serve no useful purpose and also that the convalescence and recovery will be more rapid and permanent by removing the mental or "psychological" factor of worriment by an early adjustment of the claim.

No. 11. *Refusal to call at claim department offices for discussion:* This contention or obstacle is not of sufficient importance for the adjuster to waste any time in trying to overcome it. There may be some good reason for such a refusal, as for instance, physical infirmity or lack of time, but even if caused by downright stubbornness or unreasonableness no serious thought or time should be sacrificed in combating it. "If the mountain won't come to Mahomet let Mahomet go to the mountain."

No. 12. *That the company is liable or it would not call upon claimant:* This thought, although perhaps not openly expressed, may very naturally arise in the mind of the injured party when a claims adjuster makes him an unsolicited call. It would seem wise, therefore, at least in cases of debatable liability, for the adjuster to employ the "negative method" and introduce himself more in the character of an investigator than an adjuster and by means of his opening questions create the impression that there is doubt in the minds of the company's officials as to their liability for the accident and hence call upon the injured person to ascertain his version of the occurrence. In the case of absolute liability such as car collisions, derailments and the like there is little occasion for such a procedure and the adjuster may account for his voluntary visit by the perfectly sincere statement that he desires to learn whether the person was injured and if so, the extent of such injury. They can then get down to the real business of settling the claim without further preliminaries.

Thus far it will be seen that we have been working along the lines of the "negative method." If now the claimant becomes belligerent and asserts that the adjuster would not have called upon him had the company not believed itself liable for the accident in question—then the style of procedure shifts to the "positive method." It is then up to the adjuster to enlighten the claimant as fluently and thoroughly as possible as to the principles and advantages of compromise and to inform him that corporations and also individuals frequently make small payments even in cases where it is definitely settled that there can be no recovery at law; that such a course is taken not only to assist the injured by lightening their financial loss but also as a matter of sound business policy on the part of the company.

No. 13. *That settlement with driver for injury indicates liability for property damage:* This contention is one to be anticipated and denied at the very outset, and presents an excellent opportunity for an application of our "negative method" of procedure. In other words, such an idea existing in the mind of the property owner must be aborted by a denial or negation of its logical soundness. The adjuster, if he is endeavoring to effect a compromise, should commence the interview by differentiating the reasons and motives which make it expedient for the company to desire the personal injury claim settled and yet to have no particular concern relative to the outcome of the property part of said accident. The argument is this—that the driver's claim presents a case of personal injury, *i.e.*, hurt done a human being, the measure of damages for which may be estimated anywhere between nothing and thousands of dollars. The property loss, on the other hand, presents merely a claim for a fairly definite, practically liquidated amount of damage to a piece of personal property. There may be some minor differences or disputes between the parties, as to the market value before and after the accident and as to reasonableness of repair bills, but these are trivial when compared with damages in the personal injury case and the maximum amount of damage can be almost mathematically ascertained. Hence the company's treasury is not faced with a claim whose value is undeterminable and which may possess great potentialities.

This line of reasoning, it will be noted, closely resembles the argument to be used in dealing with No. 12, and seems too simple to need further elaboration. Many others of equal or greater merit will doubtless suggest themselves to members of this association. The particular environment, social and financial status, local customs and laws, all these are factors of the utmost importance in the application of psychological principles, for to be of any real assistance to us this psychology must be of the so-called *practical* or *applied* kind, as contrasted with *pure* psychology. In short, the successful claim agent is, after all, merely a shrewd trader or business man, to whom, in plain English, the greatest assets are a fairly fluent and persuasive tongue coupled with a large amount of good, hard common sense.

History and Comments on the Third Rail System*

Some of the Interesting Features of and Experiences on the Third Rail Systems of the Pacific Coast

IN CONSIDERING the history of the third rail, we are not confronted with a problem of ancient history. In the eighties there were several feeble attempts at using a rail on the same plane as the running rail instead of the overhead trolley. The first successful application, however, was on the Intramural Railway around the World's Fair Grounds in Chicago in 1893.

Following this, the next installations of importance were the elevated roads of Chicago. The Metropolitan on the West Side was the first one, the others being converted from steam to electric using the third rail. From this it was a mere matter of a few years and all the elevated roads in New York City and Boston were converted to this system.

Then in quick succession followed several of the terminal electrifications in the East, all using the third rail where the voltage did not exceed 600. These installations are still going on east of the Rocky Mountains. This story, however, deals more particularly with the installation on what is now the Northwestern Pacific Railroad, Marin County, Cal.

To one of the early pioneers in the electrical field in California is due the credit for the electrification of the interurban section of the old North Pacific Coast Railroad. John Martin purchased the North Pacific Coast Railroad, then a narrow gage road from Sausalito to Cazadero and running over the hills from San Anselmo to San Rafael and down to San Quentin Point, and made the electrified section broad gage, still retaining the narrow gage for steam. The present system consists of 6 miles of single track and 15½ miles of double track, or a total of 37 miles of electrified track, all at 600 volts.

In this state there are three third-rail systems, the Northwestern Pacific and the Sacramento Northern, using the over-running type of construction at 600 volts, and the Central California Traction, using the under-running type at 1,200 volts. The contact rail as used on the Northwestern Pacific is all regular common "T" rail, and nearly all of it is either 60-lb. steel or 50-lb. iron.

In the first installation the rail was supported mainly on a large block of wood spiked to the tie and the contact rail spiked to the block. These were continually breaking off and did not last very long. Then some patent granite blocks were tried. These were put in at the Sausalito terminal and through the Corte Madera tunnel. The leakage over them was excessive and the aura at night was at times brilliant. It was quickly decided that the object to be obtained was a support for the contact rail and not a means of illumination.

At that time the present style of support block which has proved very satisfactory was designed and put into service. Every sixth tie in the track is 1 ft. longer than the standard tie. On this extra length the support for the contact rail is placed. This support consists of a redwood block 5 in. square and 6½ or 7 in long. The length depends on the size of the rail in the track. This block is treated with two coats of insulating paint by dipping. There is a ⅜-in. screw bolt at the base holding to small angle irons, which in turn are lagged to the tie. On top of the block is placed a cast-iron cap upon which the rail rests. The cap is so constructed as to form an apron over the block and give a space of nearly 2 in. on the block that is always dry even in the worst rainstorm. Of course, this does not exist when flood water comes up over the track and even over the contact rail. This cast-iron cap has a channel in which the rail rests. The rail is not clamped or fastened to the block in any way, but is free to move with the expansion and contraction. The contact rail has tried to crawl over the right-of-way at times, but it generally landed on the running rail and the result was a shutdown. When this buckling has occurred, it is simply a case of breaking a joint at this place, allowing the rail to straighten out, dropping the overlapped end to allow space travel of the collecting shoe on the cars. To overcome this trouble about twice a year men go over the line and hammer the joints and pour oil around the angle bars and over a large proportion of the support block caps. When this has been done, the buckling feature has been eliminated. As an illustration of how successful this is, we have several sections of 3,000 ft. and one section of over 4,000 ft. of continuous power rail.

At road crossings and intervals in front of stations the rail is open and the ends protected by approach blocks. These blocks are pieces of rail equal in cross-section to the contact rail but with one end heated and hammered, thus allowing the contact shoes on the cars to ride up onto the rail easily. At these openings there is constructed an underground box with at least one 1,000,000 circ.mil cable in it, the ends of which are soldered to the end of the contact rail.

These undergrounds, as we call them, are constructed of 1-in. redwood and are made 4 in. square inside. The cable is supported in the box clear of the wood by porcelain cleats every 2 ft. The box is then filled with an asphaltum insulating pitch. Properly installed, this type of box has proved very satisfactory and has the most excellent moisture resisting qualities.

In the original installation a feeder was placed in the web of the rail from Sausalito to San Anselmo with the exception of the section through the Corte Madera tunnel. This feeder proved very unsatisfactory, for it was but a short time after its installation that the sleeve joints began to loosen up. Even after the sleeve and rod were drilled through and aluminum pins driven in, these were sheared off.

The experiences with this rod were very interesting. At openings where the rod ended it was necessary to use a long brass sleeve for connections. In one end of the sleeve was soldered the rod, using only pure block tin. In the other end was soldered a short piece of copper cable using half and half solder and the cable soldered to the rail. The jumpers were soldered directly to the rod on either side of the sleeve. After they were soldered the joints held and would not give. There were about seventy-five of them put on in the section between Alto and Almonte. Four days later all the jumpers were on the ground, having fallen off of their own weight. Another attempt to solder aluminum has proved futile.

About five years ago there came suddenly a demand for aluminum. All the aluminum feeder was then replaced by a 1,000,000-circ.mil. copper cable and the change was made without expense to the railroad company.

One great advantage in the third-rail construction, both mechanically and financially, is our method of carrying feeders. From Sausalito to Alto Power House, a distance of four and one-half miles, we have two 1,000,000 circ.mil cables on each rail, or four cables in all, and the only additional expense for feeder support is the small iron clamp used to hold the cable in the web of the rail. There are at advantageous points switches so that the system can be sectionalized if necessary and in case of trouble one section can be eliminated entirely. We also carry an overhead jumper on pole line over Corte Madera tunnel, and have switches installed so that the tunnel section alone can be cut out without interference with any other section.

The use of a third-rail system of course can only be justified where, like the Northwestern Pacific, the operations are entirely over private right of way. There have been several cases where people being struck by trains have been thrown against the power rail and burned. There is but one case of human life lost that I can find directly traceable to contact with the third rail.

Our maintenance costs after thirteen years of service show the following averages:

For 1916	$87 per mile
1917	95 per mile
1918	145 per mile

The differences in these costs do not reflect any change in the condition of the rails, but rather a decided change in labor and material cost. At the present time we are maintaining the entire system with a crew of five men, three of whom only devote one-half day to power rail work. This crew also does all track bonding.

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*A paper prepared by the electrical department, Northwestern Pacific Railroad, and read by C. E. Thatch, at a meeting of the Pacific Railroad Club, San Francisco, August 11.

The costs previously given take care of all track bonding. All joints on the running rail are bonded with a 300,000-circ.mil soldered bond with a "T" head, soldered directly to the rail. We admit that we are without doubt cranks on solder. All joints of whatever nature, bonds, feeder cable, cross cables, are soldered direct to the rail, using half and half solder.

The gage of our rail is 26½ in. out from the gage line of track and the top of power rail 6 in. above top of running rail. For total clearance we ask 12 in. above top of running rail, 22 in. out or more. This clears on all classes of equipment. Occasionally there is sent on the road some large furniture car with unusually low truss rods, but this difficulty is overcome by observing the published clearances and also the alertness of car inspectors at Tiburon, where most of such equipment reaches our road.

One of the main difficulties is in the winter from high water. We have had several times when at certain points the water was up over the power rail, but it was fresh water and we were able to keep power on the rail and keep trains moving. When the extreme high tides come in the winter along the shores of Richardson Bay, with a good southwester behind them and the salt water begins to get up around the power rail, operations cease. This condition occurred during one storm in the winter of 1918-1919, and our traffic out of Sausalito was stopped for about three hours during the most severe part of the storm.

Railroad Crossings and Crossing Signs*

Standardization Suggested Along Various Lines to Reduce the Hazard —The Railroads of the Country Are Spending Thousands of Dollars a Year to Protect the Public

By R. S. Messenger
Claim Agent Rochester (N. Y.) & Syracuse Railroad

THE RAILROAD LAW of New York State specifies the type and position of the crossing sign to be installed. This sign is furnished by the railroad company and is set by the highway authorities of the town or municipality in which the crossings are located. This law is a step in the right direction, but I do not believe that the sign is sufficiently conspicuous to be adopted as a standard for all crossings; also there is nothing in the law to prohibit other signs being placed at crossings. You have all approached crossings where there was the usual "Stop, Look and Listen" sign, a sign put up by the State Highway Departments, a sign put up by the local automobile club and last but not least a sign put up by some industrial concern ostensibly as a warning sign but in reality an advertising scheme.

In my opinion, this multiplicity of signs is worse than no sign at all because when the driver of a vehicle approaches a crossing so decorated he tries to read them all and doesn't sense any of them, or, what is more apt to happen, they are taken for advertising. If one conspicuous uniform sign was placed at each crossing and the public seeing that sign could know that it meant one thing, many crossing accidents would be avoided. A uniform standard sign of such size and coloring and so lettered that its meaning cannot be mistaken should be placed at every grade crossing in the country. Such signs should be placed at a uniform distance and far enough from the crossing so that there will be plenty of opportunity to have an automobile under control before reaching the crossing. When such a sign is adopted and placed, it should be *prima facie* evidence of negligence on the part of the driver of a vehicle who is struck and injured at a grade crossing.

The chief safety officer of a large railroad recently told me that he had checked three widely separated crossings to find the number of vehicles going over them in a day and to check the number of drivers of such vehicles who stopped, looked and listened before crossing the railroad tracks. Approximately 7,900 vehicles, of which 98 per cent were automobiles, crossed the three crossings that day, but none of them stopped and less than 5 per cent of the drivers of these vehicles looked or listened before crossing the tracks. The railroads of this country are spending thousands of dollars every year to protect the public at their crossings and to train and educate the motormen and engineers in safe operation, but until the automobiling public shows a disposition to co-operate, we shall continue to have these appalling catastrophies at grade crossings, no matter what type of sign is adopted as standard.

Gates and flagmen are considered by many as the most effective protection for grade crossings, but the expense of maintenance is greater than the electric railways of this country can stand. Aside from the expense I personally know of numerous instances where automobiles have been driven through the gates, and the August number of the *National Safety News* contains an article showing where the Long Island Railroad has been compelled to use telegraph poles in place of the usual type of gates because so many drivers of automobiles had driven through the ordinary gates. This is a pretty good evidence that the fault is not all with the railroads. Pedestrians also are daily disregarding the gates, walking under or around and being struck by approaching cars.

Flagmen are human, and where the human element enters failure sometimes arises, but more often in the case of railroad flagmen than elsewhere, because cripples and old men are placed at crossings as a substitute for a pension. This should not be done, for a flagman to be efficient must be intelligent, active and alert.

There are many automatic signals for crossings such as electrically operated gongs, good at some places but affected by climatic conditions, easily getting out of order or else they ring continually when there is no danger, which leads to their utter disregard.

The old type "Stop, Look and Listen" signs were all right before the advent of automobiles, when the approach to crossings was at the rate of 4 to 8 m.p.h., but in the present day these are not conspicuous enough nor are they seen soon enough to stop a vehicle approaching a crossing at 20 to 50 m.p.h., so today we are advocating a standard crossing sign to be placed at from 300 to 500 ft. on each side of every crossing.

In New York State, and I am informed in many other states, the railroads are compelled to pay for these signs. It does not seem reasonable to require the railroads to furnish or maintain crossing signs to be erected off their right-of-way. This should be a public charge, or at least the cost of the signs should be shared by the public and the signs placed and maintained entirely by the public. As to the maintenance of these railroad crossing signs, I have seen any number of them that have been placed at crossings in New York State within the last year riddled with bullet holes, the enamel knocked off, the sign bent so as to be useless as a warning and in many instances knocked down entirely. Much of this damage is done thoughtlessly by boys, some deliberately by men. The National Safety Council should, through its local councils, start a campaign to educate the public as to the meaning and importance of the standard crossing signs and as to the possible results which may arise from their effacement and destruction.

To the railroad man grade crossings present another problem, which is to make the view for the motorman and driver of approaching vehicles as long and as clear as possible. Here again the railroad meets the opposition of the thoughtless public who own property along the right-of-way. For example, the company with which I am associated has for the past four years sent out men to trim trees and clear the view at all crossings on our road, which is a double track, high speed road, 87 miles long, operated between the cities of Syracuse and Rochester over 117 grade crossings. As foreman of this safety crew we use a motorman who has been in the employ of the company for the past fourteen years. His instructions are to trim all trees, bushes and weeds on the right-of-way which in any way interfere with or obstruct the view of a motorman or the driver of an approaching vehicle; also to trim all trees, etc., adjoining the right-of-way that interfere with or shorten the view, where he can obtain the permission of the owners of such trees or bushes. Here is where the trouble begins. The one idea in the minds of adjoining property owners, particularly near cities and towns, is to grow a hedge or line of trees that will shut off the railroad regardless of the safety of the public at such grade crossings. We have no power to compel the trimming or to prevent the planting of these barriers, but are annually forced to pay out large sums of money for accidents caused by those death traps erected by unthinking people.

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*Abstract of paper presented at the electric railway section of the annual congress of the National Safety Council, Boston, Mass., Sept. 29, 1921.

All railroad grade crossings should have easy approaches, good planking and be so graded that the danger of stalling motors would be eliminated as far as possible. All automobiles should be driven over railroad crossings in intermediate gear to reduce the danger of stalling and thus prevent accidents. Slight inexpensive changes in highways often make dangerous crossings comparatively safe. When a road crosses the track two or three times within a short distance, several crossings can be eliminated by re-locating the highway, especially when state or county highways are being constructed.

Among the safety rules of the road with which I am connected is an order to the motorman that all highway crossings in cities and villages must be approached under such control that a car may be stopped short of any obstacle. Sometime ago at one of these crossings an automobile was pushed by the car between 200 and 300 ft. The motorman was laid off for thirty days. The situation has improved since then, but there again we have the human element, and it is necessary constantly to check up these crossings to see that the order mentioned is obeyed, but who checks up the careless, thoughtless and reckless automobile driver for whose mistakes the railroads are daily made to pay?

Many grade crossing accidents on electric roads, in my opinion, are due to ignorance on the part of the public as to the speed, distance traveled per second and distance in which a large interurban car can be stopped. Not long ago a vehicle was struck at a crossing on one of the roads running out of Syracuse. The following morning the coroner asked the motorman, who was a man of long service, the speed at which the car was traveling when the vehicle was first seen. The motorman's estimate was 40 to 50 m.p.h. "How far away were you from the crossing when you first saw the vehicle?" "About 200 to 250 ft." "How far did you go after you applied your air before stopping?" "About 650 ft." At this reply the coroner said, "That is all I want from you. You should have stopped in less than that distance." After the motorman had left, the claim agent told the coroner that a test was to be made the following day with the same car and motorman at the point of the accident and asked the coroner to be present. A number of tests were made, and the shortest stop according to the coroner's own measurement was 700 ft. The coroner told the claim agent that he wanted to apologize to the motorman as he considered after seeing the test that a wonderful stop had been made at the time of the accident. He also said that he had learned a great deal about the operation of interurban electric cars that he had not before appreciated. That particular coroner is very careful since that experience about placing the blame before he knows all the facts.

My observation has been that the officials in charge of constructing state and county highways pay too little attention to safety features at electric railroad crossings. I know of a number of roads constructed within the past two years where the crossings are diagonal, a good view one way and no view the other for either the public or railroad employees. Cuts have been dug, the grade changed and no attempt made on the part of the highway officials to eliminate the resulting banks from obstructing the view. The railroads, the state and county highway authorities, automobile associations and local safety councils should get together in every state in the Union and adopt some sane, uniform and practical method of road construction in relation to grade crossings.

It is my opinion that the standard crossing sign should be of a color that is most visible in daylight and will most readily reflect light from automobile headlights and even from a dim lantern on a farmer's wagon and that color from my experience should be "traction orange" for the background or field, with "Railroad Crossing" in large black letters. It should be of such size as to compel the notice of passing vehicle drivers, at least 4 ft. x 4 ft., and should be constructed of a material as nearly indestructible as possible. This sign should be located on the right-hand side of the highway on each side of every crossing at a distance of not less than 300 ft. All other signs should be prohibited by law from being placed within 1,500 ft. of such grade crossings.

Some may wonder why "traction orange" has been my choice. The cars of the company with which I am connected were formerly painted a dark green and some Pullman color. One day I heard one of the Public Service Commissioners of New York State say that our cars blended too much with the landscape and should be painted a more visible color. Our company immediately took a car and painted it in panels of several different colors. We found after an exhaustive test that the "traction orange" was visible at a greater distance and reflected light farther than any other color.

"Traction orange" is a shade of yellow. Yellow is the color that is used by railroads as a caution sign. Caution is the thing that must be instilled in the minds of the people approaching railroad crossings. If the public will approach grade crossings with caution there is no danger and, therefore, no need for a red sign. When it becomes a habit with the public to approach grade crossings with caution, the grade crossing problem will be near a solution.

Eject the Grundys*

The Constructive Method of Teaching Safety Methods Is Urged Upon the Railway Industry

By Laura M. Roadifer
("Miss Safety-First")
Philadelphia Rapid Transit Company

IN THIS world problem of preventing needless injury to human life probably no other industry began earlier or worked more persistently than the street railway industry, for the reason that upon its operations the city's economic life depends. With perhaps greater frequency, too, as a result of careful and continuous study of the material causes of accidents, new and better improved safety devices have been put into operation to reduce the mechanical hazards to a minimum. The street railway industry, probably more than any other, is confronted with ever changing conditions involving new dangers and new problems. Contributing largely to these changes is the automobile traffic, which shows such a marked increase every year, affecting some cities more than others, depending largely upon the width of the streets upon which we operate, that it unquestionably has become the greatest menace to safe street car operation.

In my opinion the greatest problem which we have now to solve lies in discovering the best means of inculcating the "preventive spirit" in the minds of the general public, but principally directed to employees, autoists and school children playing in the streets; the latter being the particular phase of this problem to which I have been giving attention with very gratifying results. Numerous methods to effect this "preventive spirit" have been employed, some more successfully than others, but most of us at least until a comparatively recent time have been prone to let our attempts in this direction rest upon the "Better be safe than sorry" type of slogans, which time and usage have robbed of their edge, instead of attempting to arouse active spirit. By arousing a spirit of emulation among the employees, the major tendency for a clear accident record can be created and accentuated. Recognition of careful service ignites the spirit of emulation readily. One motorman of the P. R. T. Company has operated a car for the last twenty years and holds a no accident record. His fellow workers know this is not merely a stroke of luck, but careful application to his duty at all times. A development of overzealousness must be guarded against, however, for an industrial organization must have for its foundation co-operation for continuous mutual benefit, and it is very important that every individual in an organization understand where the mutuality of interest lies.

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*Abstract of address delivered before the electric railway section of the National Safety Council at Boston, Sept. 27, 1921.

Unfortunately the greater number of accidents remaining in the street railway industry depends largely upon the public's failure to comply with the obvious laws of safety, for in this modern day of civilization the instinct of self-preservation is not as keen as in the more primitive ages and safety teaching has become recognized as an essential part of every one's education. It is a state requirement in some parts of the country that safety be taught in all the schools I take it every one here acts as instructor among either the employees in his organization, the public, or both, but, regardless of the people whom he works among, the first essential is that he should understand human nature well enough to select intelligently a method of approach which will bring the proper mental reaction. Things regarded as educational do not have a strong appeal, generally speaking, for comparatively few of us have a natural thirst for knowledge. If this were so, more men would rise from the ranks into executive positions than really do, if the interest to learn everything possible about one's job were prevalent.

Don't you think, however, that all of us are a little too inclined to regard ourselves as teachers, modifying our name somewhat by calling ourselves safety instructors or directors, but employing the methods used when we went to school, rather than regarding ourselves as salesmen of a product for which we must create a demand? The old style teaching, the kind we had, "won't take" any more, and the modern teacher must apply the arts of the salesman to make his subject appear attractive, whether it is or not, and we must admit that safety is fundamentally unattractive. We sometimes become so terribly impressed with our own importance and take our work so very seriously that we become what I call the "Grundy" type, complaining of the everlasting carelessness of the men, or the unwillingness of our superiors to see the conditions as they really exist, or go about deploring the fact that "some one" around the shop had done some very careless thing and predicting as a consequence that that "some one" was going to get hurt if he weren't more careful, or announcing to some one before his fellow workers that that was the second time he had been caught without his goggles and the next time it was expected that he would be caught without his eyes.

Cheerful thoughts that suggest so many pleasant things. Let us eject the Grundys and adopt the constructive, happy method of teaching or selling safety. Instead of continually telling the people to avoid injury so much of the time let us try more to impress them with the right way to keep safe.

The "constructive" method apparently is the one that sells the goods; why can't it be just as successfully employed in selling safety?

Illinois Association Annual Meeting

Talks on Manufacturer Co-operation, Advertising the Railway and Bus Competition, Followed by Golf Tournament, Make Day of Work and Recreation

WITH an attendance of sixty, the Illinois Electric Railway Association held its annual meeting at the club house of the Aurora (Ill.) Country Club on Oct. 14. President E. M. Walker, general manager Terre Haute (Ind.) Traction & Light Company, presided, and, after rollcall, addressed the members briefly on the current aspects of the business. In speaking of the trials through which the industry has passed, he said that while even now we cannot say with assurance that the storm is over, we can at least see the break in the clouds sufficiently well to give us the feeling that the electric railways are going forward to better days. Conditions improve with the process of liquidation, and liquidation is going on and will go on effectively until the process is complete. Natural movements do not stop midway. We are finding out that our prosperity as a nation depends not so much on the amount of the world's gold supply that we own as on the amount of the home-produced commodities that we sell at a profit to the rest of the world, and until that lesson is fully learned we cannot talk of normalcy as an existing state. Normal times will not come until business is reassured and made to know where it stands with reference to such vital questions as the tariff and taxation and until our constituted governments begin to practice thrift and economy in earnest and make it clear that business properly conducted will not be interfered with as long as it is managed with due regard to the laws.

Continuing, he remarked that at the recent convention of the American Electric Railway Association the keynote seemed to be salesmanship, and to his mind this should ever be the uppermost thought in the electric railway business. When the idea of salesmanship is lost sight of, the idea of doing business at a profit is lost also. All incentive to give good service vanishes and business falls down. The way to sell any product is to make it attractive and as we have only one product to sell and it is such a product as cannot be stored or placed on shelves or in showcases for future use, but on the other hand must be sold out on every trip and a new supply made for the next trip, we must put our best thought and energy into making this product attractive. By this he meant that it should be furnished with the best and most suitable type of equipment at the frequency and with the regularity that the traffic demands, and at a price which the customers are willing to pay and which will return a profit to the operators.

K. A. Simmon, Westinghouse Electric & Manufacturing Company, then addressed the association on what the manufacturers are trying to do to assist in relieving the burdens of the electric railways. Among the examples cited to indicate co-operation of the manufacturers, he mentioned the part they have taken in the general task of educating the public to an understanding of utility problems, the use of space in popular national magazines for the same purpose, the studies made of the field of usefulness of electric transportation and the work of expounding the results before business men's associations and various civic bodies. Of more direct assistance was the effort of the manufacturers to reduce operating and maintenance expenses by cutting down the cost of production of manufactured articles and improving their quality. The safety car, particularly, he thought, was a credit to the manufacturers' aid to the industry as there are now some 5,000 of these cars in operation which, at an average annual saving of $2,000 per car, means a saving to the industry of some $10,000,000 annually. He counseled against any misapprehension as to the replacing of the street car by the trolley bus, saying that there was little possibility of that form of transportation displacing the street car even in a minor way.

John Benham, vice-president International Register Company, called attention to the paper read by E. F. Wickwire at the recent convention at Atlantic City (See ELECTRIC RAILWAY JOURNAL for Oct. 8, page 599), in which it was pointed out that the manufacturers' employees should be made to realize that their bread and butter depends on the wellbeing of the electric railway industry. Mr. Benham said that manufacturers' employees constitute a large number of people who can talk and vote in a way to help correct sentiment and legislation tending against the electric railways. He thought that few manufacturers were taking the trouble to give their employees this angle of their responsibilities to the industry and he emphasized it as a thing which should be done. As for the International Register Company, he said that he would not have an employee in the establishment who was against the utilities.

A paper on "Advertising the Electric Railway," by E. E. Soules, was read by Mr. Helton, Chicago Elevated Railways, in the absence of the author. An abstract of this paper appears elsewhere in this issue.

Luke Grant, publicity manager Chicago Elevated Railways, in discussing Mr. Soules' paper, said that the efforts of the publicity man, no matter how good, fall flat if the operating department does not back him up with good service. Truth in advertising must hold absolutely with any publicity matter gotten out about electric railway service. He pointed out also the great desirability of having all employees thoroughly informed as to the company finances, stating that there are no secrets any more in the electric railway business and the employees should have the information in order to give them proper background for their contact with the public. In one of the publications gotten out for the employees of the elevated railways, a monthly simplified analysis of the operating statement is published and the results have been good. Mr. Grant explained that the publicity work of his company included the monthly publication and distribution of 5,000 copies of the *Safety Bulletin* for the employees, and 50,000 copies of the *Elevated News* and 12,000 copies of the *North Shore Bulletin* for the public.

DISCUSSION ON MOTOR BUS COMPETITION

In his report Secretary R. V. Prather called attention to the bill passed by the Fifty-second General Assembly of Illinois which provides for fees in addition to those required under the motor vehicle law, for the operation of motor buses and motor trucks over improved highways. The fee originally written into this bill as introduced was 1c. per mile for passenger or freight carrier vehicles. In the absence of data to support these fees an amendment was agreed to with the Illinois Automobile Association which provides that ½ cent per mile shall be paid for all vehicles, trailer and semi-trailer used in carrying freight, and one-twentieth of 1 cent per mile for each passenger seat for each vehicle, trailer or semi-trailer used in carrying passengers. The bill requiring the payment of these fees was passed by the Assembly and signed by the Governor. Mr. Prather reported that the Secretary of State is experiencing some difficulty in collecting these fees, and he urged the co-operation of the railway companies in reporting to him the names and addresses and sphere of operation of any bus companies known to them. This will make it possible to check up with the Secretary of State as to the application of this law. He thought it was important to make a showing as to the financial benefits to the State accruing from this act, as an effort will probably be made to repeal it at the next session of the Legislature.

A. M. Farrell, general freight and passenger agent Chicago, Ottawa & Peoria Railway, discussed various aspects of the competitive situation in Illinois at some length, pointing out particularly the requirement of the law that a bus company or freight trucking company operating on public highways must secure a certificate of convenience and necessity from the Illinois Commerce Commission before it can begin operation. He summarized the requirements set forth in general order No. 68 of the commission for applicants desiring to operate motor bus or motor truck lines, as follows:

Must be incorporated under Illinois laws.

Must notify a utility with which they will be in competition.

Must file notice with every municipality, county or township into or through which applicant proposes to operate.

Must give notice, three weeks before hearing before commission, by publishing in not less than 3-in. space once each week for two successive weeks, in a newspaper published in or of general circulation in every city, town or community affected, but when cities are more than 10,000 population such notice must be published twice each week in two papers. The commission prescribes the wording to use in such notices.

Must secure authority from cities, villages or towns to operate upon the streets of any municipality and file a certified copy of same at hearing before commission.

Must engage chauffeurs only in accordance with motor vehicle law of Illinois and a certified copy of license issued to each chauffeur must be filed with the commission. Chauffeurs must be twenty-one years of age or older and have two years' experience.

Must produce, at hearing, information as to weight of vehicles.

Must make quarterly reports to the commission, on the first of January, April, July and October, showing condition of each vehicle, cost of operation, statement of income, statement showing financial assets and liabilities, and claims pending, showing amounts involved and character of claim.

Must make immediate report to commission of any accident, causing loss of life or injury to any person.

Must make quarterly report showing number and make of motor vehicles, seating and tonnage capacity thereof. No such vehicles shall be operated over any other route, or at any other than schedule time, so as to interfere with the operation on schedule time over the specified route, without express permission of the commission, unless the established route is blocked or impassable.

Must file time-table showing time of arrival and departure at each point. No change may be made in schedule until after five days' notice to the commission. Must file tariff showing charges, in accordance with commission's instructions.

Must operate cars without interruption unless authorized to the contrary by the commission. Unless they comply strictly with the terms of commission orders the certificate of convenience and necessity is declared cancelled.

Must continue to furnish service until the commission holds a hearing (under the same rules of procedure as when certificate of convenience was issued) and issues an order cancelling their certificate.

Must file on or before hearing before the commission, and also before operating any vehicle, a sworn statement of ability to pay damages resulting from accidents for which they may be held liable, or file with the commission securities, indemnities or bond protecting the traveling public. Section 55A of Ill. C. C. Laws places the amount of $10,000 on each vehicle.

Must not operate any vehicle until every provision of this order is complied with and evidence thereof has been submitted to the commission.

Must stop at every grade crossing.

Must forfeit all rights if vehicles are not operated within ninety days after certificate has been granted.

Failure of any corporation to comply with each and every provision of the commission's order shall be full and sufficient cause to cancel and set aside any certificate of convenience and necessity granted.

Continuing, Mr. Farrell spoke of a certificate which had been issued to a bus company to operate in competition with his company between LaSalle, Oglesby, and Starved Rock, Ill. The granting of this certificate was opposed by the railway, but the commission ruled that the bus company was entitled to the certificate by reason of the geographical location of the point served. The route of the bus company is a direct one and somewhat shorter than that of the electric line. The traffic of the interurban is handled to Starved Rock Station, from which passengers walk about a quarter of a mile to the Illinois River, and there board a ferry boat which conveys them to the south bank to Starved Rock proper. After failing to prevent the operation of the bus line, the railway arranged with the ferry company for a sale of joint tickets at a very low round trip rate. The bus company charged 75c. for the round trip between LaSalle and Starved Rock, and when the railway put in a through ticket rate, the former was forced to reduce the charge to 50 cents. Additional service was also put on the electric line and quite a good deal of business was drawn away from the bus company. This method of meeting the competition with cut rates and frequent, good service is to be continued next year, even making further reductions if necessary.

F. E. Fisher, general manager Chicago, Ottawa & Peoria Railway, called attention to a serious defect in the Illinois law governing highway common carriers which hinges on one word. The law describes the companies affected as those engaged in the business of picking up passengers "indiscriminately." For this reason, he said that many buses which are doing very great harm to the electric railways are without the jurisdiction of this law. He explained that some bus operators contract with coal mining companies, school districts, manufacturers, etc., to haul the employees to and from work or children to and from school. Having once contracted to haul certain people, they do not come under the definition of indiscriminate handling of passengers and have therefore been able to operate without securing a permit from the commission. During the off hours, these bus people contract to handle baseball crowds and miscellaneous gatherings so that they are kept occupied a good deal of the time in a way that forms very serious competition for the electric railway companies. Mr. Fisher said that as a result of the various bus competition, the earnings of his company have shrunk from $10,000 to $20,000 a month and that unless some way is found to put them out of business, the interurban will have to cease operation before many years. He explained further what Mr. Farrell had said about the competitive bus line operating to Starved Rock. This line runs over a fine concrete road all the way and by virtue of crossing a bridge and carrying the passengers directly to Starved Rock, it is able to give a quicker, better service than the electric railways can possibly furnish. In view of this, Mr. Fisher could see no way to compete, except to cut rates to such a point as to starve the Starved Rock buses.

The matter of correcting the fault introduced by the word "indiscriminate" is to receive the immediate attention of the legislative committee of the association.

ELECTION OF OFFICERS

As the concluding business of the annual meeting, the following officers were elected for the ensuing year:

President, W. L. Arnold, secretary and treasurer Elgin & Belvidere Electric Company, 105 South LaSalle Street, Chicago; first vice-president, A. D. Mackie, Springfield, Ill.; second vice-president, R. A. Moore, Joliet, Ill. Executive committee, E. M. Walker, Terre Haute, Ind., chairman; D. E. Parsons, East St. Louis, and H. E. Chubbuck, Peoria, Ill.

After luncheon at the Country Club, the annual eighteen-hole medal handicap golf tournament was played, Luke Grant carrying away the president's cup. The Aurora, Elgin & Chicago Railroad provided a special train from Chicago to Aurora and automobiles from Aurora to the Country Club for the convenience and pleasure of the delegates. The arrangements were in charge of B. P. Alschuler, attorney for the A., E. & C., who was highly complimented by the members for his excellent planning.

The Trend in Advertising the Electric Railway*

By E. E. SOULES

Manager of Publicity Illinois Traction System, Peoria, Ill.

JUST as there have been changes in types of equipment and methods of operation in the electric railway business, so has the advertising of electric railways undergone many experiences that have required readjustments and changed tactics in recent years. First came the early days of the industry when the newly built electric railway, emulating the example of its only competitor, adopted the methods of the old-time steam railway. Those were the days of the flaring poster and hand-bill heralding cut-rate excursions, "knocking" the service and facilities of the other fellow's line and offering a dollar's worth of transportation for a half-dollar's worth of coin.

The electric railway, however, soon found that its contact with the public was much closer than that of the steam road. Its cars passed the door of the merchant, the newspaper man and the home of the best (as well as the worst) citizens in the cities and villages along its lines. It had a new and interestingly different story to tell. It had a personal contact to maintain with the folks in the towns along its lines and the medium through which the desired *entente cordiale* could best be established and maintained was the newspaper. Coincidentally with this, the advertising departments became known as "publicity" departments.

Then, after a few years of "publicity work," during which the public was being introduced to the electric railway, and the newspaper editors and operating officials had become accustomed to calling each other by their first names, the period of increasing fares put the newspaper men in an embarrassing position with their readers. Our newspaper men began to show signs of fading friendship and lack of understanding of our situation. Those of us who knew the newspaper men, however, could see the reason for their position on the utility question. So, again the wise ones in the operating field sensed a new angle and the period of "public relations" publicity was at hand.

The work of acquainting the public with the truth concerning the utility industry is still an important part of the advertising policy of the electric railway, as every operator is aware. But, there is a new problem that needs attention. And this leads to what I am going to refer to as the fourth, or present-day cycle in electric railway advertising.

MERCHANDISING ADVERTISING NOW NEEDED

The merchandising of electric railway transportation is today the new problem of the electric railway. The advent of the automobile and the hard road has opened a new competition which must be met by vigorous tactics if the electric railway is to survive. It is not necessary to tell electric railway men what the automobile and the hard road mean. Both city and interurban operators have felt the effect in decreased passenger receipts and can see what is going to happen to freight revenues unless new and convincing methods are devised in combating the new competition.

Naturally, this situation seems to be one to trouble the traffic department, but in my judgment it should also be first in the mind of those responsible for the advertising policies of the electric railways. In the final analysis, what is advertising but merchandising? Advertising, strictly speaking, is one of the means by which a product is marketed to the public. If the merchandising policy behind the advertising is weak or lagging, the advertising cannot and will not produce results. So, it appears to the men on the advertising end of the industry that concerted action on the part of the traffic officials with the idea in view of building a strong and convincing merchandising plan with which to meet the new competition is the most urgent need of the electric railway.

We thought we had competition in the past, but in the broad sense of the word the electric railway has had no real, active, virile competition such as that now offered by the automobile and its chief ally, the hard road. The problems of the electric railway to date have been those of operating, engineering and public policy. The problem today is that of selling a service to the public, and selling it so well that the public will select it in preference to that of all competitiors. It is a question of merchandising in the truest sense of the word.

Many individual companies have already anticipated the changed conditions and have laid a foundation for merchandising their product. From them we can gain ideas that will help build up a broad merchandising policy for the electric railways in this territory.

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*Abstract of paper read before Illinois Electric Railway Association at Aurora, Ill., Oct. 14, 1921.

American Society for Municipal Improvements to Meet in Baltimore

THE twenty-seventh annual convention of the American Society for Municipal Improvements will be held at Baltimore, Md., on Oct. 25, 26, 27 and 28, with headquarters at the Southern Hotel.

An extensive program has been planned to include, among other things, on Tuesday, Oct. 25, a paper on Public Service Relations by Major Ezra B. Whitman, of the Maryland Public Service Commission; on Wednesday, Oct. 26, the report of the general committee on city planning and its sub-committee on utilities; on Thursday, Oct. 27, the report of the general committee on street paving, street design, street maintenance and street railway construction and its sub-committee on street railway construction, as well as many other papers and reports on paving, especially one on specifications of street railway pavements, including track construction; and on Friday, Oct. 28, the report of the committee on transportation and traffic, and a paper on subways for city transportation.

The program of the convention is a heavy one and contains much else of interest to municipal engineers as well as many entertainment features.

Railroad Division of A. S. M. E.

THE Railroad Division of the American Society of Mechanical Engineers will discuss the elimination of waste on railroads in connection with the general consideration of that topic at the annual meeting of the society. Three papers will be presented, as follows: "Avoidable Waste in Locomotives as Affected by Design," by James Partington, American Locomotive Company; "Avoidable Waste in Operation of Locomotives and Cars," by William Elmer, Pennsylvania Railroad; "Avoiding Waste in Car Operation—The Container Car," by W. C. Sanders, New York Central. The meeting will be held at 29 West Thirty-ninth Street, New York, on the morning of Dec. 9.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Service Ordered Resumed

Electric Railway Service Will Be Restored in Des Moines on Passage of New Franchise

Early resumption of railway service in Des Moines is in prospect, for Judge Martin J. Wade of the federal court on Oct. 17 ordered the receivers for the Des Moines City Railway to resume service on the day that the City Council finally passes the proposed franchise ordinance.

By suspension of rules the City Council on Oct. 17 passed the franchise for its first and second readings, but under the Iowa law such ordinances must lie over for one week in the form in which they are to be finally passed. If the ordinance now before the Council is not amended it would therefore be possible for the franchise to be passed finally on Oct. 24. This would permit service to be resumed the following day. At the present time it would seem that there is little chance for further amendment of the franchise draft.

Judge Wade's memorandum and order states that the trustees for the bondholders under whose plea service was ordered abandoned would not consent to furnish the money necessary for the resumption until the City Council has finished with the franchise. Judge Wade further stated that the trustees had agreed to furnish the financial resources to permit of resumption of service, but was not specific as to what degree of service it is proposed to give on the resumption of service.

Further encouragement was given by the union employees of the company, who on Oct. 17 announced that they had agreed to accept a cut in wages of 7 cents an hour. The men claim that this cut will reduce operating expenses approximately $125,000 a year and will act to increase the cushion fund provided for under the new franchise and thus tend to an early reduction in the fares.

Upon news of Judge Wade's order the City Council was called in special session and hurriedly passed a resolution barring the buses from streets where there are railway lines. This provision will be effective from the day that service is restored by the railway.

Previous to the developments of Oct. 17 Judge Wade had called a meeting of those interested in the railway controversy, but in his memorandum issued simultaneously with his order he stated that he considered such a meeting at this time inadvisable, in view of the developments.

With the exception of the power clause, there were few changes in the franchise draft as passed by the Council on Oct. 17. It has the approval of Corporation Counsel Miller and two attorneys named by the Greater Des Moines committee to assist Judge Miller in handling the franchise. Agreement upon the power clause was reached after many conferences, which did not end until late Sunday night. The clause has been changed so that the Des Moines City Railway is now empowered to "sell energy to interurban railways for the operation of interurban railways and for the transaction of their business." It will be recalled that the power clause was proposed by the Harris interests controlling the railway and that its presentation resulted in delaying the negotiation.

The principal features of the franchise as passed on Oct. 17 are as follows:

Fare.—A sliding scale fare starting at 8 cents and tapering off as the earnings of the company increase to a low point of 5 cents.

Tenure.—The grant is exclusive for a period of twenty-five years in so far as electric railway operation is considered.

Extensions.—Provides for extensions of lines when it is proved that such extensions will at least pay cost of operation together with reasonable depreciation.

One-Man Car.—Omits the two-man car provision of the former contract and gives the company the right to operate one-man cars under certain conditions.

Arbitration.—The franchise makes the Iowa Board of Railroad Commissioners the arbitration board and in case they refuse to serve provides for the appointment of three non-residents of Des Moines by the justice of the Iowa Supreme Court and two associate justices.

Dividends.—No dividends are to be paid upon the common stock until the cash fare is reduced to 7 cents. At 7 cents a 3 per cent dividend is authorized; at 6 cents a 4½ per cent dividend; at 5 cents a 6 per cent dividend, and at a 5-cent cash fare with ten tickets for 45 cents, 7 per cent is authorized.

Buses.—Buses are abolished from car line streets except in crossing bridges.

Owl Cars.—Owl cars are to be provided at a fare twice that of the day fare.

New Haven Adopts the Motor Car

Self-propelled motor cars are to be used by the New York, New Haven & Hartford Railroad on some of its branch lines. A preliminary announcement to this effect was made from the company's headquarters in New Haven on Oct. 14. It is understood that the initial order calls for supplying three of these vehicles. They will be furnished by the International Motor Company. The first of them will be placed in service on lines between New Haven and Hartford and between Middletown and Willimantic. Others will be placed in service in the Rhode Island and Cape Cod country. The actual routes of the new vehicles have not yet, however, been determined. A statement giving the details with repect to the service which it is proposed to establish with the new motor cars is expected to be made within a few days from the office of President Pearson.

Court's Aid Invoked

Despite This Action Prospects Appear Better for Early Settlement in New Orleans

The State Supreme Court of Louisiana on Oct. 4 took under advisement the opposition of Assistant Attorney General Luther E. Hall to the injunction granted by Judge Provosty of the Supreme Court in the so-called railway case. The injunction lifted the order obtained some months ago by Assistant Attorney General Hall in the Civil District Court against the Commission Council seeking to prevent that body from carrying out its reported intentions of giving the railway a return of 8 per cent on a valuation of $44,000,000 and fixing a rate of fare.

The Assistant Attorney General, it will be remembered, alleged that one Supreme Court Judge alone was without authority to set aside the order of Judge King, of the Civil District Court.

It is possible that the delay in reaching a settlement of the railway troubles of New Orleans on the plan submitted by Commissioner Maloney, of the Department of Public Utilities, which appears to have been ironed out to the satisfaction of both the Commissioners, the Mayor and the representative of the eastern security holders, may be waiting the action of the court of last resort. One thing is quite certain, it is still hanging fire and has not as yet been submitted to the Commission Council.

The reason given for the delay has been the illness of Mayor McShane. The commissioners themselves are unwilling even to venture a prediction when the matter will come up.

Two bills were introduced in the Legislature during the week having a bearing on the New Orleans Railway & Light Company.

One of these seeks to clothe the Commission Council of New Orleans with a rate fixing power over public utilities and defines the power of the Commission Council in fixing the rates.

The other bill grants indeterminate permits for the use of streets to railway, gas and electric light companies in cities of 100,000 inhabitants or more.

Eureka Takes Over Street Railway System

The Eureka Street Railway, the successor to the Humboldt Transit Company, Eureka, Cal., is now operating the railway system in the City of Eureka. Under municipal ownership the management passes into the hands of the Superintendent of Public Works, John Griffiths. There was no change in the personnel except the pay of platform men has been reduced from 50 to 45 cents an hour.

$5,787,196 Is Being Spent for Improvements in Columbus

By the end of the current year, the Columbus Railway, Power & Light Company will have expended $5,787,196 in new construction work and betterments, in connection with the lighting and railways services. This includes a total of $3,584,719 in power plant, substation and transmission line construction, $471,777 in new underground conduit lines, $182,000 in extending streetcar lines, and $1,398,700 in new track construction, special trackwork and other work incident to this.

This extensive rehabilitation and new construction program has been instigated under the presidency of Charles L. Kurtz, and while some of the planned work has recently had to be postponed on account of the general business situation, the physical property of the company in both the railway and lighting services will have been greatly improved by the end of the year, placing the property in a much better condition to meet the demands of the community.

Owing to the exceedingly low rate of fare which prevailed in Columbus prior to the war, and in fact until some time thereafter, the physical condition of the railway property became very bad. This gave rise to the demand for the extensive rehabilitation and construction program in the railway.

The financing of this work was extremely difficult owing to indebtedness accumulated under the low rate of fare. It was finally done through an issue of $3,000,000 of three-year 8 per cent bonds, attended by two restrictive features. One of these was that a $50,000 monthly sinking fund must be set aside to liquidate the debt. The other was that the company is obligated to secure the consent of the underwriters before any additional securities can be sold.

These and other matters included in the program were referred to in the ELECTRIC RAILWAY JOURNAL of April 19, shortly after their inception.

Peter Witt Retained in Seattle

The Seattle City Council has employed Peter Witt, Cleveland, to make a survey of the municipal railway with a view to effecting economies in operation. Mr. Witt expects to conclude his survey by Dec. 17, and the City Council has indicated that it will await the completion of his work before taking any important steps toward reducing fares.

The Council is also awaiting the return from the East of D. W. Henderson, superintendent of railways, who attended the meeting of the American Electric Railway Association in Atlantic City, visited the installation of the trackless trolley on Staten Island and studied transportation problems elsewhere en route.

Other developments in the railway situation in Seattle include the enactment of an ordinance appropriating $50,000 for municipal buses to serve Cowen Park, South Beacon Hill and other suburban districts; passage of the $680,000 ordinance for retracking First Avenue and other betterments; adoption of an ordinance under which buses may operate in connection with the street railway, on a 10-cent fare with transfer privileges, and a 50-50 basis with city cars. The vote on Councilman C. B. Fitzgerald's 5-cent fare ordinance has been postponed until after the return of Mr. Henderson.

The $680,000 bond ordinance passed provides for renewing the tracks on First Avenue, purchase of twenty-five new street cars, and payment of the Western Washington Power Company for the Greenwood Avenue car line bought last year by the city.

"Boycott" Started in Hyde Park District

Agitation of Long Standing Renewed in Effort to Secure Lower Fare

A boycott has been started against the Eastern Massachusetts Street Railway by the residents of Hyde Park for the purpose of forcing a reduction in fares to Boston.

Without giving the company any formal notice of their intention to take such action some individuals in Hyde Park, assisted by the Board of Trade of the town, started to operate a free jitney service from Cleary square and the boundary line between Hyde Park and Boston. For about a week they operated touring cars and buses for the free use of the public, and have now established a nominal rate of fare, selling tickets that are good for a week. They are giving this jitney service, at less than cost, not only over the line to Boston but along all the other lines which the Eastern Massachusetts Railway is operating in Hyde Park, in the hope that this course will induce the railway to reduce its fare from 10 cents to 5 cents.

Thus far the Eastern Massachusetts Street Railway has taken no notice of the boycott. It is operating as usual on a fifteen-minute schedule during the ordinary hours of traffic and on a ten-minute schedule during the rush hours on the Boston line. It has not reduced the fare and has no present intentions of making a reduction.

The boycott is aimed at one of the companies maintaining one section of service between Boston and Hyde Park. The Boston Elevated Railway maintains the other section, the two companies meeting on the boundary line and each of them charging 10 cents for the part it operates. The main and ultimate object of the Hyde Park Board of Trade is not to reduce the fare on the particular company against which it has started a boycott, but to establish a 10-cent fare between Boston and Hyde Park, where the combined fare of the two companies today is 20 cents.

Subway and Elevated With Steam Suburban Service Recommended

A rapid transit system consisting of a subway and elevated line and a new steam suburban service which would greatly build up the city of St. Louis and increase the population is suggested in the extract from the annual report of the Department of Public Utilities pertaining to Rapid Transit System. The report is for the year ended April 11, 1921. It is signed by Engineer Charles S. Butts.

In the matter of steam service the report recommends the operation of suburban trains from the east side of the Mississippi River and the establishment of a suburban station at Twelfth and Market Streets.

On the elevated and subway development the elevation of the Hodiamont line is recommended. The distance to be elevated from Maple Avenue to Spring Avenue is about 3½ miles; length of subway from Spring Avenue to the new station at Broadway and Lucas Avenue is 2½ miles. The entire project might be constructed for $3,000,000.

The report further recommends that plans for other subway lines should be developed in districts not available to the present proposed system and some means devised to build them as soon as possible.

The report states that with the above elevated and subway system installed with a station at Broadway and Lucas Avenue, and the installation of a steam railroad suburban system, with a suburban station at Twelfth and Market Streets, it will be a step in the right direction and will give a large part of the city and county a rapid transit system. It says: "We cannot hope to build up our city, especially in the outlying districts, without a more rapid system of transportation than that which is given by the surface lines."

Railway Men Win State Championship

Athletics have proved a popular organization program in the Kansas City Railways this summer and fall. The eight baseball teams which constitute the league of the company's divisions and departments completed their schedules on Sept. 15. The attendance at the games was far larger than in any previous year.

Baseball enthusiasm was further stimulated by the success of the "Tramways," the team representing the company in the Independent Semi-Pro. League of the State. The Tramways justified the fine support given by the organization by winning the championship of the state. The final game in this series was scheduled for Oct. 9, but the pennant had been won before that date.

As the baseball season closes, plans are being made for organizing a basket ball league, to continue the interest in athletics through the winter season.

Connecticut Men Cut

Wages Reduced 8⅓ per Cent by Arbitration Board—Company Arbitrator Dissents

A reduction of 8⅓ per cent in the wages of trainmen employed by the Connecticut Company, operating more than 500 miles of line, has been decided upon by the board of arbitration. The official decision of the board was written late during the week ended Oct. 15 by Judge John K. Beach, New Haven, and has the approval of James H. Vahey, Boston, attorney for the men. Joseph H. Berry, Hartford, the third member of the board and representative of the Connecticut Company, disagreed with the majority opinion. He maintained that a reduction of at least 15 per cent should be authorized.

At the old scale, the men received 54, 57 and 60 cents an hour, the wage increasing to the maximum with three years' service. One-man car operators received 15 cents in excess of this scale.

The arbitration decision establishes a wage of 47 cents for the first three months of service with 51 cents for the next nine months and 55 cents thereafter. The latter figure, reached after one year's service, is the maximum. One-man car operators will receive 10 cents over this scale. On the matter of the guarantee to spare men the contention of the men was allowed with reservations.

The application of the principle of a reduced scale for the first three months is an innovation on the Connecticut Company lines.

Judge Beach, in writing his decision, found that the uncertainty of the reduction in living costs, reported in the last year, would not justify a more drastic reduction than that given. He did not agree with the company's contention that a cut of at least 10 per cent should be made. Mr. Berry cited figures to show there has been a decrease in living costs of 20.8 per cent in the last year.

The company has agreed to abide by the decision of the Arbitration Board. The new wage scale will be retroactive to June and an agreement will later be made to reimburse the company for the excess over the new scale, which has been paid since last June. The agreement for arbitration provides that if the company and employees cannot themselves reach an understanding as to how the retroactive feature of the award is to be put into effect, it shall be decided by Judge John K. Beach.

The text of Joseph F. Berry's dissenting opinion shows the company officially asked for a 17½ per cent reduction as compared with an 8⅓ per cent cut decided on by Judge Beach and Mr. Vahey.

The position of the company on the various points in dispute may be taken to be pretty accurately reflected in the minority opinion of Mr. Berry, who found himself unable to concur in the views of his associates with reference to the wage scale. He concurred in the award of 10 cents an hour additional over regular rates to one-man car operators and in the spread of the graduated scale, although this is against the company's contention. He said in part:

> As to the wage scale, I cannot accept the conclusions of the majority. The logic of their reasoning leads to a greater reduction than from 60 to 55 cents for the maximum hourly rate, about 8⅓ per cent.
>
> The application of the cold, clear laws of logic would call for a reduction of about 20 per cent; that is, from 60 cents to 48 cents. The company has not asked this. It recognizes, as I do, that there should, in fairness, be a margin to cover possible increase in the cost of living, and so that the men may not lose all that they have earned in improved standard of living.
>
> A reduction of 17½ per cent., from 60 cents to 49½ cents (say 50 cents), would still leave a margin of 2½ per cent for this purpose, or 1½ cents an hour. Every cent means approximately $90,000 a year to the company.
>
> The majority, however, awards 55 cents, a reduction of about 8⅓ per cent. A reduction of, say, 15 per cent or to 51 cents an hour, should in my opinion be made at the least, not only in justice to the company, but to the public, whose demand for lower fares cannot be met without greater relief from the high wages of war time.
>
> The payroll now exceeds 54 per cent of the company's gross receipts. Capital, as well as labor, is entitled to a fair living wage.

The questions submitted were not defined in the original submission, but were later formulated as follows:

1. The wage rate to be paid by the company to its motormen, conductors and other employees for the twelve months beginning June 1, 1921, including the length of the graduated scale.
2. The differential in excess of the regular rate to be paid to operators of one-man cars for the same period.
3. The guaranty to be established for the extra or spare motormen and conductors for the same period.

The first and most important question was the rate to be paid the motormen and conductors, called the blue uniform men. It was agreed that if any reduction were made in the maximum rate paid to them, the wage rates of all other employees represented by the committee should be readjusted by applying the same percentage of reduction.

Cost Details Stated

In his report to the Board of Public Works outlining in detail the San Francisco (Cal.) Municipal Railway extensions and improvements, M. M. O'Shaughnessy, city engineer, included the accompanying table of costs. This table gives a comparison of costs of four routes for electric railways into Sunset District, Forty-ninth Avenue and Judah Street Terminus referred to previously in the ELECTRIC RAILWAY JOURNAL.

	Cost of Track	Cost of Tunnel	Total Cost	Annual Cost of Operation and Interest on Railway Cost	Miles New D. T.	Distance Ferry to Ocean (miles)	Running Time (minutes)	Tunnel Length	Grade in Tunnel (per cent)	Heaviest Grade on Line (per cent)
Grove Street...	$850,000	$450,000	$1,300,000	$350,000	5.65	7.75	47	1,350	2.6	9.5
Duboce Avenue	567,000	1,900,000	2,467,000	307,000	4.54	7.24	39	4,200	2.85	7.0
Eureka Valley.	500,000	1,400,000	1,900,00	311,000	3.91	7.53	40	3,400	4.0	5.4
Laguna Honda.	464,000	300,000	914,000	314,671	3.48	8.48	42	900	4.0	4.2
Change in road	......	150,000	....	....	....				...	....
For comparison: Market Street Railway, No. 7 (Haight Street line)					...	7.24	43	No tunnel		12.1

D. U. R. Case Presented

Company Goes Direct to Public With Statement of Its Attitude on Proposed Ouster

Allen F. Edwards, vice-president of the Detroit (Mich.) United Railway, has made a statement to the public with a view to fully informing the voters of the exact situation before they go to the poles to vote on the ouster ordinance. The company's stand is reiterated relative to selling the Fort Street and Woodward Avenue tracks to the city on sections where franchises have expired. Mr. Edwards stated that in as much as doubt seemed to exist regarding the position of the company in connection with the so-called ouster ordinance to be voted on at the municipal election on Nov. 8, he felt called upon to state the company's position clearly.

OUSTER ORDINANCE AFFECTS WOODWARD AVENUE

He cites that the ouster ordinance affects directly the Woodward line from the Grand Belt line to the river and the Fort and West Jefferson lines from Artillery Avenue to the east, including the extensive turning facilities in Cadillac Square. If the city through the Street Railway Commission desires to obtain possession of these parts of lines through purchase by direct agreement or through the process of a board of arbitration, the company stands willing to co-operate with the city to that end.

He further states that if, on the other hand, the Street Railway Commission insists that the company must accept the outrageously low offer of $388,000 for these parts of lines or quit service and remove its rails and other property from the streets, there is absolutely and unqualifiedly no other course for the company to follow than to abandon service thereon and take up the tracks. Under no circumstances will it be possible for the company to accept the inadequate and unfair offer of $388,000 for more than 23 miles of track together with overhead and underground equipment.

The trackless transportation amendment to the city charter, on the ballot on Oct. 11, failed to receive the necessary 60 per cent vote for its approval. About a 59 per cent vote was cast in favor of the amendment. It was announced immediately following the canvas of the votes that if there were no barriers due to lack of sufficient time, the proposed amendment would be put upon the Nov. 8 ballot. The amendment would empower the Street Railway Commission to establish trackless trolley systems in the city.

City officials have expressed the belief that the questions covered in the amendment were not thoroughly explained to the voters and on this is based the opinion that if again presented to the people the amendment would carry. It is explained that the amendment does not call for any new appropriation of money, but that all such equipment for trackless transportation lines will be purchased with a part of the $15,000,000 bond issue authorized in 1920. Mayor Couzens and the councilmen are in favor of the provision of the amendment, believing that it is important that the city be empowered to utilize the new development in transportation methods.

As another step in the working out of the plans for the election in November Daniel W. Smith has been nominated to oppose James Couzens in the coming mayoralty race, Mr. Smith's eligibility as a candidate having been definitely established. The fact that he has recently resided and voted outside of the city of Detroit was not considered as grounds for declaring him ineligible in the courts.

Service Crippled by Power Plant Accident

By a series of unavoidable accidents the Tri-City Railway & Light Company, Davenport, Iowa, was hard hit on Sept. 21. The 20,000-kw. turbine of the company had broken down a few days before and part of it had been sent to Pittsburgh for repairs, so the plant was short its main reliance. On the night of Sept. 20 there was a severe electrical storm and the second machine, a 15,000-kw. turbine, was put out of service.

This left the station with two old machines which had been kept merely for emergency purposes, a 9,000 and a 3,000 kw. But at 7:10 on the morning of Sept. 21, when these two machines were being tuned up to shoulder the peak load, the spindle on the governor of the 9,000 kw. broke.

In this emergency the old 3,000 machine and the hydro-electric plant at Sears were called on for their last drop of "juice" and until repairs were made on the 9,000-kw. machine the plant was hard hit to supply enough power to run cars and the power and lighting circuits.

The lighting circuit was not interfered with. Power circuits were restored in Davenport, Iowa, at 11 o'clock and in Rock Island and Moline, Ill., at noon. The generator in the steam plant at Davenport was called on, this auxiliary being available because the plant was being tested out preparatory to furnishing its steam service through the winter months. By the use of this auxiliary the power and lighting circuits were kept going and a few street cars were operated.

The crippled service affected the Muscatine, Iowa, street cars and the interurban cars operated between Clinton, Davenport and Muscatine.

New York Would Install More Trackless Trolleys

Municipal "trackless trolleys" operation between Richmond and Tottenville, Staten Island, a distance of about 9 miles, was proposed by Grover A. Whalen, Commissioner of Plant and Structures of the city of New York, in a report submitted on Oct. 18 to the Board of Estimate. Commissioner Whalen asks that $177,700 be appropriated to establish the new line. Commissioner Whalen's recommendations are:

> That this department be authorized to establish a trackless trolley system between Richmond and Tottenville, to be operated by electric current generated at the Sea View Hospital power plant.
>
> That corporate stock in the amount of $177,700 be authorized for such installation.

The estimated cost includes the erection of a double overhead trolley system 9 miles long, construction of 7 trackless trolley cars, erection of transmission line from Sea View power house to Richmond, feeder lines along the route, automatic substation, electric generator to increase power output at Sea View and shelter for cars and spare parts.

Mr. Whalen said:

> It is now my duty to report to you that these trackless trolley systems have been installed and are in successful operation between Meier's Corners and Linoleumville and Meier's Corners and Sea View Hospital.

This installation was described in detail in the ELECTRIC RAILWAY JOURNAL for Oct. 15.

Berkshire Men Accept Cut

Motormen and conductors employed by the Berkshire Street Railway, Pittsfield, Mass., will accept a wage reduction of 8⅓ per cent, retroactive to June 1. The reduction follows an agreement between the union and the company, a few months ago, that the Berkshire employees would abide by the decision of the arbitration board in the case of the Connecticut Company and its employees. This latter board recently announced its findings for a reduction of 8⅓ per cent.

Hearing on Transit Plan Postponed

Nov. 10 has been set as the date for the first hearing before the New York Transit Commission on the outline of its proposed transit plan, reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 1, page 557. It was originally proposed to start the hearing during the week commencing Oct. 17. A statement by the commission follows:

> The outline of the plan published by the commission at the end of September, was given out at the earliest date at which it could be completed, in order to inform the public of the progress made, and to furnish a basis for study in advance of the hearings. The reception given the report by the press and the discussion that has followed have been gratifying. But while much of the criticism has been constructive and of a helpful tendency, there has been a pronounced disposition in some quarters to make the transit plan a football of politics, employing prejudiced misrepresentation and abuse in place of dispassionate inquiry.
>
> It has become increasingly evident that such an attitude makes it futile to attempt to develop the plan through the medium of the examinations proposed while the campaign is on.
>
> The commission's program has nothing to do with politics, and its action will not be affected either one way or the other by the issue of the election. Its function is to work out a reorganization based on sound economic principles, to repair as far as it can the damage that has been done and to relieve the present intolerable conditions as soon as possible with the degree of sureness required.
>
> The commission believes, therefore, that a short delay in beginning its series of hearings—which could in no event be finished until a considerable time after election—will be more than compensated for by the better progress that will be made when the whole matter may be approached free from the biased and unreasoning spirit engendered by a political contest.

Richmond Wages Continue Unchanged

No change in the wages paid employees of the Virginia Railway & Power Company in Richmond, Petersburg, Norfolk and Portsmouth is to be made at this time, and the same working agreement between the men and the company is to continue in force until further notice, though it will not be renewed for another year. Announcement to this effect was made on Oct. 5 at the conclusion of a conference between representatives of the employees and officers of the railway company.

All relations between the men and the company are to continue as they now exist until some further decision is made, dependent upon conditions in the four cities. This solution of the problem was said to have been satisfactory to both interests. The present agreement made for one year expired on Oct. 16.

President Thomas S. Wheelwright, of the company, issued the following statement:

> Officials of the Virginia Railway & Power Company were in conference yesterday and this morning with representatives of employees of the company in the matter of contract covering wages for another twelve months' period, the present contract expiring on Oct. 16.
>
> The company advised the representatives of the employees present that owing to the unsatisfactory conditions prevailing in the street railway field and the uncertainty as to what action looking towards relief might be taken by the councils in the respective cities concerned, it would not see its way clear to renew the contract as to wages for any definite period. It is the company's intention, of course, to live up to any outstanding agreements affecting wages, either verbally or in writing.

Railway Will Be Rebuilt.—In accordance with an agreement reached with A. B. Anderson, Judge of the United States District Court at Indianapolis, and the city of Lafayette, employees of the Terre Haute, Indianapolis & Eastern Traction Company have replaced the connecting track at East Main and Kossuth Streets to permit interurban cars of the traction company to enter the business district of Lafayette. Three months ago the city tore up the connecting track in Lafayette and since then the cars operated on the interurban railway have been stopping at the city limits.

Financial and Corporate

Consolidation Not Obligatory

Legislation Now Being Worked Out Covering Merger of Lines in Washington

Uncertainty as to what the railways in the District of Columbia may expect in the way of legislation was increased by the recent action of the House in voting overwhelmingly to recommit the bill of its District of Columbia committee which was intended to facilitate the consolidation of the Washington Railway & Electric Company and the Capital Traction Company. It is very certain that this rebuff will not deter the committee from reporting out further legislation.

In the discussion of the legislation it was made very clear that nothing in the committee's bill would compel consolidation. It was stated that the object was to remove the obstacle to consolidation and to equalize returns in such a manner as to make it desirable to effect the consolidation. The committee proposed to amend the existing law which provides a tax of 4 per cent on gross receipts and provide a tax of 1 per cent on gross receipts coupled with a tax of 50 per cent on all earnings in excess of 7 per cent on the fair value of the property. In the new bill introduced by Representative Woods, the 50 per cent tax would apply to all earnings in excess of 6 per cent.

It was shown during the debate that the receipts of the two companies are practically the same. Each carries between 75,000,000 and 80,000,000 passengers a year. The difficulties lie in the fact that the Washington Railway & Electric Company carries that number of passengers on 133 miles of track, whereas the Capital Traction Company carries that number on 63 miles of track. The result, it was stated, was that a year ago one company made 11 per cent and the other less than 4 per cent on its valuation. It was pointed out that at present the difference has diminished so that the Capital Traction Company is earning about 10½ per cent and the Washington Railway & Electric Company a fraction more than 5 per cent on their ascertained values.

Merger Under Reorganization Approved

A merger of the Olean, Bradford & Salamanca Railway with the Bradford Electric Railway, Bradford, Pa., has been approved by the New York Public Service Commission. The new company formed by the merger is known as the Olean, Bradford & Salamanca Railway, with headquarters in Olean. Authority has also been granted to issue common and preferred stock to the amount of $3,808,000, with the understanding that rates to be charged by the company shall be subject to the direction of the Public Service Commission. The basis on which the reorganization of the properties following foreclosure is to be carried out was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 1, page 567.

Ford After Electrics

Automobile Manufacturer Negotiating for Interurbans to Tie In with Steam Line

An option on the line of the Cincinnati, Milford & Blanchester Traction Company, Cincinnati, Ohio, has been taken by Henry Ford, Detroit automobile manufacturer. B. H. Kroger, Cincinnati banker, who is one of the principal owners of the traction company, commonly known as the Kroger Line, said that Henry Ford, while on a visit to Cincinnati, recently opened negotiations for the purchase of this line.

The traction company operates an electric railway between Madisonville and Blanchester, Ohio, a distance of 25 miles. It is said that Mr. Ford wants to connect this line with the Detroit, Toledo & Ironton Railroad, purchased by him some time ago. While the Kroger line is an interurban, its right-of-way could be used for the operation of steam trains and that is what Mr. Ford wants, officials of the traction company said.

Representatives of the Cincinnati, Milford & Blanchester Traction Company have been in Detroit conferring with Ford officials on details of the transfer, but so far nothing of a definite nature has developed. It is known that Ford engineers also have been investigating possible purchase of the Cincinnati, Georgetown & Portsmouth Railroad, which extends east of Cincinnati toward Portsmouth, with the idea of connecting Ironton, the present terminal of the Detroit, Toledo & Ironton Railroad, and Cincinnati, with a direct Ohio River Valley line.

If Mr. Ford obtains title to the great Muscle Shoals nitrate plant in Alabama it is believed to be his plan to push an all-Ford direct rail connecting with Detroit and Muscle Shoals with a southern extension to Mobile, Ala., which would give the automobile manufacturer a direct line from his plants at Detroit to tidewater at the Gulf of Mexico tapping his West Virginia and Kentucky coal properties, Muscle Shoals and the Birmingham, Ala., iron and steel districts.

In the event that Ford purchases the Cincinnati, Milford & Blanchester Traction line he will probably connect it with the Detroit, Toledo & Ironton Railroad at Kingman or Washington Court House, Ohio.

Toledo Reports Surplus

September First Month Under Service-at-Cost That Receipts Exceeded Expenditures

For the first time since the cost-of-service plan was adopted in Toledo last February a report showing an operating surplus rather than a deficit has been turned in to members of the board of control by Street Railway Commissioner Wilfred E. Cann. The report for the month of September has shown that income exceeded expenditures and credits to various funds by $11,110, which compared with a deficit of $20,098 for the previous month.

The report for the eighth month of operation under the Toledo plan came soon after President Frank R. Coates of the Community Traction Company had rescinded his order to increase fares to straight 7 cents.

PEAK IN FARES PROBABLY REACHED

It is believed by the commissioner that the peak in fares has been reached and that in a few months the stabilizing fund will be built up to normal and fares may start down again.

The deficits in all funds except the sinking fund and stabilizing fund have now been wiped out and only book values are found in those two funds. The deficit to the sinking fund will be cleared away this month. This will allow the city to acquire ownership of the lines at a rate of $17,708 a month.

During September the total number of revenue passengers carried was 4,521,868 and the daily average was 150,429, a gain from August, for which month the daily average was 148,658. Total earnings for September amounted to $260,363.

Mr. Cann said:

> During the month operation has been curtailed to the extent of 49,921 car miles, the decrease being attributable to one day less of operation, to the cut in service to Toledo Beach, and to reduction in our mileage due to increased speed.
>
> Rent from tracks and terminals shows a decrease of $4,300, the major portion of which is due to the adjustment made in the rate per car mile charged to interurban lines for use of the city tracks. Revenue from rent of equipment fell off about $500 and is due to the discontinuance of Beach line service.
>
> Revenue per car mile shows an increase over previous month of 3.28 cents, while operating expense has decreased 0.26 cents and maintenance expense has been decreased 0.17 cent. Ratio of operating expense to income has been reduced 1.57 per cent.

Several changes in routes were made by Commissioner Cann on Oct. 16.

During seven months of the operation of the cost-of-service plan the car riders of the city of Toledo have been saved $331,741 by the reduced fare and cost of transfers put into effect at the time the ordinance was adopted. The computations were made by Harold Bailey-Stokes, accountant and auditor for Commissioner Cann. They are based upon passengers carried since Feb. 1. The ownership of the city in the railway property is $123,958. If this were added to the savings the total would be $455,700 gain by the city since the plan has been in operation. These figures do not include the returns for the month of September.

Results of Increased Fare Disappointing

The 7-cent fare which has been in effect on the lines of the Louisville (Ky.) Railway since Feb. 21 has failed to increase earnings in the proportion anticipated, the increase having been only about $200,000 for the period, whereas the company had expected that it would add about $1,000,000 annually to the revenue. A 2-cent increase, it was figured, would increase earnings about 20 per cent.

James P. Barnes, president of the Louisville Railway, reports that a complete survey of the company and its operations will probably be ready by Nov. 15. This survey will deal in part with improved service and reduced cost of operation where possible. Consideration will be given to increased number of one-man cars, two-car trains and of rerouting certain lines.

Decrease in Car Riding in Pittsburgh

There has been a great decrease in car riding on the lines of the Pittsburgh (Pa.) Railways as shown in a comparison of September, 1921, and September, 1920. The present 10-cent fare with three metal tickets for 25 cents went into effect in September, 1920.

In September of this year 24,910,047 passengers were carried against 25,848,563 in the same month a year ago. The receipts in September of this year fell below the receipts for September, 1920, by $126,745.

In July and August of this year there was a greater falling off in the number of rides compared with the same months of last year. Though in those months of this year the fare was 8⅓ cents and in the same months last year 7½ cents, the receipts were less under the higher fare than under the lower rate of a year ago.

The figures were compiled by the receivers for the city authorities.

Net Earnings Good—Fares Reduced

The Cincinnati (Ohio) Traction Company will reduce fares ½ cent to 7½ cents on all its lines effective Nov. 1. This announcement was made following the receipt of financial reports for August and September of the traction company by William Jerome Kuertz, Director of Street Railways. The traction company's action is based on the report of earnings for these months, showing a net balance of $3,671.90. For the month of August the company had a deficit of $9,722.90, due chiefly to the fact that during that time it had the heaviest ways and construction accounts for any month in several years. This was more than offset, however, by the September report, which showed a balance of $13,394.80.

The big item that tended to produce a surplus in September was the reduction in platform cost, $13,445, or from $211,146.35 in August to $197,699.64 in September. Revenue passengers for August numbered 8,659,835 and for September 8,489,125.

Springfield Line Going Behind

Manager of Ohio Property States Company's Losses in Commenting on Wage Reduction

P. E. O'Brien, general manager of the Springfield (Ohio) Railway, has filed with the City Commission a statement dealing with the recent readjustment of the wages of its men and reviewing briefly the financial condition of the company. It will be recalled that the men accepted voluntarily a reduction in wages effective Oct. 1 of 11 cents an hour, or from 53, 55 and 57 cents to 42, 44 and 46 cents. Mr. O'Brien said in part:

> During 1921 up to Sept. 1, we carried 1,250,000 fewer passengers than in 1920. The new wage scale is as yet 100 per cent increase over Jan. 1, 1916. We have been so pressed for cash that we have been unable to pay our June taxes, notwithstanding the accruing penalties.
>
> The unpaid debts for street paving and reconstruction total $90,000 and are fully shown by the city records. Our monthly deficit has grown from a small amount to more than $11,000 per month for September of this year.
>
> Our pay roll reductions and any other economies cover only a part of the monthly deficit. We can only hold on and hope for business improvement, in which event we hope to readjust all our relations with the city.
>
> Of course no earnings have been available for stockholders for years. Even the preferred stock, which was sold to erect the new carhouse and purchase cars in 1913, has been in default for dividend for seven years.
>
> Our borrowing capacity is exhausted, owing to the fact that our mortgage bonds have been offered as low as 55 cents on the dollar with no buyers.

Attached was a detailed statement showing the wages received by the motormen and conductors from 1916 up to the present time. On Jan. 1, 1916, they received from 20 to 25 cents an hour. On Oct. 1, 1919, the men were increased from 38, 40 and 42 cents an hour to 43, 45 and 47 cents.

The financial statement showed that for eight months in 1920 there were carried 7,868,900 revenue passengers and in 1921 the number carried during the same period was 6,569,984, or a loss of 1,298,916 passengers. The receipts for eight months from passengers in 1920 were $449,542. In 1921 during the similar period the revenue was $425,475. After deducting expenses in 1920 the company's net gain was $11,350, while in 1921 the statement shows that the company sustained a loss of $67,999. Mention is made that no provision was made in either year for dividends on preferred stock.

The report shows that the total reduction per year as a result of the wage readjustment will amount to approximately $55,227, and of that $45,874 is the reduction in the wages of the trainmen. The operating expenses in 1920 for eight months amounted to $338,157, while the cost of operating during the same period in 1921 was $367,850.

Interurban to Abandon 60 Miles

The abandonment of 60 miles of interurban lines constituting the Lima-Defiance, Medway-New Carlisle, and the Columbus-Orient branches of the Indiana, Columbus & Eastern Traction Company was approved by Federal Judge John M. Killits in court at Toledo on Oct. 18.

Application for the action was made by the receivers on the grounds that the lines do not pay. J. H. McClure, receiver, appeared in person before the court and declared that the unprofitable operation was hindering the business of the main line. Before the abandonment can be actually put into effect the company must also have the sanction of the Ohio Public Utilities Commission. It is expected that several towns and cities will make a vigorous fight before the commission when the interurbans seek to do away with the service.

Grafton Properties Sold

Dr. T. F. Lanham, the trustee of the bankrupt Grafton Light & Power Company, offered the entire property for sale recently at Grafton, W. Va., in its various classifications as set forth in the legal publication of the sale. When he offered the entire traction line, including all real estate and certain personal property that had not been offered separately, he received a bid of $14,000, then $15,000 and after a little Mr. Faris, trustee of the Citizens' Bank, Charleston, bid $16,000. The property was knocked down to him.

Dr. Lanham then offered the entire power plant on the south side, or all property comprised in schedule H of the advertisement. The bidding started at $20,000, and it quickly ran up by bids of $5,000 and $10,000 to $60,000. The auctioneer cried the property for some time and no further bids being offered he knocked the property down to N. M. Argabrite, New York, for $62,000.

The local property will be operated in conjunction with the plant which New Yorkers are now planning to erect on the Cheat River at Caddell just below Kingwood. Mr. Argabrite was accompanied by P. H. Powers, his electrical engineer and assistant, and their counsel P. C. Madera, Philadelphia, and Col. Carlton C. Pierce, Kingwood.

Arrangements were made with the trustee to continue operation of the electric railway until the property is turned over to Mr. Faris by the court. He indicated that he intends to continue the operation of the line indefinitely.

City Buys Railway.—The city of Goldsboro, N. C., recently bought all the outstanding stock in the Goldsboro Street Railway, and this railway will be operated in the future under municipal management. The line was discontinued in October, 1920. New equipment has been ordered.

Traffic and Transportation

Jersey Charging 8 Cents

Public Service Railway Has Put New Rate Into Effect Under Court's Restraining Order

Another step has been taken toward securing the advance in fares sought by the Public Service Railway, Newark, N. J. The decree has been signed by the court putting into effect the temporary injunction against the Public Service Commission. The order of the court restrains that body from interfering with the company collecting an 8-cent cash fare or four tickets for 30 cents with 1 cent for transfers, pending final decision by Federal Judges Wooley, Davis and Rellstab of the adequacy of the rate of 7 cents with 2 cents for transfers allowed by the commission under its recent ruling. The company is seeking a 10-cent fare.

New Fares Charged on Oct. 20

The railway put the advance into effect on Oct. 20, or just as soon as the company could arrange to comply with the provisions laid down by the court. Under these provisions the company is required to give a bond of $250,000 to guarantee riders a refund in the event the new rate of 8 cents is reversed. Rebate slips must be issued while the new fare is collected. In the event that the final decision of the court is not rendered in two months the company must supply additional bond.

The hearing at which the details were fixed by the court for putting its order into effect was held at Trenton on Oct. 18. Robert H. McCarter of counsel for the company opposed either impounding the extra pennies the company will collect or the filing of a bond. He said either practice would be "irksome and hard for us." He said the money, if used to renew the property of the company, would be protecting the public to better advantage than if it were impounded and saved.

President Thomas N. McCarter of the company suggested that the tokens to be sold be restricted to use by non-transfer riders and that persons paying the straight fare of 8 cents and 1 cent for a transfer be refused refund slips so that they would pay the same as they have recently been paying.

Master to Be Appointed

Judge Rellstab wants to have submitted to him by Oct. 27 the names of several men who might qualify as masters to hear the testimony in the final determination of the case. He will then assign the man to sit for the court.

In the meantime the state is rushing its preparations for an appeal at Washington.

The session at which the decree was framed and signed was not held with the formality of a court sitting. It was merely a conference. One of the outstanding features was that while Judge Davis was present, he took no part in the discussion between counsel and members of the court. He had filed a dissenting opinion and Judge Wooley several times explained to the audience that he left Judge Davis out of the conversation because Judge Rellstab and himself were responsible for the granting of the injunction and felt that they should bear the full responsibility for the carrying out of the decree.

Formal Bus Proposals in Saginaw

Six proposals for motor bus service were made to the City Council of Saginaw, Mich., on Oct. 19 by companies offering to organize transportation companies or sell buses to the city to replace the service formerly rendered by its bankrupt street railway system, known as the Saginaw-Bay City Railway. The proposals covering the formation of a company to serve the city suggested a corporation with a capitalization averaging $350,000 and operating a number of buses varying from thirty to sixty cars in the various plans.

All of the proposals for organizing companies asked aid from the city or local business interests, the plan of the Wolverine Transit Company, Detroit, asking that local people subscribe for $125,000 of advance transportation. The proposals were taken under advisement by the Council, which was to meet again Oct. 20 to give them further consideration.

Miss Safety First Trips to Buffalo

Plans for an extensive safety first campaign in the public schools of the city have been outlined by the International Railway, Buffalo, N. Y. A woman who formerly worked in Philadelphia for the Mitten interests has been employed by the International and will be known as Miss Safety First. The co-operation of the municipal authorities and the city school department is sought so that she can deliver lectures and safety first talks in the schools.

Explaining the plans of the traction company, Herbert G. Tulley, president of the International, said the word "don't" will be taboo in the safety first campaign and that instead of telling the pupils in the schools not to do this and not to do that, Miss Safety First will tell them to cross at corners, to look both ways before crossing, etc.

Signs have been placed in the street cars advising children of the appearance of Miss Safety First and urging them to use caution to avoid accidents in the streets.

City's Case Closed

Chicago Rests Its Argument for a Decrease of Surface Line Fares to Five Cents

The city of Chicago on Oct. 14 closed its case against the Chicago Surface Lines before the Illinois Commerce Commission. This is the proceeding in which the commission is being urged to reduce the rate of fare from 8 cents to 5 cents. A continuance was taken until Oct. 25 so that the lawyers might go to Washington and argue another branch of the fare case before the companies start putting in their evidence.

John T. Fanning, an engineer, was one of the city's principal witnesses. He claimed that the operating expenses could be reduced to $31,199,500 by conducting business at a cost of $2.40 an hour as follows:

Item	Per Car Hour	Total Cost
Platform expense	$1.60	$20,800,000
Supervisors, checkers, etc. (500 men)	.085	1,105,000
Repairs (400 men)	.039	507,000
Clerks (150)	.0275	357,500
Power	.25	3,250,000
Maintenance and renewals	.28	3,640,000
Administration and office	.0385	500,000
Compensation and damages	.08	1,040,000
Total	$2.40	$31,199,500

The city did not care to take the burden of saying that wages should be reduced and this witness was embarrassed at times to explain how he could operate without any allowance for reporting time, overtime or any thing other than actual running time.

Another city witness was Special Engineer George W. Jackson, who also was subjected to a long cross-examination. Among other things Engineer Jackson stated that he could save $18,000,000 a year and that he could take care of 2,000,000 additional cash passengers without extra equipment. His system contemplates the abandonment of 8 miles of present special work in the downtown district and the use of single track curves. By simplification of the looping system he said the downtown speed could be increased from 4 m.p.h. to 8 m.p.h. and the speed for the system from 10 to 13 m.p.h. He would also make other changes.

The city is contending that a considerable profit can be made under operation at a 5-cent fare and insisted that even if this were not true the companies should be content with a loss during the remaining five years of the ordinance because of profits in the past.

Courtesy Not "A Lost Art"

The "Civility" Campaign launched the first part of October by the Northern Ohio Traction & Light Company, Akron, Ohio, is proving a big success and has become the watchword of the employees. In a letter addressed to the employees of the railway and invited to be read by patrons of the line, D. A. Scanlon, general superintendent, says: "There is no real justification for insolence from a platform man to a patron, nor from a patron to a man in charge of a car."

Zones Suggested for Los Angeles

Commission Engineer Recommends Two Six-Cent Units for Pacific Electric Railway—Company Carefully Managed

The Pacific Electric Railway's application to the California State Railroad Commission was reheard in Los Angeles on Oct. 11. The appeal is for an increase in rates, which is considered a substantiation of the emergency raise granted the company during July, 1920, by the commission to tide the company through the abnormal cost of materials and labor. From testimony given by Chief Engineer Richard Sachse of the commission, it would seem that radical changes in railway service of various cities in southern California as served by the Pacific Electric lines will be necessary to put the system back on a profitable footing.

MR. SACHSE filed a service survey report of three volumes or a total of approximately 600 pages, prepared by the Railroad Commission's engineers after a study of the situation extending over a period of fourteen months.

Since Mr. Sachse's valuation report of the company's property has been previously made known, the railway company's attorneys at the opening of the hearing expressed a desire to file several exceptions to the valuation figures. The first contention of the railway was against the commission's item of engineering; namely, 5 per cent. The company contended that 6 per cent was the reasonable figure for this particular item. The railway also took exceptions to the multiple ratio used by the commission in arriving at the value of the company's right-of-way, claiming too low a value was allowed.

The item of interest was contested. Whereas the commission in one of its estimates figured it at 6 per cent, the company contended it should be allowed at least 8 per cent in order to take care of its amortization of the bonds. Exception was also taken to the commission's method of treatment of allowing interest on funds during construction period and to the commission's report of the valuation of the company's park and resort property. The commission set aside this property at its valuation cost of some $449,000 as non-operative property. The company contends that this should be included in the operative property.

NON-PAYING LINES SHOULD SHUT DOWN

Chief Engineer Sachse of the commission was on the stand the entire day reviewing in general his service survey report, but the attorneys for the various municipalities pleaded for a further continuance of the case until they could study his report and be prepared to present their objections. Nov. 14 was set as the date to continue the case, while Oct. 11 and 13 were devoted to hearing Mr. Sachse testify in general as to the contents of the report and his recommendations to remedy the Pacific Electric's financial condition.

Mr. Sachse recommended that many non-paying lines be discontinued. In his report he states that the entire system now shows a gross deficit of $13,443,444, and is in default on bond interest to the extent of $5,000,000. The company has been operating at a loss of $500,000 to $1,000,000 annually; and under these conditions, the engineers find, the company faces being delivered in the hands of receivers.

The commission's engineer ascribes the present condition of the railroad's finances largely to the "cut-throat bus competition." The motor bus competition involves the big issue of the present hearing and from the report of the commission's engineers it is indicated that a new case at which this particular situation will be threshed out is looming up at this time. Present conditions are believed to show that southern California is going to be the battle ground for the settlement of the motor bus and electric line competition which has rapidly been growing into one of the biggest transportation problems of the country. Engineer Sachse in his report estimated that the bus lines were cutting into the revenue of the company to the extent of $1,000,000 annually. Referring to the federal census of 1920, the commission's engineers point out that while the population in the four counties served by the Pacific Electric Lines increased 78 per cent over that of 1910, passenger travel showed an increase of only 16.5 per cent over the totals of 1914.

The engineers stated that the rates had only increased 38 per cent during the past four years while operating expenses of the railway have increased more than 100 per cent.

Mr. Sachse in his testimony relative to the bus situation stated that it is up to the people to decide which form of transportation they desire, and that he will present to the commission the cost of operation of the interurban lines and the cost of operation of the bus lines. He claims that the bus lines' figures of their cost of operation are not presented to the commission in the proper shape, but that after a thorough study of their operations he has found that it is costing the bus lines a great deal more to operate than they report to the commission.

Mr. Sachse states that the Pacific Electric Lines has invested more than $2,000,000 in street pavement and annually spends more than $400,000 maintaining this street pavement. He recommends that the railway be relieved of the financial burden of street pavement assessments.

With reference to deferred maintenance, Mr. Sachse in his report recommends that within the next three years the Pacific Electric spend $3,000,000 for deferred maintenance, of which amount $1,500,000 represents deferred maintenance of ways and structures, while $1,500,000 represents deferred maintenance of equipment.

In the year 1910 the company carried 50,000,000 passengers, and as the population doubled Engineer Sachse claimed the passenger haul should have quadrupled in the year 1920 or the company should have carried 200,000,000 passengers, but the company carried only 96,000,000, although from 1910 to 1920 inclusive, the system increased its service 3,000,000 car miles.

TWO SIX-CENT ZONES SUGGESTED

The commission's engineers in their report recommended the creation of a two-fare zone in the city of Los Angeles, with a 6-cent fare for each zone and a fare from 10 to 12 cents in riding from one zone into another. Several plans for collection of fares under the zoning system were included in the report. In each case the inner zone boundary would have a radius of 4½ miles from a given center of the city. The outer zone would average 3 miles across the city limits. Under the first plan the business section of Los Angeles would constitute one zone and the outlying residence section the second. Tokens would be sold at the rate of 10 for 50 cents, each token being good for a ride within a zone.

As an alternative for the zone system Mr. Sachse suggested that a flat increase in local fares on the Pacific Electric city lines to 8 cents might be made, but it was pointed out that this plan would be unfair to patrons riding only a few blocks. A proposal was also made to charge 1 cent for each transfer issued.

Among the increases asked for by the company are: Increase mileage rate for thirty-ride family commutation tickets from 1.8 to 2 cents per mile, or 11 1/9 per cent increase; 20 per cent increase in daily commutation sixty-ride ticket; in cities outside of Los Angeles, 10-cent local fare.

At this time the freight earnings represent 30 per cent of the gross income. Mr. Sachse recommended that this freight business must continue.

PROPERTY CAREFULLY MANAGED

Mr. Sachse stated that the company's organization was being handled most efficiently and economically.

Since Mr. Sachse testified that in his opinion no increase in fares on the Pacific Electric lines would be necessary if the electric lines enjoyed the patronage given competitive motor freight and passenger carrying lines, the bus interests are battling against any action that might involve their franchises and operating certificates.

Taxes on Transportation Repealed.—The U. S. Senate agreed recently to the repeal of taxes on freight, passenger, Pullman and express transportation, effective Jan. 1. The repeal was made without a record vote.

Buses to Extend Railway

According to a recent announcement of Meade Frierson, general manager of the Nashville (Tenn.) Interurban Railway, an extension of the line via truck and bus will be made to Columbia. The Nashville Interurban connects Brentwood, Nashville and Franklin.

It is planned to maintain a two-hour schedule between Nashville and Columbia. Passengers will be taken from Columbia to the interurban station at Franklin where they will be transferred to the electric road.

This extension will give to Columbia and Maury County the choice of two carriers for the transfer of freight and passenger traffic, the Louisville & Nashville Railroad (steam) being the other property which maintains a service between Nashville and Columbia.

Adopts Heart-to-Heart Discussion

Richard Meriwether, vice-president and general manager of the Dallas (Tex.) Railway, has adopted a plan of meeting with the trainmen in their various gatherings and discussing with them in a heart-to-heart manner the problems that affect them as well as the company's interests.

In a recent issue of "Partners," the official publication of the railway, some remarks of Mr. Meriwether on his meeting with the employees at the East Dallas carhouse are quoted. In part his talk follows:

> I am fighting for you on the one side and the stockholders of the company on the other. I am the trustee, so to speak. I protect you first and then I scan the books in an endeavor to pay a little interest to the people who have invested their life savings in our company.

Mr. Meriwether said his door was open at all times to men who might seek information about the affairs of the company. He also invited suggestions from the men whenever they saw fit to make them.

To Teach Safety in New Way

Teaching safety, through childhood fairy tales, is a new plan which has recently been started by the Los Angeles (Cal.) Railway, in co-operation with the Board of Education. More than 300,000 copies of folklore classics are being distributed to school children, from the first to fifth grades, inclusive. The back page of the booklets is devoted to pictures and verse, showing how automobile and street car accidents happen, and how they can be avoided.

It is the hope of Mrs. Susan M. Dorsey, superintendent of schools, and agencies working with the Board of Education in accident prevention, that the children will take the little books home to their parents, and incidentally interest them in the move for greater safety. Each book contains eight pages, with colored illustrations. Sixteen different books are included in the series, and each child will receive eight, according to his grade in school. The distribution will cover a period of two months.

The safety suggestions on the backs of the books are not confined to street cars, but include automobiles and general traffic conditions. They do not carry the name of the street railway.

Rerouting Proposed

Best Features of Many Proposed Plans Adopted for Application in Milwaukee

The Milwuakee Electric Railway & Light Company has been directed by the Wisconsin Railroad Commission to reroute certain of its railway lines in the downtown district to effect a reduction in the traffic congestion on Grand Avenue, the city's principal business and amusement center.

The principal change to be made will be the shifting of the Wells-Downer line from Grand Avenue to Wells Street, a parallel east and west thoroughfare. Stretches of track on Wells Street are owned and operated by two other electric railways, the Milwaukee Northern Railway and the Chicago, North Shore & Milwaukee Electric Railway. The shift in the route of the Wells-Downer line will therefore necessitate the joint use of track by the Milwaukee Electric Railway & Light Company, and the two other roads involved. The commission's order requires that the change in the route of the Wells-Downer line be effected within sixty days from date of issuance of the order, that is by Nov. 1, 1921.

Other changes in routing to be made are to be effected within ninety days and will involve the State, National, Third, Vliet and Walnut lines. The purpose of these changes is to eliminate certain objectionable turning movements and reduce the number of street cars passing certain points in the downtown district which appeared at present to be equally as congested as Grand Avenue under present routing. In this connection the commission pointed out that the operation of street cars on the streets should be considered as only one element in the congestion complained of. Many things conspire to create this congestion, it said, and any rerouting of cars can be expected to relieve the condition only partially.

Original action in the case was taken in 1913 when the commission on Dec. 1, 1913, ordered the joint use of tracks on Wells Street owned by the Milwaukee Northern Railway and the Chicago & Milwaukee Electric Railway, now known as the Chicago, North Shore & Milwaukee Electric Railway, by the Milwaukee Electric Railway & Light Company and fixed the terms and conditions of such use. The owners of the track appealed to the Circuit Court of Dane County, which held that the commission's orders were unreasonable in that they permitted the companies having joint use of tracks to examine each other's books and records. In orders issued Jan. 26, 1921, the commission corrected its original orders to meet the court's objections and retained jurisdiction to make further investigation of the question of the proper method of compensation upon application by any interested party. Following this the city of Milwaukee petitioned the commission for an order requiring the Milwaukee Electric Railway & Light Company to reroute certain of its cars from Grand Avenue to other streets. Similar petitions were received from the Milwaukee Safety Commission, Milwaukee Real Estate Board and various civic organizations.

A hearing was held in Milwaukee at which a number of rerouting plans were presented by various civic organizations. The Milwaukee Electric Railway & Light Company submitted its views with reference to the rerouting problem. The company's report suggested the adoption of what in its opinion seemed to be the best features of all the proposed plans as a so-called "composite" plan. Following an investigation by the commission's engineering staff and another public hearing the so-called "composite" plan was adopted by the commission. It forms, in substance, the basis of the commission's present order in the case.

It is of interest to note that the commission points out in its order that the attitude of each of the railways involved has been throughout the entire proceeding, as expressed by their representatives, that they stood ready to comply with any order for the rerouting of cars which the commission determined to be under all the circumstances appropriate and in the interests of the city of Milwaukee and the street car riding public.

Auto Petitions Heard in Connecticut

The Connecticut Company, New Haven, Conn., has recently installed an auto bus service between the tunnel in Hartford and the Union Station as an experiment. If operation of the line is successful, it is said, other routes for a similar service will be established. The Common Council of Bridgeport has petitioned the Public Utilities Commission for additional jitney routes, and has asked the commission to touch on electric railway fares. It is understood, however, that the commission cannot give a hearing to the Bridgeport officials under the terms of the petition. The commission has already conducted hearings on the jitney question in that city.

Auxiliary Motor Bus Service Suggested for Montreal

The establishment of an auxiliary autobus service from St. Catherine Street to Wellington Street, Montreal, Que., advocated by Ald Elie, has been favorably commented on by E. A. Robert, president of the Montreal Tramways, and Messrs. Graves and Seurot, engineers of the company and the Tramways Commission respectively. The matter is now in the hands of the Tramways Commission for decision. The length of the proposed route is about a mile and a half.

Reduced Fares in Sight

Seattle's City Council Will Make Thorough Study of All Transportation Problems

Following the city of Seattle's victory in the "Jitney Must Go" campaign, with the result that jitneys are now barred from all Seattle streets, the City Council is turning its attention to the problem of reducing street-car fares on the lines of the Municipal street railways. The present rates provide a 10-cent cash fare, with tokens valued at 8⅓ cents, for sale on street cars. A number of suggestions have been made for decreasing the present fare, and at an early session of the council as a whole, all ramifications of the city's transportation problems are to be thoroughly discussed.

Councilman C. B. Fitzgerald, chairman of the finance committee, has had introduced in the city council an ordinance that provides for a 5-cent fare, with what is virtually a 3⅓ cent charge for transfers. Under the proposal, a car rider would pay a nickel for one ride on any street car of the municipal street railway. If he wanted a transfer, however, he would drop in the box one of the 8⅓-cent tokens, which would continue to be sold on cars at three for a quarter.

Another ordinance to be considered is that of Councilman Oliver T. Erickson, who proposes that the city shall pay, out of general taxation, for maintenance and upkeep of the municipal lines, above such sum as would be netted after the Stone & Webster bond interest is paid. Councilman Erickson believes that with such a plan a carfare possibly as low as 3 cents could be maintained. Councilman Erickson's proposition is meeting with little support in the Council. It has been estimated that such a plan would double the present rate of taxes in Seattle.

Important reductions in the expense of operating the Municipal Street Railway lines are expected to be made, the largest of which will be the item of approximately $300,000 in revenues which has been taken from the municipal lines by the operation of jitneys. Councilman Fitzgerald also proposes to eliminate an expense of $140 000 a year now paid to extra operatives hired while employees of the street railway are on their 15-day annual vacations on full pay. Mr. Fitzgerald expresses the opinion that with a proper and economical operation of the lines, the reduction in fare will not result in a call on the general taxation funds to meet expenses. Every member of the City Council favors a reduction in fares, if such a change can be made and the operating expenses of the lines covered without resorting to general taxation.

An ordinance that is now before the City Council proposes an appropriation of $50,000 for the purchase of municipal buses to be operated on the Cowen Park route, these cars to run direct to the city from Cowen Park without stopping en route to pick up or discharge passengers. Residents of the district are extremely anxious to secure this service and have appeared frequently before the Council to urge their claims.

Mayor Hugh M. Caldwell, skeptical as to the advisability of reducing fares on the municipal railway to 5 cents, recently called together a group of lawyers to discuss the possible effect of a 5-cent fare. The consensus of opinion was that failure to charge an adequate fare might make the city liable to a damage suit from bondholders. Assistant Corporation Counsel J. T. Kennedy expressed the opinion, however, that there is no legal question involved until it is determined by experts and statisticians that the 5-cent fare would be inadequate to pay the interest and principal, and the cost of operating the railway. The so-called "adequate fare" clause of the railway utility bonds was defined by attorneys as requiring the city to charge a fare adequate to meet interest and redemption without any reference to cost of operation.

Under the present 8⅓-cent fare, the municipal railway will go on a warrant basis on or about Jan. 1, 1922, in order to accumulate sufficient funds to meet the first payment of $833,000 to the Stone & Webster interests next March. This would mean that local banks will be asked to cash pay-warrants, and be reimbursed by the city at a time when the revenues of the railway will permit. In addition to the $833,000 payment, on principal, there falls due next March 1 a semi-annual interest payment of $410,000.

Monthly Commutation Scheme in Muscatine

With the slogan "The more you ride, the less you pay" the Clinton, Davenport & Muscatine Railway will put into effect a new monthly commutation plan in Muscatine on Nov. 1.

Under the new system the frequent rider will ride cheaper than at present. The holders of a commutation ticket will be allowed to ride on any railway line in the city for 5 cents. Tickets will cost 50 cents and will be good for a period of one month. Workmen's tickets in books of fifty will continue to be sold after Nov. 1, but the price will be raised to $2.50 a book.

The accompanying table shows the net cost per trip for from ten to one hundred rides where commutation tickets are purchased.

Rides Month	Ticket Cost	Fare Paid	Total	Net Fare
10	0.50	0.50	1.00	10c.
11	0.50	0.55	1.05	9.54
12	0.50	0.60	1.10	9.16
13	0.50	0.65	1.15	8.84
14	0.50	0.70	1.20	8.57
15	0.50	0.75	1.25	8.33
20	0.50	1.00	1.50	7.50
25	0 50	1.25	1.75	7.00
30	0.50	1.50	2.00	6.67
40	0.50	2.00	2.50	6.25
50	0.50	2.50	3.00	6.00
60	0.50	3.00	3.50	5.83
70	0.50	3.50	4.00	5.71
80	0.50	4.00	4.50	5.62
90	0.50	4050	5.00	5.55
100	0.50	5.00	5.50	5.50

Individuals who will not benefit under the new commutation ticket plan are the occasional traction line patrons. If a man uses a street car ten times per month or less, it will not pay him to invest in the monthly tickets. He will have to pay the full 10-cent fare.

Illinois Commission Denies Certificate to Competing Bus Company

A certificate of convenience and necessity has been denied to the Argo Motor Bus Company by the Illinois Commerce Commission. The company sought to operate a motor bus line in competition with the Chicago & Joliet Electric Railway. This is one of the first orders issued by the new commission in considering a large number of such petitions now pending before it.

The Argo Motor Bus Company started operation on March 18, 1921, without a permit. The Chicago & Joliet Electric Railway filed a complaint with the commission, which ordered the bus company to discontinue operation. The latter failed to obey the order, and the matter was referred to the Attorney General, who applied for an injunction in the Circuit Court. In the meantime the parties who operated the buses incorporated and filed application with the commission for a certificate. The court thereafter refused the injunction on the grounds that an application had been duly made to the commission for a permit and the date for the hearing had been set.

As the result of the hearing before the commission, an order was issued denying the permit on the grounds that the service rendered by the bus company was unreliable and uncertain and that no regular scheduled service was maintained, that no necessity existed for the operation of motor vehicles between the point specified by the application, that the applicant had not complied with the requirements of the law, and that the electric railway was supplying sufficient and adequate transportation facilities.

The commission also stated that to grant the application would result in depriving the public of adequate and sufficient transportation facilities, since it would become necessary for the electric railway to discontinue some of its present service in order to pay operating expenses. The public would be required to pay a higher rate of fare if both motor vehicle and electric interurban transportation were maintained.

The bus company has been operating from the Chicago terminal of the Chicago & Joliet Electric Railway at Cicero Avenue, paralleling the interurban line to a point known as Argo, a few miles outside of Chicago. Now that the commission has issued an order denying the permit, the court will undoubtedly grant an order restraining the bus company from operating if the latter continues.

Fare Reductions Sought

Connecticut Cities Seek to Return to the Five-Cent Unit—Company Behind 1916 Record

At a hearing before the Public Utilities Commission of Connecticut on Oct. 18 officials of the city of Norwalk asked for a 5-cent fare on the lines of the Connecticut Company only between certain points. Evidence, however, disclosed an attitude in favor of a general reduction in fares.

L. S. Storrs, president of the company, said the recent reduction of 8½ per cent in the wages of trainmen would probably not amount to more than one-third of a cent per passenger on an estimated number of passengers for 1921 including the next two months. The company set up as a standard for comparison the figures of 1916, the company's best year. Even with jitney competition removed, the advance in the number of passengers carried in Norwalk in 1921 over 1916 was only 25 per cent. President Storrs said that a general statement would be made for the company in a few days when the results of the decrease in the wages of the men had been figured out.

Norwalk officials introduced evidence to show that traffic had increased 88 per cent over 1920 since jitneys were eliminated, but the company insisted on 1916 figures as a basis for comparison for reducing fares.

At the hearing on Oct. 18 on petition of the city of New Britain for reduced fares testimony was given indicating a decrease of more than 1,000,000 passengers on that division, between November, 1920, and September, 1921, under a 10-cent fare as compared with the number carried in the same period in 1915-1916 under a 5-cent fare.

The report, however, shows that since July 15, when jitney competition was restricted under the new State jitney law, the average increase in revenue passengers on the New Britain division has been 10.3 per cent. The weekly increase in revenue passengers between July 15 and Aug. 25, according to the figures presented, has ranged from approximately 5,000 to 10,000 passengers.

Under the 5-cent rate during the 1915-1916 period 5,446,467 passengers were carried as against 4,140,757 passengers in the 1920-1921 period under the 10-cent rate. Under the 5-cent rate the fares collected totaled $273,323, while under the 10-cent rate the total passenger revenue was $414,075.

Mayor Barton of Norwalk and Corporation Counsel William K. Tammany favored fare reductions for the city. The Mayor declared that the jitneys carried more than twice the number carried by the trolleys. He said: "It looks to me like good business for the trolley company to reduce the fare to 5 cents and double the number of passengers."

It was his idea that solid popular support for the company would accompany such a reduction.

Mayor Barton said popular feeling would prefer the trolleys to the jitneys if the company reduced fares as this would prove it wanted to serve the public and meet its demands satisfactorily. He urged a trial period at a reduced rate, at least. If the company finds a return to the 5-cent fare to be unprofitable, the people of Norwalk are willing to have the question reopened.

It is generally understood that other cities in the State, where the Connecticut Company operates, have prepared petitions asking for fare reductions. These have been held in abeyance, however, pending a decision on the matter dealing with the two cities mentioned by the Public Utilities Commission.

Jitney Problem Acute in Tacoma

City officials and business men of Tacoma, Wash., fearing the invasion of the jitneys, and looking upon Seattle's long fight as an example, are taking steps to curb the jitney before they become too strongly entrenched. An ordinance providing for strict regulation of jitney operation in the city has been introduced in Council, discussed at length, and put over for further investigation. The ordinance is similar in form to previous measures, except that in the old one, the Council was constrained to give a license upon application, whereas in the new ordinance, the Council may prescribe conditions and refuse a permit if it deems advisable.

Commissioner Silver urged that befor an ordinance be passed "swatting the jitney," the Tacoma Railway & Power Company should be required to state what it will give in the way of improved service or extensions in return for elminiation of the jitney competition from its earnings. Mayor Riddell favored the immediate passage of the ordinance, which is patterned after the Seattle ordinance, and which, if enforced, will mean the possible elimination of jitneys from Tacoma streets. Commissioner Silver pointed out that conditions are different in Tacoma from those in Seattle, where the street car system is municipally owned.

An interesting feature of the move against the jitneys was the request from the local association of street car men that the ordinance be amended to compel jitneys operating in the city to operate on streets at least one block away from car lines, except in the downtown business section, where this would be impossible.

According to the monthly report of George W. Rounds, superintendent to the Washington Department of Public Works at Olympia, jitney competition is becoming an active factor in cutting down the number of passengers carried and the revenue derived by the Pacific Traction Company and the Tacoma Railway & Power Company on their Tacoma lines.

The month of August which rounded out the first year for the Tacoma Railway & Power Company's city lines under the 10-cent fare, witnessed a decrease in revenues of $15,169.81 from the same month last year. The total passenger fares paid on city lines in August, 1921, was $131,103.88, as against $146,273.69 in 1920. The total number of passengers carried on the city lines in August, 1921, was 2,004,522, whereas in 1920 the total was 2,268,458.

Transportation News Notes

Seven-Cent Fare Stands.—The Public Service Commission of Pennsylvania has dismissed petitions of various Philadelphia improvement associations and civic bodies for reinstatement of the 5-cent fare on Philadelphia Rapid Transit lines. The commission recently ruled that the 7-cent fare would be continued pending completion of valuation proceedings.

One-Man Cars in Use.—The International Railway, Buffalo, N. Y., has started the operation of one-man cars on the Connecticut Street line. The company has rebuilt several of its short double-truck cars of an old type into one-man cars. The Connecticut line is the shortest line in the city and does an extensive transfer business. No opposition developed on the part of the city or the union platform employees similar to the trouble experienced by the company when this type of cars was introduced into Lockport.

Increased Rates Suspended. — The Public Service Commission recently suspended the application for increased rates on the railway in Salem, Eugene, West Linn and Astoria, Ore., until Jan. 1 of next year. The Southern Pacific Company, which owns the lines operating in Eugene, Salem and West Linn, and the Portland Railway, Light & Power Company, which operates cars in Astoria, last July filed tariffs with the commission increasing the prevailing fares from 5 to 8 cents. The commission later suspended the tariffs temporarily, pending an investigation which has not been completed.

Co-ordination Again Urged. — Not until the American railway man understands that the motor bus is not going to replace the railway but merely to help it to operate in thin-traffic routes to a better advantage than on a railway track, the transportation problem will remain unsolved. This opinion was recently expressed by Walter Jackson, electric railway and motor bus expert, speaking before the Boosters' Club at Danbury, Conn., on the subject of "Trackless Transportation." It was on the suggestion of Judge J. Moss Ives that Mr. Jackson addressed the meeting. He praised the service and equipment of the Danbury & Bethel Street Railway and also Receiver Ives' efforts to employ his facilities to the utmost advantage.

Personal Mention

Mr. Potter Again President

Elected Head of United Electric Railway, Providence, with Termination of Receivership

Albert E. Potter, for thirty years identified with the traction company of greater Providence, R. I., has been elected president and general manager of the United Electric Railway. This corporation was organized early this year and last July took over the traction properties of the Rhode Island Company under the reorganization plan, following a receivership of nearly two years.

Mr. Potter assumed his duties on Oct. 1, succeeding Zenas W. Bliss, who was made temporary president of the corporation pending its taking over of the actual control and operation of the trolley lines in Providence and adjacent territory. Mr. Bliss resigned some weeks ago when the receivership was terminated.

ALBERT E. POTTER

Mr. Potter is a unique figure in the Rhode Island traction system. For years he was president and general manager of the old Rhode Island Company. He follows in the footsteps of his father, the late Albert T. Potter, who was head of the trolley lines for many years.

Throughout the entire period when the Rhode Island Company was under fire and the public was criticising the company and the Mellen régime, Mr. Potter retained full confidence of the public. It was considered remarkable how the public always stood behind father and son in the management of the trolley lines while it condemned the holding companies for its policies.

Clifford Whipple, general counsel of the road, has been made vice-president and R. Roscoe Anderson is continued in the capacity of the superintendent of transportation. The same personnel in the department heads is also retained.

Following his election as president Mr Potter was elected a director of the company, taking the place of Richard B. Comstock, who resigned. This change was made necessary under the company's charter, which requires that the president shall be chosen from among the directors of the road.

The new president has been identified with the trolley company since boyhood. Born in Cranston, R. I., in 1873, a son of Albert T. Potter, Mr. Potter received his education in the schools of that town and was graduated from the Bryant & Stratton Commercial School. In 1892 he went to work in the track department of the Union Railroad. For three years he was roadmaster, and in 1895 was made superintendent of conductors and motormen.

He was made superintendent of transportation in 1900 and in 1906 became general manager of the Rhode Island Company. In 1914 he was made president of the Rhode Island Company, serving until that road went into the hands of the federal trustees. From that time on he remained as general manager of the company.

C. C. McChord Is Made Chairman of I. C. C.

Charles C. McChord, Kentucky, was selected on Oct. 3 to be chairman of the Interstate Commerce Commission for a term ending on Dec. 21, 1922. Commissioner McChord, who is one of the older members of the commission, will complete the term of Edgar E. Clark, who resigned both as chairman and as commissioner several weeks ago.

Youngstown Manager Resigns

A. W. Hartford, since 1912 general manager of the Youngstown & Suburban Railway, Youngstown, Ohio., recently announced his resignation, effective Oct. 30. He will spend the winter in Florida.

A. L. Reynolds, who has been associated in the management since Day & Zimmerman of Philadelphia acquired an interest in the property about two years ago, will succeed Mr. Hartford. Mr. Reynolds was appointed general superintendent of the Youngstown property in March of this year. He was formerly in the operating department of the Twin City Rapid Transit Company. An extended review of Mr. Reynolds' career was given in the issue of the ELECTRIC RAILWAY JOURNAL for March 26, 1921.

S. J. Keenan, general passenger agent of the Hudson Valley Railway, Glens Falls, N. Y., now has the title of general freight and passenger agent, having taken over the duties of the former general freight agent F. F. Newberry.

Mr. Oakley Elected Head of Pacific Claims Association

As was noted several weeks ago, Frank D. Oakley was elected president of the Pacific Claim Agents Association at its annual meeting held at Butte, Mont. He succeeds C. A. Blackburn, who is claim agent of the Butte (Mont.) Electric Railway.

Mr. Oakley is attorney for the Tacoma Railway & Power Company, the Puget Sound Electric Railway and the Pacific Traction Company. Previous to his connection with these interests as attorney in 1912 Mr. Oakley had been engaged in the general practice of law since he came to Tacoma in 1905. Mr. Oakley has never been connected with any electric railway in any capacity other than that of attorney. For the past three years he has held the office of vice-president of the Pacfic Claim Agents Association.

Mr. Oakley was born in Chicago on April 25, 1876, where he attended the Northwestern University and subsequently the University of Michigan.

FRANK D. OAKLEY

The other officers who were elected for the ensuing year are first vice-president, C. M. McRoberts, Los Angeles (Cal.) Railway; second vice-president, P. O. Solon, Tacoma Railway & Power Company, Tacoma, Wash.; third vice-president, J. W. Grace, Sacramento (Cal.) Northern Railway.

Dan Fisher Leaves the Strickland Interests in Texas

Dan Fisher, assistant to the president and in charge of publicity of the Dallas (Tex.) Railway, Texas Electric Railways, Texas Power & Light Company and other Strickland interests in Dallas, Tex., has tendered his resignation from the companies.

Mr. Fisher has been confidential man for the late Col. J. F. Strickland for thirteen years and had held the position as head of the publicity department of the Strickland interests for more than three years. A successor to Mr. Fisher has not yet been chosen.

John S. Hester, superintendent of overhead and transportation of the Laurel Light & Railway Company, Laurel, Miss., has been promoted to general superintendent, since A. B. Coryell has resigned as superintendent of power. In connection with his other duties, Mr. Hester will supervise the operation of the power plant. Mr. Coryell has been appointed general superintendent of the Muskogee (Okla.) Electric Traction Company and the Shawnee & Tecumseh Traction Company as was noted in the ELECTRIC RAILWAY JOURNAL for Sept. 17.

J. W. Hale, general manager of the Humboldt Transit Company, Eureka, Cal., was succeeded by John Griffiths, superintendent of Public Works, with the transfer of the property to the city of Eureka. It is the intention of Mr. Griffiths to make numerous extensions just as soon as the municipal organization has been completed. The only changes made in the personnel of the company so far were in the positions of inspector, electrician and shop foreman, track foreman and clerk and time keepers. For these positions Superintendent of Public Works Griffiths submitted the names of Mitchell Russell for inspector, H. L. Duncan for electrician and shop foreman, I. A. Malone for track foreman and Paul Humphries for clerk and time keeper. These appointments were confirmed by the city council.

Obituary

James K. King, sixty-four years old, of the legal department of the Indianapolis (Ind.) Street Railway, died at his home in Indianapolis recently.

Charles W. Davis, vice-president and general sales manager of the Standard Underground Cable Company, Pittsburgh, Pa., died in New York recently. Mr. Davis had been connected with the company for the past twenty years.

Jacob Brenner, receiver of the Staten Island (N. Y.) Midland Railway, died suddenly on Oct. 16. Mr. Brenner, who was also commissioner of jurors of Kings County and a veteran Republican leader of the Eighth Assembly District in Brooklyn, and for a generation had been in the forefront of Republican politics in Kings County. He was born sixty-four years ago on the east side of Manhattan, but had resided since babyhood in Brooklyn, his home at the time of his death being 252 Charles Street. By profession a lawyer, he had been the junior partner of Bearns & Brenner since 1891, having founded his own firm after twenty years' experience in the office of Smith, Woodward & Buckley. In 1893 he was appointed counsel to the Police Department of the old city of Brooklyn, and served through two administrations. From 1897 to 1902 he was a city magistrate.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Toronto Commission Seeking Buyers for Old Rolling Stock

The Toronto Transportation Commission, in the course of rehabilitating and revamping the Toronto Railway, which it has been operating since Sept. 1, has recently taken steps to dispose of 340 single-end city-service street cars. The majority of these cars are single and double-truck closed motor cars, although there are some single-truck trail cars. The motor cars are equipped with either G. E. 67, G. E. 80 or G. E. 1,000 motors and K-6 or K-10 controllers. The commission also has a stock of spare equipment which will also be sold. The wheel gage of the cars is 4 ft. 10⅞ in.

Tenders should be addressed to the chairman of the commission.

Porcelain Insulator Market

Although prices on high-tension porcelain insulators of both the pin and strain types have been reduced only 10 per cent within the last year, there appears to be little likelihood of any further material reductions in the near future. Insulator manufacturers state that in their processes of manufacture it is essential that the personnel of the workmen be changed as little as possible in order to maintain a uniformly standard product. Reductions in labor costs have been very small, and these have been offset by increased charges for freight on both raw material and finished products. Comparison of present prices with those on a pre-war basis is difficult because of changes and developments in materials and design and the different requirements for both types of high-tension insulators.

The domestic market is fairly quiet. Most sales are small and appear to be for replacement and maintenance purposes. Few long extensions are being made and this has naturally curtailed the demand.

Foreign sales are holding up well, and manufacturers report that many European countries have a decided preference for American insulators because their serviceability has been demonstrated in actual practice here. In some countries German competition has appeared, but is not regarded as serious except in the case of insulators for the lower transmission voltages.

Direct Current Recommended for Netherlands

The commission appointed in January, 1920, to study the desirability of electrification of all railways in Holland has prepared a report which, it is understood, not only favors such a scheme but recommends the use of 1,500 volts direct current. It is also recommended that the electrification be made in connection with the proposed unification of electric light and power service throughout the country. There is no indication, however, that this work will be undertaken in the near future.

Trolley Cord Quotations Higher

Recent increases in the raw cotton market have been reflected in a rise in prices for bell, register and trolley cord. Within the past three weeks increases in the various grades of cord have been in the neighborhood of 10 per cent. According to the grade desired one representative manufacturer quotes from 42 to 60 cents a pound for trolley cord while the price of bell and register cord varies between 66 and 74 cents a pound. These prices on an average are about 4 cents a pound higher than those quoted six months ago.

Buying in the trolley field is quiet and the car building field is not providing anything like normal demand though purchases for ordinary maintenance have been steady. Stocks, consequently, are in good condition both in manufacturers' and jobbers' hands and buyers will find no difficulty in having orders promptly filled.

Large Cement Output in September

The movement of portland cement continued on a large scale throughout September, more than 11,300,000 bbl. having been shipped from mills. Shipments of portland cement during the third quarter of the year were approximately 33,970,000 bbl., establishing a record for this quarter. For the nine months ended Sept. 30, 1921, the shipments amounted to 74,045,000 bbl., which exceeds the former record volume moved in the corresponding period of 1920. Favorable operating conditions are indicated by the large September production of 10,027,000 bbl. of finished cement, which established a record for that month. The average daily production was greater than that of August.

Pole Demand Satisfactory

The demand recently for poles of all varieties continues very satisfactory, with jobbers reporting white cedar and chestnut poles as increasingly active. One of the largest jobbers in the South reports the receipt of heavy inquiries for poles from utilities during the past several weeks. Stocks of the better class of poles in that territory are fairly good, with shipments from yards are quite prompt.

In the middle West stocks are heavy and moving slowly. A nominal quotation is $8.60 for a 35-ft., 6-in. top Northern white cedar.

Rolling Stock

City Council of Seattle, Wash., has enacted an ordinance to appropriate $50,000 for the purchase of municipal buses to serve Cowen Park, South Beacon Hill and other suburban districts. A separate appropriation provides for the purchase of twenty-five new street cars.

Toronto (Ont.) Transportation Commission has received 50 motor cars from the Canadian Car & Foundry Company on its order of 100 motor cars and 60 trailers from that company. The total number of new cars ordered was 210, an order for 50 motor cars having been placed with the Canadian Brill Company.

Nashville (Tenn.) Railway & Light Company lately placed an order with the Nichols-Lintern Company for a small number of mechanical sanders. This order, with others which have been given from time to time, will lead to the total equipment of their rolling stock with sanding apparatus.

United Railways & Electric Company, Baltimore, Md., placed an order this week with the J. G. Brill Company for twenty-two one-man double-passageway improved safety cars. Ten cars of this type were purchased last May and the specifications of this equipment were given in the ELECTRIC RAILWAY JOURNAL for May 14, 1921. This type of car was fully described in the issue for Sept. 10, both as to design and operating features.

Track and Roadway

Hydro-Electric Power Commission Ont. Canada has started work on the extensions to the Windsor Street Railway estimated to cost $900,000.

Jamestown (N. Y.) Street Railway will lay a four-way switch in the center of the city and double tracks will be laid in Main and Third Streets.

Boston (Mass.) Elevated Railway will very shortly begin work on relocating the tracks on Humboldt Avenue. At the same time the city will repair the street.

Sacramento Northern Railroad, Sacramento, Cal., will be rehabilitated if it is taken over by the Western Pacific Railroad. About $3.000,000 will be spent in improving the system.

Cincinnati (Ohio) Traction Company will extend its East End car line to California, Ohio, if the electors at the special election which has been authorized favor the improvement.

Key West (Fla.) Electric Company has relaid the main divisions of its line with 80-lb. 7-in. rails replacing the old 4-in. rail on Simonton, United and Duval Streets.

Cincinnati (Ohio) Traction Company will install new tracks at Liberty Street, Western Avenue and Freeman Avenue to eliminate a bad turn and congestion in that section. The city will pay for the razing of buildings necessary for this improvement.

San Jose (Cal.) Railroad has been granted permission to remove a turnout from the line now operating on East Julian and North Eleventh Streets and to install the necessary equipment for a new turnout on North Eleventh as near as practicable to East Julian.

Pacific Electric Railway, Los Angeles, Cal., has been granted permission to remove its center poles and replace them with span poles to carry its trolley feed and other wires between Orchard Avenue and Normandie Avenue on its Sixteenth Street Railroad line in Los Angeles.

Philadelphia (Pa.) Rapid Transit Company has recently bought about 80,000 Douglas fir ties in the far northwest, and they have been shipped by water to Philadelphia. Owing to the low water rate on shipments of this kind, the ties are said to have cost the Philadelphia Rapid Transit Company only a little more than $1 each.

Interborough Rapid Transit Company, New York, N. Y., will have its line extended from the Grand Central Station to Forty-first Street and Eighth Avenue as soon as the contract for the work has been awarded. Bids for constructing this Queensboro extension will be opened on Nov. 9 by the Transit Commission.

Los Angeles (Cal.) Railway has completed the installation of new track, ties, ballast and pavement on the western section of Washington Street and new ties and ballast are now being installed on the Gage Street line. At Seventh and Main the entire cross track and curve from east to north is being replaced with new material.

Portland Railway, Light & Power Company, Portland, Ore., will complete within the next two months, construction work costing $240,000. The entire Killingsworth Avenue improvement, covering 1¼ miles and costing $60,000, will be completed within two weeks. Rebuilding of the west track on Third Street from Washington to Flanders will cost $30,000, while the new bridge over the junction of the Bull Run and Sandy Rivers will cost $150,000.

Toronto (Ont.) Transportation Commission has about 2,000 men laying new lines, changing old ones, installing new intersections and making other betterments on various parts of the system. The Dundas line from Keele Street is the first to be completely overhauled for the operation of the new cars. New intersections have been installed and the operation of the cars started Sept. 24. The Coxwell Avenue extension, which is being built, consists of a new double track, a total distance of approximately 2,400 ft. The existing single track on Gerrard Street north to Danforth Avenue will be made into a double track, with doubletrack Y's at Gerrard Street north to Danforth Avenue, and to connections with the Danforth car house yards, a total distance of approximately 2 900 ft. of single track. The straight track will be laid with 100-lb. A.R.A. type-A rail, on ties and tie plates, on a 9 in. concrete base, with crushed stone cushion. The paving will be granite block with cement grout. The special track work will be A.E.R.A. standard 122-lb. girder and 100-lb. girder guard rail. This piece of construction will connect the Toronto Civic Railway, Danforth Avenue and Gerrard Street lines with the Toronto Railway lines at Queen Street. An intersection has been installed at the corner of Broadview Avenue and Danforth Avenue, to connect the Toronto Railway tracks with the Toronto Civic Railway, Danforth line. A large force is changing the line, repairing the pavement and doing other work on the Bathurst Street line, northerly from its connection with the Dundas Street line. A 0.75 mile extension of the Bathurst Street line to St. Clair Avenue is being built, and it is expected that it will be ready for operation in November. The tracks are being extended on Bloor Street west, from Runnymede Road to Jane Street six blocks, 2,250 ft.

Power Houses, Shops and Buildings

Boston (Mass.) Elevated Railway will open up its new Arlington Street subway station in time for the rush of Christmas shoppers.

Fort Smith Light & Traction Company, Fort Smith, Ark., will add a 7,000-hp. generator to its equipment early next year. The new plant will cost $100.000 and it is expected it will be in operation by March 1.

Indiana Service Corporation, Fort Wayne, Ind., has purchased two 1,000-kw. rotary converters in connection with its new substation. Transformers and switchboards have been purchased from the General Electric Company. The company has also bought three 2.500-kw. 2 300-13,000-volt and three 1,000-kw. oil-cooled outdoor transformers. Outdoor substation equipment has been purchased from the Railway Industrial Engineering Company, which, together with five outdoor oil switches and two outdoor lightning arrester equipments, will make up the outdoor substation structure. The substation cost, including equipment, building and changing feeder circuits, will be approximately $110,000.

Eastern Massachusetts Street Railway, Boston, has recently converted its Quincy Point power house from a coal burning to a fuel-oil burning plant. A contract has been made by the company with the New England Refining Company for approximately 7.500.000 gal. of fuel oil per year for the Quincy plant which supplies electricity for the operation of trolley cars in four cities and nineteen towns on the Bay State System south of Boston. The substitution of oil, the company is convinced, will mean substantial saving in cost, the benefit of which under the service at cost plan will be distributed among Quincy, Brockton, Taunton and Fall River operating districts. The oil burning equipment was installed by the Bethlehem Shipbuilding Corporation.

Toronto (Ont.) Transportation Commission has let a contract to Wells & Gray for the erection of an addition to the Toronto Civic Railway car house, Danforth and Coxwell Avenues, at an estimated cost of $235 000. The extension will consist of three concrete car houses, with provision for offices and stores, and the contract includes alterations to the existing buildins, the plumbing and heating, and the provision of rolling steel doors. The existing car house accommodates 89 cars, and with the extension will accommodate 203. Another contract has been let to Jackson, Lewis Company, for the extension of the St. Clair car houses. The present car houses consist of two buildings, one built in 1913, the other in 1916, each being 200 ft. x 40 ft. with three tracks in each unit, housing altogether 18 cars. With the additions to the buildings and yards, 50 cars will be accommodated inside and 107 outside. The extensions to the present buildings consist of two sheds to the south, 230 ft. x 44½ ft. each containing three tracks at 13 ft. centers. On the north another section will be built, 326 ft. x 44½ ft., containing offices ,trainmen's recreation rooms, lavatories, locker rooms, stores, boiler room and a two track repair bay. All the new buildings will be of reinforced concrete, with brick and tile walls. The repair section to the north will have a wood block floor, and one repair track will be equipped with hoisting machinery to raise the cars from the trucks. Wheel grinders will be installed and other smaller equipment for carrying out minor repairs. The whole group of buildings, both old and new, will be sprinklered throughout, and a 40,000 gal. tank will be erected to supplement the city pressure. The storage sheds proper will be open both ends, and each track bay will be equipped with rolling steel doors raised and lowered by individual motors. It is expected to have the new buildings completed by December. The approximate cost is $220,000.

Trade Notes

Edward L. Oerter, comptroller of the J. G. Brill Company, Philadelphia, for the past ten years, has been appointed secretary of the company to succeed Henry C. Esling, announcement of whose death was made in the Sept. 24 issue of the ELECTRIC RAILWAY JOURNAL.

George L. Sawyer, formerly sales manager of the material handling machinery for Barber-Greene Company, Aurora, Ill., has been appointed to represent the Universal Crane Company, Elyria, Ohio in the sale of Universal cranes in the New York field. His offices are at 141 Center St., New York City.

O. B. Frink, assistant principal engineer of the Hall Switch & Signal Company, Garwood, N. J., has been appointed representative of the Waterbury Battery Company, Waterbury, Conn., with office at 30 Church Street, New York City, and S. J. Hough field service engineer at New York, of the Waterbury Battery Company, has been appointed western representative with office at 1861 Peoples Gas Building, Chicago Ill.

Rubber Insulated Metal Corporation, 91 William Street, New York, now has as its president C. T. L. Huston, who was the organizer of the company, and who has taken back the control and management from the Century-Plainfield Tire Company. It is intended to pursue exclusively the manufacture of mechanical rubber goods whereby the Elchemco process is used in the manufacture of Rimco insulation for such articles as pliers, screw drivers, flexible couplings, etc. William F. Hart, who was the sales manager of the company, has resumed his former office. The executive office will be at the previously mentioned address and all business transactions will be handled there.

New Advertising Literature

The J. G. Brill Company, Philadelphia, has just issued a pamphlet which describes the Brill type of electric rail-less cars, including a novel current collector and other interesting features. A description is given also of the control system which consists of a current-relay contact system with a foot master controller.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL. Editors HENRY H. NORRIS. Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

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Mail Pay on a Better Basis Than Formerly

ONE of the striking evidences of the value to the industry of association work is shown in the services performed by the mail pay committee, whose report for the last year was presented at the Atlantic City Convention and was abstracted in the Oct. 8 issue of this paper.

Under the old mail pay committee, as many members of the industry know, a substantial step forward in the fight for fair and compensatory rates of pay for mail carriage was made. Perhaps this is best indicated by the fact that after the decision of the Interstate Commerce Commission was handed down, the appropriation to the Post Office Department for mail carriage by electric lines was increased from $545,000 to $707,000 or by $162,000; that is, 30 per cent.

During that struggle the committee succeeded in getting the question of side and terminal service eliminated as a burden to the carriers. The commission also established the principle of limiting the number of pouches of mail, or pieces of parcel post, that could be carried on cars for a flat rate per mile. In other words, the Interstate Commerce Commission put the mail handling on a space basis.

Those of the industry who are familiar with the burdensome restrictions that were imposed by the Post Office Department rulings on these two matters of course recognize that a real victory was obtained in the decision of the commission, and the mail pay committee and the member companies represented by them are entitled to congratulations for such success as crowned their efforts.

As indicated in the report presented at the convention, however, the mail pay committee is satisfied that the new rates are not fully compensatory. Therefore it recommended to the association that the fight for justice be carried on still further and this recommendation was approved.

Since the change in administration in Washington last March, a different spirit has prevailed in the councils of the Post Office Department, and the committee, as the report indicated, has received the promise of co-operation by the Second Assistant Postmaster General to the end that the facts, as ascertained by the data sheets and other study, can be agreed upon in advance. This is a businesslike way of approaching the subject as it will eliminate the necessity for a long drawn out and tedious series of hearings and will enable a much more efficient and concise presentation of the case before the commission for argument. The plan should permit the committee so to put forth its arguments and conclusions that further relief ought to ensue when the Interstate Commerce Commission decides the case.

The matter is being referred to here editorially, as indicating one of the many lines of productive activity engaged in by the American Electric Railway Association and its committees, and one that should, if a successful termination is reached, mean still more revenue to those companies which are now burdened with the carriage of the mails.

Furthermore, under the present law, it is understood that the Post Office Department has the right to demand the carriage of the mail by any electric railway. Therefore, all electric railway companies, whether members of the association or not, have a potential interest in the work of the committee on mail pay, because they might at any time be required to carry mail, and, even at the present rates, most companies would carry the mail at a loss.

There is ample justification, therefore, in this situation for the industry to put united support behind the mail pay committee in its efforts to lighten the burdens laid heretofore upon many of the companies by the Post Office Department.

Does Engineering Training Fit for Management?

DOES an engineering education fit or unfit a man for executive leadership? This, after all, was the question at issue in several addresses at a joint meeting of engineers held in New York on Oct. 19. On the one side the charge was made that the habit of mind of solving problems with mathematical exactness followed by the engineer was incompatible with, or usually not accompanied by, that vision of possible future growth which is necessary in large undertakings or the faculty of establishing good relations with employees and the public. To quote the advocate of this theory, Mr. Cabot, a Boston banker:

"His [the typical engineer's] natural position is that of the hand which executes rather than the mind that conceives. Leadership is not native to him, his enthusiasms have been put under stern control, locked up so that they cannot warp his judgment—they cannot easily be released to inspire others. In fact, they are often atrophied. . . . I do not believe that it is impossible for an engineer to be a great leader and manager of industry. All that I maintain is that his natural handicap is increased by our present methods of training to such an extent as to make him an unpromising candidate for promotion to such positions, and I say this with full knowledge of the fact that his selection to fill them has become increasingly common of late years, especially in public service corporations."

In defense of this theory the achievements of Vanderbilt, Hill, Carnegie, Schwab, Gary, Ford, Westinghouse, Coffin, Vail and others were cited. Particular mention was made of the record of T. N. Vail, whose successful direction of the A. T. & T. was declared not to have been equaled during the past seven years by that of the management of any other utility or group of utilities.

So much for the prosecution. On the other side, there were not lacking defenders of the engineers, who declared that it was the engineer whose exact training was often required to rescue and rehabilitate a utility or other enterprise after the promoters and their financial backers with their impracticable ideas and schemes of high finance had brought the property into financial difficulties.

Of course it would be improper to ignore the merits of each type of mind. Our great utilities and industrial enterprises would not be in existence but for the enthusiasm, creative genius and courage of the pioneers. Much of the practice of anticipating development and building for the future could well be copied by some of their more prosaic successors. But the present time particularly calls for executives who, while having a vision, can tell whether that vision is real or imaginary, is an oasis or merely a mirage, and that their paths are being directed by a beacon and not a will-o'-the-wisp. The modern president of a utility must be economical but ready at the same time to spend money when the conditions warrant. He must understand how to deal with men as well as with materials.

Not all engineers—perhaps it can be said not many engineers—can do this, but their percentage of failure probably is not as great or no greater than among the non-engineers, including among the latter the bankers. There is nothing in the study of engineering itself which should preclude the broader knowledge required to conduct large enterprises successfully. Rather, engineering education should train a man to substitute judgment based on knowledge for haphazard guess based on surmise or intuition. There are many conspicuous examples of men with engineering training who have directed or created large undertakings. The names of George Westinghouse, General Goethals and Herbert Hoover will occur to the mind at once as notable instances. In the public utility field there are of course many notable examples whom it would be invidious to mention, yet their names will recur to everyone.

After all, the lesson for engineers is not that their training will prevent them from high executive service. Rather, it is that it will help them, provided it is combined with courage to make decisions, insight into the probable future development from a given set of conditions, and ability to judge men and get along with them.

The "Electric Railway Journal" and Bus Transportation

FOR several months, if not for years, there has been an increasing demand upon the editors of the ELECTRIC RAILWAY JOURNAL to keep the electric railway field informed upon developments in bus transportation. It has been recognized for some time that this newly-developed agency must be a permanent factor in urban and interurban transportation of passengers, and there has been an earnest desire on the part of most railway operators to be informed about its potentialities and accomplishments for the double reason of knowing how to meet the new agency in competition and how to use the new agency in co-ordination with existing rail systems.

It is of value to make or obtain actual analyses of cost of operation of various trackless vehicle installations for the edification and education of the operators of these systems and for those who would undertake such operation. The leading operators of such systems, as well as railway men, are in thorough sympathy with such a program for they both are anxious to know exactly where the bus is going to fit in ultimately in the passenger transportation business.

The bus manufacturer is also vitally interested in all these matters. He wants to work closely with the operator to determine the fundamentals of design that will insure the most economy in operation. There must be considerable research and expenditure of money before there is any degree of finality in bus design principles. Some special designs have been developed, though some manufacturers still hold to the use of the standard truck chassis.

In response to the evident need of editorial service in this entire bus problem, an effort has been made during the past months to supply it. All of the studies which have been made and data which have been collected tend only the more firmly to fix the idea that the best transportation for the community can be obtained only by the co-ordination of the various transportation facilities and not by indiscriminate competition. That buses should be regulated in the same manner as railways should be is a principle which is admitted and even encouraged and sought by leading bus transportation operators.

However, the numerous problems of the railways, coupled with the increasing interest in the problems of the bus transportation field, make it almost impossible to give adequate treatment to both in the somewhat limited space available in the ELECTRIC RAILWAY JOURNAL. Accordingly, it has been decided to try to give a special service on bus transportation in a monthly supplement to the ELECTRIC RAILWAY JOURNAL. This supplement, according to present plans, will make its appearance in January, 1922, and will be known as the "BUS TRANSPORTATION JOURNAL section of ELECTRIC RAILWAY JOURNAL." It will be edited by the same group of editors now responsible for this paper and will be co-ordinated in its editorial policy in exactly the same manner that it seems desirable to co-ordinate the bus transportation service in the field with electric railway service; namely, to give the best complete service by a co-ordinated unit. This undertaking is being started only after consultation with several leaders in both the electric railway and the bus fields, and the general opinion expressed was that this plan is the best to provide the desired service.

In the manner proposed, the information on all bus transportation questions, no matter what form of drive is used, will be available to all electric railway men who are interested in the subject and will also be available to those interested in the operation of bus systems, whether or not they are interested in electric railways. It must be recognized that there are many small communities and many interurban transportation routes which, even in the days of wildest dreams for electric railways, could by no stretch of the imagination support a rail system but in which there is now a demand for some sort of transportation which the bus can supply. This field has never been served by any publication from a transportation standpoint, but this service the BUS TRANSPORTATION JOURNAL will be able to perform.

The ELECTRIC RAILWAY JOURNAL and the BUS TRANSPORTATION JOURNAL, therefore, as a unit, hope to cover the urban and interurban passenger transportation field, in so far as it is served by responsible transportation agencies. The effort is thus merely a continuation, with expansion, of the past efforts of the ELECTRIC RAILWAY JOURNAL to assist where it can in the solution of urban and interurban transportation problems and in the upbuilding of the industry created and operated for the purpose of supplying such transportation.

THE COMMISSION IS HOUSED VERY EFFECTIVELY IN THE STATE CAPITOL

Regulation of Utilities in Wisconsin

Power of Wisconsin's Railroad Commission Strengthens Utility Securities in That State—Adequate Revenue in Return for Satisfactory Service Gives Badger State a Perfect Record in Number of Utility Receiverships—"Efficiency Instead of Politics" Is Keynote of Commission's Success

THE confidence which Wisconsin holds in its Utility Commission is clearly expressed by a decision of the Wisconsin Supreme Court rendered in the last few months, from which the following extract was taken:

> The commission legislation has been welcomed by the public and the public utility companies alike. It has never been suggested that the purpose of the legislation was other than for the promotion of the public interests. Critics should appreciate that private capital devoted to public service is entitled to a fair return and that it requires more courage to render just than popular decisions. It is believed that fourteen years of experience has vindicated the law as a measure of great public benefit, although recently, when abnormal industrial and commercial conditions have given rise to a general increase in rates of service, mutterings against the law or its administration may be heard. But it should not be forgotten that successful regulation must be fearless and fair and accommodated to the exigencies of changing conditions. Whenever the administration agency appointed to arbitrate between the public and the utility is influenced by public sentiment rather than considerations of justice, the purpose of the law will fail, not because of its infirmities but because of its weak and servile administration.

The origin of regulative legislation in Wisconsin came in 1874 under pressure of the so-called Granger legislation when a board of three railroad commissioners was appointed by the Governor. This board lasted two years and did some splendid pioneer work, being replaced in 1876 by a single commissioner. This system was continued until 1905, being changed from an appointive to an elective office in 1881. This railroad commissioner was required to make inquiry regarding neglect or violation of laws by the railroads, inspect and examine the condition of railway equipment with reference to public safety and convenience and report all existing violations to the attorney general for action. The power of the commissioner ceased there, for the attorney general acted on the complaints by issuing recommendations to the railroad company involved, which recommendations were final unless reversal was obtained by an appeal to the court. This unique feature distinguished the old regulation from the new in Wisconsin. Incomplete and ineffective as this method now appears, it nevertheless marked progress in that line. The Wisconsin law was upheld by the Supreme Court of the State in 1874, in one of the first cases, if not the first case, of a higher court recognizing the right of railway regulation by the State (Ryan decision—June, 1874), and this case, with similar ones arising about the same time in Illinois, was upheld by the United States Supreme Court in 1876. (Otto, U. S. Rep., Oct., 1876.)

The next important event in the history of State regulation occurred in 1901 when a constitutional amendment provided that it was illegal to grant passes; this was followed in 1905 by the initial draft of the final bill making a railroad commission for Wisconsin.

Amendments to this law appeared as the necessity demanded in 1907, 1909 and 1911. This commission consisted and still consists of three members appointed by the Governor and confirmed by the Senate, the term of office being six years, expiring serially.

The personnel of the present Railroad Commission of Wisconsin composes the following: Carl D. Jackson, chairman, an attorney; Henry R. Trumbower, a political economist, and Lewis E. Gettle, an engineer. The secretary of the commission, C. D. SeCheverell, is the executive head of all other employees. The staff, under his direction, is divided into four departments, headed as follows: (1) Engineering—C. M. Larson, (2) Statistical—G. C. Mathews, (3) Service—C. B. Hayden, (4) Traffic—R. V. Adams.

Most of the states, with the necessary exception of Massachusetts, on account of a prior law, have followed closely the modeling of the Wisconsin law, but until very recently under no other commission are so many classes of utilities included. Some of these State commissions have powers somewhat similar to those conferred on the Wisconsin commission. These include the regulation of almost all phases of the operation of the following:

THE PECULIAR UNROOFING OF THE CAR PERMITTED PASSENGERS TO BE REMOVED WITHOUT SERIOUS INJURIES

Slack brakes coupled with some inattention on the part of the motorman were officially reported by the commission in connection with this accident in Milwaukee on June 5, 1919, in which more than seventy persons were injured.

Steam railroads,
Electric urban and interurban railroads,
Express companies,
Sleeping car companies,
Freight companies,
Telegraph and distribution messenger companies,
Companies or individuals doing transportation business over any railroad in the state,
Common carriers engaged in passenger or freight transportation partially by rail and partially by water,
Telephone utilities,
Gas utilities
Electric lighting utilities,
Water utilities,
Heating utilities,
Toll bridge utilities.

Municipal and privately owned utilities under the Wisconsin law are placed on the same basis as regards commission control, a most excellent provision, as it prevents certain unfair comparisons which are often made between the two types of ownership. Provisions of this law which may be especially noted concern:

1. Joint use of property,
2. Valuation of property,
3. Uniform accounting systems,
4. Commission's reports,
5. Depreciation,
6. Service standards,
7. Complaints,
8. Court review,
9. Franchise and indeterminate permits,
10. Anti-free service.

In general the public utilities law can be rated in short but comprehensive form as follows:

> The Railroad Commission of Wisconsin is vested with power and jurisdiction to supervise and regulate every public utility in this state and to do all things necessary and convenient in the exercise of such power and jurisdiction. (Section 2, Public Utility Law—1797 M.)

Due to the abnormal economic conditions created by the war, the recent work of the commission is marked by two general characteristics: First, the relatively small number of cases involving railroads, due to federal control; second, the excessively large number of utility cases handled, most of which involved increases in rates. This is shown very forcibly by the accompanying chart.

The largest number of cases was handled in 1920, but any present decrease in the number of other cases will be more than offset by the increase in railroad cases that are following the resumption of full private control and operation. Moreover, since market conditions show a marked decline, there will be an increase in utility cases involving decreases in rates, which will tax the commission's capacity greatly.

TABLE I—INCREASE IN UTILITY INVESTMENTS IN LAST TWO YEARS

	1919	1920
Common stock	$883,592	$5 381 843
Preferred stock	1,040,600	3 372 600
Bonds	16,708,000	39.785 233
Notes	5,494,000	11 098.075
Equipment trust certificates	....	32 127,109
	$24,126,192	$91,764,860

The outstanding features of these increases in investments are: (1) Practically all of this stock has been sold locally to their customers, (2) A large amount of temporary financing by the issue of notes and other short-term securities has been done by the utilities, due to a desire to avoid long-term securities at the abnormal high rate of interest which has prevailed during the last two years.

The electric railways showed an increase in investment and revenues, although the increase here was not so rapid as in the case of other electric utilities. Operating revenues show the effect of increased rates of fare, many of which were effective during 1919. Though showing an increase in greater proportion than the increase in investment, the total operating expenses increased at an even greater rate. The year 1910 showed a return of 6.5 per cent, 1914 a return of 5.6 per cent and 1919 a return of 1.9 per cent.

The number of utilities, of which the commission has a record, increased each year notwithstanding consolidation:

TABLE II—PUBLICLY AND PRIVATELY OWNED UTILITIES UNDER THE JURISDICTION OF THE WISCONSIN COMMISSION

	Municipal	Private	Total
Classification:			
Electric	107	217	324
Gas	2	33	35
Water	121	26	147
Street railroads	...	25	25
Heating	...	12	12
Toll bridge	...	8	8
Total utilities	230	321	551
Telephone	...	982	982
Grand total	230	1,303	1,533

ENGINEERING DEPARTMENT

The engineers serving the Railroad Commission are organized as the "railroad and utilities division" of the State Department of Engineers. This division not only performs such duties as may be assigned to it by the Railroad Commission, but its members are available for service to other state departments upon call by the State chief engineer.

The activities of this department may be classified roughly under two headings, namely, valuation of public utility property, and inspection or supervision of service rendered to the public by the utilities. The engineering activities can be briefly outlined as follows: I—Public utility service; II—railroad construction and service; III—public safety; IV—physical property valuation; V—water power; VI—jitney regulation; VII—miscellaneous problems of engineering.

I—PUBLIC UTILITY SERVICE

"Service" is the watchword of the Wisconsin commission. By this the entire utility field is dominated and regulated. When the commission seeks to investigate a rate, the service of the utility in question is carefully analyzed and the rate established on that basis. The analysis and inspection to determine these grades of service form a very important part of the commission's activities. The inspection service is very detailed and precise. Standardized service, with a rating for every utility, is the object. To that end one chief method is used. An inspecting department is provided which is continually on the alert for betterment of service, using standard forms for the grading of each branch, such as electric, telephone, and gas. These reports form the basis for an actual compilation of rating data. These data were primarily for the use of the commission, but recently they have served a twofold purpose. Being made public, a keen competition was created among the utilities, resulting in a noticeable betterment of plant and operating conditions. Finally it can be said that the rate-making of the commission is based on service rendered and is also essentially *"A cost plus a reasonable profit on the physical property used and useful."*

TABLE III—UNIQUE RATING SCHEME ADOPTED FOR THE COMPARISON OF UTILITIES

	1918	1919	1920
Electric	76 1	75.4	76 2
Gas	75 9	77.1	73 3
Telephone	79 5	....	78 5

The average ratings of the utilities for years up to 1920 are as shown in Table III.

Incorporated in the records of the service department are complete files of photographs showing conditions of service and maintenance for different utilities, which offers tangible evidence for considerations of rates. These show to what exact degree the service is watched by the commission. For further ease of control the State is divided into four districts with resident engineers in each at the following district capitals: Northeastern, Eau Claire; northwestern, Appleton; south-central, Madison; southeastern, Milwaukee.

II—RAILROAD CONSTRUCTION AND SERVICE

During the control of the steam railroads by the government very little was accomplished by the State commission except to a slight degree in means of co-operation with the Interstate Commerce Commission. A gradual increase in activity, however, followed the return of the railroads to their former owners.

It is particularly interesting in city railway development that the first zone-fare system ever put into effect came under the supervision of the Wisconsin commission in 1914 in the city of Milwaukee. This fare system proved its worth by actual use and is now in operation under the same rules. The system divides the city into several zones, a central and outlying zones. A flat rate of 7 cents is the present fare for travel, in each zone, while a fare of 3 cents is charged for each additional zone traversed.

Rolling stock equipment on all electric railways is maintained in a good operating condition by careful supervision. Plans for additional new equipment as well as for major alterations must be approved before being put into effect.

III—PUBLIC SAFETY

With a view toward securing uniformity in methods of protection, the commission, in co-operation with Illinois, Minnesota and Indiana, has arranged a set of rules governing the construction, maintenance and operation of interlocking plants for railways. These rules contain rigid requirements pertaining to any change in signaling plants and specify approval of all new installations by the commission. They also contain strict requirements for inspection service.

AN EXTENSIVE INVESTIGATION OF THIS RAILWAY ACCIDENT IN MILWAUKEE WAS MADE BY THE ENGINEERING DEPARTMENT

Considerable attention has been given to automatic

TABLE IV—CENSUS FOR 1920 AND RECORD OF FARE INCREASES GRANTED IN WISCONSIN CITIES

City	Population	Cash Fare	Ticket Fare	Present Fare Became Effective
Appleton	19,561	5 cents	Nothing stated	2-12-19
Ashland	11,334	7 cents	6 for 40 cents	10-16-18
Beloit	21,284	5 cents	Nothing stated	1915
Chippewa Falls	9,130	6 cents	Nothing stated	8- 1-18
Eau Claire	20,880	6 cents	Nothing stated	8- 1-18
Fond du Lac	23,427	8 cents	10 for 70 cents 50 for $3.00	9- 5-20
Wisconsin Rapids	7,234	10 cents	*	2-20-19
		5 cents	†	2-20-19
Green Bay	31,017	10 cents	5 for 35 cents	1- 1-21
Janesville	18,293	10 cents	7 for 50 cents	10-29-20
Kenosha	40,472	7 cents	8 for 50 cents	10-30-20
La Crosse	30,363	6 cents	18 for $1.00 (Workmen's tickets) 6 for 30 cents (School tickets) 25 for $1.00	9-16-18
Madison	38,378	6 cents	9 for 50 cents	11-16-18
Manitowoc	17,563	6 cents	5 for 30 cents	8- 9-18
Marinette	13,610	7 cents	10 for 50 cents	8-27-20
Merrill	8,068	7 cents	9 for 50 cents	12-23-18
Milwaukee	457,147	7 cents	8 for 50 cents	11- 2-19
Oshkosh	33,162	8 cents	5 for 35 cents 50 for $3 00	9-17-20
Sheboygan	30,955	8 cents	10 for 70 cents 50 for $3 00	9-11-20
Racine	58,593	7 cents	6 for 35 cents	12- 1-20
Superior	39,624	5 cents	Weekly tickets $1 00, unlimited riding, transferable.	

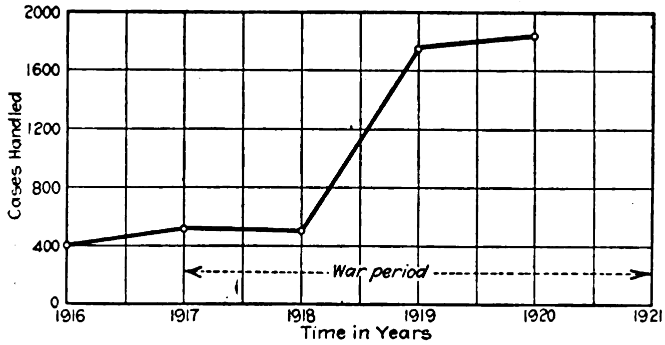
* From Wisconsin Rapids to Port Edwards.
† From Port Edwards to Nekoosa.

train control in the State, but since the prerequisite for such control is necessarily a perfect system of automatic signals, this advance field has been postponed until the signal system is nearer perfection.

Complete records of all the crossings in the State are kept and filed by means of photographs which show views, angle of crossing, height of grade and location, reference to which and suggestions for their betterment make for a minimum of accidents.

Accident reports form a necessary part of the commission's routine work, though none but the most important is investigated. Reports by the corporation involved must be in the commission's hands within two days after occurrence and, if the case warrants, facts are gathered, witnesses summoned and a report upon which much legal action depends given out by the commission.

Work in connection with the elimination of grade crossings by viaducts and subways has been encouraged in every way possible and advances in this line have been numerous.



THE WORK OF THE COMMISSION WAS GREATLY INCREASED AS A RESULT OF THE WAR

Due to the increasing use of electrical apparatus by relatively unskilled people a more comprehensive set of rules governing its installation and use was needed. As a result of this need a large committee was appointed for its compilation. The model for this new safety code will be code No. 54 of the U. S. Bureau of Standards.

IV—PHYSICAL PROPERTY VALUATION

The commission requires two valuations of any property by its engineering department—one, a true reproduction value, and the second, a ten-year average value. The former determination is for use only in case of sale of the utility property, while the latter, which is the most used, is for rate-making purposes. In the determination of these valuations the most favored plan is what is known as the split-inventory method. The total inventory of an operating utility is classified and split into its various cost periods. The items in the inventory are carefully assigned a per cent condition value in terms of their new condition and by use of a complete *"life table"* which covers all items used. This "life" or depreciation table is used in conjunction with the "rating" given to each operating utility as to its maintenance—the rating being given in per cent perfect—80-85 per cent rating is considered good for separate stations and 90 per cent for system fed from a transmission line.

The foregoing methods of appraising property have demanded some modification in the last few years, due to rapidly fluctuating prices, but in general they are accurate and easily applied for the commission's needs.

TABLE V—AUTHORIZED MOTOR-BUS OPERATORS IN WISCONSIN

	Authorized Bonded Carriers
Milwaukee	42
Racine	5
Kenosha	3
Remainder of State	26
Total	

VI—JITNEY REGULATION

Particular attention has been paid by the commission to jitney regulation in the State. Due to increased costs of operation the number of jitneys has radically decreased during the past two years. Table V shows the number of authorized bonded carriers in operation in June, 1920.

CONCLUSION

The work of the Wisconsin commission, though founded on new lines, has proved its worth and now by virtue of cases handled, decisions rendered and satisfaction given it can be consequently placed in a high rank in state regulating bodies. Its decisions are widely quoted in court opinions and by experts in utility and railroad management. Though no mention has been made of it, additional duties are performed for other state departments which include rent, water power and securities or blue-sky regulation. The work as performed by the commission has been done with one single viewpoint in mind—public relations. This one thing has been carefully fostered and, though some dissension must always be evident in such a field, the consensus of opinion would easily show the commission to be the true, unbiased body which its law intended.

State Aids Interurban Bus Lines in France

IN THE May-June, 1921, issue of *L'Industrie des Tramways*, M. Paris, general manager, Société Générale des Transports Départmentaux, an organization which has developed motor-bus cross-country services in France, describes some of the advantages of this mode of transport. The war, of course, had proved the wonderful flexibility of both passenger and motor truck. Pre-war trials with motor buses, especially in the Haute-Garonne department, had also been most satisfying.

Since post-war costs of railway building are six times greater than before the war, it was obviously impossible for private operators or the government to meet the demands for service, even from regions where there is little population. Here is where the bus comes to the rescue in any place where the roads had been good enough for animal transport. Not only is the bus valuable in handling the traffic offered today, but also in determining when railway construction would be justified. Because of the mobility of the bus, also, it is feasible to run the same vehicle along different routes on different days of the week, as in the sparsely-settled districts, and to concentrate sufficient buses on any one route which is favorable by a fair or other traffic-raising occasion. On the routes served by M. Paris' company, use is made in some cases of a fifteen-seat trailer behind the motor bus.

A number of these lightly traveled bus or stage routes in France are subsidized by the government, but not liberally enough in the view of M. Paris. The March-April issue of *L'Industrie des Tramways* lists about 150 State-aided autobus routes. A large number of these are in the mountainous districts in southeastern and southwestern France and are probably postal routes.

Bus and Car Costs Compared

The Writer Compares Estimates on Operating Costs of Motor Bus, Trolley Bus and Safety Car, as Given in Recent Articles in This Paper by Messrs. Thirlwall and Stocks, and Defends the Figures of Mr. Thirlwall

BY H. L. ANDREWS
Railway & Traction Engineering Department, General Electric Company

THE ELECTRIC RAILWAY JOURNAL has recently published two very excellent articles covering the relative cost of operation of the rail car, the trolley bus and the gasoline bus.

In Mr. Stocks' clear analysis of this transportation field, which appeared in the Sept. 24 issue of the ELECTRIC RAILWAY JOURNAL, he arrives at the same general conclusions that have been reached by J. C. Thirlwall in his very able presentation of this subject, which appeared in the issue of Oct. 1. These general conclusions are that there is an economic limitation in density of traffic for rail-less vehicles, that the field of the motor bus is in handling small loads on fairly long headways, that the rail car is the most economical and efficient means of handling mass transportation where short headways are required and that the field of the trackless trolley lies in between these two extremes. But in the actual cost of operation of the three types of vehicles these two authors differ widely, and therefore they do not agree on the economic limitations or degree of traffic density that determine the dividing line between the economic use of the three systems. There is also a further difference of opinion on the relative number of vehicles required for a given amount of traffic.

In view of this wide diversity of opinion between these two authors, it seems desirable that some additional evidence be presented bearing on the operating costs of the three types of vehicles, their relative capacity for handling peak loads and therefore the headway, limitations and degree of traffic density that mark the dividing line between the economic use of the three systems.

Mr. Stocks has evidently used as the basis of his article operating costs of safety cars considerably higher than those used by Mr. Thirlwall. There is presented in Table I a number of actual operating costs, together with the costs assumed by Mr. Stocks and Mr. Thirlwall in their articles:

TABLE I—COSTS IN CENTS PER CAR-MILE OF SAFETY CAR OPERATION FROM VARIOUS SOURCES

	1	2	3	4	5
Maintenance of way and structures	1.46	2.0	1.6	2.0	2.1
Maintenance of equipment........	1.55	2.0	1.7	1.7	4.0
Power........................	1.04	2.5	1.9	2.5	3.6
Conducting transportation........	6.35	6.5	8.4	9.0	9.71
General and miscellaneous........	1.92	3.5	2.4	3.0	4.06
Total....	12.33	16.5	16.0	18.2	23.47

1. Actual average costs, Mid-western property operating sixty-six cars, year 1921.
2. Cost estimate of a large holding company operating several hundred cars.
3. Actual average results in 1920 of ten companies operating 500 cars.
4. Costs assumed by J. C. Thirlwall.
5. Costs assumed by C. W. Stocks.

If actual results are conclusive evidence of operating costs, it appears that Mr. Thirlwall has been very conservative in his estimate of 18.2 cents per car-mile for the operating costs of the safety car and that Mr. Stocks has been too conservative in increasing the operating costs of the safety car by nearly 47 per cent over the actual costs obtained from ten companies which have operated 500 safety cars for three years or more.

[EDITORS' NOTE.—Mr. Stocks in a supplementary statement briefly explains the basis of his estimates.]

These authors also differ widely on the estimated operating costs of the trolley bus and the gasoline bus, this difference evidently being due to the difference in basic assumptions. While no actual operating costs for the trolley buses are available, these may be estimated with a fair degree of accuracy by basing such estimates on the actual operating costs of safety cars and gasoline motor buses. The operating costs assumed by Mr. Thirlwall and Mr. Stocks for both the trolley bus and the gasoline motor bus are given in Table II:

TABLE II—OPERATING COSTS IN CENTS PER BUS-MILE AS GIVEN IN THE ARTICLES BY MESSRS. THIRLWALL AND STOCKS

	Trolley Bus		Gasoline Bus	
	Stocks	Thirlwall	Stocks	Thirlwall
Maintenance of way and overhead......	0.888	0.7	0.1	0.0
Maintenance of equipment............	6.5	4.0	8.5	8.5
Power..........................	3.1	2.3	3.55	7.0
Conducting transportation............	9.9	9.0	9.9	9.0
General and miscellaneous............	3.9	3.0	3.9	3.0
Total...........................	24.2	19.0	25.95	27.5

Reference to this comparison indicates that there is a fairly wide difference of opinion between authors as to the costs of operation of both of these rail-less vehicles. Knowing the operating costs of the safety car, using the actual results obtained from a number of railway companies operating these cars for a reasonable period, and with fairly accurate data on the operating costs of several gasoline bus installations, we have substantial evidence on which to base the cost of operation of the trolley bus. Primarily, the difference between the estimates used by the two authors lies in maintenance and power costs.

MAINTENANCE AND POWER COSTS

The electrical equipment of the trolley bus is essentially the same as the safety car and should therefore have practically the same maintenance costs.

There are accurate data showing that the cost of maintaining the electrical equipment on safety cars is approximately 0.3 cents per car-mile. From such data as are available on segregated costs of body and chassis on gasoline bus lines, it is reasonable to assume the total maintenance of the body and chassis of the trolley bus to be not more than 1.35 cents per bus-mile, making the total maintenance for this bus complete, less tires, 1.65 cents per bus-mile. Where solid tires are used with gasoline propelled buses, records show that the tire costs vary from 1 to 2 cents per bus-mile. Assuming the higher figure for the tire costs, the total cost of maintenance of the trolley bus should be not more than 3.65 cents per bus-mile.

If we may safely base the cost of the trolley bus on known costs of the safety car and the gasoline bus, and it seems reasonable to believe that we can, it appears that Mr. Thirlwall's estimate of 4 cents per bus-mile for maintenance is conservative and that Mr. Stocks has been too conservative in estimating the maintenance costs of 6.5 cents per bus-mile.

Mr. Stocks has assumed that a safety car will require at the car 200 watt-hours per ton-mile and that the trolley bus will require 250 watt-hours per ton-mile. Corresponding figures used by Mr. Thirlwall are 150 watt-hours per ton-mile for the safety car and 195 watt-hours per ton-mile for the trolley bus. Mr. Stocks assumes 2.25 cents per kilowatt-hour as the cost of power at the car, while Mr. Thirlwall, with line and conversion losses included, assumes a cost of approximately 1.6 cents per kilowatt-hour at the car.

The power costs will of course vary widely in different localities, but from data published by the American Electric Railway Association it seems conservative to estimate the cost of generating power in a large station to be 1.1 cents per kilowatt-hour and in a small station 1.6 cents per kilowatt-hour at the alternating-current bus. Assuming 15 per cent line and 25 per cent conversion losses, these figures become 1.59 cents per kilowatt-hour and 2.3 cents per kilowatt-hour at the car. The figures used by Mr. Stocks correspond to the maximum power rate, while the figures used by Mr. Thirlwall correspond to the minimum power rate. As a general average, 2 cents per kilowatt-hour and 1.5 kilowatt-hour per car-mile will probably represent average power conditions for the trolley bus, or the total cost of power will be 3 cents per bus-mile as against 6 to 8 cents for the gasoline bus, or a saving of 3 to 5 cents per bus-mile in power.

The operating costs of a gasoline bus can best be determined from actual installations. While the authors differ materially in the cost of operating gasoline-propelled machines, it is apparent that Mr. Stocks has based his operating costs on one of the most widely known and best operated gasoline bus installations in this country, while Mr. Thirlwall has taken the average operating costs for five representative installations of the motor bus. It is difficult to find motor bus installations where the fuel economy assumed by Mr. Stocks is actually obtained. Most of the data available on fuel consumption are based on buses weighing from 7,000 to 8,000 lb. If this should be adjusted to a 10,000 or 11,000 lb. vehicle, it is doubtful if the estimates of 7 miles per gallon used by Mr. Stocks can be equaled.

If the fuel consumption of the gasoline bus is based on average conditions and average installations, it is conservative to assume 4 to 4½ miles per gallon of gasoline, which at a wholesale price of 22 cents corresponds to 5 to 5½ cents for power. The cost of lubrication increases this from 1 to 1½ cents per bus-mile, making a total charge for power and lubrication of from 6 to 8 cents per bus-mile.

Here, again, if we take actual results from several typical installations of the gasoline bus and base the operating costs of this vehicle on these known results, it appears that the figures used by Mr. Thirlwall are more nearly representative of actual practice and that those used by Mr. Stocks are anticipated economies in fuel consumption which have not yet been realized.

CAPACITIES AND SCHEDULE SPEEDS

It would appear from Mr. Stocks' article that he has lost sight of the fact that a safety car has a greater carrying capacity than either type of bus and that to provide carrying capacity for a given number of people more buses than safety cars would be required. Fundamentally, the vast majority of rail cars have been designed with particular reference to rush-hour conditions. Their dimensions both in floor area and in cubical contents are governed by the idea of providing seating capacity considerably in excess of the normal mid-day or evening load and of handling during rush hours a standing load at least as large as the seated load. Motor buses on the contrary, with few exceptions, have been designed with the one thought of providing seating space for the light-hour loads, and no attempt has been made in their development to furnish the additional seats or space for the tremendous percentage of increase over normal riding that occurs during the rush hour. The safety car was developed as a compromise between these two viewpoints, in that the seating capacity was brought nearer to the normal load than in the majority of rail cars, but it was nevertheless laid out and constructed to carry comfortably peak loads of nearly double its seating capacity. So far as records indicate, no buses have been designed to accommodate any such proportion of rush-hour excess capacity.

Some typical designs of recent buses have dimensions as given in Table III.

TABLE III—COMPARISONS OF DIMENSIONS OF RECENT BUSES WITH SAFFTY CAR

	Brill	Imperial	Average Bus	Safety Car
Seating capacity	29	29	..	32
Length	20 ft.	20 ft. 6 in.	..	28 ft.
Width	7 ft. 4 in.	7 ft. 0 in.	..	7 ft. 10 in.
Floor area, square feet	147	144	..	218
Maximum capacity, assuming 3.6 sq.ft. per passenger	41	40	40	60

With this as a fundamental, any comparison of buses, either gasoline or electric, with safety cars should be made on the total carrying capacity of each type of vehicle. In other words, to provide the same carrying capacity during rush-hour service there must be 50 per cent more buses in service than safety cars. This has been recognized by operators of rail lines which are using gasoline buses as auxiliaries. Mention was made of this by R. Gillman Smith in a paper entitled "The Motor Bus as a Supplement to Electric Railways," read before the 1920 convention at Atlantic City and published in the ELECTRIC RAILWAY JOURNAL of Oct. 16, 1920. Mr. Smith has assumed that the safety car can carry sixty passengers, or approximately double its seating capacity, while the gasoline bus has an overload capacity of but 67 per cent. It is Mr. Smith's conclusion that with bus transportation the number of units operated during rush hours would be increased 120 to 140 per cent over the base schedules, as compared with an increase of 100 per cent in the number of rail units. Mr. Stocks has lost sight of this, and in making his comparison between rail cars and the buses he has assumed that the same number of vehicles would be operated in each case.

The schedule speeds for the three types of vehicles as given by Mr. Stocks—that is, motor bus 10 m.p.h., trolley bus 9 m.p.h., and rail car 8.57 m.p.h.—take into consideration only the greater mobility of the bus and do not consider the greatly superior accelerating qualities of the trolley bus over the gasoline motor bus. In so far as mobility is a factor of schedule speed, the trolley bus has no handicap over its gasoline competitor. Collecting devices have been developed which permit a wide range of operation, and this vehicle has the ability to maneuver in traffic the same as the gasoline motor bus. Due to the higher rate of acceleration obtainable with the trolley bus, it can hold higher schedule speeds than the gasoline propelled machine.

Mr. Stocks and Mr. Thirlwall differ in the several factors entering into the fixed charges, particularly in the rate of interest and in the rate of depreciation. The values assumed by each of these authors follows:

TABLE IV—COMPARISONS IN CENTS PER VEHICLE-MILE IN DEPRECIATION AND FIXED CHARGES

	Thirlwall			Stocks		
	Gas Bus	Trolley Bus	Safety Car	Gas Bus	Trolley Bus	Safety Car
Interest paid	9.0	9.0	9.0	7.0	7.0	7.0
Taxes	2.8	2.8	2.8	2.0	2.0	2.0
Depreciation	6.9	3.7	3.2	11.2	10.78	5.6
Total	18.7	15.5	15.0	20.2	19.78	14.6

The principal difference is in the life of the vehicle. Mr. Stocks assumes the life of the safety car as twelve years, a motor bus and trolley bus as eight years, and has depreciated these vehicles over a straight line, while Mr. Thirlwall assumes fifteen years for the safety car and the trolley bus, and that the life of the gas equipment on the motor bus will be no more than five years. He has carried his depreciation as a sinking fund.

It is difficult to recognize the basis assumed by Mr. Stocks in giving the gasoline-propelled machine a life of eight years. All of the gasoline bus operators depreciated their equipment at the rate of 20 to 25 per cent, and it is the universal recommendation of the majority of gas bus manufacturers that the gas equipment should be depreciated over not more than a five-year period. It appears that Mr. Stocks has been too optimistic on the useful life of gasoline equipment and perhaps too conservative on the life of the safety car and the trolley bus.

Mr. Stocks has included a charge of $466.66 per mile of route for rail lines to cover the cost of removal of snow and ice, cleaning and sanding track, etc.

Certainly if this is a proper charge against a rail line, it is an equally proper one against the bus routes, and in making comparisons it is reasonable to assume that the rail-less vehicles, either gasoline or electric, will be burdened with an equal, if not greater, operating charge to cover this item.

A careful study of both Mr. Stocks' and Mr. Thirlwall's articles indicates that Mr. Stocks' article is predicated on incorrect operating costs for all three vehicles and that his assumptions as to the relative numbers required are incorrect. As a result, his conclusions must be modified. The rail car has a much wider field of economic superiority than he assumes and must still be considered the most efficient means of handling all routes of heavy and of medium traffic. The motor bus, on the contrary, has a less extensive range of possibilities than his figures would indicate, and under practically all conditions of city service where any type of rubber tired car would be desirable the trolley bus is more efficient and less expensive than its gasoline cousin.

Why the Figures Differ

By C. W. Stocks

IT IS NOT surprising that a comparison of the two statistical analyses dealing with the cost of service rendered by the motor bus, trolley bus or safety car should disclose some differences of honest opinion. This is especially true with analyses predicated for the most part on estimates on the part of two persons, even when based so far as possible on actual results. Another reason why the comparisons differ is that the bases of the two analyses are entirely different. The analysis by J. C. Thirlwall is based on a 4.5-mile route having a rush-hour period, whereas the analysis of the writer was for a 3-mile extension to an existing class A urban transportation system on which rush-hour traffic would be of little or no consequence.

A comparison of the individual assumptions discloses that in figuring investment costs there is a considerable difference in track and distribution system unit costs per mile as well as in the cost units set up on a vehicle basis for storage and shop facilities. In one case a power plant and automatic substation is figured as part of the investment as against purchasing power at proper voltage. Mr. Thirlwall has not considered any additional investment for land, shop tools and machinery for either form of service.

Taking up the assumptions that go to make up the items used in calculating the cost of service, it is immediately obvious that Mr. Thirlwall has used a constant car-mile unit figure throughout for the service items that enter into each cost analysis. Transportation unit costs as a rule vary inversely as the car-miles run, although there are some costs that vary directly with the mileage and others are independent of the amount of service rendered.

It is for that reason that both track maintenance and electric line expense each were divided into fixed and variable parts and the allowance for building maintenance was taken equal to the depreciation allowance.

In Table I on page 769, in which comparative safety car operating costs are presented, the differences that are claimed to exist in maintenance of equipment of expense are due to the inclusion of allowances for superintendence at 1.6 cents per car-mile, shop expenses at 0.3 cents per car-mile and maintenance of service equipment and shop equipment at $200 per year, in addition to 2 cents per car-mile for maintenance of car body and electrical equipment.

The cost of power varies to such an extent, depending on whether it is purchased from water power or steam plants, that any attempt to say that such costs are less than the commonly used average maximum would lead to an erroneous result. One reason that the allowance for conducting transportation is so high is that platform costs were predicated on a wage scale of 65 cents per man-hour, with an average schedule of 8 4/7 miles per hour, as against a tight schedule of 9 miles per hour and wages at 50 cents per hour as assumed by Mr. Thirlwall. The figures shown in column 5 of Table I on page 769 cannot be taken as true average figures as they represent merely the average of the average car-mile figures and are not weighted in accordance with the number of car-miles run under each headway.

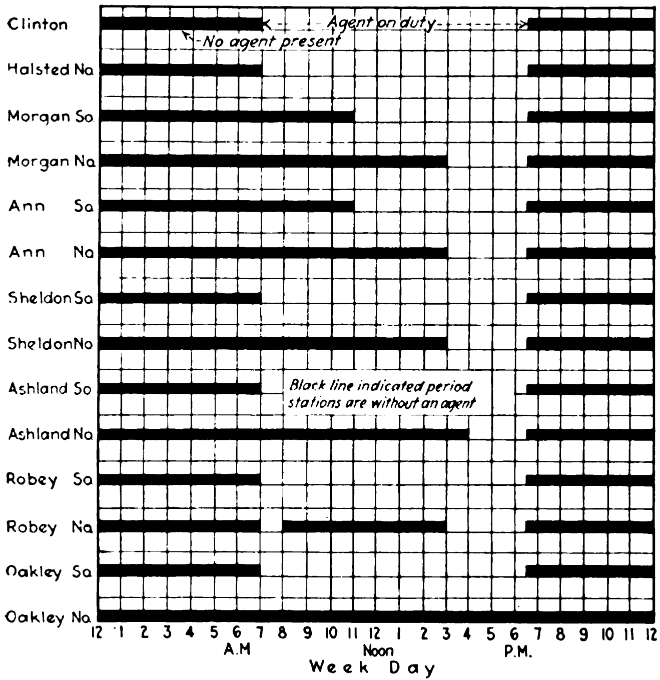
For the reasons explained in connection with Table I, maintenance of equipment for the trolley bus and motor bus in Table II are figured to cover not only the vehicle maintenance but their proportionate share of superintendence and other shop expenses. The cost of power consumed by the trolley bus is based on purchased power at 2¼ cents per kilowatt-hour at the car, which is estimated to be 250 watt-hours per ton-mile on an 11,500 lb. vehicle. This unit includes power for heating and lighting the trolley bus as well.

The difference in power costs for the motor bus; that is, for gasoline and oil, lies entirely in the assumptions. Mr. Thirlwall's investment costs seem to be based on a modern bus, but his operating costs on an entirely different type of equipment. Present-day vehicles built especially for passenger service with an engine of higher speed than the sluggish heavy duty truck motor will give better operating results than he has calculated.

As for the life of the motor bus versus the trolley bus, body manufacturers are attempting to build bodies with a ten-year life, and it is easy to believe that the chassis frame will last as long. In the case of an engine, it is right to expect that as it wears out it can be replaced by a new one—like the transmission or rear end. The composite life of all the equipment is then dependent on the life of the body and frame and not on that of a removable part any more than is the case with a safety car.

Chicago "L" Eliminates Some of Its Station Agents

WITH diminishing business as a spur to greater economy, M. J. Feron, general superintendent of transportation Chicago Elevated Railways, has devised a scheme for use on the Chicago & Oak Park Elevated Railroad which has made it possible to dispense with the services of fifty-two station agents. The Oak Park elevated is so constructed that a separate agent is required for each direction of travel at each station. A study has developed that at twenty-five of these locations the traffic is so light that the station agent can be done away with without introducing any difficulties in fare collection. During a large part of the day at these stations there are only three or four passengers per train per station to board. So it has been arranged that during the hours when there is no station agent present, the fares will be collected on the train by the conductor. The trains in these light periods are usually only three cars long, so that with the average of only three or four passengers per station to collect from, and only three cars to cover, the conductor who is stationed on the first car can easily handle this additional work. Should conditions require more than three cars, arrangements have been made for one of the guards to assist the conductor in collecting the fares, turning over his collections to the conductor.



WEEK-DAY SCHEDULE OF STATION AGENTS FROM CLINTON TO OAKLEY ON OAK PARK ELEVATED RAILROAD

The accompanying chart shows the names of the stations from Clinton to Oakley which will be without an agent during part or all of the day, and the hours during which each station will have an agent or will be agentless. The period during which an agent is present varies with the local conditions. This accounts for the variations in the schedule of hours for the station agents. The schedule was so worked out that the agents continued in the employ of the company are able to get in eight hours duty each day. A saving of $260 per day has been effected through this scheme.

Copies of these schedules for week days, Saturday and Sunday are posted in the trainmen's room, but the conductors are further informed by a large sign as to whether they should collect fares from persons boarding at any station. This sign is placed on the platform in plain view of the conductor when no agent is there.

The stations closed during part of the time are those between the Loop and Hamlin Avenue. The stations beyond Hamlin Avenue handle a sufficient number of people, so that it was not deemed advisable to leave them agentless during any period of the day, at least for the present. Hamlin Avenue is about 4 miles west of State Street.

Trolley Buses at York, England

THE route over which the York trolley buses are operated is about 1¼ miles in length from the Market Square of the city to Heyworth. Several very narrow streets have to be traversed and the turnings are numerous and sharp, the route being indeed an impracticable one for tramcars. The trolley buses, four in number, which have been operated nine or ten months, are of the single-deck type with seats for twenty-four passengers. There are five seats at the back and two rows of longitudinal seats. The left side seats ten, and the right but nine. They are light vehicles and are extremely narrow, the over-all width being but 6 ft. 3 in. The entrance is close to the driver's seat, so that they can be operated by one man, who also supervises the payment of fares as the passengers enter. Each trolley bus has two 23-b.hp., motors which are set amidships with their armature shafts parallel to the frames. Each motor drives one of the rear wheels by means of worm gearing. There is no other gearing on the chassis and a differential is, of course, unnecessary. Rollers and ball bearings are employed throughout and the weight of the vehicle rests entirely on the axle casing, the axles having only to transmit the torque, which is taken by the springs. The motors are controlled by a railway series parallel controller. Service brakes act on the rear wheels and an emergency brake on the motor shaft.

The overhead equipment is exactly similar to that of a trolley line except that the wire is duplicate to afford a return circuit. The trolley wires are 21 ft. from the ground and the 17-ft. steel trolley poles on the bus permit the vehicles to travel at a distance of 15 ft. on either side of the center of the wires. The trolley wheels are deeply grooved and ample freedom of swiveling is arranged for. It is stated that, exclusive of capital charges, the cost of running was 11.5d. per car-mile. The total cost of service, including fixed charges, taxes, etc., amounts to 1s. 6d. per car-mile. Current was supplied at 2d. per kilowatt-hour and the consumption was 1.42 kw.-hr. per car-mile measured at the station, according to an article in London *Engineering* of Sept. 2, 1921.

Transportation by Motor Bus in Gloucester

Organized Bus Company Supplants Independent Jitney Bus Operation that Sprang Up Overnight When Rail Service Was Withdrawn—Conditions Under Which Buses Operate Given in Detail—Rates Call for 10-Cent Minimum, with More for Longer Rides

GLOUCESTER, the outpost of the Commonwealth of Massachusetts and one of the historic spots of New England, holds also the record of being the first city in the country with a population of more than 20,000 to depend solely upon the motor bus for urban and suburban transportation. Not since June 19, 1919, has there been any other means of transportation. On this day the ultimatum previously delivered by the board of trustees of the Eastern Massachusetts Street Railway called for a cessation of service unless the taxpayers of the city would meet the operating deficit, which had been estimated at $20,000 or more per year. The City Council, on behalf of the people, declined to make any such guarantee unless it was approved by the people on a referendum.

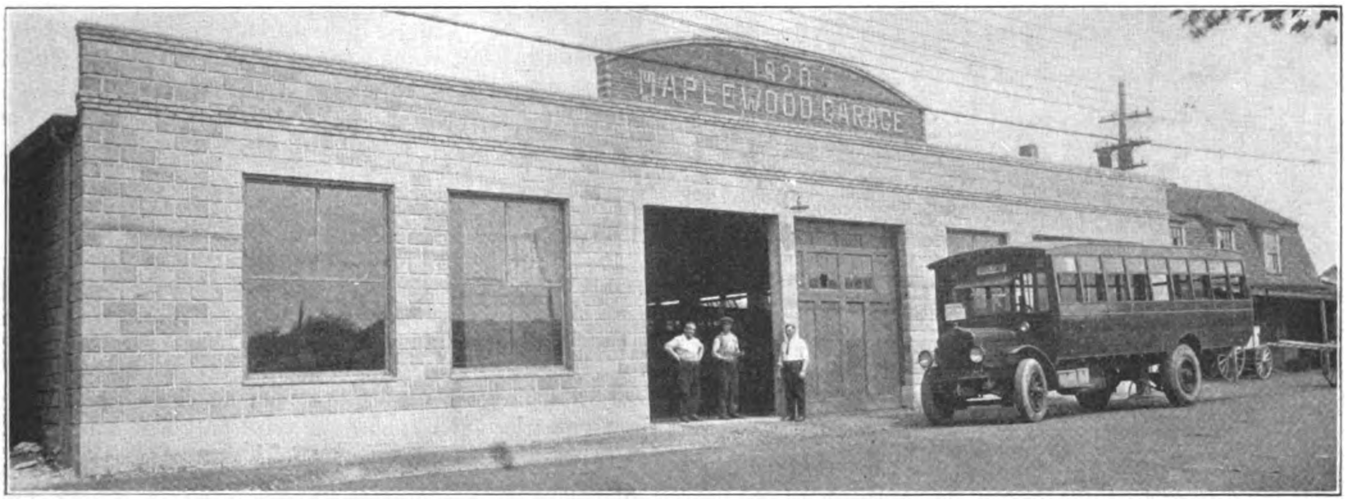
This meant that not only were the cars in the city of Gloucester taken off but those on the suburban lines to Rockport, Essex, Hamilton and Beverly as well. In all service was discontinued on approximately 30 miles of track. Gloucester, so far as trolley car service was concerned, was isolated and the only means of reaching the city from outside points was by the steam railroad or by a motor bus line from Beverly via Manchester-by-the-Sea.

Immediately upon cessation of the trolley service independent jitneys flocked to the city from neighboring points and attempted to handle the traffic. For more than six months this was the only means of transportation that existed. There could be but one answer, namely, the unregulated and unorganized jitney, without fixed and co-ordinated schedules, and with each owner operator trying to cut everybody else's throat, so to speak, failed from a transportation standpoint to render efficient service to the community as a whole.

OPERATING CONDITIONS FOR BUSES

Realizing this, the City Council undertook to bring some system out of the chaos that existed and approached the traffic problem from a regulatory standpoint, drafted an ordinance and put the motor bus transportation directly under the control of the Mayor, with the hope of encouraging an operating company to be formed to take over the entire system of bus operation.

The ordinance as passed provided for the licensing of all motor vehicles operated on the public streets for the transportation of passengers for hire and became effective Feb. 6, 1921. This ordinance made it necessary for each motor vehicle to carry a license, obtained from the Municipal Council and subject to the approval of the Mayor, which must be renewed annually. Such licenses as granted and approved by the Mayor, however, did not become operative until a security amounting to $12,500 by bond or otherwise had been deposited with the city treasurer for each motor vehicle having a seating capacity of twenty-five and an additional sum of $500 for each additional seat. The filing of an approved insurance policy by any one licensee to the extent of at least $20,000 total liability for injury or death in any one accident or for $5,000 for injury or death of one person and $1,000 for property damage directly caused by each vehicle allowed this security to be reduced to $500 in the form of a bond for each motor vehicle. These bonds are purely liability bonds.



FRONT OF GARAGE WHERE BUSES ARE REPAIRED AND PUT UNDER COVER WHEN NOT IN SERVICE

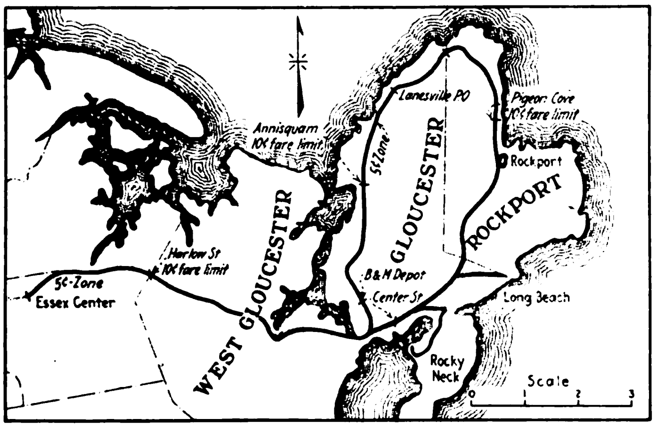
Another requirement of the ordinance provided that metal plates bearing the words, "Licensed Motor Vehicle, No. — , Gloucester, 1921, —— passengers," setting forth the serial number of the license, the date and number of passengers exclusive of the operator that the bus can carry, are issued by the city and must be displayed on the inside dash of the motor vehicle. Destination signs are required.

The bus operators are also required to file with the city all operating schedules and tariffs and only the fares shown in the tariffs may be charged unless seven days notice is given to the city clerk and approval of the new rates is granted by the City Council. In case the increase is denied by the Council the bus company must continue operation under penalty as described herewith.

Each individual motor bus operator must hold a driver's license granted by the city. Applicants upon passing the requirements are given a badge which must be openly displayed when they are operating their buses. Such badge licenses are not transferable. The city clerk issues an identification card to successful applicants, which must be carried by the operator at all times when on duty. Such license fees cost $1 per year.

Motor bus drivers by the ordinance are prohibited from smoking while driving, from collecting fares, making change, etc., or discharging passengers while the vehicle is in operation. They are not allowed to pass up prospective passengers unless the bus they are driving is carrying its full licensed load. Other regulations provide for operators turning in all articles left in their vehicles, for stopping prior to crossing railroad tracks, for adequate interior illumination at night, for maintaining heat in winter and for reporting injuries to passengers or damage to property in which they are involved.

License fees payable to the city of Gloucester for the use of the streets are $10 per year per bus licensed. This is the only payment to the city for the use of the streets. In addition the company pays the usual property tax and state vehicle license tax. In the event that the motor bus licensee fails to comply with the terms of the license granted, except when prevented by conditions beyond his control, he forfeits to the city of Gloucester $1,000, not as a penalty but as liquidated damages for each and every month during which failure continues. Before his operating license again becomes effective he must file a bond not exceeding $5,000 for the faithful performance of the conditions of the license.



MAPS SHOWING MOTOR BUS LINES AND FORMER STREET CAR ROUTES

Licenses for the operation of vehicles as well as the individual driver's licenses can be revoked or suspended by the Municipal Council after a hearing for violation of any law of the Commonwealth relating to the operation of motor vehicles or municipal traffic ordinances, provided such violation has continued for a period of five days after proper notice to the licensee.

At least sixty days prior to the termination of licenses for the right to operate vehicles the licensee must either file petition for a renewal of his license or notify the Municipal Council of his intention to discontinue the operation of motor vehicles when his license expires.

Under the terms of the ordinance pupils' tickets must be sold in lots of ten or forty at one-half the regular cash fare. This is in accordance with the Masssachusetts street railroad laws.

As a precaution against accidents due to skidding when highways are so slippery as to be dangerous all vehicles must use proper non-skid tire chains. Vehicles are also required to carry an extra tire if equipped with pneumatics.

In December, 1920, the Gloucester Auto Bus Company was organized under the Massachusetts laws with a capital of $150,000, divided into 15,000 shares of $10 each. The company has a paid in capital of about $75,000. Some 6,500 shares represent the garage valued at $20,000 and part payment of the buses at $45,000. The fleet of 16 motor buses represents an approximate value of $125,000.

ROUTES OPERATED

It was not until May 1, 1921, that the Gloucester Auto Bus Company actually took over the entire transportation of passengers to Rocky Neck, Annisquam and Lanesville, as well as to West Gloucester and Essex. On Aug. 1, 1921, motor bus service was extended to Long Beach, Rockport and Pigeon Cove. Two trips per day were also inaugurated between Rockport and Lanesville via the Cape Road, about the same time. The five bus routes which are shown on the accompanying map follow the streets for the most part formerly used by the trolley cars, the only exception being the line to Long Beach, which travels an entirely different route due to the fact that the railway company reached that point via a trestle over the marshes.

The city of Gloucester, in improving the roads for bus operation, has in some cases, especially along Main Street, covered up most of the trolley tracks with bituminous macadam. In Rockport there are places where concrete roads have been built directly on top of the former car tracks.

The base schedule maintained calls for a thirty-minute headway on the East Gloucester-Lanesville line and hourly headways on the other routes. During the morning and evening rush hours short trips are inserted so as to double the service for the greater part of the routes. The maximum number of buses in operation at one time is thirteen or fourteen. Regular drivers are paid $25 per week and spare men 50 cents per hour. Four men who drive rush-hour trips only also wash and clean their own buses.

Table I gives some statistics as to the length of the lines and the service maintained.

TABLE I

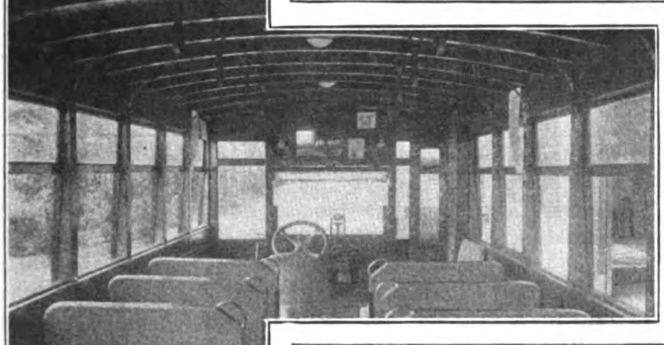
Route	Length One Way, Miles	Service Inaugurated, 1921	Trips per Day Each Way	Normal Headway	Rush-Hour on Headway	One-Way Fares, Cents
Rocky Neck-Lanesville	8.01	May 1	32	60	30	(d) 15
Rocky Neck-Annisquam (a)	6.08	May 1	12	..	30	10
West Gloucester (Harlow Street)	5.56	May 1	25	60	30	10
W. Gloucester and Essex center (b)	7.82	May 1	4	60	60	(d) 15
Gloucester-Rockport-Pigeon Cove	7.02	Aug. 1	25	60	30	(d) 15
Long Beach (c)	2.25	Aug. 1	25	60	60	10
Rockport-Lanesville via Cape Road	4 0	Aug. 1	2	..	..	10

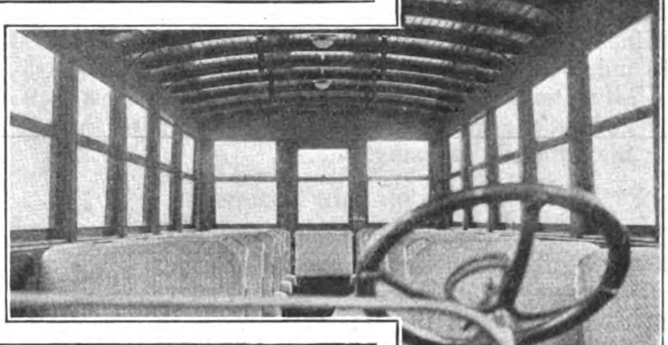
(a) Short line service, rush hours only.
(b) Rush hours only.
(c) Summer beach resort. The weather governs the headway.
(d) Minimum fare 10 cents, with additional 5-cent zone.

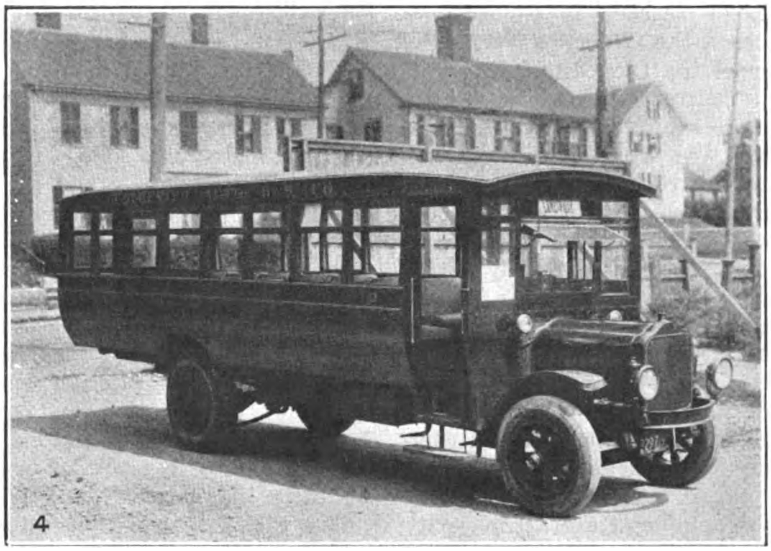
RATES OF FARE CHARGED

Fares are based on a modified zone system for each route with the minimum fare fixed at 10 cents without transfers between the various lines. School tickets are sold in lots of ten or forty in compliance with the Massachusetts statutes as provided in the bus ordinance.

The minimum fare points from the center of the city for each route are marked on the accompanying map. In reality it is possible to ride further on the motor buses than it was on the street cars for the same fare. This is especially true of the lines to West Gloucester and to Rockport, where the present 10-cent fare limit is a considerable distance beyond the fare point established by the trolley zone system.







No. 1. Loading at mid town terminal on Main Street, Gloucester.
No. 2. Looking forward in Type A bus body, showing fare box in relation to driver's seat.
No. 3. Interior of Type A bus body, showing seating arrangement.
No. 4. A 3½-ton White Model 40 chassis with body seating thirty-seven. Some bus, even though it is numbered 13.

Johnson fare boxes are used exclusively for fare collection purposes. The system in vogue is very simple. Passengers deposit their fare directly in the box irrespective of whether 10 cents or 15 cents. On trips outbound from the center of Gloucester fares are deposited by the passengers as they leave the bus. On inbound trips the whole fare is deposited as the passenger boards the bus. The only record kept by the bus driver is the fare box reading when he takes and leaves the bus, for purposes of settlement. No record is kept of passengers carried or of collections by trips or of the number of trips run. In fact, not even a mileage record of bus operation is kept by the company from which to compute unit costs.

EQUIPMENT

The company has available for service, under a trust certificate or partial-payment plan, sixteen White chassis of three different carrying capacities. Thirteen are Model-20 chassis and three Model 40 chassis. The frames in each case have been lengthened about 18 in. and brackets have been riveted to the side frames to give the body a wider bearing surface on the frame.

Wooden bodies are used, built by the Essex Truck Body Company, Lynn, Mass. They have drop sash windows and folding service door and a rear emergency door. The bodies on the Model 20 chassis are 17 ft. 10 in. long and 7 ft. 6 in. wide; they weigh, exclusive of the seats, approximately 1,750 lb., which is equivalent to 65 lb. per seat. The two types of bodies on the Model 40 chassis are 30 in. and 50 in. longer but of the same width and weigh proportionately more than the smaller type A. The cost of the bodies on a seat basis is about $55 per seat.

Table II on page 776 gives in detail some of the principal dimensions. The general appearance of the buses is shown in the accompanying illustrations. The upper illustration shows one of the Type A buses. The bus illustrated on page 773 is the 3½-ton truck chassis (Model 40) with a chain drive and is called Type C. The interior view shows the seating arrangement in Type A. The only difference from this in the larger type is a longitudinal seat at the left of the driver, extending up to the front dash. Heywood-Wakefield seats with rattan covering are used throughout.

The buses are equipped with giant pneumatic tires. All rear tires are 44 x 10. The front tires on Type A buses are 36 x 6, while Types B and C use 38 x 7.

In the winter months when it becomes necessary to use tire chains it is planned to put 40 x 8 pneumatic tires on the rear wheels. Several makes of tires have been tried. One bus was even equipped with Overman cushion tires, but due to the rough roads that are encountered the riding qualities were not found to be as good as with the pneumatics. At present Firestone tires are used exclusively.

The cost of the Type A bus complete and ready to run is about $7,000. Type B bus costs about $1,000 more. This cost, if figured on a seat basis, is equivalent to approximately $250.

GARAGE AND SHOPS

The company owns a spacious garage within two or three minutes run from the center of the city. It is of cement block construction, one story high with tar roof and contains approximately 20,000 sq.ft. of surface. The repair shop and offices of the company are located in this building. The shop occupies the left corner and the office the right front.

While the company does not keep a detailed record of trips nor of bus-miles run, nor of the traffic handled, it does keep a record of all earnings and expenses. Such figures, however, from a transportation standpoint are almost valueless as they have not been reduced to unit for comparative purposes.

All materials are purchased locally through one of the large local garages, the officers of which have an interest in the auto bus company.

VIEWS ON THE SITUATION

The Mayor, Percy W. Wheeler, who has always been a strong bus advocate, says in relation to the bus operation: "The Gloucester Auto Bus Company has given very good transportation. We have had one of the most successful summer seasons in Gloucester's history. Early in the season the Council gave me, as Mayor, full power to compel the Gloucester Auto Bus Company to live up to its contract with the city. We are getting a great deal more rapid transportation than under the street railway. We have not received a single complaint from any patron of the road as to injury of person or wearing apparel or of any discourteous treatment by any bus operator.

"We have had some four or five extremely heavy rainstorms which caused the worst washouts in our streets we ever have had. Amid all these thunder showers and storms the buses never missed a trip. The street railway would certainly have been delayed a number of hours under like conditions. As far as I know there is not a single suit against the bus company for injury of property. As far as the transportation having been kept up, it has been continually improved. I think it is the opinion of a great majority of the citizens that the bus transportation is very much better than the one-man car transportation given us by the street railway company.

"The factory employees and all laboring people, I think, are more than satisfied with this form of transportation as in many cases it has given them an opportunity of going to their homes for dinner and returning to work as there is at least 30 per cent saving in running time. The buses are kept very clean and are entirely free from the dust condition which we had with the street cars. On the whole, I believe Gloucester today has the best transportation system of any city in the State."

TABLE II—PRINCIPAL DIMENSIONS OF GLOUCESTER BUSES

	Type A	Type B	Type C
White chassis—model	20	40	40
Method of drive	Worm	Internal gear	Chain
Number of each type	13	2	1
Seating capacity	27	35	38
Body dimensions (inches)			
Length over all	276	300	331
Width over all	90	90	90
Headroom	73	74	73
Width inside of seats	82	82	82
Length inside	209	240	267
Height of floor	33½	39½	40½
Height of first step	16	19	18½
Height of risers	7½–9½	9½–11	10–12
Service door—clearway	22	22	22
Side post—centers	30	30	30
Width of aisle	16	16	16
Seat—centers	26½	26½	26½
Chassis dimensions (inches)			
Wheel base	169	178	188
Body overhang from rear axle	85	90	103
Body overhang from end of frame	57	41	48
Tread of wheels	61	66	66

A business man and manufacturer that is a large employer of labor was asked to comment on the bus transportation system. He says: "At present we are operated exclusively on a bus transportation from which there is very little complaint on the part of the public. Some people are willing to put up with many inconveniences in order that they may be transported home as quickly as possible, and there is no question but that the bus does give more rapid transportation than the car system, but I think we must not lose sight of the fact that there are many disadvantages. The bus proposition has not arrived at such a state of excellence that we can entirely depend upon it.

"The situation in Gloucester was somewhat different, I believe, than in other places, and the public voted for the bus in preference to the electric car, due to the fact that it is the general impression that the trustees of the Bay State Street Railway did not exactly play fair with the people of Gloucester. They offered transportation at cost which would necessitate a public fare the same or greater than the present bus fare, and in addition the city was obliged to guarantee the difference between the revenue derived from the fare and the actual cost of operation, which was a rather considerable sum. It was the question of the citizens of Gloucester and the trustees of the railway not getting together and neither being willing to give way, each thinking that the other would sooner or later change their mind. Personally I am in favor of the street cars, but only under certain conditions. I do not believe we should have street cars with the present bus fares and then be asked to contribute so heavily to the operation of the road. There are many items of depreciation and overhead that I do not believe should be borne by this system alone and figured in each part of the cost of operation. There seems to be little likelihood of the trustees opening the line unless the citizens of Gloucester will accept their proposition, and the majority of the citizens of Gloucester apparently have made up their minds that they will continue the buses unless the trustees of the Bay State Street Railway will recede from their former decisions and provide a satisfactory service at economical charge, including fares and also a fair burden of the overcharge.

"I do not look upon the bus proposition in such glowing terms as outlined by our Mayor, but I will say that I hear very little criticism of the present bus transportation; in fact, I think even far less than we heard the last few years of the car transportation furnished by the Bay State Street Railway."

On the other hand, there are street railway advocates and some of these claim that if two groups were made of Gloucester and the opinions of the people stated, there is no doubt that there would be a pronounced sentiment in favor of the street railways. Up and down Main Street are merchants who have requested that the cars be put back and their explanation of their unwillingness to come out openly as an organized unit is that they do not wish to become embroiled in a political controversy.

The claim is also made that not all the local politicians are of the same opinion as the Mayor. Alderman Silva does not believe the buses have the same merits as the street cars. At a hearing before the Massachusetts Department of Public Utilities, as late as Sept. 22, he stated that while the buses in Gloucester are new the service was at its best, but he questioned, as the buses wore out, whether the same standard would be maintained.

It is also understood that the Chamber of Commerce has taken a letter referendum from approximately 600 of its members asking that they state what they preferred to discuss in open forum. This forum was held in accordance with the wishes of the members and there seemed to be no dispute on the point that the advocates of the street railway greatly outnumbered the advocates of the buses.

Some of the hotel people who cater to the summer visitors, and there are a number of spacious hotels along the former rail routes, have complained to the railway company that the loss of business for 1921 was large. These hotel operators have asked the railway to restore the car service before next spring.

Analysis of Bus Operation

One New England Company Finds Supplementary Bus Service Is Not of Itself Profitable—Bus Operation on Seat-Mile Basis Exceeds that of Rail Service

THE Connecticut Valley Street Railway, which has been operating a motor bus route between Greenfield and Turners Falls, Mass., since Nov. 4, 1919, has from its experience reached a conclusion that is of interest to other railway-bus operators. In a recent letter the company says:

"Our conclusions up to date on this type of transportation, which have been reached after a comparatively short time, and by no means through the results of a large operation, are that as a means of supplementing existing street railway service there is a small possibility of making both ends meet in the operation of the buses. The territory which otherwise would not be served by transportation facilities on account of the cost of creating it can be served at a much less original investment by bus operations. Its ability, however, to take care of large loads is not as flexible as that of the street railway and the comparative cost of operation, even under present high costs, is still in favor of the street cars, if the costs are measured by the expense of providing seats per mile.

"It may be said, however, in justice to the service which we inaugurated, that we succeeded in driving out the unregulated competition which was seriously affecting our revenue, and we have also been able, by having both facilities within our control, to curtail substantially our street car service, as both the bus route and street car route reach the same termini, but by different routes."

An article in relation to the motor bus line operated by this company was given in the ELECTRIC RAILWAY JOURNAL, April 24, 1920, page 853. Since the publication of this article the company has discontinued the operation of buses over that portion of the route in Greenfield covered by Chapman, Pierce, Federal and Sanderson streets. This discontinuance was due to the lack of passengers over this part of the route.

Since that time the bus schedule has been cut in half and co-ordinated with the trolley schedule to provide a thirty-minute headway between Greenfield and Turner's Falls. The bus leaves on the hour from Greenfield and the trolley thirty minutes later. The running time for the bus is less than fifteen minutes, as against twenty minutes on the trolley. This gives an average running speed of 12.5 and 9.6 m.p.h. for the bus and trolley, respectively.

INCOME STATEMENT MOTOR-BUS OPERATION, YEAR ENDED DEC. 31, 1920, CONNECTICUT VALLEY STREET RAILWAY

	Actual	Per Bus-Mile, Cents
Passenger revenue	$20,263.31	28.23
Operating expenses:		
Maintenance of equipment		
Inspection	$1,781.24	2.48
Repairs to body and chassis	4,259.99	5.91
Tire costs	2,146.39	2.98
Depreciation of equipment	6,004.00	8.36
Total	$14,191.62	19.73
Transportation labor	4,848.85	6.75
Cost of power		
Gasoline	3,749.75	5.23
Oil	159.04	.22
Total	$3,908.79	5.45
General and miscellaneous:		
Insurance	$1,407.11	1.95
Miscellaneous credits	149.78	.21
Total operating expenses	24,206.59	33.67
Net operating revenue	3,943.28	5.44
Taxes	300.00	.41
Interest on $16,500 at 5½ per cent	900.00	1.22
Net income	5,143.28	7.07
Total cost of service	25,406.59	35.38
Bus-miles operated	71,779	......
Bus-hours operated	9,698	......
Average scheduled speed (m.p.h.)	7.42	......

The operation of this co-ordinated schedule shows that the thirty-minute bus headway provided an excess of service over the passenger requirements.

The bus fares at present are those that have been in effect since March 15, 1920, and divide the line into three 5-cent fare zones. The 10-cent minimum fare allows a ride of two full zones or less. No transfers are issued to or accepted from the trolley cars. Workmen's tickets are sold in lots of twenty-five for $3 and are good only during certain hours of the day.

The buses provide seats for nineteen passengers only. Standees are not allowed. The automotive equipment consists of three 1919 Cadillac model 57-B chassis. Since being put into service each vehicle has averaged about 40,000 miles.

The accompanying table gives an analysis of the cost of service of motor bus operation for the year ended Dec. 31, 1920.

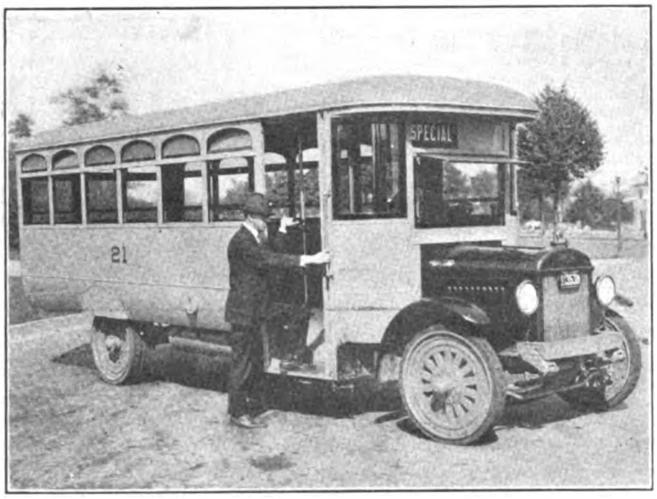
At a meeting of the National Editorial Conference of Business Papers, held in Chicago, on Oct. 24, a message was read from Secretary of Commerce Hoover, who said, in part: "The editors of the business press have shown a fine spirit of service. Your opportunity for leadership is unique and unchallenged. Upon you rests in large measure the responsibility of the control of industrial thought and opinion in the detail of the industrial, economic and technical problems which confront us. I wish your conference every success in carrying forward your high and constructive purposes."

New Type Bus Installed in Baltimore

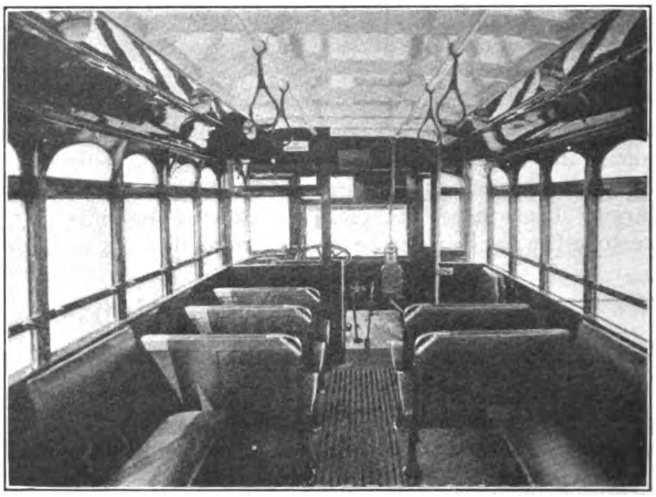
The Motor Bus Has a Knight Sleeve Valve Motor and a Semi-Steel Body—Seats Twenty-five Passengers—Operates on Regular Schedule

ON SUNDAY, Oct. 16, the Baltimore Transit Company put into regular service on its Charles Street motor-bus line one of the new-type Republic Knight motor buses having a composite or semi-steel body. This motor bus has a seating capacity of twenty-five and can carry approximately fifty per cent standees. If figured on a basis of 2.5 sq.ft. per passenger the carrying capacity is fifty.

The motor bus is of the type recently displayed at Atlantic City during the association convention. The body was built by the Hoover Wagon Company, York, Pa., and has oak sills and flooring with ash posts and car lines reinforced with steel gussets and angles. The roof, which is practically flat, is covered with Agasote. The inside panels under the window sills are three-ply Haskelite with gum wood for the outside finish. The outside panels are sheathed with sheet steel. The windows are drop sash and so arranged that they do not drop entirely out of sight but act to prevent passengers from sticking their heads and arms outside of the bus.



THE NEW BALTIMORE BUS, WITH ITS SINGLE 15-IN. STEP AND 26-IN. SERVICE DOOR, IS CONVENIENT TO BOARD



THE INTERIOR FITTINGS AND THE UPHOLSTERED LEATHER SEATS, WITH PLENTY OF KNEE ROOM, MAKE FOR A COMFORTABLE RIDE

Ventilators, three on a side and staggered, fit in over the drop sash side windows. Hale & Kilburn stationary seats, with Fabrikoid imitating Spanish leather covering, are used. A novel feature of the seat arrangement is the method employed to obtain more knee room with the cross-seats on 28½-in. centers. This is done by cutting in the seat-backs so as to give a 10-in. knee room in addition to the 17-in. cushion width.

Inside lighting is furnished by six dome lights just over the advertising racks, using 16 cp. lamps. There are in addition lights for a Hunter roller sign, a step light, a fare-box light, and the usual tail and head lights.

The driver has an excellent vision in all directions, as will be noticed from the illustrations. This was accomplished by using round glass in the front vestibule windows.

The power plant consists of a four-cylinder Knight sleeve valve motor having a 4⅛-in. bore and 4½-in. stroke. A Clarke rear end and Fuller transmission with four forward and a single reverse speed make up the power plant units.

This type of motor bus is the result of a special study on the part of the Republic Truck Company and has been designed solely with the idea of providing safety and comfort of passengers. It is by no means a common motor truck chassis mounting a special body but has been designed new from the ground up. With a wheel base of 176 in., a track tread of 66 in., extra long springs on both front and rear axles, Morand cushion wheels and Firestone cushion tires, the bus has excellent riding qualities.

As for convenience of passenger interchange, the service door, which is at the front on the right, has a clear width of 25 in. and folds inwardly; the seats are so arranged that the largest amount of standing space is over the rear axle. This arrangement makes it possible to keep the aisle, which is 18 in. in width, practically clear of congestion. The seating arrangement is illustrated in the interior view.

The bus as operated was fitted in as a part of the regular schedule which calls for a six-minute headway, except during rush hours, when a three-minute headway is maintained. The route is 3.3 miles long and extends from the center of the city to University Parkway via Charles Street. The schedule calls for twenty minutes running time, with a four-minute layover at each end, which gives forty-eight minutes for a round trip. The average running speed for the line is 9.9 m.p.h. Considering the grades that are encountered on the outbound trip this is a pretty fast schedule and keeps the operator on the *qui vive*, especially so when there is a large amount of vehicular traffic with which to contend. A detailed story regarding the route in question is given in the ELECTRIC RAILWAY JOURNAL for Jan. 3, 1920, page 13.

	All Dimensions in Inches
Length over all	264
Wheelbase	176
Minimum turning radius	336
Length of body	216
Outside width	88
Inside width at seat cushions	84
Headroom	75
Height of floor—light	28
Height of floor—loaded	27
Height of step	15
Height of riser	13
Size of tires (*a*)	34 x 4
Cross seat centers	28½
Type motor	Knight Sleeve Valve
Cylinder diameter and stroke	4⅛ x 4½

( ) Single tires on front wheels; dual tires on rear.

Some of the more important dimensions of the bus are given in the accompanying table.

Rectifier Substations Developed Abroad

Conversion of Power on Heavy Electrification Systems in Europe Is Being Made with Mercury-Arc Rectifiers in Conjunction with Rotary Substations—Arc Apparatus Perfected with Outputs Up to 900 Amp. at 800 Volts

By J. H. Milliken
Midstates Engineering Company, Chicago, Ill.

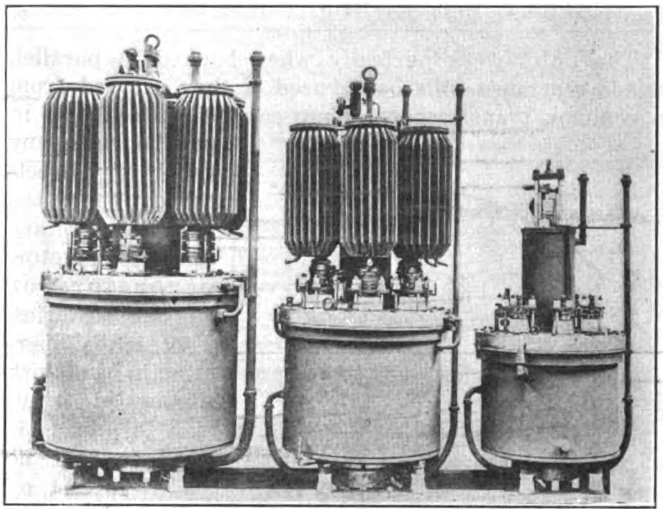
WITH a record of 100,000 kw. of installed capacity in Europe, the large power rectifier has reached a point where it merits consideration in American practice. The development work in Europe has been carried on and the apparatus brought to its present state of operating efficiency by Brown, Boveri & Company of Baden, Switzerland.

Recently this company received an order in connection with the electrification of the Chemins de Fer du Midi (one of the large railroads in France), which includes three rectifier substations of 3,600-kw. capacity each, one rectifier substation of 4,800-kw. capacity and several rotary-converter substations, two of which latter are to be automatically controlled. The specification under which these rectifiers were purchased requires that they shall be able to withstand 50 per cent overload for thirty minutes and 200 per cent overload for five minutes. The applied pressure will be 1,500 volts for lines equipped with third rail and 3,000 volts for lines equipped with overhead trolley in the heavier traffic zones. Information at hand about this electrification work is very meager, but it is understood that this railroad has heavy passenger and freight service over a line including heavy gradients. The weight of trains is 480 tons and the locomotives have an output of 1,400 hp. and weigh sixty-five to seventy tons. They are provided with regenerating equipment, this accounting for the necessity for some rotary-converter substations, as it is impossible to return power to the alternating-current line through the rectifiers. The converter substations will therefore be located at those points favorable for regeneration.

In addition to the Midi Railroad, three other French railways, Paris-Orléans, Paris-Lyons-Mediterranean, and Chemins de Fer de l'Etat, have accepted the direct-current system for the electrification of their lines, employing rectifier substations. It is understood also that a 500-kw. 550-volt substation, supplied with 8,500-volt, 42-cycle primary current is in use in railway work in Milan, Italy. Another is in use in Asnières, France, of 300-kw. capacity at 600 volts. The Birmingham Corporation of England has a 275-kw., 450-volt equipment at Harbone substation.

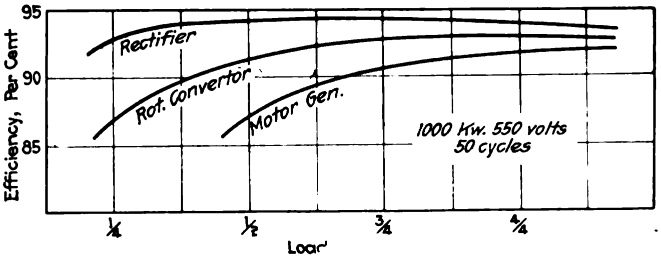
In constructing the large power rectifier the results obtained from the glass-bulb type are of little assistance as the aspect of the problem is entirely changed. One of the principal problems connected with this apparatus, but one which with the bulb type was quite simple, has been to make a tank of sufficient capacity that would be absolutely tight under all conditions. Without going into detailed description, it is sufficient to say that in the apparatus under the present state of development the problem of sealing has been solved satisfactorily.

The rectifier consists of an arc chamber or cylinder having a cylindrical extension at the top, both cylinder and extension being built of steel plate. The arc operates in the arc chamber between the main anodes, of which there are six when six-phase connection is used, and the cathode or body of mercury in the bottom. The arc is started by an auxilliary ignition anode which automatically makes contact with the mercury cathode when the circuit through a solenoid operating this anode is energized.


Three Standard Units Designed for Direct-Current Output at 300, 600 and 900 Amp. at Any Voltage up to 800

Supplying each rectifier bank or individual cylinder as the case may be there is a stepdown transformer suited to the conditions of primary voltage on the supply line and delivering current to the rectifier at a voltage suited to the required direct-current output. This requirement is similar to that of rotary convertors, though the ratio of secondary voltage to the direct-current voltage differs from that of either the three-ring or the six-ring converter.

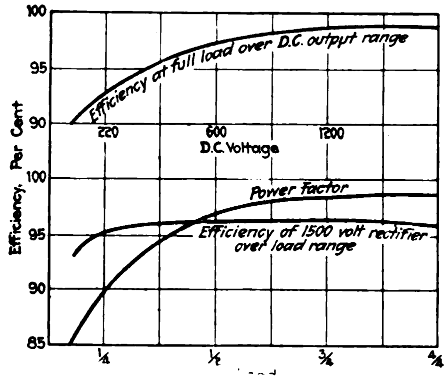
The rectifier economizes floor space as the cylinder unit need not be accessible for operating attention, all operating being done from the switchboard. The cylinder unit is not heavy and has no moving parts, so foundations are not required and it may be placed on galleries or on floors in buildings not especially designed for substations. If erected in the center of the room, ducts or conduit for cable or bus must be provided in or below the floor slab.



Comparison of Efficiency of Steel-Clad Rectifier, Rotary Converter and Motor-Generator Over Load Range

The simplicity and ruggedness suit it especially to automatic and portable substation uses. The attendants in a non-automatic substation need have no more skill than would be demanded for a transforming station, as the operating functions are no more involved than switching. The standard single units now in production and use are:

Type	Amperage	For Voltages Up to
G 3/16	300	800
G 4/6	600	800
G 5/6	900	800
HG 3/6	300	1,200



Some Characteristics of the Steel-Clad Rectifier

The units work perfectly when banked in parallel, anode reactance coils being used if they are fed from a common transformer. They can be worked also in parallel with any type of direct-current apparatus such as rotary converters, motor-generators or storage batteries. The parallel operation in bank with proper distribution of load is fixed so that no adjustment of voltage is necessary when putting in or taking off units. Compounding is provided as required to take care of voltage change to meet changing load. Adjustable output voltage through a wide range is possible by imposition of an induction regulator upon alternating-current supply.

One of the most pronounced advantages of the rectifiers, particularly for peak, mill and railway work, is its remarkable overload capacity. The short-time overload capacities are as follows:

Duration of Overload, Minutes	Per Cent of Normal Rating Permissible
2	300
5	200
10	150
30	125

There is no flashing over or damage to the rectifier from external short circuits. Momentary short circuits do not affect the apparatus at all, and severe ones are, of course, cleared by the usual protecting breaker.

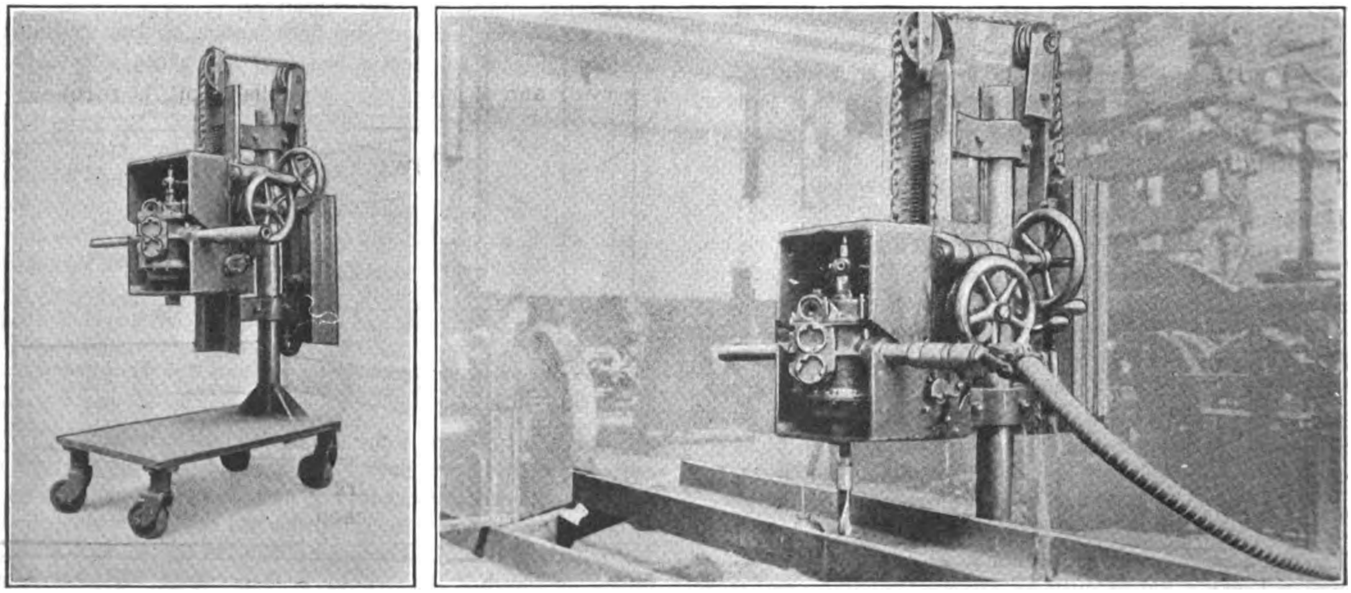
The characteristics of the units evidence high power factor over all, very high unit and over-all efficiency at all loads, and excellent regulation with compounding where required. The power factor averages around 95 per cent, and the efficiency at full load varies from 92 to 98 per cent, depending on the direct-current output voltage utilized.

The efficiency of a cell itself does not change with the load current, but in taking account of complete plant, transformer and auxiliaries must be included. From the accompanying curves it will be seen that the efficiency remains virtually steady down to one-quarter load, when these fixed losses have a marked lowering influence on the curve. It may also be that the rectifier has considerable advantage over the rotary at less than full load and somewhat better efficiency at full load. The very high and almost flat efficiency curve of a rectifier supplying 1,500 volts direct current is shown in one of the curves.

The records of a number of stations that have been in service for a sufficient length of time for observation indicate that the apparatus gives reliable performance with very small maintenance cost.

Portable Air Drill

ACCOMPANYING illustrations show a form of portable air drill which was designed by F. P. Maize, master mechanic of the Portland Railway, Light & Power Company, Portland, Ore., to drill 15-in. x 41-ft. channel iron for freight cars. After use on this particular job it was found of great convenience for other work, as it drills as fast as an ordinary drill and can be easily attached at any desired location. The air drill is mounted in a cage and slots are cut for the arm, and the feed screw is screwed tight against the top. This holds the drill tightly in place, and the cage can be moved up and down by a feed at the side of the machine. By this construction one man can handle the machine very easily and make rapid changes. One illustration shows the machine drilling a 41-ft. channel iron.



At Left, Handy Portable Air Drill. At Right, Air Drill in Operation Drilling Channel Iron

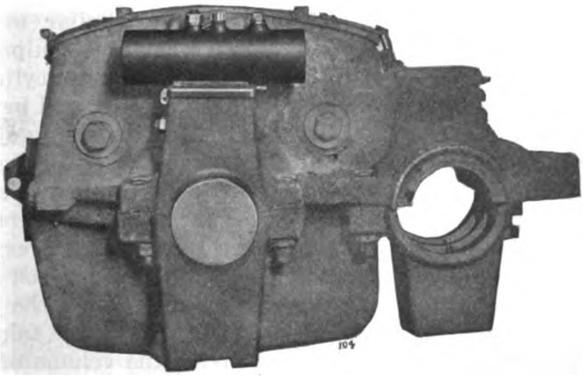
New Type Vacuum Oiler

Oil Is Supplied to the Top of the Waste Packing From an Oil Chamber Added to the Top of the Bearing Housing and Welded to the Cover

LUBRICATION is a vital factor in the efficient operation of electric railway equipment, for upon it depend both continuity of service and economy in maintenance. The actual cost of lubricants is small in its relation to other operating expenses, but the expense of replacing equipment parts damaged or destroyed through lack of proper lubrication sometimes amounts to a large item.

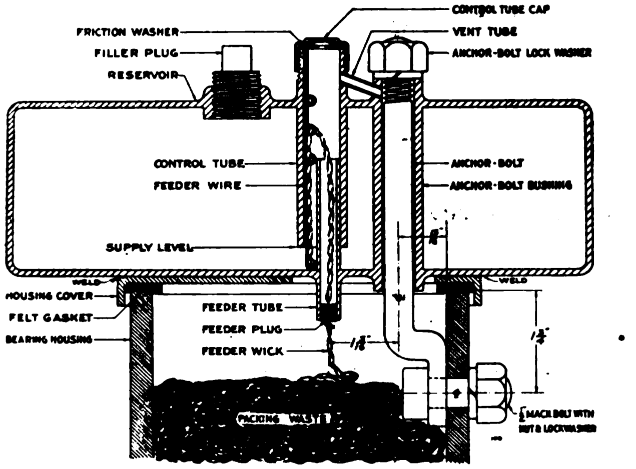
Armature bearings are considered as the most vital of all the bearings in electric car equipment, since a hot armature bearing usually results in damage to the costly windings of the armature. Several methods of lubrication for railway motor bearings have been tried, but oil and waste lubrication is the one now universally used. The basic principle of oil and waste lubrication is capillarity, which is afforded by the interstices or spaces between adjacent fibers and strands of the waste, through which oil is supplied to the bearing. The rate of oil flow with waste packing is dependent upon four factors—first, the height of capillary lift; second, the effective cross-section of the mass; third, the viscosity of the oil, and fourth, the difference in saturation density at the two ends of the mass. With a modern motor this means that the rate at which oil is supplied to the bearings depends upon the distance between the oil in the bottom of the housing and the bearing, the amount and compactness of the waste in contact with the axle, the thinness or thickness of the oil, and the rate at which the revolving shaft or axle reduces the saturation of waste at the point of contact.

The efficiency of railway motor lubrication is impaired by the fact that the packing waste cannot be maintained in the proper saturated condition at all times. With the older types of motors the reason is the inability to control the oil feed against the combined factors of capillarity and gravity. With later types of motors it is difficult to maintain the oil level at a fixed point, and, as a result, the rate of feed varies. The efficiency of lubrication is also impaired by the entrance of dirt and other abrasives into the bearing housings each time the covers are opened for oiling or inspection by improperly fitting covers and weak or broken cover springs.



VACUUM OILER INSTALLED ON COVER OF MOTOR HOUSING

In an endeavor to overcome some of the difficulties of keeping waste properly saturated, the Railway Improvement Company, New York, has placed a new vacuum oiler on the market. This consists of a cylindrical steel reservoir, which can be mounted on the top of the bearing housing. By welding the oiler to the cover, both the cover and oil chamber can be held firmly in position by use of an anchor-bolt bolted to the housing. An anchor-bolt bushing passes entirely through the oil chamber so that the assembled oiler and cover can be slipped over the anchor bolt and fastened by means of a nut and lock washer. The top of the reservoir also contains a removable filler plug and a control tube. A feeder tube extends from the inside of the control tube through the housing cover with its lower end just above the level of the waste packing. The lower end of this feeder tube is closed with a felt plug through which passes a feeder wick, composed of special wool strands. From the feeder tube this wick passes through a wire loop and then down the control tube to the bottom of the reservoir.



CONSTRUCTION OF VACUUM OILER

The rate of oil feed necessary will vary with different types of motors, the character of the service, the quality of the oil used, the packing waste, the viscosity of the oil and the bearing clearances. Different rates of feed are provided in the oiler by varying the height of the upper end of the wick. To provide for this, the feeder wire has three loops through which the wick can be passed, and thus the capillary lift is increased or decreased to meet the conditions.

Two capacities of oilers are being furnished. The type D oiler is suitable for motors up to and including 60 hp. It consists of a steel reservoir 3 in. in diameter and 10 in. long with a capacity of 8 gills. For motors above 60 hp., the type DD oiler, having a 3½-in. x 10-in. reservoir and a capacity of 12 gills of oil, is furnished.

Electric Power at a Million Volts

SUCCESSFUL generation of electric power at more than 1,000,000 volts at commercial frequencies has just been accomplished at the High Voltage Engineering Laboratory of the Pittsfield Works of the General Electric Company. In the course of the experiments the gap spacings for sphere and needle spark gaps were carefully checked up and prolongation of existing curves (750,000 volts and below) were found correct up to 1,100,000 volts.

Arc-over tests were also made on strings of standard 10-in. suspension insulators up to 1,100,000 volts. The laws of corona were checked at similar potentials and found to hold. A short transmission line was tested for corona conditions and results indicated that a line using 4-in. diameter conductors or larger would be necessary at 1,000,000 volts.

Machine Makes Pre-Treatment Incisions in 500 Ties per Hour

A MACHINE for making incisions in ties to secure the maximum penetration of a preservative that is applied later has been operating in the lumber yard of the Charles R. McCormick Company at San Diego, Cal. This is the same machine described in the ELECTRIC RAILWAY JOURNAL for April 30, 1921, page 819, but as set up at San Diego the arrangement is such that ties are handled very rapidly.

EDGE VIEW OF A PERFORATED DOUGLAS FIR TIE

Instead of a greased plank formerly used in conveying ties to and from the machine a motor-operated chain conveyor is now employed and the crew consists of four men for unloading ties, one for watching the chains, one mechanic and four men for loading ties onto cars. This makes ten men in all. With this arrangement 3,600 ties can be handled in eight hours. As about an hour each day is lost in switching cars to and from the machine, the actual maximum rate of passing ties through the machine is about 500 per hour. Several hundred thousand ties were treated by this process at San Diego for the Santa Fé Railroad.

Paint Spraying Saves Time

A COMPRESSED air paint spraying machine has recently been installed by the Los Angeles (Cal.) Railway for painting trucks. The equipment is called the Aeron painting system and is sold by the De Vilbiss Manufacturing Company of Toledo, Ohio. Results from the use of this machine show that a truck can be thoroughly painted in less than five minutes, whereas the handwork previously took about forty minutes. Owing to the difficulty of reaching all parts of springs by hand painting the work is particularly tedious and slow. The mechanical department of the Los Angeles company rates the paint-spraying machine as a 75 per cent improvement over the hand-painting method. With this equipment three lines of hose are attached to the paint jar. One carries compressed air from the compressor tank to the jar, another carries air through the jar to the handle, and the third carries the paint to the handle. The force of the spray is regulated by the handle, which is shaped like an automatic pistol and works with a trigger. A safety valve on the paint jar prevents excessive pressure.

PAINTING A TRUCK WITH THE PAINT SPRAYING MACHINE

The tank has a capacity of 7 gal. and has a seamless pressed steel shell with welded bottom. The cap is made of cast steel with handles for carrying and for screwing it down so as to render it airtight while in operation.

Double Capacity Air Brakes

THE Virginian Railway operates over heavy grades, some of them as high as 1.5 per cent down grade, and near Elmore the trains have to be pushed up a 2.07 per cent grade. The rolling stock on the Virginian consists of very large cars; for example, 1,120-ton coal cars and the most powerful steam locomotives in the country. The braking problem under these conditions is very serious because the weight of the cars when empty is only one-quarter of the gross weight loaded and because the grade necessitates adequate control. With single capacity brakes the braking force developed is constant in magnitude but varying in relation to car weight. The usual practice has been to design the brake layout so as to provide the highest fractional percentage of braking force on the empty car and then to accept whatever reduced braking ratio might be available for the loaded cars. Usual percentages were 60 for the empty and 15 per cent for the loaded. Any compromise design for the conditions on the Virginian Railway was impossible, so a double capacity brake equipment was used, the layout being designed to provide for 40 per cent braking ratio for an empty car and 40 per cent for the loaded car. The additional force required to raise the braking ratios on loaded cars is obtained by the combination of an additional cylinder and increased leverage, a small load reservoir supplying the additional air.

When the equipment is set for empty car operation the take-up and empty cylinders, which are built in one structure with a small piston operating within the larger, operate as one 10-in. cylinder similar to the standard single capacity brake. When the equipment is set for loaded car operation the take-up cylinder piston first takes up the slack in the rigging and brings the shoes firmly onto the wheels. Then the empty cylinder piston moves out a slight amount, its clutch gripping the notched push rod of take-up cylinder piston, thus supplying additional force. Finally, as the brake pipe reduction continues, the load cylinder moves out a slight amount, gripping its notched push rod and adding to the force already developed through the connecting rods and levers. By this method of slack take-up and short travel of the larger piston the volume of air required for a given application is reduced to a minimum. The new brake was tested out on a train consisting of 100 loaded 120-ton capacity cars and the brakes operated to the complete satisfaction of every one concerned. Among the witnesses of the test were four men who were present thirty-five years ago at the famous Burlington test of the Westinghouse air brake, which did much to cause the universal acceptance of that type of brake on American railroads. This new development is applicable to heavy electric cars.

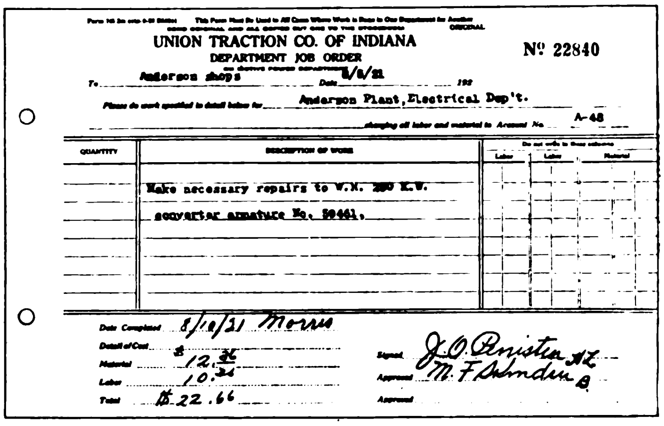
Keeping Armature Repair Records

Careful Record Kept of All Work Done in Armature Repair Department of Union Traction Company of Indiana from Time Armature Is Removed from Service

THE accompanying forms illustrate the methods of keeping records of work done in the armature repair department of the general shops of the Union Traction Company of Indiana, at Anderson. All armature repairs are taken care of at this point with the exception of the work done by one armature winder at the Muncie shop. When an armature is removed from service an armature record tag is attached to it. This tag consists of two parts and gives information as to the cause of removal as well as a complete record of the repairs as carried out, and finally, a record of its reinstallation when again placed in service. All armature repair tags are sent to the office of the master mechanic at the Anderson shop, where a record is kept of all work done.

In addition to the records furnished by the armature repair tags, a daily report is made out by the armature room foreman and sent to the master mechanic's office. This report gives the type and number of the armatures, the defect found and the cause of the trouble. It also includes information as to the repairs made. At the end of each month this information is tabulated in the form of a monthly report to the master mechanic and to the superintendent of motive power. This tabulation gives the various defects which occur for each type of armature owned. The company has fifteen different types of railway motors in service, and a scheme for numbering the armature shafts has been worked out which has proved very convenient and also prevents mistakes as the various types can be readily identified by the numbers.

The first two figures of the number used indicate the type of motor and the following number or numbers indicate the serial number of the armature. For example: Westinghouse No. 112 motor armature has 12 for the first two figures. Similarly the type 121 has 21. The 303 has 03, and the General Electric 205 has 05 as the first two figures of the armature number. The armature repair department also makes repairs to motor generator and converter armatures for the electrical department. This work is taken care of by a department job order, which is issued by the department having the work done. One of the accompanying forms shows the type of order used. Five copies are made of each order. The original copy accompanies the job, the second sheet is sent to the timekeeper, the third is filled in in the master mechanic's office with the date of receipt, the fourth copy is sent to the superintendent of motive power's office, and the fifth copy is kept by the department of issue. When the job is completed the original copy is sent to the office of the master mechanic with the date of completion and the foreman's O.K. This is then sent to the timekeeper and the copy in the master mechanic's file is sent to the office of the superintendent of motive power with the date of completion noted thereon. The storeroom office furnishes the timekeeper with the cost of material used, and this, together with the cost of labor, is entered on the original form. This is then returned to the department of issue for the information of those particularly interested in the work.



ORIGINAL

UNION TRACTION CO. OF INDIANA
DEPARTMENT JOB ORDER

Nº 22840

To Anderson shops Date 8/8/21 192

Please do work specified in detail below for Anderson Plant, Electrical Dep't.

charging all labor and material to Account No. A-48

QUANTITY	DESCRIPTION OF WORK
	Make necessary repairs to W.H. 200 K.W.
	converter armature No. 20461.

Date Completed 8/10/21 Morris

Detail of Cost $

Material 12.36

Labor 10.30

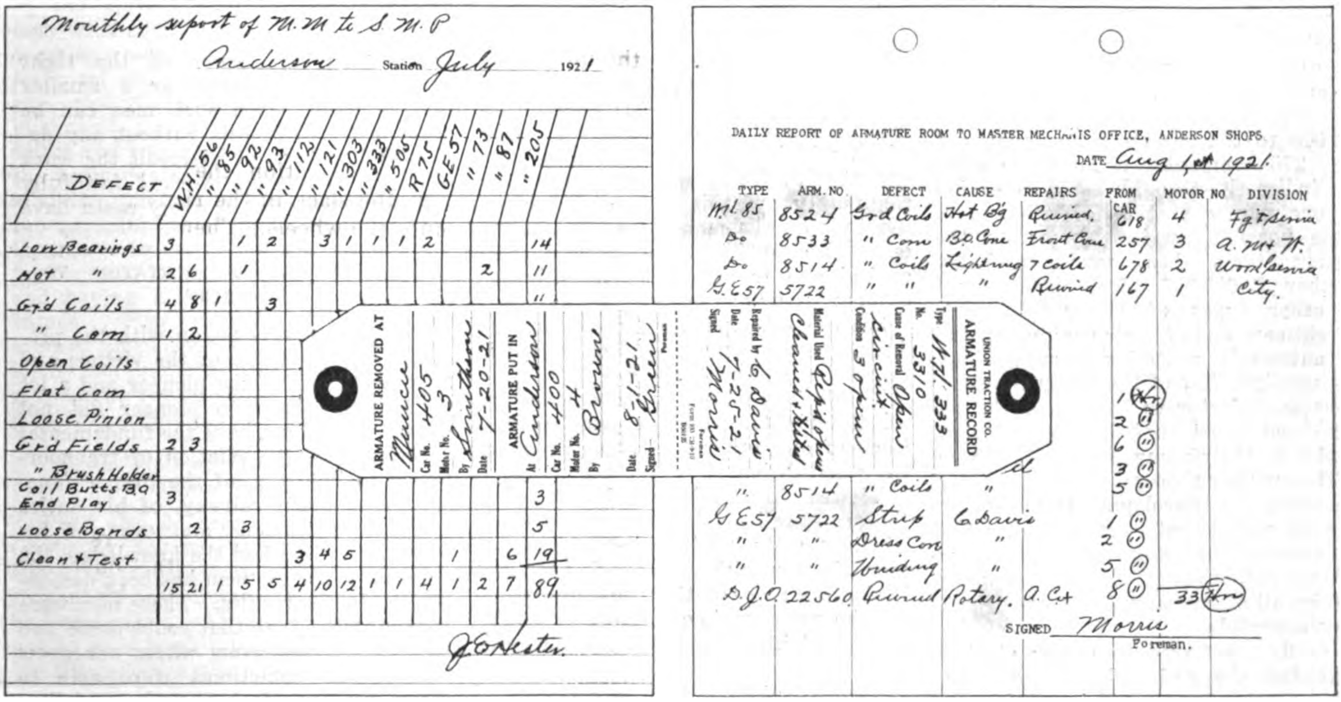
Total $22.66

Signed J. O. Brister

Approved M. F. Bender

Approved

FORM USED FOR JOB ORDERS



Monthly report of M. M. to S. M. P.

Anderson Station July 1921

DEFECT	W.H. 56	" 85	" 92	" 93	" 112	" 121	" 303	" 333	" 505	R 75	GE 57	" 73	" 87	" 205	
Low Bearings	3			1	2		3	1	1	1	2				14
Hot "	2	6		1									2		11
Gr'd Coils	4	8	1		3										11
" Com	1	2													
Open Coils															
Flat Com															
Loose Pinion															
Gr'd Fields	2	3													
" Brush Holder															
Coil Butts BQ End Play	3														3
Loose Bands		2		3											5
Clean + Test						3	4	5				1		6	19
	15	21	1	5	5	4	10	12	1	1	4	1	2	7	89

J. O. Brister

ARMATURE REMOVED AT Muncie

Car No. 405

Motor No. 3

By Smithson

Date 7-20-21

ARMATURE PUT IN At Anderson

Car No. 400

Motor No. 4

By Brown

Date 8-1-21

Signed Green

UNION TRACTION CO.
ARMATURE RECORD

Type W.H. 333

No. 3310

Cause of Removal Open circuit

Condition 3 open

Material Used Repaired open Cleaned + Tested

Repaired by C. Davis

Date 7-25-21

Signed Morris

Foreman

DAILY REPORT OF ARMATURE ROOM TO MASTER MECHANICS OFFICE, ANDERSON SHOPS

DATE Aug 1st 1921

TYPE	ARM. NO	DEFECT	CAUSE	REPAIRS	FROM CAR	MOTOR NO	DIVISION
W.H. 85	8524	Grd Coils	Hot B'g	Rewired.	618	4	Fgt Service
Do	8533	" Com	B.O. Cone	Front Cone	257	3	A. M. + N.
Do	8514	" Coils	Lightning	7 Coils	678	2	Work Service
G.E. 57	5722	" "	"	Rewired	167	1	City.
					1 (Hrs)		
					2 (")		
					6 (")		
					3 (")		
"	8514	" Coils	"		5 (")		
G E 57	5722	Strip	C. Davis		1 (")		
"	"	Dress Com	"		2 (")		
"	"	Winding	"		5 (")		
D.J.O.	22560	Rewired	Rotary.	A. C+	8 (")	33 (Hrs)	

SIGNED Morris
Foreman.

AT LEFT, MONTHLY REPORTS OF ARMATURE DEFECTS. AT RIGHT, DAILY REPORTS OF ARMATURES REPAIRED.
IN CENTER, ARMATURE RECORD TAGS

Manufacturers' Problems Discussed

Mr. Thirlwall Gives Data on Recent Improvements in Electric Railway Equipment—Mr. Pellissier Describes the Buying Problems Which the Railways Are Called Upon to Solve

A "TWO-HEADER" meeting of the New England Street Railway Club was held in Boston on Oct. 13. The afternoon session was devoted to two addresses on the problems of the railway company and the manufacturer. George E. Pellissier, chief engineer and assistant general manager Holyoke Street Railway, spoke for the railway companies and J. C. Thirlwall, railway and traction engineering department, General Electric Company, spoke for the manufacturers.

MR. THIRLWALL'S ADDRESS

Mr. Thirlwall said that in considering the subject of the discussion he was tempted to suggest that it should be slightly changed to read "What the Manufacturers Have to Sell and What the Railway Companies Have to Buy." The manufacturers have many things to sell, but for some time past apparently there have been comparatively few things the companies felt they were obliged to buy. Broadly speaking, every successful manufacturer has to sell not only the fabricated product of his tools, but the ideas of his designers, engineers and salesmen, and their ability to save money or make money for his customers. In other words, in the long run, it is the ability of a manufacturer to give service to his customers that governs the volume of his sales.

The long period of stationary receipts and of mounting wage and material costs through which the electric roads have passed for the past five years has emphasized the necessity of service from the manufacturer, and in general the manufacturers need not be ashamed of the response. The period has seen many economies and methods of increasing earnings worked out by both operators and manufacturers. For instance, the Birney safety car is adding directly some $12,000,000 or $13,000,000 to this year's net earnings of the 275 companies using these cars, and indirectly, through rapid extension of one-man operation of other cars made possible by its success on the Birney type, has saved probably another $2,000,000. The development of other types of low-wheel, light-weight cars and of their equipment, and of automatic control for substations, are simply a few of the many contributions manufacturers have made to the concerted effort to help traction companies in their struggles for existence.

The speaker then pointed out some of the important developments made during the past twenty years, saying that he referred not only to those undertaken by the General Electric Company, but by all of the manufacturers of railway materials.

He first referred to power stations with their change in prime movers from reciprocating engine drive, with 25-cycle power and 5,000-kw. unit maximum, to turbine drives with 60 cycles and 45,000-kw. unit maximum; to the development of the diversified load in central stations and to the saving in fuel, attendance and lower reserve capacity accomplished during the period mentioned. The change in fuel consumption from these improvements is from 5 to 6 lb. of coal per kilowatt-hour for a small engine-driven generator to 2 lb. of coal or less per kilowatt-hour for the large turbine. There has been a corresponding saving in energy consumption of cars. On the basis of 36,000 miles and 4,000 hours per year the old double-truck car would take about 180,000 kw.-hr. as compared to 150,000 kw.-hr. for modern double-truck cars and 75,000 kw.-hr. for safety cars. With $7 coal the old double-truck car would cost for fuel per year about $3,150, whereas the cost for fuel with light weight safety car operation and large turbine generation would be only $525 per year.

Similarly the automatic control in substation permits closer spacing of substations, saves copper, increases the load factor, permits a better contact with the power company if power is bought, and saves approximately $3,000 a year in attendance for substations, together with other savings in light losses, etc.

A similar comparison was made between the old heavy, split-frame non-ventilated motor with poor commutation, grease lubrication, soft bearing metal and gearings with the modern motor which weighs from 30 to 40 per cent less for a given working capacity so is less in first cost and has an average cost of maintenance of only 50 to 60 cents per thousand miles or $18 to $22 per year, as compared with six to seven times that amount for the old type. This is in addition to its greater reliability, which means fewer cars held in and fewer road failures. Small wheel design also saves weight in body and truck. The speaker also referred to control and brake improvements and in shop equipment, mentioning among the latter, banding lathes, baking ovens, electric hoists, paint-spraying machines, air-blowing machines for electrical equipment, armature slotting machines, pinion pullers, hot water heaters for mounting pinions, acetylene and electric welders, testing outfits for fields, armatures and other apparatus, etc. In conclusion the speaker said:

"We have all trimmed our sails during the passing storm; our prices have followed the receding waves of post-war inflation and are back to what we believe to be a fairly stable basis; we are in most lines prepared to make quick deliveries of standard material; we are anxious for orders."

What the Railway Company Requires and What It Should Buy*

The Function of a Railway Is to Furnish Satisfactory and Adequate Transportation as Cheaply as Possible and All Efforts Should Be Devoted Toward Accomplishing This Result

By GEORGE E. PELLISSIER
Assistant General Manager Holyoke (Mass.) Street Railway

FIRST—A railway's primary function is to furnish satisfactory and adequate transportation facilities to the whole community it serves at a cost which will be as low as possible consistent with the service required by the community, and this cost should include a return on the money invested in the enterprise sufficient to attract new capital and to act as an incentive to economical management.

Second—The industry should be conducted as a monoply subject to public regulation and control.

Third—The industry is entitled to all the rights, privileges and obligations of any other like industry under the constitution.

Viewed from this standpoint, what the street railway industry needs most, I believe, and what it has always needed most, is men with the capacity for real leadership as executives and operators. At the present time I know of no industry of like importance and magnitude which has fewer of the right kind of men available or a smaller reserve from which such men can be developed. I say this without any desire to disparage or discredit the work of those who have worked faithfully and hard, but who in many cases have not obtained results.

RELATION OF TRANSPORTATION TO INDUSTRY

The real trouble began with the promoter, who had few of the virtues and all the failings of the pioneer and a lot of failings that the pioneer did not have. He did not have the fundamental knowledge of the relation of transportation to industry, of the proper function of a street railway, of his duties and his obligations and even of his rights, or, if he had the knowledge, the courage to assert them has been demonstrated by the results. These men were rarely of the type that could make two blades of grass grow where one grew before, but sometimes were able to make one blade look like two, and thus established a reputation for good management wholly undeserved and created the impression that the industry was a gold mine.

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*Abstract of paper read at a meeting of the New England Street Railway Club, Boston, Oct. 13, 1921.

This impression led naturally to the demand on the part of the traveling public for extension of service, lower fares, reduction of dividends, and finally public regulation, which was interpreted to mean authority without responsibility. With leaders lacking the power of analysis, lacking the knowledge of the actual cost of operation, lacking in many instances the knowledge of their rights and the courage to assert them, the industry followed the lines of least resistance and acceded to demands and regulations which should have been resisted to the limit. Expediency, not principle, was their guiding motive, and I regret to say that in many organizations the traditions then established still persist, with the result that such organizations are not only in a much worse position than the average but they have also done much to destroy the confidence of the public in the integrity of the industry, causing the innocent to suffer with the guilty.

When, as a result of decrease of fares, extension of service, added maintenance expenses due to age, wear and tear on physical property and accrued depreciation, revenues decreased and operating expenses increased the property was allowed to deteriorate and service to be impaired in the attempt to keep up dividends. To further aggravate the situation, wages in all other industries began to go up, accompanied by the labor organization movement. The failure of street railways to keep pace with other industries in increasing wages led to lack of co-operation, even where there had been any, strikes and general demoralization.

Hence, I repeat that the greatest need of the street railways today is for men with constructive minds, men who combine administrative ability with technical ability, men with vision, courage, enthusiasm and zeal for accomplishment, and who have the ability to select and inspire their co-workers with the same qualities, men of culture and initiative, thoroughly grounded in the fundamentals and trained for the work they have to do. Men of sincerity, integrity and broad human sympathies, and having a well-developed sense of values. Men capable of obtaining highest efficiency from the human element and enlisting the spirit of the men in the ranks, which after all is the most important part of the men.

GOOD WORKMANSHIP REQUIRES GOOD TOOLS

What else do street railways need? Obviously, to furnish satisfactory and adequate transportation facilities at a reasonable cost, they need proper physical equipment. As the mechanic cannot do good work without tools, neither can the railways give good service without proper facilities, and at the present time the tracks, rolling stock and equipment of many companies, together with the facilities for maintaining them, are nothing less than atrocious.

Railways should buy the best material for the purpose required, all things considered, including cost, and it may not be the best or the cheapest thing available which should be purchased. As an illustration, if a company has 200 motor equipments of a certain type and requires two more, even though motors of another type with 5 per cent greater efficiency at 5 per cent less cost could be obtained, it would not be justified in changing standards, thus increasing the stock of repair parts necessary simply to avail itself of the slight gain in efficiency and cost, unless it had definitely decided to abandon the type it had altogether.

In the smaller organizations, where the executives may have to perform the duties of heads of departments, this problem is not so difficult, provided they have the necessary qualities of leadership, but if some of the essential qualities are lacking, their absence will be more noticeable than in the large organizations, just as one discordant note is more noticeable in a solo than it would be in an orchestra of fifty pieces.

PRINCIPLES TO BE FOLLOWED IN PURCHASING

In the larger organizations the absence of some of the necessary qualities of leadership will not be so apparent if the qualities of some members of the organization supplement those of the others, but when any of the members lacks a well-developed sense of values there is always danger that the interests of the whole are subordinated to the interests of a part. The engineer, for instance, may insist upon material conforming to his specifications regardless of cost. The purchasing agent may insist upon buying the cheapest because it will make a better showing for his department. The storekeeper may refuse to honor a request from the maintenance department for material until the proper amount of "red tape" had been unwound, even though in so doing the work might be halted and the company put to a loss, whereas the true interests of the company as a whole would lie in giving the true value to each element, taking whatever action was necessary to obtain the best results for the company as a whole. In purchasing, my own belief is that special specifications be avoided so far as possible, as they are bound to increase the expenses, and in many instances material made to these specifications actually is no better than the standard material of the manufacturers or that called for in the specifications of the A. E. R. A.

I further believe that street railways should purchase their material rather than manufacture it, unless there is some special reason for doing so. In most instances where companies think that they can manufacture for less than they can buy, I believe that a proper cost accounting system would show them to be in error, and this applies particularly to the smaller companies. When it comes to buying rolling stock and equipment, I believe that the greatest importance should be attached to the relative value of each element entering into the decision, and, having carefully analyzed the requirements, that material should be purchased which best fulfills the requirements, nor do I believe there can be any such thing as a standard car which will fit all conditions. All types undoubtedly have their field, but the attempt should not be made to crowd any particular type into the field for which it is not fitted, whether by companies or by manufacturers, and I might say here that the element of the likes and dislikes of the public should be taken into consideration. Adequate service does not necessarily mean satisfactory service.

This brings up the question of the position of the relation of the manufacturers to the street railway companies in supplying their material needs. It is my belief that the manufacturers' efforts should be confined to developing and supplying apparatus which they and the railways consider necessary. I believe their selling efforts should be confined to the companies with which they are doing business, and not devoted to propaganda directed at the general public with the view of compelling the adoption of devices which the manufacturers have perhaps designed without intimate knowledge of the requirements of the situation and which they desire to sell.

I also believe that in designing such apparatus the chief aim of the manufacturers should be to develop the best thing for the purpose rather than something distinctively their own product. In the long run it will be for the interest of the manufacturers as well as for the street railways for them to supply what will best meet the requirements of the situation, and in some instances good salesmanship might dictate the purchase of the other fellow's material rather than the purchase of material unsuited for the purpose.

Tenth Annual Safety Congress Held at Boston

AS AN adjunct to the National Safety Council, which held its tenth annual safety congress at Boston Sept. 26-30, the electric railway section has almost held its strength through the period of depression. Chairman J. H. Mallon, assistant general superintendent of transportation of the Metropolitan West Side Elevated Railway, Chicago, presented an encouraging report to the opening session of the section on Sept. 27. He stated that 110 electric railway companies hold membership in the section today. Sixteen dropped out during the year and seven joined, so that there was a net loss of nine. Under the circumstances, calling for curtailment of expenses, it is encouraging to the movement that a larger number of firms have not withdrawn. Chairman Mallon, however, deprecated this form of economy. When the street railway company maintains a safety organization, perhaps expressed through its affiliation with the electric railway section, it induces the employees to feel that the company is more considerate of its employees and its passengers, and they, in turn, become more considerate and careful.

With these brief observations, Mr. Mallon opened the meeting, named his nominating committee and introduced as the first speaker Miss Laura M. Roadifer, the safety expert for the Philadelphia (Pa.) Rapid Transit Company.

An abstract of this paper was published on page 745 of the issue for Oct. 22.

At the second session John E. Cullen, assistant to the president United Railways & Electric Company of Baltimore, gave a talk on the attitude of the public toward the railway participation in no-accident-week campaigns. Mr. Cullen prefaced his remarks on this subject by giving a comparison of the former policy of silence of railway companies in regard to accidents and the present policy of frankness, and he cited instances of both methods experienced by him when he was a reporter on a newspaper. He showed clearly that the latter policy pays both directly and indirectly. He then described a "no accident" campaign conducted recently in Baltimore. The railway company with which he is connected took a prominent part in this campaign. It carried streamers and posters on the inside of the cars and placards on the outside with the slogan "Don't get hurt," and the motormen when passengers got off said the same thing. The speaker said that the plan was not only directly helpful, but he believed it convinced the public that the company was endeavoring in every way to do the right thing. The speaker also referred to the increase in hazards caused by the large number of automobiles now on the streets but said that it has been held in Baltimore that the street car has the right of way at every intersection over the vehicles.

A paper was also presented on railroad crossings and crossing signs by R. S. Messenger, claim agent Rochester & Syracuse Railroad. An abstract of this paper was published on page 744 of the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 22.

The new officers of the electric railway section of the council are as follows: Chairman, B. D. Haskins, Chattanooga (Tenn.) Street Railway; vice-chairman, H. B. Potter, Boston Elevated Railway; secretary, M. W. Bridges, Metropolitan West Side Elevated Railway, Chicago.

Local Ownership of Utilities Emphasized

West Virginia Association Addressed by Governor Morgan and J. P. Barnes of Louisville Railway—Sale of Securities Locally Will Follow Clean Publicity and the Gaining of Bankers' and Editors' Confidence

ATTENDANCE at the annual convention of the Public Utilities Association of West Virginia in session at Charleston, W. Va., on Oct. 20 and 21 was representative of every portion of the state. The membership represented a total assessed valuation of $30,000,000, it was stated by Secretary A. Bliss McCrum, in his annual report. The membership includes all the important utilities in the state, with three exceptions, and it was planned to extend the membership so as to take in something like 150 small telephone companies, which will make the association include every line of public utility in West Virginia. C. P. Billings, manager of the Wheeling Traction Company, predicted that the coming year will see the association take rank among the best in any of the states in the country.

The association re-elected all the old officers as follows: Herbert Markle, Bluefield, president; C. P. Billings, Wheeling, first vice-president; Mentor Hetzer, Moundsville, second vice-president; E. W. Alexander, Charleston, third vice-president; A. M. Hill, Charleston, treasurer; executive committee: C. C. Bosworth, Elkins; W. R. Power, Huntington; A. H. Grimsley, Clifton Forge, Va.; A. C. Babson and C. S. McCalla, Charleston, and C. H. Brues, Wheeling.

The banquet the first day was one of the most successful occasions of the kind ever held in Charleston. Herbert Fitzpatrick, Huntington, acted as toastmaster. Governor E. S. Morgan, who formerly served as chairman of the Public Service Commission of West Virginia, was one of the speakers, and this previous connection made his talk the more interesting to the utility men. Judge E. D. Lewis, present chairman of the commission, also made an address. Fred M. Stanton spoke for the utilities, and the principal address of the evening was made by James P. Barnes, Louisville, president of the Louisville Railway.

Mr. Barnes treated the "pressing problems of public utilities" after the fashion of a medical adviser. He divided his subject into three classifications: (1) A study of symptoms, (2) diagnosis of ills, and (3) treatment for their correction.

"Influenza may stalk through the country claiming its thousands of victims," said Mr. Barnes, "just as the unregulated jitney may strike into the utility world, claiming its victims among the transportation companies. This does not argue unsoundness of the modern transportation system, but rather represents a new menace to the public life and welfare against which new or keener prophylactic safeguards must be employed. Truly, in the past, stocks may have been manipulated and property accounts watered in the interest of individuals. Admittedly this is not good business today, neither does the present physician bleed his patients, yet who shall say that many lives were not prolonged to the benefit of posterity by the old and now discarded methods of the practitioner? Blood renews itself, so has capital in many instances, and generally the true corporate history will show that the renewal of capital has not been from excess earnings but from withheld dividends.

"Auto-intoxication comes also from the disuse of normal organs. One who fails in self-analysis is failing in one of the ordinary processes of assimilation and elimination and will sooner or later find clogged with dead matter the channels which should be devoted to clearing normal business matters. In all too many cases this condition is the result of mental laxness or downright ignorance of cause and effect. The diagnosis of our public utility ailments has been delayed for many of us because of the acute discomfort of the symptoms. Our tendency has been to treat the symptoms in the hope of immediate relief from discomfort rather than seek to treat the disease."

Mr. Barnes advocated "the knife" as "treatment" and declared that "all deformities should be the source of "immediate operation." After that he advocates the "antiseptic treatment" looking to the "general upbuilding of the patient. No antiseptic for the ills of the public utilities equals the clear sunshine of fact," he emphasized. "All truth, comfortable or uncomfortable, must be recognized as truth. Clean publicity is for the corporation as clean living is for the individual, the surest safeguard against infection. Publicity is not necessarily advertising propaganda nor carefully constructed news stories. The most effective publicity may be and usually is a full and frank discussion of all corporate matters with every inquirer.

"Times have improved," he said, "the public conscience has awakened, individual conscience has awakened, the public is better represented today in its officials, elected and appointed, generally speaking, than it was in the past. Business morals have improved and with this general improvement there has been a vast improvement in the corporate morals of public utilities. Business practices generally recognized in generations past as not only defendable but admirable, would today meet a storm of protest and execration around any directors' table. Public utilities may be suffering from earaches in New York, ulcer in Detroit, cancer in Des Moines, but this does not imply fundamental weakness or unfit-ness in the utilities themselves. Local irritation may produce a strange and unusual symptom requiring special treatment."

C. P. Billings, manager of the Wheeling Traction Company, told of the recent troubles that company had encountered and how the sale of 3,200 shares of stock to 1,300 different people had helped shape unwieldy public opinion. Mr. Billings advised the sale of stock through the employees of the company, contending that the employees knew the working of the corporation and that if the company was deserving they would recommend the purchase of the stock to their friends and kinsfolk.

A. H. Grimsley, of the Virginia-Western Power Company, Clifton Forge, Va., declared that "Every bank and newspaper in the territory served by a public utility should advise those who put their trust in bankers and confidence in editors to buy of the preferred stock of the utility.

"Any banker that will not do this if the utility is earning operating expenses, full depreciation, fixed charges, preferred stock dividends and has proper equity behind the junior securities is avowing himself as so selfish that he would rather have the use of the money of his depositors than to see them buy gilt-edged securities," said Mr. Grimsley. "Every editor who fails to boost will be advertising himself as a grouch who prefers to see public utilities owned by foreign capital than by home folks. All that is necessary is for the public utility to deserve the trust of bankers and the confidence of editors. If the public utility can't send a satisfactory statement to the bank and can't convince the editors that it is responsible, I take the position that there ought not to be a ready sale for its securities."

This phase of the relation of public utilities to the communities served came before the convention for discussion following an address by Judge George R. Wiles, of the Public Service Commission, on "Advantages of Local Financing."

PUBLIC OWNERSHIP A FALLACY

"The Utopian idea is public ownership of public utilities," declared Judge Wiles, "but the recent experience of the government with the railroads has shown the fallacy of this idea. One of the most valuable assets of a public utility and the most difficult to obtain is good will. The average man looks with suspicion on the average public utility. Most of the utilities in West Virginia are owned by outside capital. Williamson, my home town, has made an effort to sell stock in a public utility through the newspaper recently, which is an encouraging sign. I hope the time will come when the public will look upon the public utility with a more favorable eye."

Discussing the address of Judge Wiles, Mr. Grimsley told how in the old days his company had difficulty in getting an advance in rates; how there would be public meetings which were packed and jammed with indignant citizens. Since there has been an effort to place the securities of the utility in the hands of home people a similar meeting was advertised and twenty people turned out, of whom eighteen were in favor of granting the utility a just increase in rates.

Appeal for Reason in Utility Regulation*

An Encouraging Message from the Retiring President of Commissioners' Association—The Public is Vitally Concerned in Utility Expansion and Must Have Broader Vision in Utility Matters—Adequate Rates and Customer Ownership Urged

BY JAMES A. PERRY

Member of the Railroad Commission of Georgia and President of the National Association of Railway and Utility Commissioners

FOR many years there has been a nation-wide agitation looking to the abolition of the rights of the different states to regulate railroads in any manner. The climax of this agitation came with the transportation act of 1920, as construed by the Interstate Commerce Commission. The construction of this act by the Interstate Commerce Commission outlaws state regulation and strikes at the very fundamentals of our system of government.

I have not the slightest doubt that one of the chief financial troubles of the carriers of the country today is the fact that rates, both freight and passenger, are so high as to result in an aggregate loss rather than a gain as contemplated. High freight rates, especially in cases of short hauls, have done more for the growth of motor transportation of freight than has all the progress of motor transportation itself, which necessarily results in a loss to the railroads.

If the construction of the transportation act of 1920 by the Interstate Commerce Commission is to remain the law of the land, a most hurtful blow has been given our dual system of government—a form of government that has stood the test of time, and chiefly because its form provides for representation of the people, for the people and by the people. The provision that it is by the people is, so far as concerns the regulation of our commerce, partially defeated and the right of local self-government is destroyed in the present construction of the transportation act.

It has always been with the individual states that we have gone forward in the first efforts of any new idea pertaining to our commerce. If proved good in one state, other states can take it up, and finally it becomes national in its scope. Far better that one state try it, should it be unwise, than for our entire country to be subject to an expensive experiment. State regulation of rates needs the demands of local traffic conditions, where an intimate knowledge can be quickly applied, whereas at one common center the truth in most cases will never be known. Remove, if you will, the state lines and you still have the problem of reasonable local rates, and to be fixed by one central body that can never have more than a smattering idea of the real local conditions. . . .

Rates that are higher than the traffic will bear stop the movement. All over the country, for comparatively short hauls, essential commodities are costing less than the freight to move them to market, with the result that in many intrastate movements motor power is hauling a good percentage of short-haul freight. . . .

Railroad property is as much the property of stockholders who put their money into it as your home and my home is property of ours. And when it is dealt with by any consideration other than that obtaining when the rights of private property are being considered, a wrong is done, first, to the man who has invested his money in the particular railroad; second, to the public, who, in the end, cannot hope to have the service, regardless of rates, if in the meantime the property has been destroyed by prohibitive operating costs and unremunerative rates.

There has been too much misunderstanding between the public and the railroads in this country. I am not unmindful that railroads here and there throughout the country have been guilty of the foolishness of seeking and receiving unnecessary benefits from legislatures now and then—only to serve their purpose for a while, with the result that an outraged people rise up to correct the wrong and, as is often the case, go so far as to do a real injustice to the railroad that ends with a loss to the public and the railroad alike. The railroads of this country can no more carry on their business in this country without the co-operation of the people they serve than they can get along without equipment, and this business of seclusion by centralization of all regulation of service and rates at Washington is going to prove the greatest hurt to the railroads and the commerce of this country that either has ever experienced.

The question of rates for utility properties has been one of nation-wide concern for several months. Dating from some two years ago, there is no question to my mind that any regulatory commissions throughout the country made the common mistake of holding light and power, gas and street railway companies to rates that were too low, hoping that the immediate future would amply justify the rates prescribed. This hoped-for condition was not realized. The experience was just the opposite of what we had expected to see. The raw materials going into the manufacture of the products sold steadily increased in price. Finally, when business generally became depressed, public utilities had been required to do business on such small returns that they were not in a position to withstand, even for a short while, an increase in actual losses already sustained.

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*Abstract of presidential address delivered at annual convention of National Association of Railway and Utility Commissioners, held in Atlanta, Ga., Oct. 11-14, 1921.

The public at once took the position that public utilities should not expect normal returns, but should endure with other business enterprises slight or no returns at all and, if need be, increased losses.

The law by which regulatory commissions are governed required them to prescribe just and reasonable rates, and the courts throughout the country have declared that a just and reasonable rate is one that with competent management will afford the utility a reasonable return upon the fair value of its property being used in the public service.

Just compensation for the use of private property by the public is a constitutional right which cannot be denied. It is the fair value of the physical property devoted to the service that must control, and it does not matter whether it came as a gift from earnings of years past, actual investment or otherwise.

The public is interested in the utility having such rates as will insure a reasonable return upon the fair value of its property, thus guaranteeing not only an unimpaired service, but such development from time to time as will always be sufficient to meet the requirements of constantly increasing demands for service.

At the present time, in many instances, a utility files an application with the regulatory board of the state in which it operates. This done, a copy of such application is served on the municipality affected by the change proposed. It makes no difference what the relief asked for may be, the mayor and council meet and promptly vote to instruct the city attorney to oppose the granting of the relief sought. No investigation is made as to the justice of the relief petitioned for, the city attorney is directed to oppose it, not to investigate and ascertain the truth, as information for the mayor and council, before action is taken one way or the other.

REGULATED MONOPOLIES ON TRIAL

We seldom hear of a municipality under such circumstances making an investigation and ascertaining if there is any merit in the claim of the utility company. Seldom investigations are made, little information is had, and seemingly none is desired.

This, of course, is an unfortunate situation. In the end it will be overcome, but not without loss to the utility and the public while such a condition prevails. Competitive business had its day and failure. Regulated monopolies are now on trial. The public is still paying 100 per cent more for some merchandise than the same article sold for four or five years ago, but the thought of paying 50 per cent increase in utility rates as compared with prices for such service three and four years ago meets with scant sympathy. . . .

The public is vitally concerned in the expansion of utilities because a city can never grow faster or extend further than her utilities reach. The utilities of a community are the greatest developers any city ever had. No city can build beyond the lines of her street railroads, and this is true to a degree in comparison with the area covered by gas mains.

WILL CAPITAL BE FORTHCOMING?

Few sections of this country can finance utility development of any kind from local capital. The financial necessities of development, therefore, carry us to foreign fields for money. Is there a man anywhere, regardless of his business interest, with surplus money for utility investments, who is going to send his money into communities where there exists a citizenry hostile to foreign capital for such investment? Even worse, will such a man send his money into a state for such investments where the state regulatory board refuses rates that will earn even less than the lawfully prescribed rate of interest as a return for utility service? Will such money find its way into a state where condemnation of such property is the talk of the day?

The public should see to it that such conditions do not exist. It has an interest greater than the selfish interest of the few who would stop the utility development of every community while their political ambitions are satisfied or a personal grouch is assuaged. It is a sad picture to see a community of inflamed citizens following the leadership of one man, or even several men, in an effort to handicap or destroy a local utility, all because of selfishness on the part of the few self-appointed leaders. This kind of thing has got to stop in this country, otherwise the public will pay the high price of stagnation in such growth, with a breaking down of the service now rendered.

PUBLIC IS WILLING TO PAY FOR SERVICE RECEIVED

What the people desire most is efficient service, so long as it is furnished at a reasonable price. This they are willing to pay. They have a right to expect both efficient service and reasonable rates at the hands of regulatory commissions. Is it not high time that the public and utility companies throughout the country were coming to a better understanding? . . .

The public is concerned in seeing that light and power companies, both steam and hydro-electric, are built in such large units and so connected as to cover a radius sufficient to overcome the interruptions in service resulting from high and low water, storms, breakdowns and other causes, all of which come at intervals and in spots; and by a proper arrangement for exchange of output between such large companies interruptions in service longer than the time consumed in throwing in a switch would never be heard of. . . .

The time has come when the public must have a broader vision in handling these questions if we are to keep pace with our opportunities for growth and development. We have got to get away from a local consideration of services of this kind. Far better for us that the lights we use in our homes and the power we use in our local enterprises be derived from power even hundreds of miles away from us, with such an interrelation of service as has just been mentioned, if by such an arrangement we have an added guarantee of continuous service.

SECURITY HOLDERS MUST INCREASE IN NUMBER

I cannot believe the public will stand for a reactionary program that will certainly carry us back to crude methods, with less service and at higher rates. We may halt, temporarily, here and there over the country, but in the end electric power supply, as well as other utility services, is going to be carried on in a wholesale manner. Any other method is squarely in the teeth of the very fiber of our people and form of government. There are 1,450,000 citizens of our country who have invested in the securities of the electric light and power companies of America. This number should be increased many times. Indeed, such a new class of investors may in the end become the only solution of the problem of financing the present needs of our utility companies—saying nothing of the future—if such companies are to keep pace in development and expansion as the public needs require. Either the public will have to assume and practice a more friendly attitude toward capital belonging to the other fellow or the public will have to put up the cash, and from a class who have heretofore studiously avoided such investments.

This brings us face to face with the issue confronting the public utilities of the nation today. They have not the financial strength of expansion, and in many cases this came to be so from the fact that they have been required by regulatory boards to operate on rates that were too low. This issue should be presented to the public that it may decide for itself the manner in which such financing hereafter shall be done. If private citizens refuse to furnish the money, then the public must inform the other fellow that efforts at condemnation or confiscation of his property will not be tolerated.

Utility Commissioners Discuss Motor Buses

The Consensus of Opinion Seems to Be that the Motor Bus Is Not Dependable Without Proper Regulation—Bus Companies Are More in Favor for Passenger Transportation than Independents with a Single Bus

AUTOMOBILE transportation, omnibus and jitney, furnished the subject for a round-table discussion at the thirty-third annual convention of the National Association of Railway and Utilities Commissioners in Atlanta, Oct. 11-14. That there was much interest is evidenced by the remarks of several of the commissioners. All seemed to recognize that the jitney motor bus as a competitor is a serious menace to other organized forms of transportation. Regulation has entirely eliminated this form of wild-cat competition in some states, while in others it goes on unrestricted. Commissioner Lewis, Iowa, believed it utterly ridiculous to expect independent jitney operators to furnish adequate transportation to any community. Such transportation must be by large companies that can be depended upon to give regular service, pay their share of road upkeep, taxes, and other obligations to the community. Public utility commissions ought in every way to discourage the independent jitney operators until they meet these requirements. The afternoon session on Thursday, Oct. 13, was devoted to a round-table discussion on "Automobile Transportation—Omnibus and Jitney."

THE NEW JERSEY JITNEY SITUATION

In opening the discussion, Harry V. Osborne, New Jersey Board of Public Utility Commissioners, who presided, said the jitney problem in his state was a serious one and it was presenting questions that were very difficult of solution. New Jersey has one of the largest street railways in the country, operating as it does more than 800 miles of track. The jitneys have absorbed about 25 per cent of its normal traffic with the result that the traction company is deprived of approximately $5,000,000 per year. This railway has complained very bitterly of this heretofore unrestricted jitney competition and with some justice, for it is entitled to reasonable protection on account of its large investments. Moreover, this protection is primarily in the interest of the public, though it must necessarily be contingent upon the ability and upon the policy of the company to furnish adequate service.

The problem has two aspects: first, its effect upon existing rail transportation systems, that serve a very large proportion of the public; and secondly, the effect on street traffic, particularly in the larger cities, where congestion has become so acute that it is almost impossible for anybody to use the streets. In Newark at the intersection of Broad and Market Streets there are 30,000 vehicular movements every day. That is a considerable tide of traffic to be obstructed by the none too carefully handled jitney.

The New Jersey commissioners are anxious to know what to do with the problem and it was not until last winter that the commissioners had any jurisdiction. Prior to that time all licenses for jitney operation were obtained locally from the various municipalities through which the buses were to operate. No other form of permit was recognized.

COMMISSIONERS GET JURISDICTION

As a result of considerable agitation on the part of Public Service interests as well as jitney interests the legislature gave the Public Utility Board a limited jurisdiction to the extent that all new jitney applicants after March 15, 1921, must have their permission to operate. That was not very much jurisdiction, but it was at least a start. This Legislature immediately raised the question as to what was meant particularly with reference to renewals of licenses. When an operator sold his bus was the vendee a new applicant or should he be allowed to continue as a matter of course to operate the bus because the original license was granted prior to March 15? The board in passing on this question construed that the legislature had, when the law was enacted, determined upon a fixed policy and placed its stamp of approval upon all buses operating on or before March 15 last. Incidentally that limited the number of jitneys with which the board had to deal, unless it appears upon hearing, as stated in the Becker decision, that the conditions have changed so as to make some other determination necessary.

TITLE TO BUS TRANSFERS APPROVED

All such applications up to the present time, have been heard and notices of the hearings have been given the railway company operating along the route in question. Where it was found that the application was for a mere renewal of an existing bus in operation, the application was granted as a matter of course under the Becker case decision.

In the case of a new line, planning to tap territory not already served by an existing street railway line but which must of necessity parallel an existing railway line to reach the center of the city, it automatically comes under the jurisdiction of the board. In such cases, the jitney is allowed to serve the new territory but it is prohibited from doing any local business when in competition with the existing trolley line, if it is shown at the hearing that a sufficient amount of service is being rendered by the trolley car company.

LEGISLATIVE VS. JUDICIAL RATE MAKING

Another aspect to the matter, which is going to be serious, is the encroachment of the Federal Court in the matter of rates. This happened in the recent case of the Public Service Railway. The commissioners had fixed a valuation of approximately $82,000,000 on the property, which the president of the company aptly declared was worth $200,000,000 for rate-making purposes. The board later granted a slight increase in the unit rate of fare, in the form of an additional cent for a transfer in the belief that it would meet the situation. The company immediately took the matter into the Federal Courts on the grounds of confiscation and in six or eight hours, in an *ex parte* application, the court granted an injunction and fixed a rate. Due to the protest that arose all over the State, the judge, either for that or some other reason, of his own volition rescinded the order fixing the rate and convened a special statutory court of three judges to say whether the rate set by the board was confiscatory. (See ELECTRIC RAILWAY JOURNAL, Oct. 8, 15 and 22, 1921, for decision of the statutory court—EDITORS.) Rate fixing, the new Jersey board holds, is not judicial but a legislative function and if the Federal Courts under any such guise are to fix rates the state commissioners might as well go out of business.

The question of jurisdiction over freight trucks in New Jersey has not yet been raised. On account of the expression in the statute "Jitneys or auto buses," it presumably will be a matter for later construction by the commissioners as to whether it is broad enough to include freight as well as passenger traffic.

REGULATIONS IN STATE OF WASHINGTON

In the State of Washington, according to E. V. Koykendall, director, the Department of Public Works has been given jurisdiction over all passenger and freight motor vehicle transportation by the last Legislature. The law became effective on June 6 last and provides that all motor transportation companies operating in good faith on Jan. 15, 1921, shall be granted certificates of public convenience and necessity so as to continue their operations. Under the law an auto transportation company is defined as any company transporting either persons or property for hire between fixed termini and over a regular route. New companies must apply to the Department of Public Works for a certificate before they are entitled to operate, regardless of whether their operation is in competition with any other existing transportation company. Where there is a transportation company already in the field the law provides that additional certificates will not be granted unless that company refuses to furnish transportation to the satisfaction of the Department of Public Works.

In the State of Washington about a thousand applications have already been filed with the result that stage and truck operations are perhaps greater than those of any other state except California. This is due mostly to the large mileage of hard surface roads and to the excellent character of other improved highways. There are some stage companies operating in Washington today whose annual revenues will reach nearly $500,000.

The department has had great difficulty in determining when to assume jurisdiction in the case of freight transportation by motor truck, especially in the cases where the company has no fixed termini or regular route, although tariffs based on weights and mileage are published.

CERTIFICATES REFUSED IN COMPETITIVE TERRITORY

Another question that has arisen refers to competitive services in substantially the same territory. So far the department in determining the question of public convenience and necessity for a new line has taken into consideration other existing means of transportation. If after a hearing it is concluded that the transportation furnished by the steam railroads, electric roads or steamboat lines in the immediate territory was sufficient and if reasonable and adequate service was already afforded by these existing lines, the application of the stage or motor bus company was refused. Sometimes, when the stage route did not parallel the rail lines but detoured several miles to reach towns and villages not otherwise served, a certificate has been granted. Many railroad attorneys have questioned seriously whether the department should take into consideration railroad or other transportation systems in granting a certificate of public convenience and necessity to a stage line, for the peculiar wording of the Washington statutes provides that "if the territory is already served by a certificate holder no additional certificates shall be given unless the existing companies fail to furnish the required service."

MOTOR BUS AND AUTO TRUCKS ARE COMMON CARRIERS

All motor-bus and auto-truck lines in the State of Washington are considered as being common carriers, and are required to file tariffs and schedules showing the time of arrival and departure at each point served in the same manner as a railroad.

In the case of stage companies engaged in interstate traffic, jurisdiction has been assumed and exercised on the theory that while the Constitution of the United States grants the power to Congress to regulate interstate commerce, Congress not yet having seen fit to exercise that power in so far as motor vehicle transportation is concerned, the local state authorities may do so. This view, it is believed, will be upheld by the courts. It has been in a number of decisions in the past.

In New Mexico it was pointed out by Hugh H. Williams, of the State Corporation Commission, that on interstate lines to Arizona the State attorney general had held that they were common carriers. Under the State law these carriers are required to file only tariffs, giving a thirty-day notice of changes in rates. There is nothing in the law as it now stands to prevent competition on the same route between these auto carriers.

Continuing, Mr. Koykendall said the view taken by the department in applications for certificates for the operation of stages or motor trucks in competition with steam railroads has been not to grant them where transportation is already adequately cared for, unless the applicant desires to serve some communities, towns or villages which are not reached by the railroad. In some instances certificates have, however, been granted for operation in such competitive territory with certain restrictions, namely that service is permitted between two termini but prohibited in intermediate territory which was already adequately served by other means of transportation.

The wisdom of carrying that theory very far is doubted, for it provokes a good deal of trouble. Passengers waiting on the road always want to board the first bus that comes along, and to have regulations that prohibit one of these carriers from handling intermediate traffic means a complaint, for the passenger wants to know why he was passed up.

The Washington Department of Public Works has made no restrictions as to equipment. It has specifically decided that it was not the purpose of the law to limit operations in so far as equipment or frequency of schedule was concerned, as it existed on Jan. 15, 1921. In other words, it has been construed that it was not the purpose of the Legislature to block the wheels of progress, and if an operator wanted to change his Ford for a Packard or to improve his schedules he was not interfered with. Complaints, however, as to inadequate service are handled in exactly the same manner as against a railroad company.

All-year-round service depends entirely on conditions. The law permits a stage company to cease operations when conditions make it impossible to carry on operations. Generally speaking, though, certificates are not granted where operations can only be carried on a short time each year on the theory that it is an impracticable proposition. There are, however, many services that are seasonal, such as to Rainier National Park and to Mount Rainier and in such cases where conditions warrant it certificates are granted.

LOSS AND DAMAGE LIABILITIES

Under the law either a $10.000 bond or insurance policy is required against loss of property and personal injuries for each passenger-carrying motor vehicle, with a loss accruing to any one individual of not to exceed $5,000 for any one accident. The department has also adopted a rule requiring an additional amount based on the passenger-carrying capacity of the vehicle. As for the freight-carrying vehicle it must have a $1,000 bond against property damage. These requirements make it as safe to travel by stage in the State of Washington as it is on the railroads.

In some cases the department believes the size of the bond required should be reduced but under the law this is impossible. This is especially true in mountain territory where it is impossible to operate a heavy car over the roads. Take for instance a mail carrier in the mountain districts who has a Ford and wants to carry passengers. The traffic is very light. To do so he must pay a premium of $300 to $400 per year for a bond and often his entire passenger income amounts to less than $100 per year. Moreover, some passengers, particularly in the sparsely settled districts, are willing to use such transportation facilities as may be afforded at their own risk. There should be some elasticity in the statute, it is believed, so that the department can make special provisions for liability to meet such particular conditions.

FEEDERS TO INTERURBAN LINES

In Washington an electric line can either arrange with an independent stage operator to extend its route to another point as a feeder and conduct it in conjunction with its own operations, or it can operate its own stages on such an extension rather than laying tracks and stringing trolley wires. That may be challenged in the courts but it has not been done so far. A railway company must, however, apply for a certificate, put up a bond and do everything that is required of the independent auto stage company.

There has also been adopted a rule which prohibits any one abandoning stage service without the consent of the department. If services are abandoned for no reason for a period of four days or more the operator must obtain a new certificate of public convenience and necessity before operations can be resumed; in other words, abandonment of service means forfeiture of the right to operate until the operator can show that conditions warrant resumption.

MARYLAND CONDITIONS

In Maryland, as pointed out by E. B. Whitman, the Public Service Commission has jurisdiction over both passenger and freight-carrying vehicles. All such operators must get a permit from the commission before operating. The conditions under which these permits are granted follow very closely those already outlined for the State of Washington. The same can also be said of the difficulties met with.

In Baltimore, with the exception of one jitney line which was inherited by the present commission, independent motor buses are prohibited. Motor buses are, however, at present operated by the traction company on one of the principal streets. During the past year there have been a number of applications for bus lines in different parts of the city, some of which were badly needed. In the spring the question of operating these lines was taken up with the United Railways & Electric Company. The railway company, however, was not anxious to take up bus operation. The commission nevertheless kept after them and told them that permits would be granted to individuals if they did not operate bus lines in certain territories where transportation was needed. This brought the railway company around to the commission's point of view, namely, that the transportation systems of the city should be interdependent. They are now studying the whole transportation question and only recently their president and their general manager have returned from abroad after a study of motor-bus and trackless-trolley operation. It is expected that the railway company will soon install bus lines in territories not now adequately served by the trol leys and where the cost of rail service would be too great to make it possible to earn a return on the money invested.

Where independent bus lines come in from the country they are not permitted to compete with the local railway but must make their terminal the point where they connect with the trolley line.

During the five years the commission has had jurisdiction it has found that the big lines give better service than where a route is covered by two or three independent operators. With these small fellows on the route the difficulty is in getting rid of them. A good many go out of business after their bus reaches the point where it needs repairs or is worn out, and it has been the policy of the commission in such cases not to reissue the permits to anyone else for a small part of what might be later a big system. The only solution of many difficulties is in having large companies, and even now when issuing permits for small sections they are conditioned on their getting off the road if a larger bus line comes in which will serve the community better.

In speaking of trackless trolleys Mr. Whitman said that he understood from investigations made by the commission that a trackless trolley could operate on a fare of about 2 cents per mile. Experience with motor-bus lines is that the fare must be between 4 and 5 cents per mile to come out whole.

Maryland has one of the best systems of state roads to be found in the country. The State has for many years been improving its roads systematically so that now it possesses a good many thousands of miles of improved roads. It is on 6 miles of these roads that come into Baltimore that the commission is asking the railway to install a trolley bus, as that part of the country is developing very rapidly and needs transportation.

Lewis E. Gettle, of the Wisconsin Commission, stated that the Milwaukee Electric Railway & Light Company is urgently insisting on putting in trolley buses for extensions rather than track in the newly-developed portions of the city. The commission has a very great doubt whether such a system would be a street car line or a bus line.

The Des Moines Situation

In Des Moines, the largest American city without street cars, Dwight N. Lewis of the Iowa Railroad Commission said that for the last six weeks the people had been dependent on jitneys without regulation for transportation. There have been a good many accidents. There is not much to be said except that these buses ought to be regulated. It is utterly ridiculous to expect independent jitney operators to furnish adequate transportation to any community. There must be companies of sufficient size to render a service that can be depended upon, and they should be regulated to pay their just share of the expense of keeping up the roads and the taxes of the community. They should also have such capital behind them that they can take care of their obligations to passengers and to the community; otherwise Public Utility Commissions ought in every way to discourage them until they meet these requirements.

The point has not yet been reached where the street railways can be dispensed with; that time may come and auto transportation so developed that it can be used in our communities. That time will not come until there is some adequate provision for their regulation, operation and maintenance.

In answer to the question as to why the street cars were discontinued Mr. Lewis stated that the railway company found it utterly impossible, with an 8-cent fare, to pay its operating expenses, let alone a return on its securities, with 5-cent jitney competition paralleling its lines for short hauls that took the cream of the business. The Iowa Commission is without jurisdiction in the situation.

With reference to freight transportation he also said there is a very necessary place for the auto truck due to the high freight and express rates for short hauls. With good roads and adequate regulation this institution has come to stay for handling short-haul freight.

Closing Sessions of Utility Commissioners

At the final session of the National Association of Railway and Utility Commissioners, held in Atlanta, Ga., on Friday, Oct. 14, the following were elected officers to serve during the following year: President, Carl D. Jackson, Wisconsin Railroad Commission; first vice-president, Dwight N. Lewis, Iowa Board of Railroad Commissioners; second vice-president, Alexander Forward, Virginia State Corporation Commission. Detroit, Mich., was selected as the meeting place of the next convention, which will be held on Sept. 26, 1922.

An account of the sessions on the first two days of the convention, Oct. 11 and 12, was published on page 708 of the issue of this paper for Oct. 15, and a report of the afternoon session on Thursday appears in this issue under the heading "Utility Commissioners Discuss Motor Buses."

The session on Thursday morning was devoted to the presentation and discussion of committee reports on federal and state legislation, litigation and valuation. The first named committee reported its efforts to have the Esch-Cummins bill amended to define more clearly the power of the states with reference to intrastate rates. As a result of this report the association adopted a resolution urging congress to amend the Esch-Cummins bill in such a way as not to relieve carriers from conforming to the laws of the states with respect to construction and operation within the states for intrastate transportation or with respect to the abandonment of such transportation. The committees on litigation and valuation devoted almost their entire attention to questions dealing with steam railroads. The latter committee reported its efforts to procure an amendment of the valuation act to relieve the I. C. C. from the obligations to include in its valuations its estimate of the "present cost of condemnation and damages in excess of original cost or present value" of lands.

At the session on Friday there was an address by M. H. Aylesworth, executive manager of the N. E. L. A. and former chairman of the Colorado Public Utilities Commission. Mr. Aylesworth's remarks were devoted largely to the subject of customer ownership of utilities. He pointed out that the results of such ownership can be observed in many sections, since at present more than a million and a half people own the securities of light and power companies under private management. Under such conditions not only are the best interests of security-holding customers represented in the development of electric service to suit the development needs of any community, but there is a correlation of the business of furnishing electric service with all those lines of business activities which the diversified group of security holders represents.

To illustrate the far-reaching effect of the right kind of "public ownership" and the conditions which make it essential to maintain the highest quality of service, Mr. Aylesworth recounted the events of the Pueblo (Col.) flood, where through the efficient organizations of the electric light, power and telephone companies the restoring of service in remarkably quick time shortened the period of distress by many days and aroused a lively appreciation of the public spirit that was displayed, even at risk to life, by company employees and officials. In a fuller realization of the community-building influence of adequate electric service, Mr. Aylesworth maintained, lies the solution of some of the future problems of the utilities, particularly the urgent need for capital to carry out the developments and betterments that are everywhere required. The selling of securities to the public through customer-ownership campaigns he dwelt on emphatically as one of the vital phases of utility financing in the future.

Traveling Passenger Agents Convene in Salt Lake City

Electric railroads were well represented at the forty-sixth annual convention of the American Association of Traveling Passenger Agents held at Salt Lake City Sept. 12 to 15 inclusive. Approximately 325 delegates were in attendance.

Among the pleasing entertainment features were trips to Saltair over the Salt Lake, Garfield & Western electric road, a trip to Ogden via the Bamberger Electric, to Ogden Canyon over the Utah-Idaho Central Railroad, where a trout and chicken dinner was served at the famous Hermitage hotel, and a trip to Logan via the Bamberger Electric and the Utah-Idaho Central electric road.

The Canadian Rockies was the selection for the 1922 meeting, one session to be held at Banff, one at Lake Louise and one at Vancouver.

A total of 207 new members were taken into the association at this year's convention.

Officers for the ensuing year were elected as follows:

President, Frederick R. Parry, general agent of the Canadian Pacific Railroad, with offices in New York City.

Vice-president, C. H. Cutting, traveling passenger agent of the Salt Lake Route of the Union Pacific system, with offices in Salt Lake City.

Secretary-treasurer, Paul C. Benedict of the Baltimore & Ohio, at Chicago.

Publicity in Litigated Cases*

No Good Comes from Publicity Given to Injury and Damage Cases

By W. H. Moore

Claim Agent San Diego Electric Railway, San Diego, Cal.

EVERY question is debatable and there is an affirmative and negative side to every debate. In this particular case I have chosen the negative side. There seem to be more reasons for not giving publicity to litigated cases than otherwise. The least said about injury and damage cases so far as electric railways are concerned the better for the companies we represent.

The first reason is that as a rule the general public is not particularly interested when a public service corporation is successful in a suit. The success of the company arouses an antagonistic attitude usually and it is thought that it is another case of a rich corporation being able to hire shrewd lawyers and the other fellow having had to take what he could get in the way of legal advice.

Publicity to litigated cases of this character is used more or less as a guide post by the next fellow that gets in trouble, and he endeavors to avoid the mistakes of the first fellow as gathered from the published facts.

Publicity creates antagonism among attorneys in general. Many an attorney has an injury case against an electric railway presented to him by a client whom he can hardly refuse to serve. If the case is tried and the company wins and great publicity is given to that fact the attorney, who is a legitimate practicing member of the bar, takes offense at the publicity and feels as though it is a slap at him and in the future feels less sympathetic when he reads of the trouble and tribulations of public service corporations.

Take, for example, the case of an attorney who is presented with an injury case and has confidence that he can recover. The claim agent being equally confident that no recovery is possible and not being able to effect a compromise that is satisfactory to both sides, the case goes to court, with the result that the verdict is found in favor of the company. Publicity then is given to the fact. This attorney naturally takes offense inasmuch as he confidently felt that the claim was an honest one. He feels that the publicity given has a tendency to belittle his ability as an attorney.

Take, for another example, that type of attorney known as an "ambulance chaser." Suppose he presents one of his typical cases in which the allegations are gross exaggerations and you win. Suppose that in our success we come out with great scare headlines, what happens then? The attorney himself might, the next time he has a case against you, give the newspapers an equally good story in retaliation. What is the result? Does it not bring injury and damage cases into the spotlight? Does it not familiarize everybody with the idea that while public service corporations have been known to win cases, they also have been known to have been successful in their defense and have had to pay heavy damages? Does it not make people feel as though they will take the chance, having nothing to lose? I dwell particularly upon the attorney phase for the reason that attorneys are a necessary part of all litigation and it is their elimination that the publicity must have to be effective.

In my opinion the only publicity of value would be a mere mention of the fact that in the suit of Jones vs. the blank electric railway company for damages in a personal injury case the jury found for the defendant. The result is obvious and the least said about the case the more effective, leaving the reader to wonder why the plaintiff lost.

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*Abstract of paper presented at the annual meeting of the Pacific Claim Agents' Association, Butte, Mont., Aug. 25-27, 1921.

Middle West Claim Agents Organize

REPRESENTATIVES of the claim departments of a number of the electric railway properties of the Middle West held an organization meeting at the Hotel Baltimore, Kansas City, Mo., Oct. 14 and 15. The purpose was to form a permanent organization of the claim men of various electric and steam roads of all the Middle Western states. The following member companies were represented:

Missouri: United Railways of St. Louis, Kansas City Railways, Kansas City, Clay County & St. Joseph Railway, St. Joseph Railway, Light & Power Company.

Illinois: Bloomington Street Railway, East St. Louis & Suburban Railway.

Kansas: Kansas City, Kaw Valley & Western Railway, Hutchinson Interurban Railway.

Other States: Denver Tramway Company, Fort Smith Railway, Tri-City Railway & Light Company, Lincoln Traction Company.

The following officers were elected for the ensuing year: President, W. C. Swisher, Kansas City Railways; first vice-president, Trevor C. Neilson, East St. Louis & Suburban Railway; second vice-president, W. P. Gottschalk, Bloomington Street Railway; secretary and treasurer, Oscar L. Borgquist, Kansas City Railways; member of executive committee, T. G. Kelly, Fort Smith Railway.

American Association News

T. & T. Executive Committee Meets

A MEETING of the executive committee of the Transportation & Traffic Association to plan the work of the coming year was held at the headquarters of the association in New York on Oct. 18. Those in attendance were: L. H. Palmer, president; G. T. Seeley, J. K. Punderford, Arthur Gaboury, and G. H. Clifford.

The executive committee decided this year to discontinue two of the committees which it had last year. One of these committees was the committee on freight, whose work during the past year was largely the drafting of a classification of freight accounts. This gives a basis for comparing the costs of freight accounting. Up to this time comparisons have been largely useless because of the different forms of accounting used. The executive committee believes that now that this classification has been adopted by the association, the most important step is to ask the companies to put the classifications into force. The other work, which would naturally be assigned to a committee on freight operation, would be the methods of promoting freight traffic, and this topic will be transferred to the field of the committee on merchandising transportation. The executive committee also decided, in view of the other subjects which had to be investigated, not to continue the committee on economics of schedules. It was believed that the work of the committee last year was so exhaustive that no further study was required immediately, except possibly in the drafting of additional definitions.

Five committees were agreed upon for the coming year. One of these will be on merchandising transportation, which will include, as stated, the merchandising of freight transportation. Another will be the committee on safety. The other three will be on personnel and training of transportation employees, traffic regulation and the transportation features of safety car operation, including probably the use of one-man cars in interurban service.

As the association has usually had six working committees, it is quite probable that another committee will be added to this list.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Strike Moves Condemned

Criticisms Contained in Church Report Are Directed Against Municipality, Men and Company at Denver

The research department of the Federal Council of the Churches of Christ in America made public on Oct. 24 some conclusions contained in a forthcoming report of an investigation of the Denver Tramway strike which occurred during the summer of 1920. The investigation was undertaken at the instance of a group of churchmen in the City of Denver which created for the purpose the Denver Commission of Religious Forces. The Commission on the Church and Social Service of the Federal Council of Churches and the Social Action Department of the National Catholic Welfare Council participated in the inquiry.

The Protestant body was represented in the inquiry by Edward T. Devine, one of the foremost social workers and writers in America, and the Catholic, by Dr. John A. Ryan of the Catholic University of America and Dr. John A. Lapp· a well known investigator and an authority on social legislation.

The strike on the street railways of Denver arose over the termination by the company of its agreement with the Amalgamated Association and the announcement of a serious wage reduction. The company justified its action on the ground that without an increased fare it was impossible to continue to pay the prevailing scale which provided a top wage of 58 cents an hour. On this issue the report states:

> The tramway employees struck because they feared that as soon as the legal obstacle should be removed the company would reduce wages to 48 cents, which it has signified its intention of doing in default of an increased fare; because they believed their union was better able to face a contest in August than it would be in October or November when its morale would be weakened by the loss of its contract with the company, and when unemployment would be more widespread; and finally because they were enraged at what they believed to be a policy, on the part of the company, aimed at disrupting their union.
>
> Whatever may have been the financial condition of the company, the men could not be expected to accept a reduction of the top-wage to 48 cents an hour without the most vigorous and indignant protest. The requirements of an industrial enterprise make it necessary in practice to safeguard stockholders and to pay interest on bonds. Otherwise capital cannot be attracted, and the bondholders will throw the enterprise into bankruptcy. But in principle the men are right—and public policy will vindicate them—in maintaining that labor should be paid a good living before money receives its hire.

The public is declared to have a responsibility in this matter and also for maintaining order without depending on imported guards. On this point the report says:

> It is to be feared that the people of Denver, as is probably true in most cities under like circumstances, for the most part failed to take a broad public view of the tramway strike and of the situation which led up to it. Had the people interested themselves to provide such regulation of the street railway system as would insure its solvency and a living wage to its employees the whole unhappy conflict might have been prevented.
>
> Further, it is impossible to excuse a great municipality for not providing at public expense and under strictly public control an adequate, disciplined police force which would make the importation of armed guards an unthinkable alternative. There is no more disturbing influence in indu at the present time than the tendency to transfer the police power of government to privately controlled agents who are irresponsive to the claims of justice and who are devoid of that discipline which the successful exercise of police power requires. That the consequences of importing armed men to guard and operate the street cars included a heavy toll of life, for which no jury has fixed responsibility, is a disquieting fact which remains a moral liability of the entire community.

Of the use of the "spy system" to combat organization activities on the part of the workers the report says that the "whole system is undoubtedly one of the most disruptive influences in our industrial order."

The publicity methods employed to discredit the strikers are especially deplored:

> A frequent method of attacking labor during industrial controversies is to represent that labor has fallen under the vicious influence of radical agitators. Sober, home-loving and law-abiding workingmen whose patriotism cannot be questioned and whose hatred of every form of anarchy and lawlessness is deepseated both in their ancestry and in their whole education and training, are recklessly and wickedly charged with harboring sentiments which the men themselves repudiate, and with being influenced by outside agitators who exist only in the imagination of their calumniators. This particular kind of misrepresentation is a feature of almost every industrial controversy, and the tramway strike in Denver was no exception. . .

The men are criticised in the report for their precipitate action in striking while their cause was before the courts. On this point the report says:

> After the disturbances of the first week of the strike the men should have made all possible speed to terminate it. It was no time to stand on ceremony. When their executive declared the strike ended, they should have gone back to work.

At the same time the use of the injunction in cases of this kind is declared by the report to be questionable and fraught with danger.

Railway Case to Go Before Full Supreme Court Bench

Associate Justice Pitney of the United States Supreme Court on Oct. 26 refused to grant an order suspending the decision of the United States District Court in New Jersey, under which the Public Service Railway, Newark, N. J., was permitted to increase its fare to 8 cents.

Justice Pitney told representatives of the railway and of the State of New Jersey who appeared before him that in view of the magnitude of the questions involved in the case he preferred that presentation be made to the full bench when the court meets on Nov. 7, explaining that the court might be willing at that time to hear oral arguments.

Des Moines Rides Again

Electric Railway Cars Welcomed Back After Suspension of Seventy-Five Days

After a period of seventy-five days, during which the city depended for transportation upon buses and other makeshifts Des Moines is again riding in the cars of the Des Moines City Railway. Service was restored on the afternoon of Oct. 24 following the passage that morning by the City Council of the franchise proposed by the Harris interests with certain changes suggested by the Corporation Counsel.

The Council passed the franchise without any further modifications and early in the afternoon cars started leaving the carhouses and by the time the rush-hour crowds were ready to go home fifty-nine cars were in operation.

According to an agreement reached by all parties to the transaction buses will be permitted to continue to operate in direct competition with the railway until after the franchise has been voted upon by the people. It was felt that fifty-nine cars were inadequate to handle the situation, but as the present power facilities of the company do not permit the operation of a larger number of cars, it was agreed that during the interim it was best to allow the buses to continue.

As yet no definite plans for the franchise election have been made, but it is thought that the vote will be held Nov. 24 or Dec. 1. Thirty days must elapse between the first notice of the election and the actual vote.

In the event that the franchise receives the support of the voters it is planned to place service on a 132 car basis as soon as sufficient substation equipment can be placed to provide power for this number of cars.

Upon order of Judge Martin J. Wade of the federal court railway service in Des Moines was stopped at midnight on Aug. 3. On Aug. 26, upon the guarantee of officials of the Iowa State Fair Association to protect the company against loss, Judge Wade permitted resumption of service during the eight days of the fair. On Sept. 2, however, the cars were again returned to the carhouses.

Bus operators have announced that they will conduct a determined campaign to prevent the ordinance from being passed at the election.

M. H. McLean, representing the Harris interests of Chicago, issued a statement at the time service was resumed. This statement follows:

> A starved horse never pulled a full load. All that the Des Moines City Railway has ever asked is the right to a fair return so that it can render good service and attract capital for improvements and extensions. that is the right to live and function properly in the community.

> The franchise is based on fundamentally sound principles. Fares are based on the cost of operation plus maintenance of a contingent reserve fund; fares to be lowered or raised as the reserve fund exceeds or falls below prescribed limits. Equally important is the provision that gives an incentive to efficient and economical operation The public must be served. That is of prime importance.
>
> The Council having adopted the franchise, the company will, if it is approved by the people, endeavor to operate under it so as to give first class service.
>
> The recent action of the employees of the company in voluntarily accepting a reduction of wages in order to assist in making possible a resumption of service is highly commendable and evidences their broad minded view of the situation.
>
> I hope and believe that the franchise will be accepted by the people at the election by a large majority and that the vexed question of the Des Moines City Railway will be laid to rest and succeeded by a period of sanity and right dealing in respect to this important factor in the life of the city.

Mayer Barton also issued a statement on Oct. 24. In his memorandum the Mayor called particular attention to the fact that the franchise election would make possible the recording of an expression of opinion which will indicate definitely the extent of the demand which had been made for a resumption of railway service.

From the experience that Des Moines has had, it would seem that the franchise ordinance must necessarily be passed at the coming election. The public, however, has a short memory and political forecasts are always dangerous. Until the ordinance has been formally approved by the voters the need would not seem to exist for going into the provisions of the grant to any greater extent than has already been done in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 15, page 709, and Oct. 22, page 749.

As late as Oct. 17 Judge Wade felt it incumbent upon him to make a statement with respect to the railway suspension in the hope of making plain the facts which led to the suspension of service. His statement was more than a mere review of the steps fixing the responsibility for the suspension in that he took occasion to offer his service in the attempt to bring about a settlement. He said that his observations were made in order that any further discussion of the problem could be conducted in a spirit of justice, fairness and common decency. In concluding his remarks Judge Wade said that up to the time his statement was made no showing had been presented to the court that conditions had changed in any respect.

The Des Moines City Railway on Oct. 26 filed with the City Council formal notice of its acceptance of the franchise ordinance. Nov. 28 has been fixed by Council as the date for the special election on the franchise. The publication of the application for the franchise checkmates the move of the Improvement League to conduct a fight to test the legality of franchise. No move has yet been made by the Council to reroute buses so as to take them off streets where car lines are operated, but Mayor Barton has intimated that this will be done as a traffic safety measure. Buses which were shipped in to Des Moines from outside cities are beginning to leave the city.

Subway Abandonment Recommended

Committee of Cincinnati Chamber of Commerce Recommends Complete Change in Plans

Abandonment of the canal subway as a rapid transit project, on which the city of Cincinnati already has spent $3,000,000 is recommended in a report made public by an investigating committee of the United City Planning Commission of the Chamber of Commerce.

The committee said it was forced to the conclusion that money already spent on the subway is a dead loss and should be charged off the city ledger and the project of rapid transit abandoned.

The committee which made the report consists of Albert Krell, president of the Central Inland Waterways Association; George B. Fox, manufacturer, and Frederick W. Garber, architect. There is $3,000,000 still unspent of the $6,000,000 of bonds voted by the public.

The committee believes, however, that the right-of-way can be salvaged and the tunnels used for delivery of freight to industries in the central part of the city as well as in all the suburbs. The committee in its report also urged that immediate steps be taken to remedy traffic congestion, to extend trade and provide interurban railway inducements.

The report says:

> The construction of the subway has been in progress two years, but it is to be regretted that moneys were provided and work upon the same was begun and carried on without proper study and careful investigation of the city's actual needs.

In a statement made in connection with the report Frederick Garber said the loop was not feasible for rapid transit purposes because there is no way of operating it profitably and because if it were operated it would serve only a section of the community.

The committee also suggests the use of the tunnel as a means of bringing interurban cars into the city in place of its proposed use as a means of rapid transit.

Alfred Bettman, chairman of the City Planning Commission, said that the report made public by the subcommittee was unauthorized and that he would investigate the matter thoroughly before making any statement.

Work has been going on on the rapid transit project for the past two years and three of the six sections have been built.

Twenty Per Cent Wage Reduction on Short Line

The Railroad Labor Board has reported to Rufus C. Jones, comptroller of the Electric Short Line Railway, Minneapolis, Minn., commonly known as the Luce Line, a decision for a reduction of 20 per cent in the wages of the engineers, motormen, firemen, conductors and brakemen of that system. The board has had the matter under consideration ten weeks. The matter was referred to that body on Aug. 2 with the consent of the employees. The board took into consideration the financial condition of the carrier. The earnings had been falling below cost of operation, and the road was paying only 75 per cent of the union scale. The decision will be acceptable to the employees it developed in conference.

The new scale in cents per hour is as follows:

> In passenger service—conductors, engineers and motormen, 62½ cents; firemen, 57½ cents, and brakemen, 56½ cents.
>
> In freight service—conductors and engineers, 65 6/10 cents; firemen and brakemen, 59 4/10 cents.
>
> In switching service—conductors and engineers, 62½ cents; firemen and brakemen, 57½ cents.

Daily Guaranty Assured Extra Trainmen

One of the points considered at length in the finding in the Connecticut Company's wage arbitration proceeding, noted in the ELECTRIC RAILWAY JOURNAL for Oct. 22, was the matter of pay for extra motormen. The men contended for a daily guaranty of $3 instead of the present weekly guaranty of $21 and said that the present scheme was faulty in that a man who failed to attend two roll calls in the course of a week might be deprived of the unearned portion of his guaranty for the entire week.

On this point Counsel Vahey, who represented the men, and Justice Beach said:

> We recognize the importance to the company of some provision for effectively requiring the presence of the extra men when they are wanted, and we think the company and the public will be sufficiently protected for the balance of the year by establishing the daily guaranty with the proviso that for not more than ten weeks on each of its divisions during the balance of the year the company may on giving two days' notice to the division committee men put into effect the weekly guaranty instead of the daily guaranty.
>
> If any controversy arises as to the interpretation or effect of this award it is to be referred back to the chairman for decision, which shall be binding on both sides.

The recent wage award brought out some interesting facts on wage scales of previous years.

In June, 1914, a maximum rate of 28½ cents an hour was agreed on. In 1916 this rate was increased by agreement to 32 cents. In 1918 it was increased to 40 cents, effective May 31, 1919. During the year 1918 the cost of living continued to rise, and in November the men applied for and the company voluntarily granted an increase of 5 cents an hour, on condition that the increased rate of 45 cents should be continued until June, 1920. This was agreed to but in August, 1920, the men again applied for and the company again voluntarily granted a second increase of 5 cents an hour, making the maximum rate 50 cents. In June, 1920, the maximum rate for the blue uniform men was by agreement raised to 60 cents an hour for the ensuing year, and at the same time the length of the graduated scale was reduced from five years to two, so that the blue uniform men recently reached the maximum rate at the beginning of their third year.

Improvements in Southern California to Cost $1,079,143

Since May, 1921, the Pacific Electric Railway, Los Angeles, Cal., has undertaken a large program of improvement work on its system, the greater portion of which became necessary principally through franchise and legal obligation. The estimated cost of all the improvements outlined is $1,079,143. The following is the schedule of the improvement jobs now underway:

Highland Avenue: 5,523 lin, ft. of double track reconstructed with 4-15/16 in. 75-lb. C. S. revised rail with tie plates, Redwood ties, rock ballast and paved with 5-in. oil macadam pavement.

West Sixteenth Street: 3,669 lin. ft. of double track reconstructed with 7-in.-128 lb. grooved girder rail—treated ties—rock ballast and paved with 6-in. concrete base and 2 in. asphalt wearing surface.

Echo Park Avenue: 6,283 lin. ft. of double track reconstructed with 4-15/16-in.-75 lb. C. S. revised rail rock ballast—Redwood ties—paved with 5 in. of oil macadam pavement.

West Sixth Street: 400 ft. of double track and 1,600 ft. of double track combination gage track. Present 60-lb. ASCE and 6-in.-72 lb. tee rail replaced with 7-in. 128-lb. grooved girder rail—reballasted with rock ballast—Redwood ties renewed with treated ties—repaved with 6-in. concrete base and 2-in. asphalt wearing surface pavement.

Santa Monica Boulevard, Colegrove Line: 11,978 lin. ft. of double track—reconstructed with 4-15/16-in. 75-lb. C. S. revised rail—rock ballast—grade change—Redwood ties—paved with 5-in. of oil macadam pavement.

San Bernardino-Mount Vernon Avenue, Colton-San Bernardino Line: 3,000 lin. ft. of single track reconstructed with 4-15/16 in.-75 lb. C. S. revised rail—rock ballast—Redwood ties—paved with 5 in. of oil macadam pavement.

Los Angeles, Eighth Street Freight Terminal: Constructed 4,600 lin.ft. of additional freight handling and storage tracks—constructed new freight terminal layout, by utilizing the brick-constructed carpenter, blacksmith and paint shop buildings formerly used by company shops before new Torrance shops were put in operation. Altering these structures and constructing additions thereto to provide enlarged and more modern freight terminal layout, as present freight terminal does not meet the company's rapid development of its freight business. New outbound freight station to be 390 ft. long; 50 ft. wide and platform full length of structure, width of platform 8 ft. New inbound freight station to be 420 ft. long; 67 ft. wide. Exclusive of these structures will be constructed an unloading rack for independently handling newspaper print.

Los Cerritos Stations-Long Beach Line: Retire 1,000 lin. ft. of present double track, pile trestle bridge spanning the Los Angeles River and construct 1,100 ft. of new double track pile trestle bridge and place seven 60-ft. skew girders. (420 ft.). Raise bridge 4 ft. above present grade. Raise approaches to new bridge each end approximately 4 ft. Provide riprap for protection of approximately 1,200 ft. of embankment. This work brought about by U. S. government constructing new flood control levee each side of company's structure for purpose of defining the channel of Los Angeles River, with ultimate purpose of preventing the river during flood periods from silting up the Los Angeles Harbor, at which point the river has during past flood periods left its course and damaged the harbor.

Another Municipal Line Opened

Clairmount-Owen Section of Detroit Municipal Railway Placed in Service—New Section Reached

Preparatory to starting service over the Clairmount-Owen crosstown line of the Detroit (Mich.) United Railway cars of the one-man safety type were started over the line on Oct. 22 to familiarize the operators with the line with a view to starting the regular five-minute schedule during the rush hour and ten-minute service the rest of the day, beginning on Monday. If it is found that a more frequent service is required, it is planned to put on more cars as needed.

While the Clairmount line passes through the residential section of the northwest part of the city, which has not had car service, it is not expected that the line will return a profit over operating expenses until such time as the day-to-day lines are taken over so that the Clairmount-Owen cars can be operated over extensions both on the east and west side of the city. This line will be connected with the present Epworth Boulevard line and the Grand Belt line of the Detroit United Railway, both of which are to be taken over by the city according to arbitration.

A resolution has been passed by the City Council providing that the proposed amendment to the city charter to provide for trackless transportation be again placed on the ballot for the coming November election. The amendment if passed, will empower the Street Railway Commission to acquire and operate gasoline motor buses, trackless trolley buses or such other type of trackless transportation as is deemed desirable. On Oct. 11 the amendment failed to receive a 60 per cent majority, 35,515 votes being cast in favor of and 24,693 votes against it.

Mayor Couzens and the Street Railway Commission are anxious to have the amendment receive a 60 per cent majority vote before proceeding to purchase trolley buses or similar equipment, although it was the opinion of some of the city officials that a simple majority vote was all that was required to provide for the purchase and operation of such equipment. It was the belief of the Mayor that the proposed amendment was not thoroughly understood prior to the October ballot and that many voters opposed it believing that it necessitated the appropriation of money other than that already provided for by the original $15,000,000 bond issue approved in 1920.

Trolley Bus Rapped by Peter Witt

Peter Witt, Cleveland, is in Seattle, where he has been engaged by the City Council to study Seattle's transportation problem. In a speech to the Council, Mr. Witt said he did not favor operation of city owned railways with the aid of taxes; that there is "nothing to the trackless trolley"; that the "one-man car has got to come," and that motor transportation "will never supplant the street railway."

Mr. Witt, said that any rate of fare which produces more revenue but does so from fewer riders is a mistake.

In referring to the use of taxation funds to support street railways, Mr. Witt said:

> That principle is economically unsound. It takes the management as well as the operatives of the system off their mettle.

He explained in detail his approved zone system of fares.

The coming of Mr. Witt to Seattle was strongly opposed by Mayor Hugh M. Caldwell, who asserted that Mr. Witt's engagement had been made by the Council without his being consulted. He even wired Mr. Witt stating that he had not approved of the investigation, and suggesting that Mr. Witt remain in Cleveland until an ordinance has been passed authorizing his employment and appropriating money for his services. The matter had been approved by the Council, however, and an ordinance appropriating $8,400 to pay for his services has been referred to the finance and utilities committee.

An Appeal Made for Unemployed in Columbus

The correspondence between the Columbus (Ohio) Chamber of Commerce and the Columbus Railway, Power & Light Company with respect to the unemployment situation in Columbus has been printed in the form of a full-page advertisement in the Columbus *Citizen*.

The Chamber of Commerce has appealed to the railway officials to start in motion its share of the improvement work on Main and Front Streets and if not actually able to initiate the work to procure the necessary materials so that some progress can be made in the late autumn. In making its request the Chamber of Commerce expresses its appreciation for the work already done by the railway.

The railway, through C. L. Kurtz, its president, commends the patriotic work of the Chamber of Commerce and other service organizations in their efforts to relieve the unemployment problem but states its inability to advance improvement plans when no funds are available for that purpose. The company gives a detailed account of the recent accomplishments of the railway, which is one of the largest employers of labor in Columbus.

Bus Proposal Accepted

Saginaw Council Favors Terms of Bus Company—Chamber of Commerce Is Opposed

If the Council can finance the advanced sale of transportation amounting to $125,000, the city of Saginaw, Mich., will, according to the proposal of the Wolverine Transit Company, Detroit, have motor coach transportation. At the regular meeting of the Council on the evening of Oct. 25 its proposal was accepted with some minor changes and to hurry matters, for Saginaw has not had any reliable transportation facilities since the Saginaw-Bay City Railway ceased operating its cars on Aug. 10.

MAYOR INTRODUCED ORDINANCE

The ordinance giving the company the right to operate was introduced by Mayor Mercer, who also introduced the proper notice revoking the franchise of the Saginaw-Bay City Railway. Commissioner George Phoenix, who has fought the traction company right along, refused to vote for the revocation of the franchise and the approval of the motor coach plan.

The Council issues an appeal to the board of commerce, clubs and societies to assist in selling the advanced transportation and within a day or two a decision on the matter is expected from the board of commerce. That body refused several weeks ago to entertain the proposal as then made by the bus interests in the name of the Wolverine Transit Company.

The essentials of the offer of the Wolverine Transit Company follow:

It will place in operation within ninety days thirty-five motor coaches each with a seating capacity of twenty-five. The rate of fare is 6 cents with universal transfers. In order to finance the plan the company proposes that the city arrange to sell in advance $125,000 of tickets, in books of 200 with a face value of $12, at a cost of $10. The money from this source is to be retained by a trustee appointed by the Council, and as each bus is delivered the trustee is to pay at the rate of $4,150 to the manufacturer. The trustee is to have a first mortgage on the equipment to the amount of the advanced transportation until the tickets sold in advance have been used.

The company is to deposit with the bus manufacturer $115,000 as a guarantee to it to start manufacturing and delivering the buses. The company further agrees to deposit with some local bank, $30,000 for operating expenses during the time the tickets are being used. The Council is to govern the service. Insurance will be carried on all buses to the amount of $5,000 for one passenger and $25,000 for one accident.

In order to insure service, the mortgage to be given the city's trustee is to run for one year, after which the company will furnish a $100,000 bond for continuation of service. The company does not ask a franchise or the elimination of the jitneys, asserting the service which it will give will compel the jitney operators to retire from business.

There is to be a special election on Dec. 7, called to submit a bond issue to complete the water plant, and at that time, the jitney owners ask that their proposal, which the Council rejected, be submitted. Commissioner Phoenix is circulating petitions for municipal ownership of buses and it is possible that this question too will be submitted.

Residents of Miami Must Decide

Miami (Fla.) voters will decide on Nov. 1 if they want to buy the defunct Miami Traction Company's track, franchise and rolling stock for $50,000 cash and a "bad account due" of approximately $73,000, which it is claimed the system owes the city for paving and bridge liens. The city is to vote on issuing bonds for $100,000, half of which will be paid the Tatum interests for the assets of the system. The liens are to be canceled. The other $50,000—if the city votes the issue—will be used to equip the 5 miles of the system with poles and trolley wire so that the lines may run as trolley lines instead of on storage batteries as previously.

Since the fire which destroyed the company's powerhouse and carhouse more than a year ago the line has not resumed operation. Many suggestions and propositions for operating the line have been offered from time to time. A few months back the Miami Chamber of Commerce offered its assistance in securing a franchise for some operator who would undertake to provide the city with railway service.

The present plan is to lease the system under some arrangement to the Miami Beach Electric Company, which is operated by the Carl C. Fisher interests.

Ordinance Passed Forcing Presentation of Electrification Plans

Favorable action has been taken by the City Council of Buffalo, N. Y., on the ordinance proposed by Frank C. Perkins, the Socialist member of the board, for electrification of the steam railroad lines within the city limits. The ordinance provides that a plan must be submitted by the railroads by Feb. 1, 1922, and carried out one year later. The action of the Council was unanimous.

For years the municipal authorities have been discussing the advisability of enacting such an ordinance as it affects the New York Central belt line operating largely through the north park residential section, but representatives of the railroads always have contended that the cost would be too great. Some time ago a hearing was held on the proposed ordinance and railroad engineers said electrification of rail lines within the city would cost millions. The ordinance enacted by the Council forces the railroads to submit an electrification plan within the next four months.

News Notes

New York Subway's Seventeenth Anniversary.— Posters of the *Subway Sun* and *Elevated Express* are featuring the seventeenth anniversary of the opening of th New York subways by the Interborough Rapid Transit Company. The posters show former Mayor McClellan and other well-known men marching from the City Hall to board the first train on Oct. 27, 1904.

Action on Extensions Deferred.—The public utilities committee of the Board of Supervisors of San Francisco, Cal., met on Oct. 19 to discuss the municipal Railway extensions. The advantages and disadvantages of the several tunnel routes were gone over thoroughly. Final action on the matter was put over for two weeks. It is more than likely that if the various improvement associations fail to agree on the extensions the Board of Supervisors will take the matter in its own hands and arbitrarily make decisions. The plans for this improvement have been referred to in detail previously in this paper.

American Legion Convention in Kansas City.—A special issue of the *Railwayan*, the monthly "organization magazine" of the Kansas City Railways, will be published in honor of the convention of the American Legion, in Kansas City, Oct. 31, Nov. 1 and 2. This issue will contain more than 200 pictures of army and battlefront scenes and portraits of members of the railway organization who had been in service. The company has slightly more than 3,000 employees, and among them are 1,500 ex-service men, said to be the largest percentage of former service men employed by any similar company of the size of the railway in the United States.

300 Veterans Meet.—The first annual banquet of the Veteran Employees' Club of the Twin City Rapid Transit Company employees in Minneapolis, St. Paul and suburbs was held on Oct. 11 at the Central Y. M. C. A. in Minneapolis. The "oldtimers" seemed to enjoy the get-together at which many "youngsters" listened to tales of the old horse car days. The occasion was just to "reminisce" and hear the story of railway development in those parts. Mike Donovan, who entered the service in 1875 and "worked under every management and master mechanic," was there and so also was "Hod" Carter of 1883 days. Horace Lowry, president of the Twin City Rapid Transit Company and son of the founder of the company, came to the gathering to commend his trainmen for their loyalty. He said: "With such support as we are given I don't see how any corporation could fail to succeed."

Financial and Corporate

Valuation Testimony Heard

$85,573,196 at Prevailing Prices Fixed As Reproduction Cost of United Railways, St. Louis

The taking of testimony by the Missouri Public Service Commission to determine the value of the property of the United Railways, St. Louis, Mo., took up Oct. 18, 19, 20 and 21 in St. Louis, with one witness on the stand. Hearings were then adjourned for a month to give the City Counselor and his associates time to study the figures submitted.

Counsel for Receiver Wells and the company submitted several sets of valuation figures as follows:

1.—Reproduction, based upon prevailing prices of material and labor, Jan. 1, 1920, $85,573,196, including depreciation.

2.—Replacement at prices prevailing June 30, 1921, $82,202,727, including depreciation.

3.—Replacement new if based upon average prices for a five-year period beginning June 30, 1916, and ending June 30, 1921, $70,201,102, including depreciation.

The inventory and exhibits submitted fill ten volumes of foolscap paper width and length, and include 4,500 pages of typewritten matter. W. B. Bennett, Madison, Wis., formerly engineer for the Wisconsin Railroad Commission, and now an associate of F. W. Doolittle, New York, in charge of the valuation work for the company, was the only witness during the four days. He is to be cross examined later. The commission sought to shorten the hearing and cut out much oral testimony, but counsel for the receiver and the corporation objected on the ground that they wanted the record to be complete in case the decision of the commission was such as to force the case into the courts for review.

James L. Harrop, engineer for the Missouri Public Service Commission, who appraised the property of the company, fixed the value at $48,936 805, in his report last spring. His estimate was based on average prices of labor and material for thirteen years between 1906 and 1918. That cost depreciated to represent physical condition of the property was $34,285,531. His figures were on the "investment" plan.

Neither the railway's nor Mr. Harrop's figures include any intangibles—allowances for consolidation, or as a going concern, etc. These items are to be added by the commission.

Taking Mr. Harrop's own figures, the railways submitted a fourth valuation of $66,867,486, which is an extension of the inventory brought up to date. The railways' "investment cost" figures were only $1,527,767 higher than Mr. Harrop's on the same inventory, complete.

In making the opening statement to the Commission, Thomas Elmer Francis, of the receiver's counsel, appealed for a liberal valuation on the ground that capital would not be attracted for sorely needed improvements and extension, and future rapid transit, unless the present security holders were treated fairly. He was cut short by the commission, which decided that arguments would be heard after all the testimony is in. Mr. Francis gave details of increased operating costs since 1916 and asserted that the universal transfer system had saved the car riders $7,784,000 in 1920 alone and more than $75,000,000 since the consolidation in 1900.

The outstanding securities of the corporation, now in receivership, exceed $100,000,000. Two years ago the city and the company agreed to a tentative valuation of $60,000,000. This was changed later by the commission to $50,000,000 for rate making purposes. The present fare of 7 cents is to run until Jan. 1, 1922, when it was supposed that the new valuation would be decided. A decision, however, is not expected in that time now and an extension may be granted. The latest report shows that revenue is hardly sufficient to pay 6 per cent on the $50,000,000.

City Counselor Caulfield stated the city would contend that the value of all United Railways property for rate-making purposes was not more than $45,000,000. It is expected that he will challenge the company to show that more than $25,000,000 had been invested by the stockholders. The other $20,000,000, he said, was "contributed by the public." He did not reveal the source of his figures.

Mr. Caulfield told the commission the burden is upon the company to show that it is entitled to charge more than 5 cents, the contract fare as fixed by the city charter. He declared: "If it fails to move the commission, whose aid is invoked to relieve it from its contract, the citizens will get a 5-cent fare."

In reply Mr. Francis said:

> I must utter a note of warning. My distinguished opponent (Caulfield) is pursuing a course that, like a boomerang, will return to smite those whom he represents. You cannot harm this company without inflicting injury upon the public which it serves. Any increase in taxes, any burden imposed upon it that increases its expenses or decreases its revenue; any action that will prevent or retard the flow of new capital to its treasury, is bound to affect its ability to give proper service.

The hearings are not expected to be resumed before the last of November.

Railway Line Not Profitable.—It is reported that the property of the St. John's Electric Company, the local operating railway in St. Augustine, Fla., has been offered to the city as a gift.

Electric Purchase Approved

California Commission Authorized Western Pacific to Purchase Sacramento Northern Railroad

The State Railroad Commission of California on Oct. 18 authorized the Western Pacific Railroad to purchase the Sacramento Northern (Electric) Railroad including all its properties, rights and franchises. Under the terms of the sale the Western Pacific is to pay $730,000 in cash for the physical property and to assume the payment of the outstanding bonds of the company. On the basis of the present market value of Western Pacific bonds given in exchange for the bonds of the Sacramento Northern the total purchase price is $4,450,000. This includes the $730,000 cash payment and the expense entailed in the exchange of bonds.

The Western Pacific Railroad Corporation, parent company of the Western Pacific Railroad, had already acquired more than 97 per cent of the outstanding stock and more than 98 per cent of the outstanding bonds of the Sacramento Northern. The bonds were acquired by the exchange of Western Pacific bonds for the bonds of the Sacramento Northern at the exchange basis of $80 Western Pacific bonds to $100 Sacramento Northern bonds. The stock of the Sacramento Northern was obtained at the rate of $27.50 per share for the first preferred stock, $15 per share for second preferred and $6 for common.

This stock control placed the Western Pacific Railroad Corporation in control of the Sacramento Northern and the directors of the Sacramento Northern voted for the sale of the property to the Western Pacific.

Of the outstanding stock of the Sacramento Northern $136,800 par value and of the outstanding bonds $80,094 have not been deposited under the Western Pacific offer. Additional time has been granted in which to make deposits.

The Western Pacific is to acquire the Sacramento Northern through a subsidiary company known as the Sacramento Northern Railway capitalized for $1,000.000. It was necessary to form a subsidiary company, it was pointed out, because under the Western Pacific mortgage it cannot advance any money to a company of which it does not own the entire capital stock. The Western Pacific Company, by the terms of the Railroad Commission's decision of Oct. 18, is authorized to use $4,450,000 of the proceeds obtained from the bond issue previously authorized; to acquire the stock of the Sacramento Northern Railway, the new subsidiary ern Railroad. The Sacramento Northern Railway is authorized to use $730,000 from the proceeds obtained from the sale of its stock to acquire the properties of the Sacramento Northern Railroad. The remainder of the proceeds are to be used as working capital.

Reorganization Ordinance Prepared

The city attorneys of Pittsburgh, Pa., have prepared an ordinance for presentation to Council authorizing the city to enter into the agreement with the Philadelphia Company and Pittsburgh Railways looking toward the reorganization of the Pittsburgh Railways. This agreement was drawn up by the city attorneys and counsel for the Philadelphia Company.

George N. Munro, Jr., special city counsel in charge of public utility legislation, said that while he was anxious to have the measure introduced at once and thus open the door for discussion on the proposition and an early decision, it would probably be held up another week. This delay, he said, was due to the fact that counsel for the Philadelphia Company, now absent from the city, has not had an opportunity to approve or reject a proposed amendment to the agreement.

The amendment as proposed by Mr. Monro provides that the new company shall assume full liability for the payment of all damage claims against the old company. Since the railway was placed in the hands of receivers many persons have been awarded damages in the local courts. These claims, according to Mr. Monro, now amount to $600,000.

. He proposes to have the new company pay the claims in ten instalments, allowing ten years in which to pay off the debt. Lawyers representing a majority of those who were awarded damages have agreed to this proposition, Mr. Monro said. The proposed amendment is the only change which will be made in the agreement before it is considered by Council.

Many pamphlets containing a copy of the agreement on reorganization were mailed to various boards of trade and other civic organizations throughout the city, with the request that they study the proposition and offer criticism and suggestions, only a few have sent replies to Council. A majority of them approved the agreement, some with reservations, but each requested a public hearing before final action is taken by Council.

The terms of the agreement for the reorganization as proposed to be executed by the city and the railway were reviewed in the ELECTRIC RAILWAY JOURNAL for July 30, page 180.

Status of Security Holders Fixed

Judge Mayer in the United States District Court has handed down an opinion in the suit of the Westinghouse Electric & Manufacturing Company against the Brooklyn (N. Y.) Rapid Transit Company, defining the status of the lien of the Brooklyn Rapid Transit gold 5s of 1945, as a first lien in equity upon the property acquired with the proceeds of $2,125,000 of the bonds, and upon property acquired with later proceeds amounting to $889,705, and such property acquired by the Brooklyn Rapid Transit Company as is subject to the lien of the first and refunding mortgage dated July 1, 1902. The opinion was confined solely to the question of the priority liens as between the trustees of the two mortgages. The 1945 mortgage was made in 1895 to secure an issue of $7,000,000 of 5 per cent gold bonds and 1902 mortgage to secure an authorized issue of $100,000,000 gold 4s.

Daily Receipts Up $1,050

Despite Industrial Depression Connecticut Company Is Doing Much Better Than a Year Ago

President L. S. Storrs and the federal trustees of the Connecticut Company met on Oct. 23 with the Public Utilities Commission in Hartford and discussed the financial condition of the company. Coming after three consecutive hearings before the commission on petitions for a reduction in fares, it is believed that a formal statement from the Connecticut Company as to its attitude on rates will be made in the immediate future.

The federal trustees will meet in New Haven on Oct. 29 and it is expected that they will take a "positive attitude" on the fare situation as recommended by President Storrs in his memorandum now before the Public Utilities Commission. The company is now making some money and it is in a better financial condition than during the last two years, as was shown in President Storrs' statement to the trustees.

FARE CHANGES UNLIKELY BEFORE SPRING

Indications are that fare reductions will get more serious consideration next spring than this winter because of the uncertainties of winter weather and their effect on railway transportation.

Twenty or more buses on various lines are being continued in operation by the Connecticut Company at a daily loss of $150. The Public Utilities Commission was informed of this fact by W. J. Flickinger, assistant to President L. S. Storrs, during the hearings for lower fare rates. Mr. Flickinger said:

> We are running these lines only for the service they afford, not for revenue. Our experience has gone far enough to show us that bus operation costs more than trolleys because much rolling stock is required.

According to him, under present maintenance costs, buses would have to be operated at full capacity throughout the day at a 5-cent fare in order to make expenses. He said it cost $20 a day to operate a trolley-owned bus.

The financial statement of the company as made by Mr. Storrs covers the first seven months of each year from 1916 to 1921 and shows that the operating revenue in those periods increased more than $3,000,000 since 1916 and that the operating expenses nearly doubled. Taxes have increased from over $260,000 to more than $400,000. The non-operating income has decreased from approximately $150,000 to a little over $5,000.

The following table shows the net income available for return on the capital invested in the first seven months of the past five years:

1916	$2,133,726
1917	1,653,573
1918	1,274 890
1919	1,042,625
1920 (deficit)	266,913
1921	1,352,917

In his statement to the trustees Mr. Storrs said:

> It seems to be desirable to take a positive attitude in the matter of our rates of fare in order to meet the feeling on the part of the most conservative of the public that the time has come for reduction.
>
> This is based upon the argument that the company was relieved by the last Legislature of the paving and bridge obligations, a lower rate of taxation was established and above all the competitive motor bus has been very generally eliminated. Furthermore, the general reductions in the price of coal and other commodities should have a corresponding effect upon our operating costs and an anticipated reduction in the rates of pay will have a marked effect upon our pay-roll costs.
>
> There is no question that the 10-cent rate of fare is considered abnormally high and it is all the more of a burden to a majority of the car riders due to the drastic reduction in industrial rates of pay and unemployment conditions.
>
> There is no question but that the people of the State generally recognized the need for the higher rate of fare when it was inaugurated and are still willing to pay that rate without much comment, but are expecting us to make some voluntary reduction.

Mr. Storrs points out that the decrease in car riders is marked, but he attributes this solely to industrial conditions. He points out that at the present time the daily receipts are averaging $1,050 a day more than they did during November, 1920. The increased revenue has been obtained in centers where the jitneys have only recently been restricted.

Mr. Storrs predicts the net revenue in November and December will be the same as last year. The cash balance of the company, he says, is better than it has been the past eighteen months. On Oct. 1 the company had a cash balance of $419,120, with all due accounts paid, while in 1920, the excess of accounts due over cash on hand was $365,000.

Municipal Lines Have a Theoretical Surplus

According to figures reported by the City Comptroller, the receipts of the Detroit (Mich.) Municipal Railway for the month of September amounted to $31,137 and in the same period of time operating expenses, not including interest on bonds, sinking fund or taxes, amounted to $26,313. To meet the charges for sinking fund, bond interest and taxes, money is being taken from the construction fund, and this action it is cited is justified by the ruling of the Interstate Commerce Commission that such charges are capital costs and may properly be charged to construction until the street railway system is complete.

The municipal street railway officials expect that the returns from the municipal lines will be greatly increased as soon as the so-called day-to-day lines are taken over by the city. These lines will connect with the municipal lines already in operation making a more complete system of north and south as well as cross-town lines.

A 5-cent fare is being collected on

all municipal lines, and according to the city charter a rate of fare must be charged sufficient to meet operating expenses, sinking fund and interest charges and taxes. If it is found that the present rate is not sufficient to meet all charges and return the money taken from the construction fund the fare will be raised.

$4,464,828 Deficit for Interborough Rapid Transit

The Interborough Rapid Transit Company, New York, N. Y., closed the fiscal year ended June 30, 1921, with a deficit of $4,464,828, as a result of combined operations on its subways and elevated lines. The deficit is the company's worst showing for any year, being nearly double the 1920 deficit of $2,235,836, and exceeding the deficit of $3,810,339 in 1919, the largest heretofore recorded. High labor costs and inflated commodity prices are given as the cause of the poor income statement of the company, which points to its contractual obligations calling for a 5-cent fare as compelling the company to render service to the public at less than cost.

During the year the total number of passengers carried was 1,013,678,831, a record. Recent months, however, have shown a falling off in gross revenue, indicating a check in the growth of passenger traffic.

Gross revenue for twelve months amounted to $55,031,941, an increase of $3,553,531 over the preceding year, while operating expenses totaling $36,024,646 showed an increase of $4,329,437.

An increase in amount of taxes assignable to operation of $112,284 in 1921 further lowered the company's operating income, which shrunk from $17,159,791 in 1920 to $16,271,601 in 1921. Total income deductions for the year amounted to $21,375,551 compared with $20,003,996 in 1920.

A comparative income statement of the Interborough Rapid Transit Company for the twelve months ended with June, 1921 and 1920:

Gross	$55,031,041	$51,478,411
Net after taxes....	16,271,601	17,159,791
Total income	16,910,724	17,768,160
Deficit after charges.	4,464,826	2,235,837

The deficit of the charges is exclusive of deficit accruals under the provisions of Contract No. 3 and related certificates which under these agreements with the city are payable from future earnings. For twelve months to July 1, 1921, these accruals amounted to $11,016,654.

Railway Loses Money.—The operation of the Paducah (Ky.) Electric Company during the past twelve months has been at a loss, according to a report by Manager A. S. Nichols to the City Commissioners and Mayor. The report shows operating expenses to be $174,304 and gross earnings $171,338. Taxes were $7,948, leaving a shortage of $10,914.

Financial News Notes

Suit for Appointment of Receiver Refused.—Saul Zielonka, city solicitor of Cincinnati, Ohio, has refused the request of Robert S. Alcorn, attorney, that he bring suit for a receiver for the Cincinnati Traction Company and for $1,000,000 back franchise tax.

Long-Term Bonds Offered.—Edward B Smith & Company, Philadelphia, Pa., are offering $100,000 of the Philadelphia & Garrettford Street Railway's first mortgage 5 per cent gold bonds. The price is 77 and interest to yield 6.75 per cent. Due date is Aug. 1, 1955.

Must Resume Trolley Service.—The Mayor and City Commission of Manistee, Mich., have notified the Manistee Railway that unless service is restored within thirty days the franchise will be forfeited. Railway service in Manistee was suspended Sept. 1.

Another Indiana Company Surrenders Franchise.—The Terre Haute, Indianapolis & Eastern Traction Company has filed notice with the Indiana Public Service Commission of the surrender of all of its franchises in Indiana. There were some thirty franchises in all that will now be exchanged for the indeterminate permit of the Public Service Commission.

Claims Ordered to Be Filed.—The bond of R. W. Levering, receiver of the Lafayette (Ind.) Service Company, operating the railway system of Lafayette, was fixed at $5,000 following his appointment as receiver by Judge Anderson in Federal Court recently. Judge Anderson ordered that all claims against the company must be filed within ninety days. Mr. Levering was appointed receiver of the company on Oct. 18.

Wants Tracks Removed.—The San José (Cal.) Railroads has petitioned the State Railroad Commission for permission to remove its tracks on Keyes Street from Tenth to the end of the line. The company also requests the substitution of a single track instead of the double one on Tenth from Reed to Keyes Streets. Lack of patronage and the financial inability to meet paying expenses are advanced as the reasons for the removal.

Railway Must Pay Taxes.—By a decision of the State Supreme Court at Olympia, the Seattle Municipal Railway must pay taxes levied against it during the month of March, 1919, in which month the system was conveyed to the city by the Puget Sound Power & Light Company. Both the city and power company appealed from the judgment of the lower court, which held the taxes payable, and which refused to adjudicate the amounts payable as between the city and the company. The State Supreme Court affirms the lower court and holds that, in so far as the present action is concerned, there is nothing for the court to adjudicate.

Many Shares of Stock Bought.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., reports that since June 30 more than 1,500 men and women have bought shares of the 8 per cent preferred stock of the company. These shares were bought with cash or in monthly payments. The details of the campaign describing the offering of this stock locally were reviewed in the ELECTRIC RAILWAY JOURNAL, issue of July 16.

Bonds Extended.—Notice has been given to holders of the first consolidated (new first) mortgage bonds of the Minneapolis Street Railway, issued jointly with the Minneapolis, Lyndale & Minnetonka Railway, due Jan. 15, 1922, that these bonds have been extended to Jan. 15, 1925. Interest will be 7 per cent from Jan. 15, 1922, and it is said further that holders may extend their bonds bond for bond with the payment to them of $10 for each bond extended, the privilege being subject to cancellation without notice. The cash payment is to be made at the time of the delivery of the bonds with the extended coupon.

First and Refunding Bonds Offered.—A new issue of $16,000,000 of Philadelphia Company, first refunding and collateral trust mortgage 6 per cent gold bonds, series A, dated Feb. 1, 1919, and due Feb. 1, 1944, is being offered by a syndicate composed of Lee, Higginson & Company, Ladenburg, Thalmann & Company and Hayden Stone & Company. The bonds are offered at $87 and interest yielding about 7.18 per cent. The issue is secured by first mortgage (subject only to $300,000 bonds) on gas properties valued by independent engineers at more than $35,000,000 and by a first lien on securities valued at more than $21,000,000. The total valuation of properties and securities on which these bonds are a first lien is more than $56,000,000.

Briefs Ordered Filed in Depreciation Case.—No arguments were presented by either side at the preliminary hearing before the Interstate Commerce Commission in the matter of depreciation charges of the Washington Railway & Electric Company. The commission was satisfied with the presentation of an agreed statement of facts. The legal representatives of the Public Utilities Commission and of the Washington Railway & Electric Company were instructed to file their briefs within thirty days, after which a date will be set for oral argument. The railway contends that it is an interstate carrier and as such the Inter-State Commerce Commission would have jurisdiction over its depreciation charges. The commission contends that the railway is not an interstate carrier within the meaning of the transportation act.

Traffic and Transportation

Advance of Fare Case Urged

Supreme Court to Be Asked to Advance Proceeding Involving Right to Charge Seven Cents

The United States Court of Appeals at Cincinnati, Ohio, has certified three questions to the United States Supreme Court, in the appeal of the city of Louisville from the restraining injunction of Judge Walter Evans of the United States District Court at Louisville, preventing the city of Louisville from interfering with the Louisville Railway in charging a 7-cent fare. In this action the city held that the railway violated a contract, calling for a 5-cent fare, while the company contended that it had no contract. The Court of Appeals in June failed to reach a conclusion in the matter and in view of the number of questions involved decided to let the Supreme Court settle them.

It is understood that the city has already arranged to present a motion in the Supreme Court to advance the case to the spring docket.

The questions certified to the Supreme Court from the federal Court of Appeals were:

> 1. Did the act of 1856 have the effect of making revocable that immunity from rate regulation evidenced by the 5-cent contract which was purported by the charter and by the contract of April, 1864?
> 2. Did such immunity terminate with the end of the original charter term in 1894?
> 3. Did the acceptance by the company of the Constitution of 1891 have the effect of making revocable any such existing immunity?

Regarding the first question City Attorney Lawton said:

> The court for all practical purposes decides that the city and the company had been delegated the power by the Legislature in the '60s and '70s to enter into a rate contract and the city and company did enter into such a contract for a 5-cent fare. At that time there was in existence an act of the legislature of 1856 providing that all the charters and franchises shall be subject to amendment or repeal at the will of the legislature, provided, however, that no amendment or repeal shall impair vested rights.

Relative to the second question, Mr. Lawton said that the charter of the old company expired in 1894, but in 1886 the Legislature had extended it ninety-nine years. This involves the question of whether the extension also continued the rate contract made with the city.

The third question asks for interpretations of several sections of the Constitution, Mr. Lawton explained.

Mr. Barnes maintained that there was no contract existing at the time of the institution of the suit, and that, "assuming that there was a proposed contract, it seems that it would not be binding either on the city or the railway company."

Mr. Barnes' views on the second question were:

> The original charter of the railway was for thirty years, from 1864. It was extended in 1886. Did this extension secure to the railway the right to charge a fixed fare or did this immunity from change expire in 1894 and leave the right to the Legislature—by itself or through the city—to reduce the fare as might be equitable?

Mr. Barnes said in regard to the third question:

> If the Supreme Court comes to the conclusion that under the act of 1856 (1) there is no binding contract or (2) that whatever might have been the result of the arrangement between the company and the city in 1864, this arrangement expired in 1894, or (3) that the arrangement as to fare became revocable by the adoption of the constitution in 1891 there is no existing contract and the railway company has the right to insist on a rate of fare that will not be confiscatory.

One-Half Fare for Children in District of Columbia

A bill has been introduced in the House of Representatives by Representative Dyer of Missouri making it mandatory for the street railways operating in the District of Columbia to charge one-half the regular rate of fare for children between the ages of six and twelve years. The bill provides that children under six years of age should be carried free when accompanied by an adult. The bill makes provision for half fare for all pupils, under eighteen years of age, of day or night institutions of learning.

The measure provides that these tickets shall be honored only at times when the school of which the passenger is a pupil is in session. The tickets are to be sold in lots of ten each, and are to be furnished only upon presentation of a certificate from the principal of the school.

The half-fare provisions in the bill carry with it the privilege of a universal transfer. The measure carries a penalty clause which assesses a forfeit of $25 for each offense.

New Five-Cent Fare Zones Established

Additional 5-cent fare zones will be started on the lines of the Boston (Mass.) Elevated Railway on Nov. 24. The routes scheduled are as follows:

Allston Railroad Bridge Allston to Porter Square, North Cambridge, via Central Square, Cambridge.

North Beacon Street, Market Street to Allston railroad bridge

Western Avenue, Watertown Arsenal and Central Square, Cambridge.

Market Street, Washington Street to Western Avenue.

Cottage Farm, Brookline Street, Central Square.

Pearl Street and Putnam Avenue to Central Square.

Harvard Square, Kendall Square line via Broadway.

Spring Hill, Kendall Square line.

Porter Square, Kendall Square via Broadway.

Sullivan Square, Central Square, Cambridge.

Harvard Square, Dudley Street line between Harvard Square and Charles River road, Cambridge.

Jeffries Point line between Harvard Square or Central Square and Charles River road Cambridge

Beacon Street between reservoir and the Boston-Brookline line.

Relief Sought in Jacksonville

Railway There Merely Meeting Expenses on a Seven-Cent Fare—Company's Cards on Table

Relief from city assessments for paving and sewers, a higher fare or some relief for the company is the plea of the Jacksonville (Fla.) Traction Company, a Stone & Webster property, made before the City Council by Peter Q. Knight, Tampa, general counsel in Florida for Stone & Webster. It resulted in the appointment of a committee to meet with Receiver E. J. Triay to see if some agreeable and equitable solution cannot be reached.

Mr. Knight argued that the present fare, 7 cents, granted by the Railroad Commission of the State last year, has enabled the line to pay operating expenses only and that not a cent has been laid away to meet indebtedness of $1,000,000 hanging over the system when receivership was instituted.

There will be a city levy of $100,000 on the paving of Main Street, he told the Council, and he stated that the company could not meet it. It cannot borrow further, he said, because it is not paying its present indebtedness.

This system is paying a levy of 3 per cent of its gross revenues to the city under its franchise—a sort of franchise tax—and it is possible that some relief in this connection may be the avenue taken to solve the problem.

In discussing the matter later, Mr. Knight said to the representative of the ELECTRIC RAILWAY JOURNAL:

> We considered it the best plan to lay all our cards on the table. So we have done so. This is a matter which concerns all of the people of Jacksonville. Their representatives on the City Council will confer with the receiver for the traction company and they will find out just what the situation is. We would be glad indeed to be able to earn our way with a 7-cent fare, or a lesser fare, if it were possible.
>
> The fact is, the street railway business throughout the country is in a bad way and has been for years. Everything that enters in their operation has increased in price in recent years, and there are very few places where the people enjoy, as in Tampa, a 5-cent fare.
>
> In Pensacola the traction company is in a receivership and the fare there is 8 cents. In Miami the railway threw up the sponge about a year ago and has not operated a car since, and the city is now considering purchasing the property and operating it as St. Petersburg did with its traction line about two years ago At St. Augustine the owners of the railway recently offered virtually to give the city its property, if it would undertake to make the betterments which the city government there is insisting shall be made by the traction company.

"Two Bells" Will Contain Bulletins

Two Bells, the official publication of the Los Angeles (Cal.) Railway, will hereafter print bulletins which have heretofore been posted in division bulletin books. This change will enable the trainmen to read the notices at their leisure and therefore avoid the unnecessary crowding around the bulletin book. The bulletins will be effective on the day *Two Bells* is issued unless otherwise mentioned. Division superintendents keep a complete file of this booklet.

Permits for Jitney Operation Granted in Tacoma

The city of Tacoma has undertaken the regulation of jitneys operating on its streets, the applications for permits having shown a marked increase since their ousting from Seattle streets. The Council has granted a number of permits for jitneys, after they were recommended by Commissioner Fred Shoemaker, who passes upon all applications. The jitney routes avoid following street car lines as nearly as possible. Where the electric railway has not provided service, the city has given the jitneys full power to operate. Open hostilities between the platform men of the Tacoma Railway & Power Company and jitney drivers broke out following the granting by the City Council of a number of petitions to operate jitneys.

Bus Company Will Seek City Authorization

As a result of the recent ruling of the Attorney General that the Ultimate Bus Company, Wheeling, W. Va., comes under city and not state supervision the company will apply for a city permit. Counsel Beneke for the bus company recently made this statement. Since the ruling there has been no further development in the long struggle between the bus company and the Wheeling Traction Company, and the buses have been running unmolested.

The State Railroad Commission had previously refused a permit to the line and had ordered it to cease operation. Following the order the ruling came that the city had jurisdiction in the case. The various moves in the case were reviewed in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 8.

Seattle's Mayor for Private Buses

An ordinance providing for the purchase of motor buses for operation by the city of Seattle into the suburban districts, such as Cowen Park and South Beacon Hill, at a cost of $50,000 has been vetoed by Mayor Hugh M. Caldwell. The Mayor states that he can see no necessity for the city to invest such a sum in motor buses, when private interests stand ready with buses to continue the service that they have been giving for years.

Mayor Caldwell said:

> I have never favored the entire abolishing of jitney buses. I have advocated and still believe in regulated bus service. Putting the traveling public both ahead of the bondholders represented in the acquisition of the municipal railway, and ahead of persons who have operated jitneys without restriction, I feel that rapid transportation, properly regulated, should not be abolished until we have something to offer in place of it. . . . Personally, I favor the issuance of permits for through buses furnishing rapid transportation to those sections of the city not supplied by the car lines, and I will not while in office voluntarily agree to stifle the growth of the city by exterminating all other forms of transportation than that which can be accommodated upon the surface street railways, which are fast becoming antiquated and obsolete as a modern form of transportation.

Mayor Caldwell, however, approved a bill providing for exchange of transfers between city street cars and privately owned for-hire cars, acting as feeders to the municipal railway. He stated that he signed the bill because it was in the nature of an experiment by the Council to endeavor to afford relief to certain sections of the city that have been deprived of transportation, and that he did not wish to stand in the way of such experiment, although doubting its success.

The Mayor expresses the opinion that more money would come to the city by accepting the offer of the jitney men to pay $20 a month for every private jitney operated on the Cowen Park line than could be made on municipal buses.

Free Buses in Muncie

Thrifty suburban dwellers at Muncie, Ind., are riding to and from the business district without cost in jitneys that formerly charged them 5 cents. As a result of the war between the jitney owners and the Indiana Union Traction Company, the latter backed by an ordinance passed recently by the Council, all jitneys now carry the sign "Free."

While the buses pursue their accustomed routes over streets used by the street cars, the policemen, charged with the duty of keeping buses off these streets, appear rather perplexed. Apparently, if the jitney drivers do not charge for the use of their machines they are not violating the city ordinance, which says that these buses shall not be operated for hire in streets which have car service.

The truth is, of course, that the drivers are receiving money, for they accept contributions offered by those who ride in their cars. The law, apparently, does not cover this, and it also is rumored that one who fails to make a contribution is not "seen" by some of the drivers the next time one waits to be picked up.

Bus Regulatory Ordinance Passed

The Council of Columbus, Ohio, has passed the bus regulatory ordinance which has been pending for some time. The measure contains among other provisions the following:

> Bus companies must ask Council for franchises.
>
> Bus companies must pay the city an annual license fee of 1 cent per mile for each bus operated, payment to be in advance.
>
> Companies must deposit with city a surety bond of $25,000 or shall carry liability insurance of $5,000 for a single accident, $25,000 for an accident injuring one or more persons and $5,000 for an accident damaging property.
>
> Council reserves the right to map out bus routes and regulate fares.
>
> Buses cannot operate on streets where there are street cars except where designated by Council.
>
> No bus to be more than 86 in. wide.
>
> Buses must have suitable signal lights at night, be properly lighted at all times and heated when the temperature falls below 35.

Bus Company Wants Permit.—The Rochester Interurban Bus Line Company has applied to the Common Council for permission to operate buses to Perry, Conesus Lake, Livonia and Le Roy.

Another Bus Route Urged on Connecticut Company

Nathaniel J. Scott, manager Connecticut Company's Hartford lines, conferred recently with George A. Ray and others representing the municipal government, regarding the installation and routing of another bus line at Hartford. The proposed route is on Maple Avenue. It is generally understood that a favorable report will be made on the project to the Common Council. The action to be taken regarding the bus line on Maple Avenue is the result of the introduction in the court of Common Council by Alderman Ray of a resolution requesting the Connecticut Company to establish such a line before Jan. 1, 1922. The resolution was referred to the Common Council railway committee, and it is declared is favored by all of the members.

Will Consider Stage Line

A hearing will be held by the State Department of Public Works on the application for a certificate of necessity to operate a stage line between Seattle and Portland. The company, whose name has not been made public, plans to operate in competition with the railroads, and will pick up passengers at intermediate points. The trip by railroad at present requires about seven hours.

Interurban Hard Hit by Autos

Asserting that the inroads made by the bus lines operating between South Bend and Elkhart, via Mishawaka, and between South Bend and Niles, Mich., are such that the Chicago, South Bend & Northern Railway must increase fares or go bankrupt, Ralph Smith, general manager, appeared before the City Council recently with a plea for aid. The buses operate in South Bend on a schedule three minutes ahead of the interurban cars, and pick up passengers waiting for the electric trains. The Council has taken the matter under consideration. It is believed that the Council will pass an ordinance permitting the buses to enter the city for a stated license fee on streets which are not used by the railway.

Bus Service Extended

The Ritter Motor Bus Line is now operating routes between Bloomington and the following outlying towns: Atlanta, Farmer City, Colfax and El Paso. Two round trips are being made now daily between Bloomington and Atlanta. The Farmer City Line is an extension of the Leroy line. When the bus operated as far as Leroy three round trips were made daily, but with the Farmer City extension of 10 miles two round trips daily are being made. The line between Bloomington and Colfax has been especially profitable. So far none of the lines has competed with the lines of the Illinois Traction System, which extends west and south from Bloomington.

Rehearing Granted on Interurban Line Fare in City

The Public Service Commission has ordered a rehearing on its recent decision granting the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., a 10-cent fare without transfers within the city. No date has been set for the new hearing. The decision is regarded by the municipal authorities of Buffalo as the first step in the fight to upset the ruling of the commission, involving recent legislation giving the utilities board power to overthrow existing franchises between public service corporations and municipalities.

In its order the commission says it finds the city has just grounds for its application for a rehearing. Following the ruling of the commission giving a 10-cent fare without interchange of transfers with the International Railway, Buffalo, the Buffalo & Lake Erie Traction Company renewed its service within the city from the terminal at Lafayette Square and the Lackawanna city line. This service had been discontinued for some time.

Get Acquainted Movement in Springfield

The Springfield (Ill.) Consolidated Railway officials have advanced a little on the Aristotelian theory of "Know Thyself." Their philosophy is "Know Your Conductor and Motorman." Passengers will not have to study and analyze their moods, manners, etc., just to learn their names will do so that a courteous relationship will be established between the patrons of the line and the men who are responsible for the operation of the car. The company will placard the men's names and Springfield riders will soon be saying "Good morning, Jim" in answer to a conductor's cheery greeting.

Complaint Made Against Seven-Cent Fare

Once again the municipal authorities of Buffalo have opened a fight against the International Railway, operating the city traction lines. Upon recommendation of Frank C. Perkins, the Socialist member of the board, the City Council has passed a resolution directing William S. Rann, the corporation counsel, to draft a complaint to the Public Service Commission against the 7-cent fare. Commissioner Perkins advised the Council he was unable to obtain from the company or the commission a statement showing the increase in revenue obtained by the International through the boost in fare and the cut in wages of the company's employees. Restoration of the 5-cent fare with free transfers is sought by the city.

Complaint also will be filed by the city against what Commissioner Perkins calls "wretched service" now being given by the company. It is declared that railway service has been reduced 20 per cent by the company, and that more than 125 regular runs have been abolished and many of the extra trips during the rush hours have been curtailed.

Commissioner Perkins contends that about 150 cars lie idle in the six carhouses during the top peak of traffic and there are 260 fewer platform men employed than a year ago. It also is contended by the city that the installation of one-man safety cars on the Connecticut Street line results in a considerable saving to the company.

Ruling on Increased Rates Indefinitely Postponed

The North Carolina Corporation Commission instead of authorizing or refusing the increased rates of fare sought by the Carolina Power & Light Company, operating in Raleigh, and the Durham Public Service Company has indefinitely postponed the issuance of the order. The matter has been pending several months.

In Raleigh the fare is 7 cents and the company was seeking a 1-cent increase. In Durham the fare charged is 7 cents, but the petition called for a 10-cent rate.

There will be no change in the present schedule in these cities and no date has been set for the hearing on these petitions.

Pleasing the Public Spells Success

The Charlottesville & Albemarle Railway, Charlottesville, W. Va., is at it again. This property, under the direction of John L. Livers, is constantly up and doing, putting its .business (transportation) before the public and actually selling it. The latest stunt is extending the hospitality of the line on certain days to the favored ones whom the company wishes to have as its guests.

Recently there was a state reunion of Confederate Veterans in Charlottesville and for the three days of the reunion the railway carried all the veterans free of charge. The invitation to ride on the lines of the Charlottesville & Albemarle Railway was extended through the daily newspapers which assured the men that their badge or uniforms would identify them. A large sign was carried on the front end of the cars which read "Welcome Veterans, Ride With Me."

Lending a Helping Hand

With school funds depleted and pupils facing the necessity of paying tuition in Dade County (Fla.), Manager Ellis of the Miami Beach Electric Company has addressed an offer to the Chamber of Commerce agreeing to carry school children free in Miami Beach provided the action would not interfere with the rules of the State Railroad Commission and the state laws governing utilities, which are very strict regarding "passes" and free transportation. The railway has been commended for its action.

Transportation News Notes

Barnes' Article Reprinted.—In the Oct. 15 issue of *Trolley Topics* the official publication of the Louisville (Ky.) Railway, extracts are reprinted from J. P. Barnes' article contributed to the Sept. 24 issue of the ELECTRIC RAILWAY JOURNAL. The article, "Relationship Between Management and Men — A Traffic Factor," has been a subject for comment in the papers in Louisville.

Applies for Rehearing.—The New York State Railways has applied to the Public Service Commission for a rehearing on its application for an 8-cent fare in Utica. The new application was made through Kernan & Kernan of Utica, counsel for the company. The story of the rejection of the former application for a 10-cent rate and the finding of the commission were reviewed at length in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 24.

Cut in Fare Acceptable.—As the result of a petition before the Public Utilities Commission in which protest is made by the towns of Leicester and Auburn against the high rate of fare from the Worcester city line, the Worcester (Mass.) Consolidated Street Railway has made a cut of 4 cents. The adjustment now provides for a 10-cent rate from the city line to these towns. The Selectmen through their attorneys have accepted the proposal.

Buses Active in Ohio.—Since the Ohio Legislature last year passed a law placing motor buses under the same regulation as public utilities, bus lines are being started in nearly every section of the state. The books of the State Public Utilities Commission record that ninety lines have been registered and twenty more applications have been returned for technical corrections. It is estimated that this number is not more than half of the actual number of bus lines that are operating in the state.

Hearing Date Set.—Final date for the hearing of the city of St. Paul against the St. Paul (Minn.) City Railway on an order to show cause why it should not be restrained from putting in force the increase in fare from 6 cents to 7 cents has been set by Judge H. R. Brill of the Ramsey district court for Nov. 15. The city will not be ready before that date. A temporary restraining order was effective on Sept. 5 against putting in the 7-cent fare and four tickets for 25 cents as granted by the Minnesota Railroad & Warehouse Commission. The hearing on the Minneapolis Street Railway's emergency fare of 7 cents or four rides for 25 cents will probably not come up until the commission determines the permanent rate.

Legal Notes

ALABAMA—*Relative Rights on Street of Railway and House Mover.*

Use of a public street to move a building, requiring consent of the proper municipal authorities, also requires exercise of reasonable care so as not to interfere unreasonably with the public right, and such right so to use the street is subordinate to other lawful uses, as by a street railway, which is not under duty to remove obstructing posts or poles on demand of the mover of the building. Such poles, when erected under proper authority, are not *per se* nuisances. If a house mover is prevented from a reasonable use of the street by a railway he is entitled to recover the reasonable difference in the cost of removing the house in the manner in which he did have to remove it over what it would have cost to remove it but for the obstructions caused by the defendant. He cannot sit idle when he encounters an obstruction and recover for this lost time. [Birmingham Railway, Light & Power Co. vs. Ashworth (two cases), 86 Southern Rep., 82, 84.]

CALIFORNIA—*Railway Held Liable for Assault and Arrest by Guards Employed During Strike.*

Where a street railway, during a strike, employed guards, acting under instructions from the president, at points where attacks had been made upon the railway's employees and cars, the railway was liable for the acts of such guards who assaulted and arrested a pedestrian in the mistaken belief that he was one of the strikers and had participated in the attacks, such assault and arrest being within the scope of their authority, regardless of the mistake that was made. [195 Pacific Rep., 958.]

FEDERAL COURT—*Conditions Defined Where Franchise Has Expired.*

Where the franchise of a street railway company has expired, the city may require the company within a reasonable time to remove its tracks and other property from the streets without depriving the street railway of its property without due process of law. Day to day arrangements by which the continued operation of the railway is permitted do not give the company rights in the streets after the expiration of its franchise, though they do entitle the company to reasonable compensation while it is operating under the ordinance. The motive of the officers of the city and the electors in adopting an ordinance to construct a municipal railway are not the proper subjects of judicial inquiry, so long as the submission of the question to the people conforms to the requirements of the law. [Detroit United Railway vs. City of Detroit, 41 Supreme Court Rep., 285.]

ILLINOIS—*Company Liable for Injuries Reasonably to Have Been Anticipated from Overcrowding of Its Cars.*

Though it is not negligence as a matter of law for a street railway company to permit its cars to be overcrowded, it is bound to know the danger to passengers resulting from such crowding, and if it accepts too many passengers or runs cars so infrequently as to cause too many to seek to ride on each car, it is responsible for injuries which reasonably ought to have been anticipated. [Walsh vs. Chicago Rys. Co., 128 Northeastern Rep., 647.]

IOWA—*Settlement of Claim for Personal Injury Not Subject to Attack.*

Where a person, who had sustained a fracture of the leg on an electric car and had been assured by his physician that the bone had properly healed, accepted a lump settlement offered by the company, and there was nothing to show that the company was guilty of any fraud or bad faith, the injured person, when he finds the physician's diagnosis incorrect, cannot have the settlement set aside, since the purpose of such settlement is to avoid litigation. [Pahl vs. Tri-City Railway, 181 Northwestern Rep., 670.]

MISSOURI—*Husband's Negligence in Driving Not Imputable to Wife.*

Where a man and his wife went in an automobile to a depot to get their daughter, they were not engaged in a joint enterprise, and the husband's negligence in driving the car, if any, was not imputable to the wife so as to prevent recovery for negligence of operators of an interurban car at a street intersection. [Corn vs. Kansas City, C. C., & St. J. Ry., 228 Northwestern Rep., 78.]

NEW JERSEY—*Negligence Will Not Be Presumed.*

The body of a man with one arm and leg cut off was discovered about midnight on the tracks of a railway company. There was no eye witnesses to the accident. The court declared that negligence is a fact which must be proved and could not be presumed, so no damages were awarded. [McCombe vs. Public Service Railway, 112 Atlantic Rep., 255.]

NEW YORK—*Passenger May Be Arrested for Taking from a Railway Car a Package Left by Another Passenger.*

Where a passenger took with him from the car in which he was riding a package forgotten by another passenger and refused on demand to surrender it to the company's representatives, there was legal ground for his arrest and prosecution for petit larceny. A railway company is obligated to use reasonable and ordinary care and watchfulness to protect passenger's possession of his property while a passenger on its cars as against other passengers or persons. [Foulke vs. N. Y. Consolidated Ry. Co., 127 Northeastern Rep., 237.]

PENNSYLVANIA—*Slight Service Paid for by Pass Does Not Make Man an Employee.*

The employee of a power company, who in consideration of the receipt of an employee's pass from a railway company agreed to read a meter in the station of the power company and hand a record of this reading to a conductor, was not an employee of the railway under the meaning of the Workingmen's Compensation Act. Hence his remedy for damages for injury received while riding on the cars was that of any other passenger. [Strohl vs. Eastern Pennsylvania Railways, 113 Atlantic Rep., 62.]

RHODE ISLAND—*Last Clear Chance Doctrine Held Inapplicable in Automobile Collision.*

The doctrine of last clear chance was held without application in an action by the driver of an automobile struck by a street car when he crossed the tracks on a turn ahead of him. The motorman's duty to try to stop the car was considered not to arise until the plaintiff driver's peril was apparent. [King vs. R. I. Co., 110 Atlantic Rep., 623.]

UTAH—*Reserved Power of State to Fix Fare Can Be Exercised Despite City Ordinance.*

As power to fix street railway fares has been retained to the state by the public utilities act, such power can be exercised by it whenever the necessity requires, despite an ordinance of a city granting the railway the right to operate over a street. Such action does not impair the obligation of the contract. [Murray City vs. Utah Light & Traction Co., 191 Pacific Rep., 421.]

VIRGINIA—*Carriers Are Not Required to Coerce Passengers Into the Exercise of Ordinary Care.*

A carrier must exercise the highest degree of care for the protection and safety of its passengers but is not required to coerce passengers who are adults and mentally competent into exercising ordinary care for their own safety, as by not alighting from the baggage door of a combination passenger and baggage car. [Davidson vs. Washington & O. D. Railway, 105 Southeastern Rep., 669.]

WASHINGTON—*Possibility of Automobile Motor Stalling Should Have Been Foreseen by Motorman of Electric Car.*

An automobile driver, who started to cross the track when the electric car was 100 ft. distant, and who would have had ample time to make the crossing if his automobile had not unexpectedly skidded, causing him to stall the engine while the machine was on the track, was held not to be negligent as matter of law. The motorman should have kept his car under such control as to have stopped it in the event of such an occurrence as stalling of motor of the automobile. [Brennan vs. Tacoma Ry. & Power Co., 191 Pacific Rep., 813.]

Personal Mention

Mr. Hasbrouck of New York Service Commission Joins Accounting Firm

H. C. Hasbrouck, for many years with the Public Service Commission of New York as head of the accounting and statistical department, has resigned, effective Oct. 31, to become associated with H. C. Hopson, New York, consultant in utility rate and accounting matters. Mr. Hasbrouck is a native of Troy, N. Y. He received his early education in the public schools of that city. After his graduation from Cornell University, where he specialized in economics, history and political and social science, he served for a time as assistant to the Cornell University registrar. In July, 1908, he left that position for an appointment as junior statistician with the then only recently organized Public Service Commission for the Second District, and has been with that body in various capacities ever since.

In 1913 he was put in charge of the commission's division of statistics and accounts and continued to perform the duties of that position until the reorganization of the Public Service Commissions in July of the current year. When the two commissions were consolidated, Mr. Hasbrouck became deputy chief accountant of the commission, in immediate charge of the accounting and statistical work of the Albany office, through which most matters relating to finances and accounts of the up-state companies have been handled. Since July 1 he has, therefore, had supervision over most of the work previously done by the division of capitalization and the division of statistics and accounts of the up-state commission.

Mr. Hasbrouck is known to public utility interests outside of New York State by reason of his membership for several years on the committee of statistics and accounts of public utilities of the National Association of Railway and Utilities Commissioners. He was chairman of the special committee of three which prepared the original draft of the uniform systems of accounts for electrical and gas companies which the 1920 committee presented to the National Association at its annual convention last year with the recommendation that they be made the basis for uniform accounting requirements in all states.

Edward Kelleher has been appointed by Governor Edwards to the position of assistant secretary of the New Jersey Board of Public Utility Commissioners. The office is a new one. Mr. Kelleher will look after the operation of jitneys throughout the state and will have an office in Newark. Regulation of jitneys came within the jurisdiction of the commission by a law pressed several months ago. Mr. Kelleher was formerly connected with the federal revenue office in Camden.

Mr. Jackson Elected

Chairman of Wisconsin Body Will Direct Activities of Utility Commissioners

Carl D. Jackson was elected president of the National Association of Railway and Utility Commissioners at Atlanta, Ga., Oct. 12. James A. Perry of the Georgia Railroad Commission is the retiring president.

Although the Railroad Commission of Wisconsin is not so old as some of the other commissions, having been organized in 1905, it has done much original work under the chairmanship of Mr. Jackson and Halford Erickson, whom he succeeded. This work has been widely studied and followed in many details by other commissions. In railroad affairs the commission's study of the costs of railway movements was the first made in this country. In the public utility field similar studies have been made, notably on rates and forms of schedules. One of the special features of the Wisconsin form of regulation is the indeterminate permit, which does away with the indeterminate franchise. Elsewhere in this issue is an article which completely describes the duties, methods and procedure of the Wisconsin Commission.

CARL D. JACKSON

Mr. Jackson has been chairman of the Wisconsin Railroad Commission since 1916 and has for an equal time been active in the affairs of the national association. In 1919 he was elected second vice-president and in 1920 first vice-president. He has served on numerous committees, and as chairman of the committee on state and federal legislation in 1920 he did much noteworthy work. During the past year he has served as chairman of the executive committee.

Mr. Jackson was born at Evanston, Ill., in 1870 and was graduated from Harvard in 1894. Following graduation he practiced law continuously in Wisconsin until his election to the commission in February, 1915.

Mr. Atwood Made Head of B. R. T. Employees

William W. Atwood has been appointed president of the Brooklyn Rapid Transit Employees Benefit Association to succeed the late George W. Edwards. Mr. Atwood will succeed Mr. Edwards as secretary of the B. R. T. Board of Pensions.

Mr. Atwood is a practical railroad man and has been connected with the Brooklyn Rapid Transit organization in positions of responsibility for 18 years. He entered the Brooklyn Rapid Transit Company on Sept. 1, 1903, as trainmaster in charge of the eastern division of the elevated system.

Mr. Atwood continued in charge of the eastern division of the elevated lines until April 1, 1910, when he was transferred to the main office and appointed supervisor of the record branch, transportation department. He continued in charge of the record branch until he was selected to fill the vacancy in the office of president of the Employees Benefit Association, caused by Mr. Edwards' death on July 31.

Robert Ridgway, chief engineer of the New York Transit Commission, has recently returned from a tour of London, Paris, Berlin and other European cities, where he studied transit conditions and means used to meet them. Mr. Ridgway said that while the rapid transit lines of European cities are trying to obtain higher fares they are not stopping with that, but are making efforts to meet the situation by increasing the number of car riders.

Martin Schreiber, chief engineer of the Public Service Railway, Newark, N. J., and manager of the Southern Division of the company with offices at Camden, was recently appointed by Mayor Ellis of Camden a member of the Camden Development Plant Commission. This body consists of three members of the city council, the city engineer and three citizen engineers approved by the chamber of commerce. Mr. Schreiber was appointed as one of the latter. The commission will work out proper plans for the ultimate development of Camden, including those for city streets, transportation parks and playgrounds, zoning, and the like. One of the first things the Commission will do no doubt, will be to arrange for proper approaches and gateways through the city for the entrance to the bridge. Mr. Schreiber has a large amount of experience in this kind of work and was for two years, the chairman of the Development Plan Board of Engineers of Jersey City.

Obituary

J. Fithian Tatem, treasurer and general manager of the Five Mile Beach Electric Railway, Wildwood, N. J., died recently at his home in Haddonfield, N. J., at the age of fifty-two. Mr. Tatem was also vice-president of the Marine Trust Company, Wildwood, N. J., and solicitor and director of the Ocean City (N. J.) Title & Trust Company.

W. E. Mandelick, for many years secretary of the London Underground Electric Railways Company, Ltd., died last week. Mr. Mandelick went to London from New York about 20 years ago, at the time when Charles T. Yerkes of Chicago was in control of the property. Previously Mr. Mandelick had been connected with the Sprague Electric Railway & Motor Company and the Sprague Electric Company of New York. He had been in failing health for a number of years.

Younger Alexander, fifty-two years old, electric railway builder, financier, oil magnate and one of Lexington's, Ky., most prominent citizens, died recently. He promoted the Central Kentucky Traction Company, which built interurban lines to Georgetown and Paris, and for more than ten years was president of the Phoenix-Third National Bank in Lexington, which position he resigned five years ago to develope extensive oil interests in Eastern Kentucky.

B. E. Parker, aged fifty-three, for a number of years superintendent of the Marion division of the Union Traction Company of Indiana, Anderson, Ind., died Oct. 20. He was the first superintendent on the Marion division of the Union Traction Company and was advanced to this position from the Anderson City Railway. He resigned Jan. 1, 1911 to accept a position as general superintendent of the Rockford & Interurban Traction Company, Rockford, Ill., later holding positions at Evansville, Ind., and Akron, Ohio.

H. E. Billau, for nearly thirty-five years a field representative of the Sherwin-Williams Company, Cleveland, Ohio, died on Sept. 19 in Freemont, Ohio. Mr. Billau was exceptionally well known in steam railroad and street railway circles and was recognized everywhere as an authority on paints, particularly on railway paints and railway painting. Many of the car painting systems now in use in railroad and street railway car shops were originated and installed by him. For the past several years Mr. Billau's work has been concentrated largely in Cleveland, Detroit, Toledo, St. Louis, Chicago and other central cities. Loyalty to his friends, his customers and his company were dominant features of Mr. Billau's career.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES
BUSINESS ANNOUNCEMENTS

Steel Rail Price Cut $7

U. S. Steel Corporation Announces a Reduction to $40 a Ton

The United States Steel Corporation on Oct. 22 announced a reduction of $7 a ton in the price of standard steel rails. The cut is from $47 to $40 a ton, according to an official statement issued by Elbert H. Gary, chairman of the board of directors. This is the first change in the price of rails put into effect by the corporation since the United States Industrial Board established a price of $47 on March 21, 1919. The Industrial Board price was a reduction of $10 a ton from the quotation prevailing at the time of the signing of the armistice, which price was established during government control of the industry. The official statement issued by Mr. Gary follows:

"We have decided to recommend that our subsidiary companies reduce the selling price of standard rails to $40 per ton base, f. o. b. our mills. The present costs of production do not justify this action, but it is hoped and expected that reductions in freight rates and otherwise, together with large operations, will soon have a beneficial effect upon our costs."

An inquiry made this week among the manufacturers of girder rails indicates that there has been no change in the price of girder rails corresponding to that just announced for standard rails.

The announcement came as a complete surprise. There has been talk at various times in the last year that rails might be reduced, but steel men always have scouted the suggestion, pointing to the extremely high cost of production. In fact it has been hinted from time to time that there might even be an increase in the schedule for rails. As a result, the rail price has remained unchanged, through three or four successive reductions in the entire industry of other products.

Among the independent mills there has been a disposition to sell rails at less than $47 a ton, but so far as is known no firm schedule which shows a price under that mark for the product has ever been made up by any of those producers. In some cases, it is understood, rails have even been sold for less than the new price announced by the United States Steel Corporation.

The new $40 price, it is understood, will apply to openhearth rails and the schedule for Bessemer rails probably will be fixed at $38 a ton, the customary spread between the two types. It represents the second reduction from the high mark of $55 to $57 for Bessemer and openhearth established during the war the first cut amounting to $10 a ton.

It is believed that the independent producers of steel rails will make a public announcement of a corresponding reduction soon, notwithstanding that they have been making concessions in the immediate past which just about correspond to the new corporation price. It is beieved also that the new price may stimulate rail buying to a marked degree. Railroads throughout the country are sorely in need of new rails, but buying has been almost at a standstill because of the sustained price. The drop of $7 a ton, it is expected, will bring into the market a large tonnage which has been withheld for just such a contingency.

The normal rail requirements of the electric railways of the country are approximately 100,000 tons annually, so that the railroads as a result of the reduction will benefit to the extent of approximately $700,000 on next year's supply of rails.

PURCHASES BELOW NORMAL

The carriers, however, have not been buying their normal supply of rails, because of their financial position and partly because of the price. As a result they are understood to be far in arrears of having a normal supply on hand, and many more rails will have to be replaced next year than in a normal year, because of the economies which have been practiced of late. Consequently rail purchases in 1922 are expected to be above normal.

The Steel Corporation adhered to the prices fixed by the Industrial Board throughout the steel boom of the latter part of 1919 and greater part of 1920, and as a result its price for standard rails during this period has never been changed from the $47 level. Independent companies, however, had increased their prices, and as a result of their advances the average price of steel rails for 1920 was $52.64 a ton as compared with $47.50 in 1919 and $57 in 1918. The average prices for the last few years compare as follows:

1921	*$40.00	1917	$38.00
1920	52.64	1916	32.75
1919	47.50	1915	28.00
1918	57.00	1914	28.00

* New price.

The average price of steel rails from 1902 to 1915 was $28 a ton and in 1901 the average was $27.40.

LAST TO BE ADJUSTED

Steel rails were the last of the important steel products to succumb to the adjustment which the steel industry has experienced since the Fall of last year. All of the important products including plates, wire nails, beams, bars, tin plate, billets and pig iron have been sharply reduced from the prices which prevailed previous to the falling off in the demand for steel, but even in the face of the reductions in all of these products steel rails held their own.

Strike Would Bring Coal Shortage in a Week

Hasty surveys of the state of coal stocks reveal that supplies are sufficient to weather a brief railroad strike only. With the mobile reserve of coal suddenly frozen up, only a week would be necessary to bring about acute industrial suffering and physical suffering as well if it should happen to be cold. This is the opinion of one of the government's foremost coal specialists. It is pointed out that while the total coal in storage is reasonably large, its distribution is not such as to afford anything like the general relief that might be assumed from the total tonnage. Communities would be affected very unevenly if there were as much as a week's paralysis of transportation. Tidewater ports, lake ports and many railroads junction points would be congested with coal but the average inland city would suffer severely.

Among railroad officials there is a distinct current of optimism. They think the chances are very much against any strike. Even if the unions should do all they threaten, there is a feeling that if the men insist on striking this is the best possible time. The railroad management seems to be in an unusually favorable position.

Copper Demand Small with Price Weakening

Copper demand is small. While most producers are holding at 13 cents or better a tendency is appearing to cut prices somewhat on nearer deliveries and to extend the period over which 13⅛-cent copper will be sold. While home consumption continues fairly good, domestic buyers seem to prefer to await results of railroad negotiations before making further commitments.

Price of electrolytic copper is 12¾ to 12⅞ cents a pound delivered for prompt shipments, 12⅞ cents for November, 13 cents for December, and 13⅛ to 13¼ cents for first-quarter, 1922, deliveries. Price of Lake copper is 13 to 13¼ cents delivered for prompt and November delivery.

Proposed Elevated Electric Railway in Osaka, Japan

The Osaka Hanshin Kyuko Electric Railway Company, which operates a railway between Osaka and Kobe, according to *Electrical Industries*, is planning to construct an elevated electric railway between Osaka and Juso, and also to double the present lines, at a cost of about 3,000,000 yen. The company also contemplates building an underground railway from its Kobe terminus to Motomachi, to cost approximately 7,500,000 yen.

Rolling Stock

Baltimore (Md.) Transit Company is asking for bids on ten motor buses similar to those described elsewhere in this issue.

New Orleans (La.) Railway & Light Company, recently placed an order with the Nichols-Lintern Company, Cleveland, Ohio, for 200 mechanical sanders.

Georgia Railway & Power Company, Atlanta, Ga., has just placed an order with the Nichols-Lintern Company, Cleveland, Ohio, for 176 mechanical sanders.

Rockland (Ill.) City Traction Company contemplates purchasing eight buses at an aggregate cost of about $56,000. With these buses the company expects to furnish a service supplementary to that given by its railway lines.

Edwards Railway Motor Car Company, Sanford, N. C., has sold to the Atlantic & Western Railway, Sanford, one gasoline railway passenger motor car having a seating capacity of forty-six passengers and in addition baggage and mail space totaling 70 sq.ft.

Track and Roadway

Hull (Que.) Electric Company will relay a half mile of track on Main Street, Aylmer.

Hamilton (Ont.) Street Railway has been requested by the City Council to lay new tracks on King Street West, Aberdeen Avenue, Wentworth and Margaret Streets.

Berkshire (Mass.) Street Railway has begun its repair work on Ashland Street, North Adams. The work includes the laying of some new rails and steel ties between Chestnut and Porter Streets.

York, Ont.—It was announced at a recent meeting of the Township Council that the Government would be asked to move the tracks of the Toronto Suburban Railway through Mount Dennis to the center of the road so that the Township can pave the Weston Road from the city of Toronto to Weston.

Pittsburgh (Pa.) Railways will open up its Mignonette Steel loop East End, on Oct. 26. The loop, which cost $40,000, will be the route of cars now looping over Center and Highland Avenues. It will relieve the present congestion at Penn and Highland Avenues.

Lima, Peru. The original concession for an electric railroad from Lima to La Punta was for a double track railroad, but a recent modification now provides for on'y 11 kilometers of single track at this time from Lima to the village of Bella Vista which must be put into use within eighteen months from the date of the contract. The prolongation to La Punta and double tracking of the line must thereupon be completed within a time of approximately two years.

Miami Beach (Fla.) Electric Company may extend its lines right to the beach instead of stopping in the residence section of the beach property. Three routes have been proposed and are under consideration, to extend the line to Biscayne Avenue from First Street, thence along Biscayne Avenue to its end. Another proposed route was to extend the line over Collins Avenue to Biscayne Avenue to Ocean drive and First Street, passing all the casinos in this vicinity. The third plan was to open South Alton road and carry the line to Biscayne Avenue over South Alton road and then east to Collins Avenue.

Trade Notes

William J. Delaney, for many years connected with the Erie works of the General Electric Company has recently been appointed sales manager of the Cincinnati Car Company, Cincinnati, Ohio.

Ralph R. Rugheimer has been appointed representative of the Automatic Reclosing Circuit Breaker Company of Columbus, Ohio, in charge of the eastern Kentucky, Virginia and southeastern Ohio territory.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is planning to establish a new branch at Huntington, W. Va., to supply the demands of its patrons in the states of West Virginia, Ohio, Kentucky and Tennessee. This branch will occupy a three-story building, 100 ft. square, located at the corner of Ninth Street and Second Avenue.

Blaw-Knox Company, Pittsburgh, Pa., manufacturer of steel produces, has announced the addition to its staff of H. O. Davidson. Mr. Davidson will have entire charge of the Prudential Sectional Building Department of the Blaw-Knox Company, and will be also general manager of the C. D. Pruden plant of the Blaw-Knox Company. Mr. Davidson will be located at the C. D. Pruden plant at Baltimore. Mr. Davidson was connected for eight years with the Hydraulic Steelcraft Company, being general manager of that organization at the time he severed his connections to become a member of the Blaw-Knox staff.

Insulation & Specialty Corporation of America, Wilmington, Del., was organized on Sept. 1 with a capital stock of $500,000 for the manufacture of an insulating material which will be sold under the name of "Fibre Granite." This material will be manufactured in sheets from .005 in. up to 12 in. in thickness and it will also be available in the form of tubes and rods which will be made in lengths from 40 to 60 in. and in diameters from ⅛ to 12 in. On Oct. 1 the capital stock of the company was increased to $1,000,000. P. C. Hennig is president and chairman of the board of directors.

Quigley Furnace Specialties Company, 26 Cortlandt Street, New York, has announced that its pulverized fuel department has been acquired by the Hardinge Company, 120 Broadway, New York. The Hardinge Company states there will be no change in the method of conducting the business at their offices, as the organization of the engineering department has been taken over practically intact. The experience and manufacturing facilities of the Hardinge Company enables them, with their present equipment and augmented staff, to further extend the activities of the Quigley pulverized fuel system.

Nic LeGrand, one of the best known and respected salesmen in the electric railway field, has hung out a shingle for himself. With headquarters and manufacturing plant at 1615 Third Avenue, Rock Island, Ill., he will supply various malleable, brass or aluminum foundry and machine shop products required by electric railways for trucks and miscellaneous car parts. He will also engage in the conversion of old single and double-truck cars for one-man operation, furnishing the material required or contracting to do the entire reconstruction work. Mr. LeGrand has been associated with the electric railway field for many years through long sales connection with the St. Louis Car Company and more recently with the National Safety Car & Equipment Company. Besides establishing his reputation as a salesman, he has won the confidence of a host of customers and friends. It is now his ambition so to conduct his own business that this personal confidence in him may be extended with increased measure to the dealings with him as a principal. Undoubtedly, the quality and price of his products will reflect the principles of square dealing which account for his success.

New Advertising Literature

E & B Manufacturing Company, Detroit, has recently brought out a "snap" connector for flexible cable.

Model Specialty Company, New York, has placed a small portable bench-drilling machine on the market.

Brown & Pengilly, Los Angeles, Cal., are marketing an overload relay "Merco" designed for the protection of alternating-current motors.

Ingersoll-Rand Company, New York, has recently developed a new motor-driven air compressor known as the "Imperial Type XCB."

Russell & Stoll Company, 17 Vandewater Street, New York City, has developed a new type of cable support for long vertical runs.

National Electric Corporation, Whitman, Mass, has developed the "Barnes Universal" tree insulator, designed to protect high-voltage distribution wires.

Hobart Brothers Company, Troy, Ohio, has just put on the market a new automatic motor-driven air-compressor pump and tank, equipped with magnetic pressure release.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

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Electrolysis Testing to Be Given Improved Status

ELECTROLYSIS has caused trouble in more ways than one ever since electricity became the motive power for street railways. Much of the controversy on the subject has been due to the limitations which have existed in electrolysis testing, long recognized to be one of the most difficult and perplexing problems, from a technical standpoint, with which the electrical engineer has to deal. Methods of testing heretofore available have not been capable of giving any definite quantitative measure of the rate at which buried pipes and other structures are being corroded by stray current. This fact accounts for many disputes and is also the principal limitation to systematic research work in regard to the relative merits of different methods of mitigation.

In the article on "Earth Current Measurement" appearing in this issue, however, there is described the first successful attempt to make, under practical conditions of field testing, a definite quantitative measurement of the current density discharged from a pipe at any point, this being the factor directly responsible for corrosion. Because the subject is particularly important, because the method described will probably prove the basis of future research work of the American Committee on Electrolysis, and because the results of approaching surveys in certain cities will depend on its use and accuracy, it seems especially worth while to place the analysis of the method before all railway men in sufficient detail and yet sufficiently concise for them to be able to judge the significance of the results.

The method described appears to be one offering promise of great usefulness. If it continues to prove as successful in its practical use as it has in its preliminary applications it should do much to place the art of electrolysis testing on a definite engineering basis.

Municipal Engineers Try Their Hands at Track Specifications

THE American Society for Municipal Improvements is taking an interest in the subject of tracks and track pavements. On another page will be found an abstract of a report on the subject presented at the convention of the society held in Baltimore last week.

This interest should be met more than half way by the American Electric Railway Engineering Association because the street railways and the municipalities have a common interest in the subject. It appears that the municipal engineers are trying to approach the matter in a broad-gaged way and that an opportunity is thus offered for co-operative study of a problem which has so many angles and about which there are so many conflicting opinions.

What is a suitable track construction for paved streets? What are the most suitable pavements for these tracks? Can the various types of track now prevailing be reduced to a few? What pavements are wholly unsuited for use in tracks and should never be installed when there is track in the street? These are but a few of the questions which arise and about which municipal and street railway engineers have had innumerable discussions. The latter have been mainly on local grounds, depending upon the location and size of the community. But the problems are not local in the main. They have a national importance and should first be studied in respect to fundamental principles applying everywhere. Once agreement is reached on these the local phases may be easily treated. This statement is emphasized by the fact that specifications for street railway track construction were suggested at the Baltimore convention in connection with paving specifications. Incidentally some of the clauses in these specifications will hardly meet the approval of electric railway track engineers as a body.

It is understood that the executive committee of the Engineering Association has taken action designed to secure co-operation with the A. S. M. I. in a joint study of the matter, which is a step in the right direction.

Declare Dividends Even Though Small

IF RESTORATION of credit is the outstanding need of practically every electric railway, would it not be of far-reaching effect in inspiring confidence to declare dividends earned, however small they might be? Many companies last year earned a surplus equal to a rate of 2, 3, or 4 per cent on the allowed valuation. This is of course far short of the permissible and necessary earning of 6, 7 or 8 per cent, and is not conducive to a feeling on the part of directors that they should declare a dividend. At least very few companies have passed on these earnings to their stockholders. To be sure, the surplus earned by some of them was absorbed in accumulated deficits. But looking at the proposition from the standpoint of the man who has held some electric railway stock for a number of years, has watched its market value steadily decline and has not had a dividend for so long that he thinks each time he looks at his certificates he might as well throw them in the wastebasket, it would seem that his feelings in the matter might be considerably brightened by the receipt of even a very small dividend check. It would indicate that the company was not dead—that it was coming back. His contact with others would thereafter be a little more optimistic about electric railway securities. This attitude would spread from such contact with the shareholders and as a result of the public announcement of the dividend and a start would be made in restoring confidence in the financial status of the company.

Too frequently such a dividend is withheld because there is fear of doing anything which local authorities might interpret as an indication of prosperity. This explains the passing of dividends in some instances even where the surplus has been large enough to warrant a full-rate dividend. With that manner of treatment for those who have taken partnerships in the business, there can be little prospect of any bettering of public opinion toward electric railway junior securities. Even though the surplus earned permitted a dividend of only a fraction of 1 per cent, it would be something, and it is believed this small amount would be very worth while from the viewpoint expressed above. To put such surpluses back into the property may be the cheapest way to get much-needed money now, but that policy will not help greatly toward restoring credit, and to a large extent postpones the day when capital improvements can be made through the sale of other than senior securities.

No Time for Obstructionist Methods

BOTH the *Wall Street Journal* and *Financial America* hope for the best for the plan advanced by the Transit Commission for rehabilitating the railways in New York. Neither paper, however, is very optimistic of the outcome. They see obstacles which to them appear to be insurmountable. Thus the *Wall Street Journal* holds to the theory that "all the existing securities were created legally. They were bought and are held in good faith. No plan can destroy the rights of these holders."

Many securities created legally are bought and held in good faith. That does not make them money earners. Their appraisal as such is pretty accurately fixed by the price which is set for them in the open market. If such be the fact, then the tractions in New York have fallen to pretty low estate under the 5-cent fare as at present imposed. One authority has estimated that securities of the companies in New York, having a market value in 1912 of $494,145,649, or $3,336,149 in excess of their face value, have already shrunk to $176,269,716, or a depreciation in nine years of $317,375,933. In the light of these figures it would appear that the equities of these holders have already been pretty well discounted even if their legal rights have not been destroyed.

It must be remembered that the commission plan is only a tentative one. The commissioners themselves would probably be the last to proclaim it to be flawless. It is particularly indefinite on the question of the basis of the proposed valuation upon which any security readjustment must be based.

At first hand the task of reconciling all the divergent interests would seem to be insurmountable. As the *Wall Street Journal* says: "There is no legal way of bludgeoning the bondholders into accepting less than the letter of their bond." Even so, there would appear to be no need of it. The situation if allowed to drift unremedied will work itself out eventually in more drastic fashion than could be done by any coercive methods from outside. This fact, the security holders must face.

The basis of all security, after all, is earning power. It is because the earning power of the roads has shrunk so low that the securities of the companies have declined to such an extent that nearly all of them are on the basis of what the holders might be expected to realize if the properties were sold at foreclosure. Bludgeoning did not have to be resorted to in the case of the United Railroads, San Francisco, the security holders of which were willing to accept new evidences of indebtedness and ownership to the extent of $47,516,000 where such securities had formerly been outstanding to the amount of $82,190,600, the reduction amounting to $23,876,000. Bludgeoning has not entered as a factor in the proposed reorganization of the Pittsburgh Railways, the representatives of the holders of whose securities have signified their willingness to accept a new deal on the basis of $62,500,000 of new capital as opposed to securities now outstanding amounting to $156,000,000.

The commission has advanced a plan—the first constructive plan since the tide set in against the companies. If either the *Wall Street Journal* or *Financial America* has anything to offer which it regards as better, the commission will undoubtedly be glad to have it presented for consideration. Obstructionist methods will not get the companies out of the present muddle. They may, however, delay the working out of an equitable plan or may even defeat it. In such event the obstructionists will have even more to answer for than have those to whom the blame now falls for the present intolerable conditions. The policy now of every one interested should be to lend a hand toward a settlement of the problem fair to all so far as it is humanly possible properly to care for the rights of all where there are so many different interests to be considered. The plan advanced by the commission may fail of consummation, but probably not for the reasons either of these papers has advanced. If it does fail all signs would seem to point to a fate worse for the security holders than any which might befall them under any settlement based on the commission's proposal.

Superpower Report Is Timely Contribution

THE Superpower Zone idea, pursued and crystallized by the Geological Survey's Superpower staff, is a logical development of the times. But it needed the impetus given it by the study made by Mr. Murray and his staff to bring home the concrete conception. This has been done in the report just issued and digested elsewhere in this issue. Similar ideas have been put into practice in other places on other scales. The plan in this intensified northeastern seaboard region must be made a reality and this is the problem ahead of the utilities and the railroads. The idea must not die.

There is an impressive note of sincerity and thoroughness of study in the possibilities outlined and recommendations made regarding electrification in the Superpower Zone. Certainly Dr. Cary T. Hutchinson, who is largely responsible for this part of the study and report, is to be commended. There may be some surprise that a group of engineers—principally electrical engineers—should recommend that only 19,000 of the 36,000 miles of track merit electrification, and that certain well known arteries be omitted, even with the low power costs predicted. But as the detailed manner in which the analysis was made is studied the reasons for such recommendations are appreciated. The suggestions of locomotive standardization, of co-operation between the manufacturers, of the constructive ideas electric railway engineers may contribute to trunk line operating problems are all timely and are well considered and presented. In fact, there is a large amount of material which can well be studied and analyzed by both steam and electric railway men.

But the big idea of the superpower system as a whole must be recognized as essential to all the parts. Electrification without power supply is foolish. On the other hand, railroad electrification offers one of the real savings and is one of the main contributing factors to the greater success of any such general undertaking.

Measurement of Earth Currents

Importance and Present Status of Earth Current Measurements—New Instrument and Method Allows More Accurate Determination of Currents Causing Electrolysis in Underground Structures

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NEW EARTH CURRENT METER IN USE IN THE FIELD

IN THE FIELD of electrolysis testing the greatest difficulty that has been encountered up to the present time has been our inability to measure directly the factor responsible for the corrosion, namely, the density of the current flowing from a pipe to earth at any particular point. In consequence of this, it has not been possible, heretofore, to make direct quantitative measurements of the degree of hazard to buried pipes and other structures. Heretofore, tests made to determine electrolysis conditions have comprised chiefly two classes of measurements, namely, voltage measurements between various structures and measurement of current flow on pipes and other subsurface structures. The voltage measurements, as a rule, comprise measurements of over-all potential on the railway tracks and measurements of potential difference between various subsurface structures and between such structures and railway tracks. Attempts have also been made to measure potential difference between subsurface structures and the adjacent earth, but, with the possible exception of lead cable sheaths, these have not yielded satisfactory results.

The chief difficulty about securing information regarding electrolysis conditions by means of voltage measurements grows out of the fact that, as stated above, the electrolytic corrosion at any point is determined directly by the intensity of the current discharged from any particular point on the pipe surface. A voltage measurement between a pipe and any other structure constitutes only one factor affecting the current flow, the other factor being the resistance of the path traversed by the current through the earth. Experience has shown that this resistance may vary between extremely wide limits, commonly in the ratio of 10 or 20 to 1 and not infrequently as much as 100 to 1, due to the character of the soil, variations in moisture content and temperature. It will be apparent, therefore, that a mere voltage measurement has no quantitative significance in determining the seriousness of electrolysis conditions in any particular locality. It is not to be inferred from this that such voltage measurements will be of no value as they do have an important qualitative significance, and under certain circumstances such measurements can be used to determine relative conditions under different systems of mitigation. They do not, however, permit of any definite quantitative interpretation.

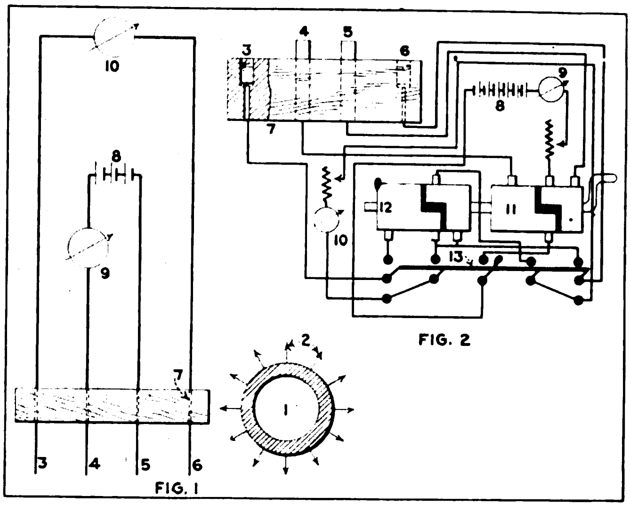
The measurement of potential differences between subsurface structures and the adjoining earth is further complicated by the phenomenon of galvanic potentials which are always superposed on any dynamic voltage that may result from a discharge of current into the earth. These galvanic potentials may often be as large, or much larger, than the dynamic voltage, thus entirely obscuring the quantity which it is sought to measure. On account of these galvanic potentials, it is not possible to determine by any means heretofore available even the polarity of a pipe with respect to earth, since the potential difference due to the galvanic potential often exceeds that due to the stray earth current.

The measurement of current flow on pipes which is very commonly made in connection with electrolysis surveys may also be of value in determining relative conditions under different systems of mitigation, but here again such measurements possess no definite quantitative significance. The amount of corrosion that may be caused by a given current on a pipe depends altogether on the manner and location of its leaving the pipe. That part of the current which may be removed from the pipe through metallic paths will produce no corrosion upon leaving the pipe, only that portion of the current which discharges directly from the pipe surface into the adjoining earth being involved in the corrosive process. Further, even if it is known that all the current on the pipe ultimately leaks directly from the pipe into the earth, the degree of danger depends altogether on the distribution of such current discharge, so that a mere measurement of the current flow on the pipe at any particular point gives no definite information as to the degree of seriousness of the situation. The only way in which definite quantitative information can be secured showing the degree of hazard to a pipe at any point is by measuring the intensity of current discharge from the pipe at the point under consideration.

Up to the present time two methods have been resorted to in rare cases in an attempt to measure the intensity of current discharge in the earth. One of these is by differential current measurement on a pipe; that is, by measuring as accurately as possible the current flow on a pipe at two points some distance apart and taking the difference between the currents at the two points of measurement as the total current discharged from the pipe between these points. The other method is by what is known as the Haber earth current collector, a device for measuring earth current density.

The method of differential current measurement is subject to the very serious limitation that it is extremely difficult to make an accurate measurement of current flow in the pipe, the methods commonly used for this purpose not being accurate enough to give satisfactory results unless the leakage current between the two points of measurement constitutes a very large percentage of the total current on the pipe, which is seldom the case in practice. For this reason, this method has been very little used in the past and has now been practically abandoned.

The Haber earth current collector is a well-known device designed to be buried in the earth at any particular point at which the current density is to be measured. It is subject to very serious limitations and to very large sources of error, and experience has shown that it cannot be relied upon to give any accurate indication of the normal current density in the earth. Numerous attempts have been made to apply it in the past but it is no longer used in this country.



FIGS. 1 AND 2—DIAGRAMS TO SHOW THE PRINCIPLE AND THE ACTUAL CIRCUIT OF NEW METER WHICH EMBODIES THE IDEA

A NEW METHOD FOR MEASURING EARTH CURRENTS —PRINCIPLE OF THE NEW METHOD

Engineers engaged in electrolysis research have long felt the need of some definite and accurate means of determining both the polarity of pipes with respect to earth and of measuring current density in the earth at any point, especially immediately adjoining subsurface structures which may be in danger of electrolytic corrosion. The object of this paper is to describe a method and instrument the purpose of which is to afford a means for the accurate determination of the polarity of pipes with respect to earth and for the quantitative measurement of current density at any desired point in the earth. This method, if it continues to prove as successful in practice as it has in its preliminary applications, will enable one to do what it has not been possible to do heretofore, namely, to make direct quantitative measurements of the actual hazard to buried structures at particular locations.

It will readily be seen that if a measurement be made of the resistivity of the earth at any particular point, and if then a measurement be made of the voltage drop between two points, a known distance apart, within this same region in which the resistivity has been measured, these two measurements will permit a calculation of the current density in the earth in the region immediately under investigation. The new method described below involves something of the principle here stated, although in its actual carrying out neither the resistivity of the earth nor the true potential drop between two points is determined.

The principle of the new method of measuring earth currents can best be understood by reference to Fig. 1, which is a diagrammatic illustration of the elements of the apparatus. Let us assume that the pipe (1) of Fig. 1 is discharging current in all directions as indicated by the arrows (2). Four electrodes (3, 4, 5 and 6) may be imbedded in the earth immediately adjoining the pipe, on whatever side the current intensity is to be measured, or placed against the wall of an excavation made near the pipe. An excavation is here assumed tentatively to simplify the explanation of the principle of the method. It will later be shown how the method can be applied without making excavations of any kind. For convenience these several electrodes may be mounted on a single insulating frame (7). Two of these electrodes, for example (3) and (6), may be connected to a suitable voltage indicator (10), which need not read in any particular units.

Suppose, now, a current (I_0) be caused to flow between the terminals 4 and 5 through the earth from the battery (8), which current will be measured by the ammeter (9). It will be evident that this current distributes itself in all directions through the earth and produces a certain voltage drop between the terminals 3 and 6 due to the resistance in the earth immediately surrounding the group of electrodes. This voltage drop between the terminals 3 and 6 will be indicated by the voltmeter (10) and will be proportional to the current flowing between the terminals 4 and 5 and to the resistivity of the surrounding earth. If E_0 is the voltage between the terminals 3 and 6 and if θ_0 is the corresponding deflection of the voltage indicator (10) we have

$$\theta_0 = K E_0 \qquad (1)$$

where K is the constant of the voltage indicator (10) which includes the effect due to the resistance of the leads and the electrodes 3 and 6. This is an important consideration and will be discussed later. Further, it will be seen that E_0 is proportional to the current I_0 sent between the electrodes 4 and 5 and to the resistivity r of the surrounding earth, or

$$E_0 = A I_0 r \qquad (2)$$

where A is a constant depending upon the geometrical arrangement of the group of electrodes. Substituting the value of E_0 as given by equation (2) in equation (1), we have

$$\theta_0 = K A I_0 r \qquad (3)$$

In the above equation it is assumed that the voltage drop across the terminals 3 and 6 is due solely to the current sent through the terminals 4 and 5. In order that this may be true, conditions must be such that no other current flowing through the earth at the time the measurement is made will in any way affect the apparatus. For the present, we will assume that this is actually the case. It will be explained later how this is readily realized in practice. After taking the above measurement of I_0 and the corresponding θ_0, the circuit of the battery (8) is opened, after which the voltage drop (E_1) between the voltage terminals 3 and 6 would be due solely to the current (i) which is flowing through the earth, or

$$E_1 = i\,r\,L \tag{4}$$

where L is the distance between the terminals 3 and 6, i is the mean current density in the region between the terminals 3 and 6, and r, as above, is the resistivity of the earth.

The corresponding deflection of the instrument (10) is θ_1 and we will have

$$\theta_1 = K\,E_1 = K\,i\,r\,L \tag{5}$$

Dividing equation (3) by equation (5), we have

$$\frac{\theta_0}{\theta_1} = \frac{K\,A\,I_0\,r}{K\,i\,r\,L} = \frac{A\,I_0}{i\,L} \tag{6}$$

Solving equation (6) for i, we have

$$i = \frac{A\,I_0\,\theta_1}{L\,\theta_0} \tag{7}$$

As stated above, A is a constant depending upon the geometrical form of the electrode group (3, 4, 5 and 6). This can be determined once for all for a given electrode group by immersing the electrode in a medium such as water through which a current density of known value is sent. Under these circumstances, if we perform the two measurements indicated above and substitute the values in equation (7), i being in this case known, we can once for all calculate the value of A, and as soon as the distance (L) between the two electrodes 3 and 6 is known, the proportional factor $\frac{A}{L}$ becomes known. Calling this factor R for brevity, we have

$$i = \frac{R\,I_0\,\theta_1}{\theta_0} \tag{8}$$

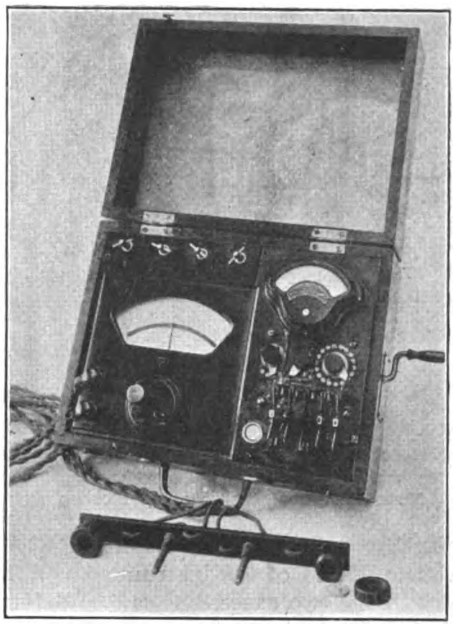
In equation (8), i is the current per unit area, or the quantity which is to be measured, and R is the known constant.

To obtain the value of i, we have therefore to perform the two operations mentioned above, namely, to send a known current (I_0) through the two electrodes 4 and 5 and at the same time measure the corresponding deflection (θ_0) of the instrument (10), this being done in a manner described below, such that the instrument (10) will not be affected by any earth current other than that which flows from the battery (8) through the terminals 4 and 5. We then disconnect the battery (8) and measure the deflection (θ_1) of the instrument (10) due solely to the earth current (i). These three values (θ_0, I_0, and θ_1) are then substituted in equation (8) and the value of i calculated.

As stated above, the indication of the voltage indicator (10) is a function of the resistance in series with its leads, and therefore of the resistance of the electrodes 3 and 6 and of the earth immediately surrounding them. In practice it is found that this resistance is often very high and quite variable, so that the instrument (10) does not in general give a true value of the voltage impressed in the earth between the two electrodes 3 and 6, and often not even an approximation to the true value. It will be observed, however, from equation (6) that the resistivity (r) of the earth in the region in which the test is being made and the constant (K) of the voltage indicator (10) disappear from the equation from which the earth current (i) is calculated. It will be seen, therefore, that in making this measurement, neither the resistivity of the earth, nor the true value of the voltage drop between the electrodes 3 and 6 need be known. This constitutes one of the important advantages of the method of procedure hereinabove described.

PRACTICAL EMBODIMENT OF THE PRINCIPLE

As stated above, in carrying out the first of the two operations above described, it is essential that some arrangement be provided whereby the deflection (θ_0) will be due only to the current (I_0) which flows through the terminals 4 and 5 and will not be influenced by any earth current already flowing. This can be accomplished in a very simple manner, by an arrangement shown in Fig. 2, which shows also a complete wiring diagram of the test set.



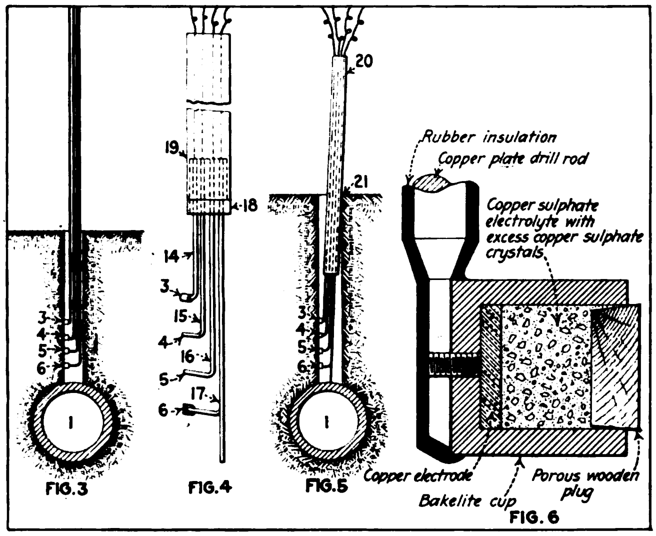
NEW INSTRUMENT FOR THE MEASUREMENT OF EARTH CURRENTS

In this arrangement, two commutators (11 and 12), mounted on the same shaft, are employed. These commutators are so mounted on the shaft that commutation takes place on both at exactly the same instant, and are provided with a crank whereby they may be rotated by hand at a suitable speed. The commutator 11 is interposed between the battery (8) and the test terminals 4 and 5, while the commutator 12 is interposed between the terminals 3 and 6 and the voltage indicator (10). It will be seen that an alternating current flows through the earth from the terminals 4 and 5 and impresses an alternating voltage on the terminals 3 and 6 which are being commutated simultaneously with the current through the leads 4 and 5 and gives rise to a unidirectional voltage on the voltage indicator (10). This instrument being of the direct current type will therefore give a deflection (θ_0) proportional to the current (I_0) sent through the terminals 4 and 5. At the same time, any unidirectional voltage impressed on the terminals 3 and 6 due to an earth current will be commutated so frequently that it will exercise no appreciable effect on the voltage indicator, and hence the reading of the latter will be just the same as if for the time being the earth current to be measured did not exist. After the measurement of the current (I_0) and the deflection (θ_0) is made under these conditions, a double-throw switch (13) is reversed, which, as will be seen from Fig. 2, disconnects the battery (8) from the terminals 4 and 5 and at the same time eliminates the commutator 12 from the circuit between the electrodes

3 and 6 and the voltage indicator (10). In the new position of the switch the voltage between the electrodes 3 and 6 due to the earth current (i) will produce a corresponding deflection in the voltage indicator (10) which is then read as the value θ_1. These three values (θ_0, I_0 and θ_1) are then substituted in equation (8) and the value of the earth current (i) is calculated in any desired units, depending upon the value of the constant (R) used.

APPLICATION OF INSTRUMENT TO FIELD TESTING

The electrode group (3, 4, 5 and 6) mounted on the insulating support (7) may be permanently buried in the earth in the region in which it is desired to measure the earth current at any time, or the four electrodes may be placed against the wall of an excavation, so that all four terminals make contact with the earth, while a measurement of current intensity in the earth adjoining the wall of the excavation is being made. The constant (R) of the instrument will, however, be different in the two cases, but can be determined once for all for the two types of measurements. In most cases, however, where it is desired to measure the current density discharged from a pipe at any given point, it is unnecessary to make an excavation. For measurements of this kind, a special type of four-terminal electrode has been designed which can be placed down in a hole extending from the surface of the earth to the pipe, as shown in Fig. 3. This hole may be made by means of an auger, or by simply driving a pipe or rod of suitable size into the earth, and then removing the rod from the hole. The four electrodes (3, 4, 5 and 6) are then put down in this hole and the measurement is made in exactly the same manner as described above.



FIGS. 3 TO 6—DETAILS OF MOUNTING THE FOUR ELECTRODES

This method of measurement can be used effectively for making rapid determinations of leakage current from the pipe at any point. Numerous experiments have shown that when a pipe is buried at an ordinary depth of several feet, which is relatively large in comparison with the distance between the four electrodes and also the radius of the pipe, the current discharged in a vertical direction upward in the vicinity of the electrodes is substantially the same as that discharged vertically downward or toward either side, so that in general it is not necessary to measure the current density on more than one side of the pipe, and it is most convenient to measure it in a vertical direction upward, as in the manner just indicated. The method can be used, however, to explore the current distribution on practically all sides of the pipe, without making any excavations, other than merely driving small holes on either side to the pipe.

In order to use this method of placing four electrodes down in a hole, it is necessary to use a special form of mounting of the electrodes. A very suitable and practicable method is shown in Fig. 4. The electrode (3) is mounted on a flexible rod (14) of some elastic material, such as spring steel, which should be elastic enough to permit it to be displaced about an inch or more, without the rod taking a permanent set. Similarly, electrodes 4, 5 and 6 are connected separately to the elastic rods (15, 16 and 17), these rods being spaced apart sufficiently so that in actual use they do not make contact with each other. These elastic rods are mounted in an insulating bushing (18), which is set in a suitable tube (19), preferably of metal. An extension of the rod (17) is provided, so that the lower electrode will always come automatically to a predetermined distance from the pipe. Wires are brought up through this tube to the surface and the measurements made after the manner shown in Fig. 2. In practical use, the tube (19) carrying the four electrodes (3, 4, 5 and 6) is inserted in the hole leading down to the pipe to the proper depth as shown in Fig. 5, and the top of the rod is pulled sideways in the direction of the arrow (20) using the collar of the hole (21) as a fulcrum, so that the four electrodes (3, 4, 5 and 6) are caused to press independently of each other against the wall of the hole, thus securing reliable contact with the earth. It is necessary that the steel rods on which the four electrodes are mounted be thoroughly insulated and preferably also copper plated in order to eliminate disturbances due to galvanic action.

The electrodes (4 and 5) through which the test current is sent from the battery in the first part of the test can be made from any ordinary metal, such as iron and copper. The electrodes 3 and 6, however, should be made on the well-known principle of the non-polarizable electrode developed by Professor Haber, that is, they should comprise a cup having an electrode at the base of copper, the cup being filled with a concentrated solution of copper sulphate. This electrolyte is confined in the cup by a stopper of wood or other porous material. Fig. 6 shows a typical form.

The illustration on page 811 shows a portable test set in which are mounted in compact form the battery (8), the ammeter (9), the voltage indicator (10), the double commutator (11-12), and the double-throw switch (13). The illustration on page 813 shows a portable four-terminal electrode. In this design the handle has a joint in the middle, so that it can be folded during transportation. The cut on page 809 shows the apparatus in use, with one man operating the test set, an assistant holding the rod in test hole over the pipe.

TEST DATA PROVE EFFECTIVENESS OF INSTRUMENT

The number of holes that have to be driven for testing a pipe line depends upon the minuteness with which it is desired to analyze the current distribution on the pipe. Numerous investigations have shown, however, that for ordinary purposes the driving of a hole about every fifty to a hundred feet is sufficient to give a good indication as to the general electrolysis conditions prevailing on the pipe, and in many cases a much larger spacing may be used. In the case of some pipe lines that have been investigated in which holes were driven every ten feet along the line, it was found that the electrolysis condition of the pipe as deduced from the readings of every fifth or tenth hole was substantially the same as that arrived at from the consideration of the readings taken in every hole. In the case of an experimental installation in Washington, D. C., a dead end length of 8-in. pipe, about 900 feet in length, was insulated from the main network by means of two insulating joints. A definite leakage current was then impressed upon the pipe and this was measured first by using the earth current meter in a series of holes spaced twelve feet apart along the entire length of pipe. This data was then worked up in several ways. First, the total leakage current was calculated from the measurements in every hole, then by using the data in every other hole, then in every third hole, and so on. The results of these calculations are given herewith:

Every Hole	Every Other Hole	Every Third Hole	Every Fourth Hole	Every Sixth Hole	Every Eighth Hole	Every Tenth Hole
1.12450	1.1188	1.2402	1.26	1.0282	1.1544	1.391

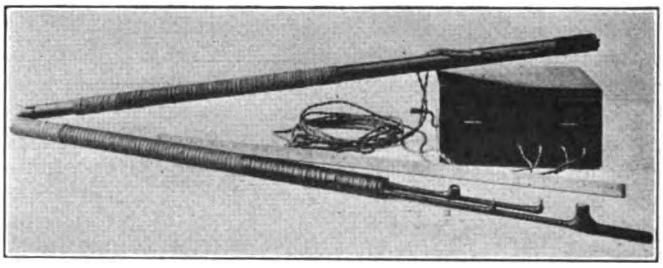
From this table it will be seen that the leakage current as calculated in the several ways does not differ to any large extent from the figures obtained by using the data taken at every hole. It is evident, therefore, that for most purposes an infrequent spacing of the holes would meet the practical requirements. Of course, where large pipe lines of another system cross the line under test, it is desirable to place the holes a little closer together, near the crossing, since the condition of the pipe may change greatly within the distance of 25 to 50 feet at such crossings. Experience has shown that the number of holes required for testing is not such as to make the method expensive to apply wherever pipes of any importance are under investigation.

It is well to have clearly in mind just what current is measured by this apparatus. This current is the mean current per unit area, as for instance per square centimeter, or per square inch in the earth in a small region immediately surrounding the center of the four-electrode group. A good approximation will be had by stating that it gives the mean current density throughout the volume of a sphere having a diameter approximately equal to the distance between the two potential electrodes of the four-electrode group. It will thus be seen that by using electrodes of very small size the current density in a very small volume of earth can be studied. By the use of electrodes an inch or an inch and a half apart, the mean current density in a sphere as small as three or four inches in diameter can be definitely determined. For most ordinary purposes, however, it is found desirable to use a two- or three-inch spacing of the electrodes, in which case we secure the mean current density in a volume of perhaps half a cubic foot of earth immediately surrounding the center of the electrode group.

It would be very desirable in many cases, in addition to the average current intensity in the space surrounding the electrodes, to know the distribution of the current at the surface of the pipe, because it is the irregularities in this current distribution which gives rise to the well-known pitting of the pipe. The simple procedure described above does not give information as to whether the current is uniformly distributed at the pipe surface. It is, however, possible by the use of a modified type of electrode, to get considerable information on this point.

In the foregoing discussion it will be observed that equation (3) involves the resistivity (r) of the earth. If the constant (K) of the voltage indicator (10) is known, the constant (A) being known, the instrument permits a direct calculation of the resistivity of the earth. The constant (K) of the voltage indicator (10) will be known provided the resistance of this circuit is sufficiently high to obscure the effects due to drop of voltage in the electrodes. The test set as made up is provided with a switch whereby a megohm or more of resistance can be inserted in series with the voltage indicator. When this is done, the resistance of the electrodes becomes negligible and the instrument can be used directly as a very rapid and convenient means of measuring earth resistivity. It is the only practicable instrument for making such resistivity measurements of the earth in position without disturbances of any kind and will undoubtedly have a great many applications for this purpose.

At the present time, investigations are under way looking to the comparison of test results obtained by this new method with those obtained by the older methods of voltage surveys, with a view of determining to what extent the data taken in previous years may yield valuable deductions when interpreted in the light of information revealed by the new method. It is hoped in this way greatly to increase the value of records of tests that have been made in years past. Also it is planned to make very thorough and extensive investigations by the new method in numerous localities, in some of which electrolysis damage is known to be very great, and in other cases in which it is known that pipes have not suffered materially over a period of years. Such investigations when completed will be of considerable value in permitting the drawing of definite and unquestionable conclusions from future tests.



COMPLETE OUTFIT READY FOR THE FIELD

The voltage indicator (10) used in this test set has to be of very special design to have an extremely high current sensitivity. The instrument used gives a full scale deflection for one microampere, and was designed and built especially for this apparatus by the Rawson Electrical Instrument Company of Cambridge, Mass., which company is now manufacturing the complete sets.

This instrument has been in use for some time at the Bureau of Standards, where it has been subjected to careful tests and experimental work, and has been found to be a very convenient, economical, and accurate means of measuring the current intensity discharged from buried pipes. The instrument has also been used in a number of instances in practical electrolysis testing, and has been found very well adapted for use under practical conditions. By the use of this instrument, information can be had showing far more definitely the actual electrolysis conditions prevailing on any particular point than it is possible to secure by any other means heretofore available. The results of tests by this instrument are not subject to the very large factors of uncertainty in interpretation as those obtained by the usual methods of electrolysis testing.

Railway Situation in Berlin

Large Reductions in Operating Expense Made Necessary by Present Conditions Have Been Effected by Consolidation of the Various Street and Suburban Lines in Greater Berlin and by Improving Traffic Conditions

BY EUGENE EICHEL
Consulting Engineer, Berlin, Germany

THROUGH a combination of all the railway systems of greater Berlin the management has been able to introduce large economies. The electric supply and feeder system has been rearranged by shutting down a number of small generating stations and by directing the current supply to the most advantageous feeding point. Expenses for current and feeder copper, for station attendants and for the supplies necessary for maintenance have been diminished. Large savings have also been effected by a rearrangement of the service, which was found desirable from a study of well-kept statistics on the density of traffic and the idle cars during various hours of the day.

The entire network of lines is being scientifically investigated and lines which duplicate service or compete with each other are being scrapped. Various radial lines are being interconnected and the number of stops reduced. Service to the outlying districts of the city is being decreased by introducing fifteen-thirty-minute service during a large part of the day.

An attempt is being made to standardize the equipment as much as possible, but this is very difficult at present. A large number of the smaller systems have tracks constructed to the narrow 1 meter gage, and all are equipped for bow current collection. As a very large part of the system, or that formerly belonging to the Grosse Berliner Strassebahn, is arranged for trolley wheel service, the consolidation has made it necessary to rebuild the smaller lines now provided with bow current collection, because it would be too expensive to change the equipment of the old Grosse Berliner. The bow collector is considered superior to the trolley wheel in Germany and the trolley wire installation is being renewed in such a manner that, with more prosperous times, it can be used for bow collection also.

REPAIR SHOPS ARE CONSOLIDATED

Another large saving is expected from the consolidation and rearrangement of the main repair shops. Old equipment is being scrapped and replaced by up to date machinery and an efficient repair force is being organized. A large number of the men previously used received subsidies for returning to the country and working as farm help. Small farmers are enabled to purchase small plots with government money, which is received in a lump sum, and war invalids are thus induced to live a healthy farm life rather than to increase the large number of city population, which at present groans under the lack of proper accommodations and insufficient and cheap food.

Quite a number of streets are being repaved. Asphalt pavement is relaid in a small number of instances, but the standard pavement used is of granite, at least as far as railway track is concerned. Track repairs are made by means of inserts electrically welded to the old rails. Worn-out joints are sawed and replaced. New rails are installed in but rare cases. These are most generally welded by the Thermit system.

The use of electric rather than air brakes will also produce economies in operation. The air brakes used in Germany have axle compressors, which are very costly to maintain, require a large amount of oil and wear out very rapidly. An idea of the cost of maintaining this equipment may be gained from the fact that the Grosse Berliner could have paid 1 per cent more dividends in 1913 if electric instead of air brakes had been used, and at that time wages, material and oil were very much lower in cost than they are at present. All new cars and as many of the rebuilt cars as possible are being equipped with motors of sufficient capacity so that they can safely be used with electric rheostatic braking.

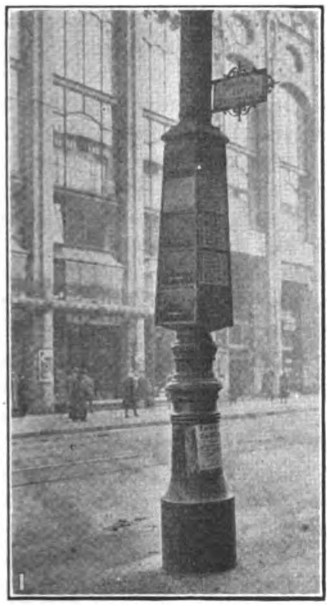
SAFETY CARS TO BE INTRODUCED

An investigation is now being made of the advantages of introducing one-man safety cars. The intention is to start with ten of these cars operating on lines at the outskirts of the city. The difficulties expected from the introduction of this class of service appear rather large. First, politics will play a considerable part, as the reduction of men from the use of one-man cars is not favored by the Social Democrats, and this party has a large amount to say in the City Hall. Secondly, the public in Berlin is not as patient as the American public, due to the present poor nourishment received and the nervous strain of the war. These effects have made them rather quarrelsome. The third difficulty is that of fare collection. At present there is plenty of dirty and sticky worn and torn paper money in Germany, but no hard cash. Thus the use of a fare box appears to be a rather hard problem to solve. The use of metal tokens might be considered, but tokens in Germany must be manufactured out of cheap material, such as tin, iron, zinc or aluminum. Nice clean German silver coins are too expensive.

In addition to the introduction of safety cars, the use of trackless trolleys on some of the outlying lines is being considered. The present indications are that these will be used as feeders for existing lines and as a substitute for any extensions required.

Some additional means which are being introduced for increasing the income includes an increase in fare to 1 mark, against 10 pfennig previously used. Due to the present depreciated value of the mark, this has a somewhat less buying value than the 10 pfennig of peacetime. A transfer system has also been introduced in an attempt to increase travel. A transfer ticket can be purchased for 1½ marks and can be used on any connecting lines within two hours after its purchase. Of course, the use of a transfer so as to enable the passenger to return directly or indirectly to the starting point is prohibited. Tickets for eight rides are also issued, but no discount is given to the purchaser, as was the former practice. The use of such tickets speeds up operation by the faster collecting of fares and through the decrease in small change difficulties effected.

During the war a rather extensive parcel mail system was introduced for carrying parcels from the depot to the post office and vice versa. This system has now been enlarged and results in a profit of about 1,000,000 marks to the post office and 6,000,000 marks to the street railway. The cars used for this service are antiquated motor cars and open summer cars. Windows and entrances are nailed shut with lattice boards.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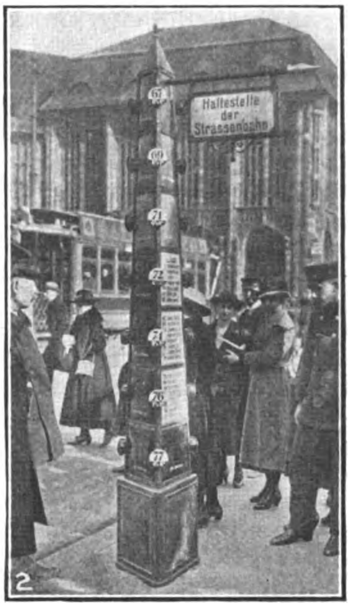

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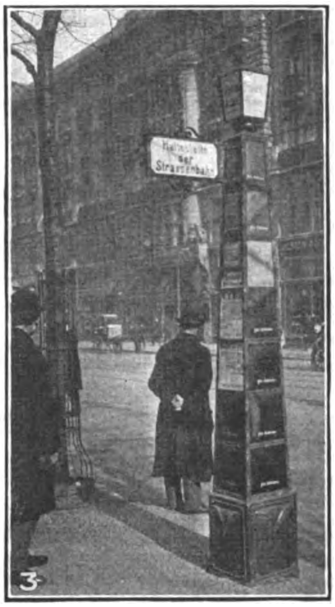

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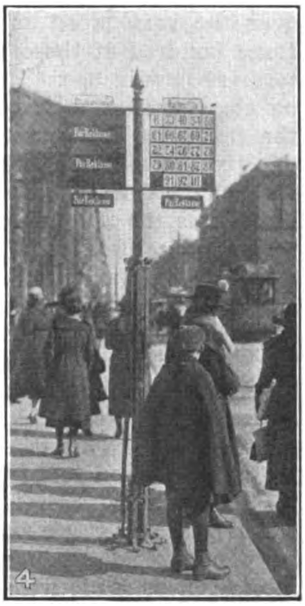
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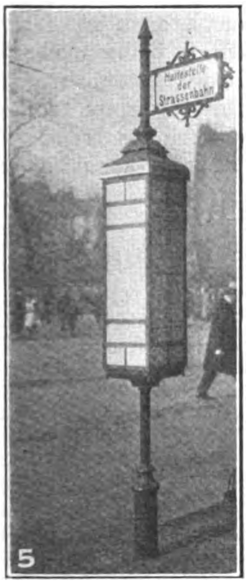

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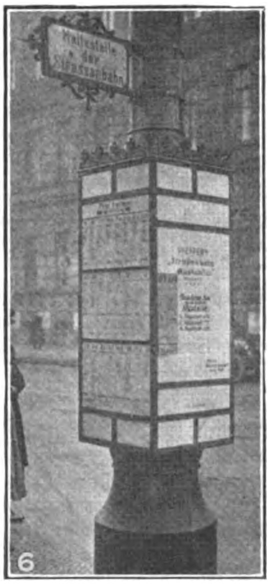

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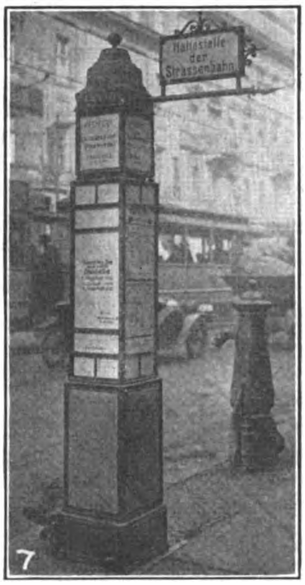

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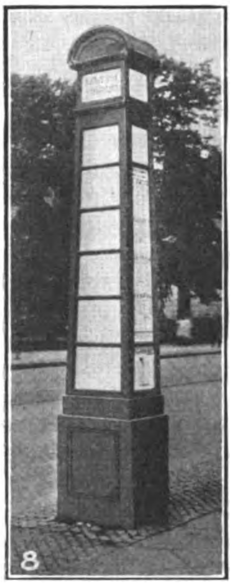
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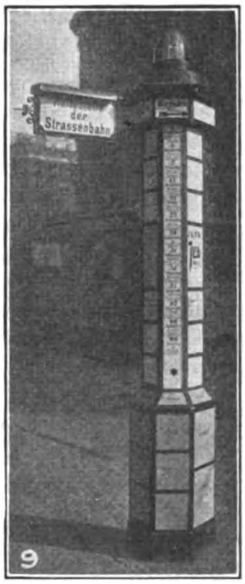

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TYPES OF STOP INDICATORS COMBINED WITH ADVERTISING SPACE

No. 1. Trolley pole inclosed by a light angle-iron framework studded with plates, enameled with different colors.

No. 2. Column of triangular shape, with enameled plates.

No. 3. Square shape column, with enameled plates.

No. 4. Ordinary stop pole with sheet-iron plates indicating the numbers of the lines passing. One side is painted white with black letters, while the other has a khaki colored background with black lettering.

No. 5. Stop pole with light angle-iron framework for supporting glass plates illuminated from inside by storage battery lamps.

No. 6. Type similar to No. 5, but using a trolley pole base.

No. 7. Square column with the lower part covered by sheet-iron plates and the upper part by glass plates, which can be illuminated from the inside.

No. 8. Same type as No. 7, but more artistic.

No. 9. Same type as No. 7, but of a hexagonal shape, which requires little space at the sidewalk and gives more space for views by the passing public. The top is crowned by a glass cupola containing a lamp with a filament of H-shaped aluminum plate which can be dimmed.

An attempt is also being made to start a substantial freight business. Certain classes of business located in central Berlin have large factories in the suburbs. The transportation of raw materials, semi-finished and finished goods is now made principally by autotruck. The electric railways are catering for this business, particularly as a night freight service. The Berlin electric railway is supervised by the Government Railroad Commission and by the Prussian Government Railroad. Before the war the electric roads were not allowed to carry freight, as the governing bodies were afraid that their own freight business would be diminished. Previous regulations of the government railroads also prevented the use of advertisements on the exterior of car windows, as it was felt that accidents might result. Now, however, they are less particular and allow advertisements and the city cars have large advertisements on the roofs, dashboards and also sandblasted on windows. This is in addition to the ordinary car advertising cards used inside.

A new source of revenue is also being exploited, which consists of the use of stop indicators. These indicate not only the place where cars stop but also the sign number of the lines passing this place, the extent of these lines and the time of the first morning and last evening car. A number of different stop indicators have been developed and the increased revenue comes from the use of advertisements at these locations. Advertisers consider the stopping place as an excellent location for their advertisements, as, while waiting for a car, the passenger has time for looking over the various advertising display. Approximately three hundred of these advertising column-stop indicators are now in use. The advertisements are displayed on glass so that they can be lighted in the dark from the inside of the column. In addition to proving an effective means for displaying the advertisement, it also enables passengers to locate the various stops readily, as the illuminated indicators can be seen for a considerable distance.

Before the war there was considerable traffic in gasoline and horse-drawn buses. Due to the high operating cost and the scarcity of rubber for tires, many of these were forced out of business where they were operated by men of small means. The Grosse Berliner purchased a large amount of stock in an omnibus corporation before the war. This is now owned by the city, so that the city now controls this traffic. The intention is to increase this bus service and use it through streets which have no electric railway facilities. A new electrobus concern is also being advocated, if suitable arrangements can be made with the city.

SUBWAYS AND ELEVATED ROADS IN BERLIN ARE EXPENSIVE PROJECTS

The city also owns a block of stock in the Berlin Elevated and Subway Railroad, which has a pre-war concession for a system of feeder lines. The elevated earns a reasonable dividend, but has to return about 3,000,000 marks annually to the city. The cities of Schoenberg and Wilmersdorf built rather expensive subways for developing real estate values. These have been leased to the Berlin Elevated, so that this latter road now has to pay about 4,000,000 marks annually to the city, due to the operating contract. In consequence, the subway service results in a loss of about 1,000,000 marks per year. This, of course, prevents extensions which were planned before the war from being completed. One of these, called the "North-South" Subway of Berlin city, while nearly completed, has an important part still to be built. This runs close to the surface in Friedrich Street and its uncompleted condition is proving a great obstacle to traffic through this street and many requests for a speedy completion are being received. When this is completed it will use 800 volts direct current instead of 1,200 volts, which were previously decided on. This is the same voltage used by the existing Berlin Elevated road and a uniform voltage will facilitate the exchange of rolling stock on the various lines. Another system called the "A.E.G. Subway," on which construction was started before the war, is in very bad condition and it appears commercially impossible to continue the work of construction. The city, however, feels that the building of these various subways should be continued, in order to provide work for a large amount of unskilled labor, as well as to better traffic conditions along the highways where open pits and fences interfere with traffic. Also their completion would increase traffic facilities to a considerable extent. The city attempted to force the corporation to continue this work, but a court decision was rendered to the effect that the corporation could not be held responsible for contracts entered into before the war. The city and operating corporation are now negotiating in regard to subsidies which it is thought will help the undergound corporation to finish the tunnels.

The oldest elevated in Berlin, called the "Berliner Stadt-Ring und Vororbahn," which can be translated as the Berlin city, circular and suburban railway, still uses steam locomotives. This system is operated by the government at a very cheap rate of fare, which is still further decreased by the use of monthly tickets sold at very low rate. As a result, this enterprise has never paid and now costs millions of marks to operate. These losses increase the burden of the population as the deficit of the government railroad must be borne by the taxpayers, and in addition the low fares charged result in a very undesirable competition with the municipal roads. The government and city are now endeavoring to come to a working agreement in regard to fares, transfers and other details, which may include the electrification of this road.

The Chief Commissioner of Berlin Traffic Utilities not only has control over the rapid transit, street railways, buses and cab traffic but also over the municipal traffic utilities, which include the street cleaning and house refuse department and the traffic on the various waterways. These latter are quite important, due to their use for carrying bulk freight, such as coal, brick, lumber and other building material, and also for use in transporting agricultural products, such as fruit, vegetables and the like. An attempt is being made to increase the income of the street railway system through connections with the various harbors by spur tracks. This would facilitate the exchange of goods from and to the harbors and should also result in a saving to shippers.

Valtellina Railway Is Extended[*]

Famous Three-Phase Railway Now Operates to Monza, a Short Distance from Milan—Road Adopts New Trolley Suspension—Details of New Locomotive—Tests Show Satisfactory Operation[*]

THE Valtellina Railway may be considered the father of trunk line electrified roads in Europe. The fuel scarcity was always felt in Italy, and this, combined with the abundance of water powers, was no doubt responsible for early and exhaustive tests with electric traction. In the beginning the Italian engineers adopted the three-phase system, because at that time the three-phase induction motor was the only reliable railway motor in existence other than the low-voltage d.c. motor. The system originally installed by Ganz & Company of Budapest has been developed and improved to give the system of today, which represents a very high standard in electrified operation, although rather costly from an installation standpoint. To abandon the three-phase system in favor of a possibly better one would result in a tremendous loss of time, valuable experience and money.

The Valtellina road is not only of great technical and historical interest but also is one of the electrifications that represents an extremely good solution of a difficult traffic problem. The road was built in 1902, and many articles have been published previously describing its equipment. The total length of the road is at present 65.7 miles and is single track throughout. It is the connecting link between Milan and several famous Alpine summer resorts. Its main traffic consists of tourists, freight transportation never being of great importance. The road passes over a very mountainous territory; about one-third of the line passes through tunnels, one-half of it is in curves, and there are grades on the system as great as 2.2 per cent. All of the original equipment was furnished by Ganz & Company. Two hydro-electric power stations supply three-phase power at 15 cycles and generate directly at 20,000 volts.

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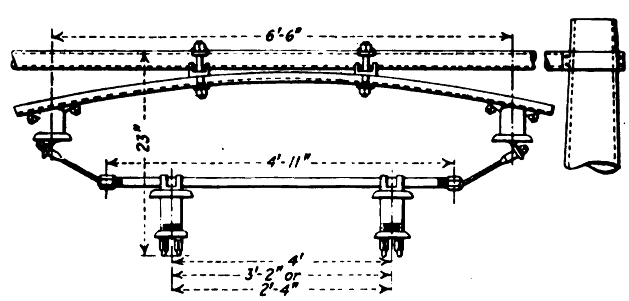
[*] Dr. E. Huldschiner contributes to *Elektrotechnische Zeitschrift*, issues of March 26 and June 2, 1921, an article on a recent extension of the Valtellina Railway. From this article the facts herewith are taken.

Originally there was only one feeder line parallel to the road, but many interruptions of the service, due to the breakdown of the feeder, forced the road to install a second parallel three-phase feeder consisting of three copper wires, each about 0.4 in. in diameter (160,000 circ.mil), suspended on seamless steel tube masts. Along the tracks are distributed nine transformer stations, each containing one 300-kva. three-phase transformer, which reduce the feeder supply voltage of 20,000 to the trolley voltage of 3,000. These transformers are of a very liberal design and will withstand for short periods 500 per cent overload or 1,500 kva.

ORIGINAL SUSPENSION AND EQUIPMENT

Two No. 0 copper wires suspended 19 ft. 6 in. above the rails constitute the old trolley line. The wires are held in movable insulators made of Ambroin (a material similar to Bakelite). These insulators are held on a steel wire between two porcelain insulators.

The original rolling stock consisted of two locomotives and ten motor cars, but this equipment proved inadequate at the end of the first year of operation, and three new type locomotives were installed of the 1-C-1 type. In 1906 four more Ganz locomotives and three Brown-Boveri locomotives were added. From year to year the traffic grew denser, until in 1914 the normal daily schedule consisted of thirty-nine passenger and forty-nine freight trains.



STANDARD OVERHEAD CONSTRUCTION FOR THREE-PHASE LINES—ITALIAN STATE RAILWAY

DETAILS OF THE NEW EXTENSION

The new extension of the line from Lecco to Monza has a length of 23.1 miles, 4.3 miles of which is double track. This extension brings the Valtellina system to within 8.6 miles of Milan. The power for the extension is supplied from an old power house in Robbiate, which was enlarged to its present capacity of 30,000 kva. The feeders are cables made of three copper wires, each about 0.6 sq.in. (360,000 circ.mil) in cross-section. Three new transformer stations, each equipped with a bank of three single-phase transformers rated at 2,250 kva., were erected along this line. To care for emergencies a 430 kva. portable substation was developed and can be dispatched and used at any point on the lines.

The trolley suspension on the new length is somewhat different from and heavier than that on the other portions of the system. It represents the standardized equipment of the Italian State Railway, as shown in the accompanying cut. An interesting detail is the method by which the joints between the porcelain and the hardware are made. To obviate cementing, a layer of hard rubber is deposited on the inner side of the porcelain, upon which is placed an electrolytic layer of copper. This copper layer is then threaded to take the suspension steel bolt. This process is somewhat expensive, but makes a very dependable joint, free from any danger of cracking. The trolley lines are very heavy, each having a cross-section of about 1.5 sq.in. with two wires for each phase, or a total cross-section of 6 sq.in. for each track. In order to carry the great weight of the trolley line and care for the many curves, steel masts have been erected every 65 ft. Every tenth pole is connected to the rails. The rail bonds are made with the Brown-Boveri metal paste method. Great care was taken to construct the overhead wiring at switch points, which is quite a complicated matter for three-phase systems. The construction is somewhat heavy but has given good satisfaction. On the present terminal station at Lecco there are not less than fifty switch points. Very heavy overhead construction is necessary in stations. For example, there are spans of 108 ft. over nine tracks and also the overhead construction for six tracks, suspended from one pole which is located in the center. Some of these spans appear rather light but seem to give good service.

LATEST TYPE OF LOCOMOTIVES

Three new types of locomotives have been ordered for the extension, which operate, however, over the entire line. Of especial interest is the Westinghouse type 1-C-1, a description of which has not been published previously. The main characteristics of this locomotive are:

Diameter of driver	64 in.
Diameter of pilot wheels	38 in.
Length over all	36 ft. 2 in.
Total weight	161,000 lb.
Weight of mechanical parts	72,732 lb.
Weight of electrical parts	88,160 lb.
Speed at 16⅔ cycles	23, 31, 46 and 62 m.p.h.
Hour rating	450, 1,670, 2,600 and 2,200 hp.
Maximum tractive effort at periphery of drivers	26,400 lb.
Specific output	32.5 hp. per ton of weight

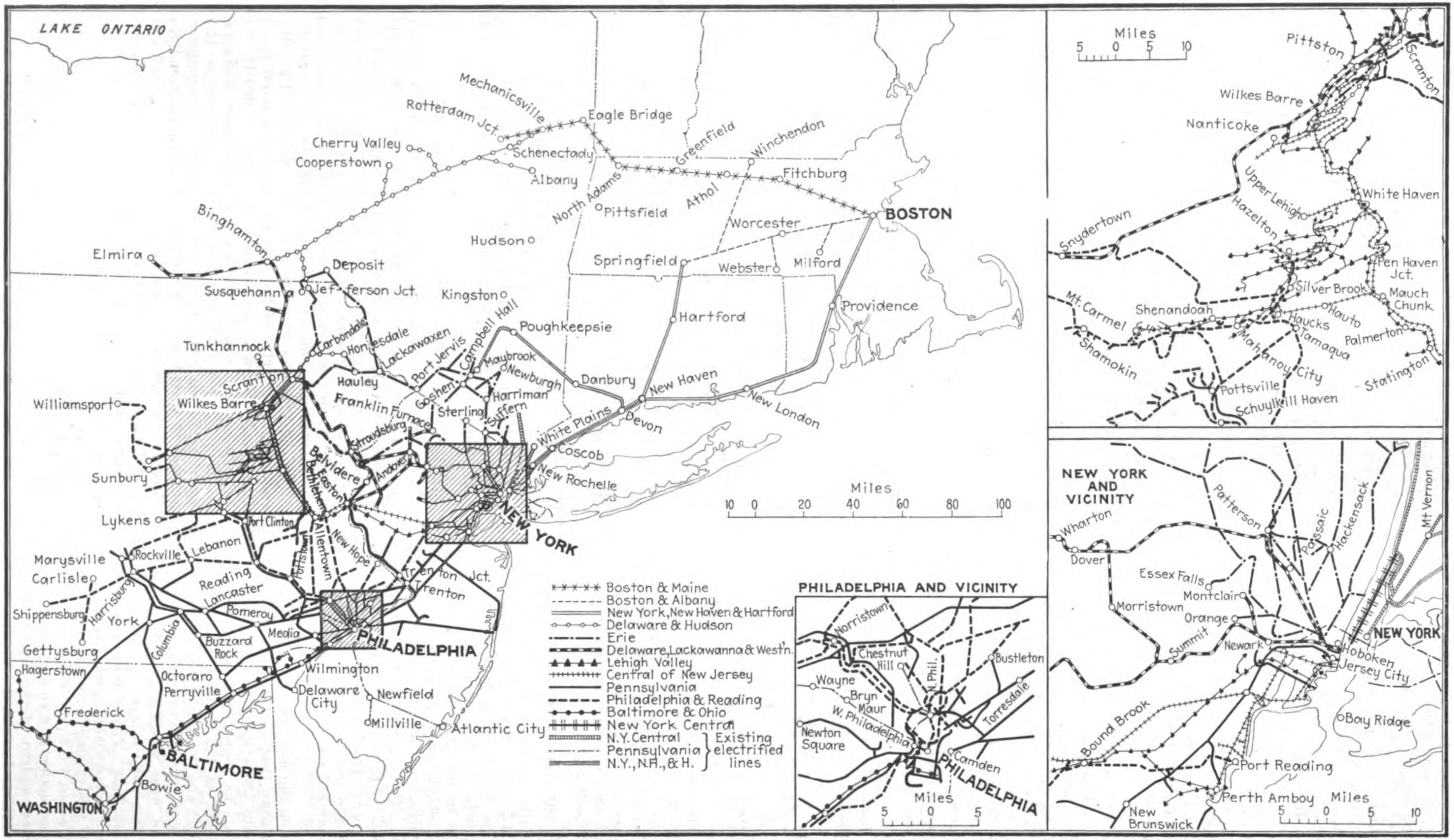
All three driving axles have considerable side play, the center one 1 in., the two outer 0.8 in. The weight of the frame rests upon heavy leaf springs, capable of supporting a weight varying between 45 and 15 tons. Power is transmitted from the two motors to the cab by a triangular rod construction of the Kando system. The motors are not fixed solidly to the frame, but rest upon very heavy spiral springs. Each motor has four bearings, which permits of a very narrow air gap of about 0.078 in. A removable floor construction permits the installation of the motors from above. There are two compressed air operated pantographs on the roof, as is standard for Italian railways. An auto-transformer is used to change the three-phase supply at from 3,000 to 3,300 volts into two-phase supply at from 3,300 to 3,600 volts. The main motors have a maximum hourly rating of 950 kva. each, are asynchronous, give four speeds, and have a wound rotor with four collector rings on one side and three rings on the other side. These rings are located outside of the bearings and beyond the crankshaft which calls for hollow shafts. Four economic speeds can be obtained by operating the two motors either as eight-pole three-phase, or six-pole two-phase, and in each case either in parallel or in cascade. The stators and rotors are wound with twelve coils on each, and every three of these coils form a star connection.

STARTING EQUIPMENT AND TEST RESULTS

The motors are started by means of an electrolytic starter with stationary electrodes. Air pressure causes the liquid to rise or fall. The locomotive has, for this purpose and for the operation of the brakes, two air compressors, taking in 35 cu.ft. of air per minute and compressing it to six atmospheres. Each compressor consists of two pumps and two motors, although one set is sufficient for normal operation.

Tests of a very severe character gave very good results. The temperature rise of the motor copper at a train speed of 46 m.p.h. and with the locomotive pulling 21,000 lb. for one hour was 69.5 deg. C. With a train of 383 tons and up a grade of 1.1 per cent, the locomotive accelerated to 43.5 m.p.h. in 267 seconds. The locomotive shows a consumption of about 35 watt-hours per ton mile. The other locomotives added to the equipment have been previously described and are of the 2-C-2 Brown-Boveri and Oerlikon types. The main dimensions and weights of this type of locomotive are:

Diameter of drivers	64 in.
Diameter of pilot wheels	38 in.
Length over buffers	43 ft. 10 in.
Total weight	202,750 lb.
Weight on drivers	99,100 lb.
Weight of mechanical parts	110,200 lb.
Weight of electrical apparatus	92,550 lb.


LAKE ONTARIO
BOSTON
NEW YORK
PHILADELPHIA
BALTIMORE
WASHINGTON
Miles
10 0 20 40 60 80 100
Boston & Maine
Boston & Albany
New York, New Haven & Hartford
Delaware & Hudson
Erie
Delaware, Lackawanna & Westn.
Lehigh Valley
Central of New Jersey
Pennsylvania
Philadelphia & Reading
Baltimore & Ohio
New York Central
N.Y. Central
Pennsylvania
N.Y., N.H., & H.
Existing electrified lines
PHILADELPHIA AND VICINITY
NEW YORK AND VICINITY
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Map Showing the Trackage Included in the 19,000 Miles Recommended for Electrification in the Superpower Zone

THE trackage which the United States Geological Survey, through its Superpower Zone report, has recommended for electrification includes only 19,000 of the 33,000 miles of Class 1 railroad trackage and of the 36,000 miles of total trackage. The analysis upon which this recommendation was based was made by operating divisions and not by roads. This has given Dr. Cary T. Hutchinson and his associates a much more detailed view and a greater opportunity to pick out the actual opportunities for economy by electrification of the steam railroad lines.

The absence of such divisions as the Harmon-Albany division of the New York Central, the Albany-Springfield division of the Boston & Albany and the Weehawken-Albany division of the West Shore Railroad is of course noticeable. But when electrification is shown to save only 6 or 7 per cent on these divisions as compared with 14 per cent as an average for the divisions chosen, the reasons for the recommendation are appreciated. The recommendations, as inferred from the foregoing, have been based on an analysis of actual operating data, assuming merely the substitution of the electric for the steam locomotive. Certain economies due to the complete revamping of railway operation which would result from actual electrical operation would, of course, modify the recommendations in part and might add some mileage to that indicated above.

Superpower Survey Shows Advantages of System Including Electrification

Report of W. S. Murray and Others for Geological Survey Outlines Savings Possible by Co-ordinating and Supplementing Existing Utilities—Recommends Electrification of 19,000 Miles of Trunk Lines in Zone and Shows Resulting Economies

UNDER the title "A Superpower System for the Region Between Boston and Washington," the United States Geological Survey, Department of the Interior, has just issued the report of its special superpower survey made during the year July 1, 1920, to June 30, 1921. This special report or study was made by a temporary organization within the United States Geological Survey, headed by W. S. Murray and financed by an appropriation of $125,000 by the government, to which was added $26,000 contributed by utilities and industries within the Superpower Zone.

One of the outstanding sections of this report has to do with the desirability of electrifying a large portion of the trunk line mileage in the district under observation. As a whole, the superpower scheme comprehends a plan of power production that includes the generation of electricity in steam stations at tidewater and on inland rivers where a sufficient quantity of water for condensing purposes is available, and also the utilization of all hydro-electric power that can be economically obtainable within the zone or within transmission distance of it, the whole to be tied together through an interconnected system of transmission lines.

Reference to ELECTRIC RAILWAY JOURNAL, Feb. 28, 1920, page 435, will give a picture of the purpose of the survey as seen at the time of its inception. There is also shown a map giving the preliminary idea of the area to be investigated. Fig. 1, herewith, shows the Superpower Zone which has been included in the final survey. Within this zone is concentrated one-fourth of the population of the United States and within it are operated, most of them independently, 315 electric public utilities, eighteen steam railroads and 96,000 industrial plants.

The general purpose of the study was to show the saving in labor, materials and money that might be effected by the installation of a power system adequate to serve the railroads, municipalities, utilities and the industries in the Superpower Zone. The basic idea of the superpower system is to co-ordinate and supplement existing utilities so as to carry to a higher degree the economies incident to their present operation, but by no means to supplant or even to compete with existing electric public utilities.

While there has been much interest in the legal and financial aspects of putting into operation such a superpower project, these points are not touched on in the report for the reason that it was deemed inopportune, without further consideration, to formulate any conclusions on these important matters. The investigation was an engineering one and the problem set was determining the total amount and location of the power load that would be required for private, municipal, industrial and railroad purposes at a date sufficiently in advance to permit the construction of a system of the highest economy to supply it. The date chosen was 1930, and the allocation of the load and power generating facilities for the six geographical divisions of the Superpower Zone forms a most interesting part of the report. In determining the amount and location of the load, the electric public utilities, the railroads and the industries within the zone lent their co-operation.

The conclusions reached by Mr. Murray are necessarily largely based on the special studies made by the members of his engineering staff. These studies appear as appendices to the report and are as follows:

Appendix B—"Electric Utilities in Independent Operation in the Superpower Zone in 1919," by L. E. Imlay, T. B. Rutherford and others.

Appendix C—"Proposed Electrification of Heavy-traction Railroads in the Superpower Zone," by C. T. Hutchinson, N. C. McPherson and others. (See abstract below.)

Appendix D—"Industry in the Superpower Zone," by H. W. Butler, H. Goodwin, Jr., and others.

Appendix E—"Performance and Cost of the Superpower System," by Henry Flood, Jr., A. R. Wellwood and others.

Appendix F—"Steam-electric Plants for the Superpower System," by Henry Flood, Jr., and others.

Appendix G—"Hydro-electric Plants for the Superpower System," by L. E. Imlay, L. A. Whitsit, B. J. Peterson and others.

Appendix H — "The Superpower Transmission System," by L. E. Imlay.

Appendix I—"Reliability of Service," by L. E. Imlay and others.

Appendix J—"The Relation of Coal and Coal-Delivery Routes to the Superpower System," by C. E. Lesher, F. G. Tryon and others.

Appendix K—"Use of Process Fuels and Pulverized Coal for Base-load Steam-Electric Plants," by O. P. Hood and others.

Appendix L—"Basic Costs," by the engineering staff.

Appendix M—"Stations and Transmission Lines of Electric Power Companies Engaged in Public Service," by A. H. Horton.

SUMMARY OF CONDITIONS

The market for superpower energy will be furnished by the electric utilities, the industries and the railroads. The estimated requirements for energy supplied through the electric utilities for municipal, private, industrial and railroad purposes in 1930 is 31,000,000,000 kw.-hr. This energy could be supplied by a co-ordinated power system at an annual cost of $239,000,000 less than by an unco-ordinated system such as is now in use. The total investment in generating and transmission facilities for the superpower system will be $1,109,564,000, of which $416,346,000 will represent the value of existing facilities to be incorporated into the system.

A study of the 96,000 manufacturing establishments operating within the Superpower Zone shows that by 1930, through the maximum economical use of purchased electric energy, they can save $190,000,000 annually above the fixed annual charges against a capital investment of $185,000,000 to provide the motor equipment necessary to receive and use this power.

The combined capital investment necessary for the electric utilities and the industries as of 1930 therefore amounts to $1,294,564,000, and this total investment will yield annually above the fixed charges the sum of $429,000,000 or 33 per cent on the investment.

Within the Superpower Zone there are 36,000 miles of railroad measured as single track—that is, including each track of main lines, yards and sidings. Of this total about 19,000 miles can be profitably electrified, so as to yield by 1930 an annual saving of $81,000,000 as compared with the cost of operation by steam. The capital expenditure necessary to electrify the 19,000 miles would be $570,000,000, and the average return upon the investment would therefore be 14.2 per cent.

The order in which the superpower steam-electric and hydro-electric power plants and transmission systems should be constructed must depend (1) on the present industrial demand for energy that cannot be satisfied because of the difficulties of the local utilities in financing extensions, and (2) on the future demand for energy that will result from the more economical generation of power under the Superpower System. It is believed that the quickest return will be obtained by following in chronologic sequence the order of procedure as follows:

1. The construction of a steam-electric plant near Pittston, Pa., to supply a part of its energy to the anthracite division of the Superpower Zone and the remainder to the metropolitan divison, particularly New Jersey.

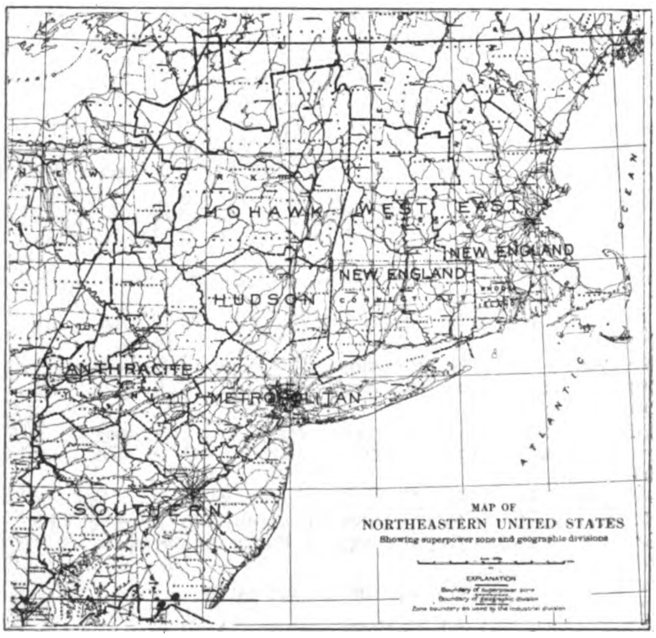

MOHAWK
WEST
EAST
NEW ENGLAND
NEW ENGLAND
HUDSON
ANTHRACITE
METROPOLITAN
SOUTHERN
ATLANTIC
OCEAN
MAP OF
NORTHEASTERN UNITED STATES
Showing superpower zone and geographic divisions
EXPLANATION
Boundary of superpower zone
Boundary of geographic division
Zone boundary as used by the industrial division

FIG. 1—THE SUPERPOWER ZONE AS VISUALIZED IN THE SUPERPOWER SURVEY REPORT

2. The construction of a steam-electric plant near Sunbury, Pa., to supply a part of its energy to the anthracite division, a part to the Reading load center, and the remainder to Philadelphia.
3. The construction of hydro-electric plants on the Delaware and Susquehanna Rivers to supplement the steam plants indicated above.
4. The progressive development of the Hudson River projects to meet the growth of energy requirements at the Schenectady, Utica, Poughkeepsie and Pittsfield load centers.
5. The construction of a steam-electric plant near Boston to supply the Boston, Lowell and Newburyport load centers.
6. The construction of a steam-electric plant near New Haven to supply the New Haven, Bridgeport, Waterbury and Norwich load centers.
7. The partial construction of the first hydro-electric plant in the development of the Potomac River as soon as the power demands of the Baltimore and Washington load centers require additional plant capacity.

THE SUPERPOWER SYSTEM

The large interconnections in California have held a spectacular interest, and of course the Superpower Zone here contemplated is based on a similar principle. But, unlike the Pacific Coast region, where water power abounds and industry is relatively small, the Superpower Zone has relatively small hydro-electric resources and maximum industrial power requirements. Of a total energy requirement of 31,000,000,000 kw.-hr. estimated for 1930, not more than 21 per cent can be supplied from water power. Fortunately, some of the best coal deposits in the country lie near this great industrial territory and a joining of hydro-electric power and steam-electric power should effect maximum capital and operating economies, at the same time conserving the rapidly disappearing cheap fuel of the Appalachian coal fields. Fig. 2 shows how the superpower system should appear in 1925. The 1930 plan calls for some additional transmission lines and power plants, the additional transmission lines reaching principally the relatively distant large power undertakings, both hydraulic and steam.

In 1930 the number of power stations required to supply the entire zone will be only 273. At present there are 558 electric utility plants and thousands of isolated plants of all sizes. The principal opportunity for economy is in having a few plants of large capacity, it being planned to have base load steam plants ranging from 60,000 to 300,000 kw. In none of these plants will there be installed a turbo-generator having a capacity of less than 30,000 kw.

Aside from the appendix on electrification of heavy traction railroads, known as appendix C, the other appendices of interest to electric railways may be summarized in what follows. The appendices are definite engineering reports largely by experts in the fields to be covered.

ELECTRIC UTILITIES IN INDEPENDENT OPERATION

In New York, Baltimore and Washington load centers the predominating agency is 25 cycles; in the remainder of the zone it is 60 cycles.

The present electric utility load is 10,000,000,000 kw.-hr. (1919), and this is expected to grow to 26,000,000,000 kw.-hr. in 1930. By forming a ring around each large city in the zone and connecting by transformers to the existing distribution lines greater interchange of power and therefore decrease in reserve capacity may be realized.

Under independent operation in 1919 the generating capacity required was 46 per cent greater than the annual peak load and the resulting annual capacity factor was 26 per cent. Under the superpower system in 1930, through joint reserve, the generating capacity required will be only 9 per cent greater than the annual peak, and the annual capacity factor will be 45 per cent.

The average unit production cost for the electric utilities in 1919 was 1.93 cents per kilowatt-hour; the cost of steam electric power was 2.12 cents, and that of hydro-electric power, 0.94 cents. Based upon the same capacity factor as applied to electric independent operation, the superpower system production cost should be 0.99 cents per kilowatt-hour.

INDUSTRY IN THE SUPERPOWER ZONE

Without any invasion of the field of what might be termed byproduct power, it is estimated that there could have been effected in 1919 a saving of 13,502,100 tons of coal—71 per cent of the coal used by the industries for producing power, or 25 per cent of all the coal used by the industries. This would have been realized by shutting down prime movers in industry and purchasing energy. Of the 96,000 individual establishments in the zone, 76,000 use power.

A careful study of the power requirements for industrial establishments in the Superpower Zone has been made and has shown that by 1930 an annual saving of $190,000,000 can be made to the industries themselves above the fixed charges, against an investment of $185,000,000 for the motor equipment necessary.

PERFORMANCE AND COST OF SUPERPOWER SYSTEM

It is estimated that the new money required for the superpower system up to 1925 is $453,143,000, and up to 1930, $693,210,000, thus making it necessary to raise $90,600,000 annually for the first five years and $48,000,000 annually for the following five years. If the demand of 1930 were provided for by the independent systems as constructed today, the total sum required would be $1,856,000,000, or $85,600,000 a year. There is thus an investment saving of $163,000,000 during the next ten years. The economic relation established between the joint use of steam and water power may be realized when it is shown that they can be so combined as to yield annually $69,550,000 on an increased investment of only $44,838,000.

In this section is shown the economy of using Niagara water power and St. Lawrence water power for generating energy to be transmitted into this district.

This appendix also shows that in 1930 the cost of the power produced by the superpower system *inclusive of fixed charges,* as delivered on the buses of the electric utilities would be 10.6 mills per kilowatt-hour, whereas the cost under independent operation as of 1919, *exclusive of fixed charges,* would be virtually the same.

STEAM-ELECTRIC PLANTS FOR THE SUPERPOWER SYSTEM

It is proposed to retain 79 per cent of the effective capacity of the present steam-electric public utilities in the Superpower Zone, with a rating of 2,677,000 kw. The average power of the steam plants retained is 44,600 kw., and these should produce energy at an average rate of 2.15 lb. of coal per kilowatt-hour. It is calculated that the following operating characteristics for base load steam plants could be realized:

Steam pressure at turbine throttle, 300 lb. per square inch.
Superheat at turbine throttle, 230 deg. Fahr.
Final temperature turbine throttle, 652 deg. Fahr.
Vacuum at turbine exhaust nozzle, 1 in. of mercury, absolute.

The proposed new steam-electric plants have been located so as to obtain the fullest advantage of low freight rates, easy coal delivery routes and ample condensing water. Three of these are to be located on sites in the anthracite region, where sufficient condensing water is available to permit the development of 300,000 kw. each.

HYDRO-ELECTRIC PLANTS FOR THE SUPERPOWER SYSTEM

The principal rivers which can contribute water power to the Superpower Zone are the Potomac, Susquehanna, Delaware, Hudson and Connecticut. It is proposed to utilize power from these rivers in 1930 to the following extent:

	Capacity Kw.	Output (Millions of Kw.-hr.)	Investment	Production Cost (Mills per Kw.-hr.)
Potomac	200,000	950	$22,000,000	3.36
Susquehanna	185,000	1,230	28,000,000	3.22
Delaware	350,000	1,250	51,500,000	5.05
Hudson	150,000	900	38,350,000	5.84
Connecticut	165,000	760	29,000,000	5.455

It is proposed to develop these rivers above their primary power capacity for peak-load operation.

The water powers of the Niagara and St. Lawrence Rivers are within transmission distance of the Superpower Zone, but on account of the time required for construction on the St. Lawrence and of the treaty restrictions concerning the use of the water at Niagara Falls the power from these sources has not been considered available in the zone prior to 1930.

It is expected that the total capacity for the production of hydro-electric power by 1930 will be 1,501,500 kw. compared with the present capacity of 451,500 kw., or 30 per cent. This will represent an investment of $245,977,000.

THE SUPERPOWER TRANSMISSION SYSTEM

Naturally a transmission and distribution system of considerable magnitude is one of the most important elements of the whole scheme. At present there are about 1,200 miles of transmission system at 33,000 volts or higher, and this mileage will become distribution rather than transmission. The principal transmission features of the superpower system will therefore have to do only with transmission of power from new plants to load centers and to the buses of existing electric utility plants.

By 1930 the superpower transmission system should consist of 970 circuit miles of 220,000 volt lines and 4,696 circuit miles of 110,000 volt interconnecting lines. The construction of the transmission system for the St. Lawrence and Niagara developments will add 3,140 circuit miles of 220,000 volt lines. This shows that potentials of not less than 220,000 volts will be selected to transmit power from plants that are at considerable distances from the general interconnected superpower plants, and within the zone a potential of not less than 110,000 volts will be employed for interconnection between power and load centers.

PROPOSED ELECTRIFICATION OF HEAVY TRACTION RAILROADS IN THE SUPERPOWER ZONE

Of particular interest to railway men is that part of the report having to do with railroad electrification in the Superpower Zone. As stated above, some 19,000 miles of the 36,000 miles in the zone could be profitably electrified. The accompanying map shows the lines which comprise this 19,000 miles. In this map the lines to be omitted, some of them important, as well as trackage to be included are noticeable.

This appendix starts out with a discussion of the advantages of unified operation and stresses the extra advantages due to unified operation by electricity. Of this the report says:

> These improvements in operation can be made more readily under electric service than under steam, for a change in the power system would bring fresh minds into the service and would consequently liberate the mental operation of the average railroad man from conventional routine. Under electric operation, for instance, the entire traffic between Philadelphia and Washington could readily be carried over the rails of the Pennsylvania System, those of the Baltimore & Ohio being left for future growth. Similarly, electric operation in the vicinity of Boston and New York would leave a margin of track capacity so great that no money need be spent for many years for further extensions of track. This relief of trackage is one of the very notable advantages that would follow unified electric operation of the railroads in this territory. The great expense of any large increase in trackage should of itself force electrification; the total cost twenty years hence will be less if electrification is begun now than the cost of the added track and terminal facilities necessary under steam

operation to provide for the inevitable 100 per cent increase in traffic within that time.

The report then goes on to discuss the specific advantages of electrification in operation and also on account of the characteristics of the electric locomotive as a machine. With most of these arguments, electric railway men are already familiar.

Under the discussion of classes of electric locomotives, it is pointed out that there is no sound reason for such variety as at present exists in the types and weights of steam locomotives. It is pointed out that the United States Railroad Administration formulated certain standard designs and reduced the number of types to about ten. The suggestion with reference to electrical equipment is that this number can be reduced still further, "certainly to as few as six types and possibly to three." The definite proposition is made that:

> The entire freight service in the superpower zone can be handled by electric freight locomotives having two articulated two-axle trucks, each carrying two motors geared to the axle, the mounting being essentially the same as that in a number of locomotives now in use and similar to the usual street car mounting. There would be two classes of locomotives of this type—a light one carrying 80 tons on drivers and having a continuous drawbar pull of 22,000 lb. at 25 miles an hour, and a heavy one carrying 110 tons on drivers and having a continuous drawbar pull of 30,000 lb. at the same speed. These units can be combined in any reasonable number; the total load on drivers can be made equal to 80, 110, 160, 190, 220 tons, or as much more as may be desired, being limited only by the strength of the draft rigging. . . .
>
> For passenger service a similar arrangement would be used—that is, two articulated, two-axle trucks, with one motor geared to each axle. The motors may be practically the same as those in the freight locomotive, the only difference being a change in gear ratio. The passenger locomotive, however, would have leading and trailing trucks, with either two or four wheels, and the total weight would be redistributed. This passenger locomotive would be of two weights, the light one having 60 tons on drivers and the heavy one 90 tons. These also may be combined, like the freight locomotives.
>
> For the switchers, one size will be adequate, with 70 to 75 tons on drivers, of the same type as the freight locomotive. Substantially the same frame and running gear can be used, with motors of less capacity.
>
> All three types of locomotives will have the usual overload capacity, and all will be able to operate in starting and accelerating at 25 to 30 per cent adhesion.
>
> These suggested sizes and types of locomotives can, of course, be varied greatly without sacrificing the advantage of unified electric operation, but identity of type for the same service throughout the superpower zone is essential.

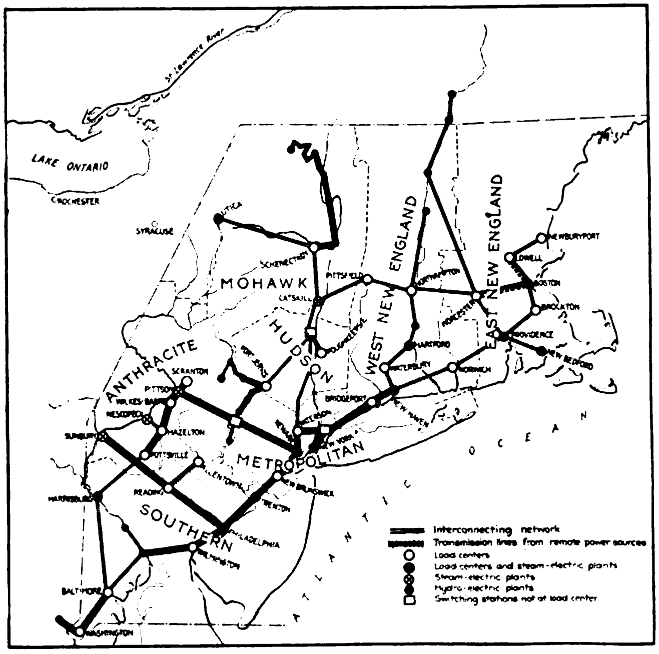

St Lawrence River
LAKE ONTARIO
ROCHESTER
SYRACUSE
UTICA
SCHENECTADY
MOHAWK
CATSKILL
PITTSFIELD
WEST NEW ENGLAND
NORTHAMPTON
WORCESTER
EAST NEW ENGLAND
NEWBURYPORT
LOWELL
BOSTON
BROCKTON
PROVIDENCE
NEW BEDFORD
HUDSON
POUGHKEEPSIE
PORT JERVIS
HARTFORD
WATERBURY
NORWICH
BRIDGEPORT
NEW HAVEN
ANTHRACITE
SCRANTON
PITTSON
WILKES-BARRE
NESCOPECK
HAZELTON
SUNBURY
POTTSVILLE
ALLENTOWN
PATERSON
NEWARK
NEW YORK
METROPOLITAN
NEW BRUNSWICK
TRENTON
READING
HARRISBURG
SOUTHERN
PHILADELPHIA
WILMINGTON
BALTIMORE
WASHINGTON
ATLANTIC OCEAN
Interconnecting network
Transmission lines from remote power sources
Load centers
Load centers and steam-electric plants
Steam-electric plants
Hydro-electric plants
Switching stations not at load center

FIG. 2—THE TRANSMISSION SCHEME AND LOCATION OF PLANTS AS CONTEMPLATED BY THE SUPERPOWER REPORT TO EXIST IN 1925

BASIS OF THE ELECTRIFICATION STUDY

The investigation of the railroads was for the purpose of seeing what saving would be effected by unified electric operation, and to compare this estimated saving with the investment needed to effect it. Merely a substitution of electric for the steam locomotive was assumed, although it was realized that the greatest gain could be obtained only by an entire revamping of the transportation scheme to fit it to the use of the electric locomotive. Such an analysis would have involved a detailed study of each road and of each division, indeed, which was not possible.

Comparisons of cost of investment and operation were based on electrical energy being purchased from the superpower system—no investment in power station and transmission systems being placed on the railroads. Their investment begins with substations segregated for railroad use.

While it was stated that the comparison of cost of investment and operation need take no account of the system of electric traction used, yet as between the 3,000-volt direct-current system and the 11,000-volt (or higher) alternating-current system the estimates were based upon the former. This was done because, with the 60-cycle frequency adopted for generation and transmission, substations with rotating machinery were required for alternating current as well as for direct current, which would remove one of the principal advantages of alternating current over direct current. On this point the report says: "In order, then, to avoid some uncertain element in the estimates of the cost of the alternating-current system it has been decided to base all estimates, both of operation and of construction, on the 3,000-volt direct-current overhead system. Substantially the same results, in money, could, however, be obtained with the alternating-current system, certain gains being offset by certain losses."

It was immediately evident that it would not be adequate to study the roads as units but that a study should be made of the operating divisions of the railroads. The result of this method of studying is graphically shown in the map showing the mileage recommended to be electrified. All of the railroads gave excellent co-operation in the collection of the fundamental data required. Detailed information for each division for each month of the year 1919 and the total for the year was obtained on the following items:

> Passenger service, train-miles, total locomotive-miles, car-miles.
>
> Freight service, train-miles, total locomotive-miles.
>
> Gross ton-miles moved (including engine and tender) separately for freight and passenger.
>
> Switching service, ton-miles, engine-miles, engine-hours or in such other form as is at hand.
>
> Amount of coal used for each class of service separately, if possible, and total; kind of coal burned.
>
> Average annual maintenance per locomotive-mile, separately for each class, if possible.

Similar data were obtained from those roads having electrically operated divisions and in addition special information of experience in electrical operation was obtained.

The report includes a large number of tables giving detailed information from the various systems. The following summary of the principal data for these roads is of interest:

SUMMARY OF PRINCIPAL DATA FOR CLASS I RAILROADS WITHIN THE SUPERPOWER ZONE FOR 1919

Road, miles	13,396
Main track, miles	21,021
Yards and sidings	12,233
All tracks, miles	33,254
Freight locomotives	4,151
Passenger locomotives	2,669
Switcher locomotives	2,701
All locomotives	9,521
Freight trailing load, thousands of ton-miles	95,629,000
Passenger service, train-miles	88,026,000
Switcher service, locomotive-miles	56,536,000
Coal burned:	
Freight service, short tons	9,771,800
Passenger service, short tons	5,525,000
Switcher service, short tons	3,108,500
All services, short tons	18,405,300

The General Electric and the Westinghouse companies prepared estimates on substation equipment, electric locomotives, catenary construction and other electric facilities; and similar data were also asked of the Ohio Brass Company and one or two other companies.

All of these data were analyzed, a study was made of the energy required for electric traction as obtained from roads operating electrically and a second method of determining electrical energy required, by calculating from profile and alinement the various work requirements, was used to give additional evidence. Investigations of switcher service at various yards, even in Chicago, were also made taking records from existing steam operation with reference to energy consumption and total movement.

Other subjects investigated, the results being based on statistics, were: Coal saved, efficiency, equivalent coal, cost of coal, cost of electric energy, cost of maintenance of steam locomotives, cost of maintenance of electric locomotives, the distribution system, maintenance of substations, saving in wages of train crews.

The report then gives summaries of costs of construction of overhead and of purchase of electric locomotives. It analyzes the number of electric locomotives required, studying locomotive mileage and locomotive hours, crew hours, etc., and arrives at the total cost noted above of $570,000,000. The report includes a table showing the detailed figures for cost of items of construction and equipment involved in the electrification of Chicago terminals, inclusive of power station and transmission systems, as collateral evidence on the relation of certain specified costs to the total cost.

After all this study was made it was concluded that the individual divisions should be examined to see what savings could be realized. Charts of these savings, first including the saving in wages, and second not including the saving in wages, were made and from these graphs it was evident that certain divisions would not prove advantageous for electrification. The group of divisions selected for electrification showed an average saving of 11.4 per cent not including wages and 14.2 per cent including wages. It includes thirty of the forty divisions examined comprised in eleven of the thirteen systems as shown in the accompanying map. It is noticeable that the Hudson division of the New York Central and the Albany division of the Boston and Albany are not included. Special conditions caused specially low operating costs here so that only 6 and 7½ per cent saving, respectively, would be realized.

The figures for each of the divisions examined are given in an interesting summary table, from which the following outstanding figures are of interest: The total net cost of construction, $570,085,000; the net reduction in annual cost of operation, including crew wages, $80,880,935, being 14.19 per cent of construction cost; the net reduction excluding crew wages, $65,065,300, being 11.41 per cent of cost of construction. The percentage of savings ranges from 10.6 per cent for the New York, Susquehanna & Western division of the Erie to 19 per cent for the New Haven-Boston route of the New Haven road.

A very large amount of tabulated matter is given at the end of this section showing in detail various costs of operation and various figures from which judgment can be passed as to the soundness of the conclusion. There is also an interesting graph showing the growth of traffic, both freight and passenger, of tracks and of tractive power for the Class 1 railroads in the Superpower Zone from 1900 to 1919. The report states that "the annual rate of growth has been 5.3 per cent in passenger miles, 4.5 per cent in ton-miles, 0.75 per cent in all tracks, and 6.6 per cent in tractive power of locomotive." Some idea of the future development can be obtained from the slope of these curves.

This section of the report concludes with the following:

> The amount of money required for electrification is indicated as being $570,000,000. This figure is based on costs prevailing in 1919, but at present cost (June, 1921) it would be reduced by 18 per cent, to approximately $467,000,000 and before this construction can be undertaken there will be further material reductions. Probably five years from now the entire work outlined could be done for not more than $400,000,000. This is comparatively a moderate sum. Good railroad authorities have stated repeatedly that more than one billion dollars a year is needed by the railroads of the United States for extensions and betterment. The part of this total to be allocated to the Superpower Zone, as determined by the number of locomotives, would be $150,000,000. The amount required for normal extensions and betterment for three years would therefore be sufficient to electrify the thirty selected divisions of the railroads in this territory, with an annual saving of more than 14 per cent. The most valuable feature of the change, however, is not the amount saved, but the great increase in maximum capacity of existing trackage and the general advantages of electric operation.
>
> These figures indicate that with a return of normal financial conditions all these lines should be electrified before further great expenditures have been incurred to increase in a minor degree the capacity of the existing tracks and yards. Steam operation cannot satisfactorily meet the conditions of the crowded terminal herein described as the Superpower Zone; electric operation can easily do it.

Improving Accident Records

THE Wichita Falls (Tex.) Traction Company has been very successful in forming and building up an organization to improve its accident records. The organization was started in July, 1919, and has been working continuously since that time with increasing effectiveness. At the time of its institution the company's records showed it was averaging one accident for every 750 car-miles, or a little more than two accidents daily with an average mileage of about 1,600. Since that time it has reduced its accident records until they ran an average of 1,500 miles per eighteen-hour day from June 18 to Aug. 6 of this year, making a total mileage of 73,500, without an accident being reported. This is considered an excellent record. The company is organized very thoroughly and every time an accident occurs it is investigated carefully with each and every trainman in an attempt to show how it happened and how it could have been avoided.

Traffic Analysis in New York

The New York Transit Commission Is Conducting an Investigation of Traffic Conditions on the Surface Lines in Contemplation of Recommending a Unified Co-ordinated System

VALUABLE information as to the amount of travel of surface car line passengers in Manhattan has been obtained as the result of trip counts which are still being made among trolley passengers by the New York Transit Commission for the purpose of aiding its investigation as to which of the trolley lines are necessary and should be retained as part of the unified system contemplated under the new plan. These counts have been in progress during the past week on the Eighth, Ninth, Sixth, Fourth and Madison Avenue lines. This week the counts were resumed on the Ninth Avenue line, and when that survey has been completed the counts will be made on the flow of traffic to and fro across Eighty-sixth Street. The new transit plan contemplates the dropping or scrapping of little used or unimportant lines and will attempt to determine just what actual use is made of each, whether as a through route or as an intermediate route of the passenger.

The commission expects later, when the work in Manhattan is completed, to extend the count to Brooklyn and the remaining boroughs of the city. Extensive preparations have been made and some preliminary tentative counts were undertaken at various points in connection with mapping out the general scheme. It is proposed to do the work in a very thorough fashion.

Under the present scheme that the commission is using each line is taken up separately and studies are being made in connection with that line by the inspection staff of the commission. Signs were posted in each car several days prior to the beginning of the count by the inspectors. These signs, printed in English, Italian and Hebrew, are informative in character, stating the reason for which the count is being made and urging the co-operation and assistance of the passengers in carrying it out. These posters say that in order to get at the proper routing of cars it is essential for the commission to learn how the lines are used, what the transfer points are of various passengers, etc.

Small cards have been printed which are handed out by the inspectors to each passenger on the car of the line involved during any particular inspection. These cards request the passenger to inform the inspector what line, or lines, he utilizes in order to get from his starting point to his destination; how many cars he uses; the name of the street corner at which he begins his trip; the street corner which is to be his final destination; at what street corner he boarded the car under inspection, and at what street corner he is to leave that car. The passenger is also requested to inform the inspector whether he paid a cash fare on the particular car or whether he presented a 2-cent transfer or a free transfer. City Hall is taken as the center to which or from which all people are considered to be traveling. A blue card is used for all passengers whose destination is in the neighborhood of City Hall, while a pink one is to be filled out by all passengers going away from City Hall.

When the counts are completed the information gathered by the inspectors will be tabulated and indexed so that it can be utilized by the traffic experts of the commission in the preparation of the necessary analyses for the guidance of the commission in working out the details of its plan.

Generally speaking, the commission has obtained an average of about 60 per cent of answers to the questions propounded by the inspectors or tendered to passengers on cars presented by them. Four inspectors are assigned to each car and the counts are made in the workward and homeward rush hours and at mid-day as well. On the longer routes three round trips are made by each squad of inspectors, while on some of the shorter ones as many as six can be made in the same time. This means that on every surface route at least nine round trips are made, so that a very accurate index of the amount and kind of travel is obtained because the counts are made at representative periods in the traffic cycle.

About one hundred inspectors drawn from the various departments of the commission were assigned to this work. In some instances the inspectors have found it possible to achieve a 100 per cent result of information from passengers. This was particularly true of the non-rush hours when the cars were less crowded. During the crowded hours the inspectors found it difficult to reach all the passengers and also found a disposition, particularly among tired passengers in the night rush hours, of not being willing to be bothered.

It was said at the offices of the commission this week that the result of the count so far is regarded as satisfactory and that the information obtained when collated and properly tabulated will be invaluable in working out the problem of the disposition of the surface car lines. It is expected that at least ten days or two weeks more will be required to complete the count in Manhattan. Several squads of men have already begun their count on several of the Brooklyn and Bronx lines.

Water-Power Development Under Federal Act

THE Federal Power Commission under the water-power act of June 10, 1920, has since March 1, 1921, authorized the issuance of thirty licenses involving 1,269,000 hp. and twenty-four preliminary permits involving 1,280,000 hp., a total of 2,549,000 hp., or as much as the aggregate of all applications approved by the several executive parties during the fifteen years preceding June, 1920. As a result, projects aggregating 1,277,000 hp. and an investment of approximately $100,000,000 are already under construction in New York, Alabama, Wisconsin, Oregon and California.

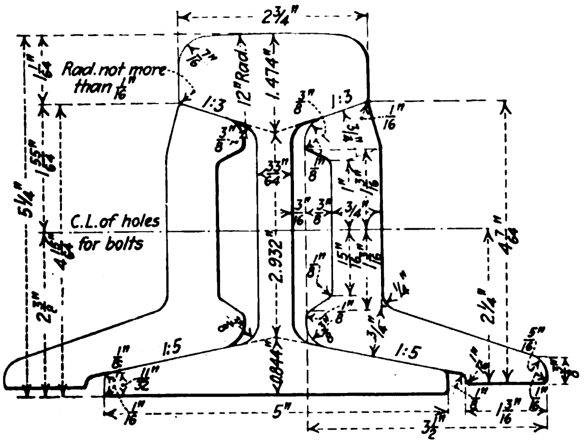
Up to Oct. 8, 1921, there have been filed with the commission 256 applications involving more than 16,000,000 hp., of which about 10,500,000 hp. is primary power and 5,500,000 secondary power. The great majority of these applications contemplate the development and sale of power as public utilities.. In 1917 the census report showed an average investment in water-power plant and equipment at that time of $240 per horsepower. If the average investment required in the projects before the commission is only one-half as much, an expenditure of $2,000,000,000 will be involved. The collateral expenditures for distribution systems, for customers' installation and in accessory industries will be several times greater. The commission believes that with the removal of the restrictions which have hitherto existed, with improved industrial and financial conditions, with the development of new industries, with railroad electrification, and with the gradual displacement of steam power by water power, it is reasonable to expect in the near future an activity in water-power development hitherto unknown.

Australian Railway Rail

Standard Specifications for Railway Rails and Fishplates Just Issued—Rails Generally Are Higher for Their Weights than Their American Equivalents

THE Commonwealth Institute of Science and Industry, Melbourne, Australia, has published the new Australian standard specifications for railway rails and fishplates which were adopted this year and have been approved by the Interstate Conference of Railway Commissioners. The specifications include ten drawings giving dimensions of the five standard section rails (T-rails) and fishplates. The rails weigh 60, 70, 80, 90 and 100 lb. per yard. The section of the standard 80-lb. rail and fishplates is reproduced.

The rails generally are higher for their weights than their American equivalents in either A. S. C. E. or A. R. A. series. The heads are also wider and of slightly less depth, while the sides of the webs are straight in contrast to the curved sides of the webs in American rails. It is of interest to note the large radius of the fillet connecting the top and sides of the head. It is greater than that found in most American rails. The greater head width is probably for the purpose of securing a larger fishing surface for the tops of the fishplates. A difference in fishing angles will also be noted, particularly under the head, the slope of which is 1:3. It is of interest to note the use of the term "fishplate" in contrast to the American terms, "angle-bar" or "splice-bar," and attention is called to the use of the T-rail in contrast to the British "bull-head" or "double-headed" rail.



SECTION OF AUSTRALIAN STANDARD 80-LB. RAILWAY RAIL AND FISHPLATES

In reference to the fishplate designs, it seems that these could have been designed along more progressive lines as they are quite similar to the old A. S. C. E. designs, which are admittedly inadequate. A design similar to the Pennsylvania Railroad standard would cost little if any more and give much greater strength.

The specifications for manufacture in general are quite similar to current American specifications. Only 5 per cent short lengths are permitted as compared with 10 per cent allowed here. Four kinds of steel are specified, permitting a range in selection by the purchaser. These are basic open hearth, acid bessemer, Sandberg's basic open hearth high silicon and Sandberg's acid bessemer high silicon. The chemical analyses of these are given in the accompanying table.

CHEMICAL ANALYSES AUSTRALIAN STANDARD RAILS

	Processes			
Elements	Basic Open Hearth*	Acid Bessemer*	Sandberg's Basic Open Hearth High Silicon	Sandberg's Acid Bessemer High Silicon
Carbon	0.55—0.68	0.50—0.60	0.50—0.65	0.40—0.55
Silicon	Not less than 0.10	Not less than 0.10	0.20—0.40	0.30—0.50
Sulphur	Not more than 0.07	Not more than 0.07	Not more than 0.06	Not more than 0.07
Phosphorus	Not more than 0.04	Not more than 0.07	Not more than 0.06	Not more than 0.07
Manganese	0.60—0.90	0.60—0.90	Not more than 1.00	0.70—1.00

* Carbon varies with weight. That in table is for 80-lb. rail.
Carbons are permitted as high as 0.62—0.75 for 100 lb. O—H Rail.
Carbons are permitted as high as 0.60—0.70 for 100 lb. A—B Rail.

Single-Phase Express Locomotives for the Swiss Federal Railways

OF THE fifty-three electric locomotives that were ordered by the Swiss Federal Railways from Brown, Boveri & Company, forty-one are of the 1-B+B-1 type and will be used for passenger and express train service. These engines were designed to pull a 300-ton train up a 2.6 per cent grade at a speed of 31 m.p.h., and to accelerate such a train on that grade to the mentioned speed within fifteen minutes. A top speed of 47 m.p.h. should be possible.

To fulfill these conditions an output of 2,000 hp. is required, which is derived from four twelve-pole single-phase motors of 500-hp. continuous and 750-hp. one-quarter-hour rating at 650 r.p.m. Two groups of two motors each drive through a reduction gear of 1:32 two jackshafts, from which horizontal rods transmit the power to the two front and two rear drivers. Each motor has its own 7½-hp. blower mounted directly above it. In the middle of the engine is installed a 1,730-kva. oil-cooled, single-phase auto-transformer, containing eighteen voltage taps for the control of the motors and the train heating. The oil of this main transformer is kept cool by being pumped through a system of cooling tubes located along both sides of the locomotive. The motor-operated tap switch is mounted directly upon the cover of the transformer, resulting in minimum length of connections.

All control apparatus, such as switches, contactors, relays, etc., are actuated by 36-volt d.c. derived from a 1½-kw. motor-generator assisted by a standard car lighting storage battery. Two motor-operated air compressors of 9 kw. each provide air pressure for braking and lowering of the two pantographs. A novel system is provided to apply electric braking on long down grades. For this purpose a 42-kva. braking transformer is connected in series with the main transformer, and it is possible to excite the fields of the four traction motors through this circuit. The armatures of each

MAIN DATA OF LOCOMOTIVES

Single-phase current	15,000 volt
Frequency	16⅔ ft.
Hourly rating	2,400 hp.
Gage	Standard
Diameter of drivers	60 in.
Diameter of pony wheels	37 in.
Length over all	54 ft. 2 in.
Weight of mechanical equipment	109,760 lb.
Weight of electrical equipment	132,160 lb.
Complete weight	241,920 lb.

two motors are put in series and discharge their generated current into special braking resistances. As the main transformer is in the field circuit, its eighteen steps permit of a very gradual applying of the braking force.

The valve operating the pantograph lowering device is interlocked with the main oil switch, allowing a lowering only after the switch is opened.

Direct Current for England

Railways Electrification Advisory Committee Submits Its Final Report on the Question of Standardization of System to the Ministry of Transport

THE final report of the Electrification of Railways Advisory Committee on the question of standardization of system was submitted on June 30 to the Ministry of Transport and was made public by the Ministry the end of August. The chairman of the committee is Sir Alexander Kennedy, LL.D., and the members include Sir John A. F. Aspinall, Sir Philip Dawson, Sir John Snell, Sir Henry Thornton, A. R. Cooper and Charles H. Merz. The committee was appointed in March, 1920, to decide "whether any regulation should be made for the purpose of insuring that the future electrification of railways in England should be carried out to the best advantage in regard to the interchange of electric locomotives and rolling stock," and "whether any regulations should be made to limit the drop of potential in an uninsulated return conductor on electrically operated railways."

On the question of system, the committee decided as follows:

1. That, in the case of those railways which have not as yet electrified any lines, as well as those which at present have electrified all or part of their lines on the direct-current system, their electrification, or extended electrification as the case may be, should be carried out on the direct-current system.

2. That the standard pressure of the direct-current system at the substation busbars shall be 1,500 volts, subject to:

(a) The continuance of any existing 600-volt and/or 1,200-volt installations, and, subject to the approval of the Minister of their extension.

(b) The adoption of half the standard voltage—750 volts—in those cases where it can be shown to the satisfaction of the Minister that advantage would arise from the use of this lower pressure.

(c) The adopton of higher pressures—limited to a multiple of the standard pressure—where it can be shown to the satisfaction of the Minister that sufficient advantage would accrue.

3. That both overhead and rail conductor collection should be permitted as long as the position and general design of the conductors and structures are in accordance with recommendations which will be made in a subsequent report. In that report the committee will also suggest the regulations required to insure that locomotives and/or motor coaches shall be able, wherever it may be necessary, to run at two different voltages, *e.g.*, 600/750 and 1,500 and/or with either rail or overhead collection.

4. That the generation of current for direct-current lines should be alternating three-phase at such voltage as may be desirable in each case.

5. That in the case of existing generating stations supplying at any frequency between 25 and 50 cycles it is unnecessary to make any change in frequency, but that it is desirable that where any one such frequency is in general use in a particular electricity district any new power station put down in that district for supplying a railway should adopt the frequency which has been approved by the electricity commissioners or is in general use in that district.

The committee desires to add on this matter that from the evidence which has been put before it, as well as its own experience, it has come to the conclusion that alternating current supplied to substations at a frequency of 50 cycles can be used for railway purposes without any detriment to railway working.

In connection with the recommendation on system, the committee says the London, Brighton & South Coast Railway long ago had installed the single-phase system for its suburban lines and that a change to the direct-current system would involve a large financial expenditure which the railway itself could not be asked to undertake, and which it would be difficult to justify to the public at the present time. The committee recommended, therefore, that the system now in use or planned for lines actually under construction on the Brighton company's suburban lines need not be changed.

The committee considers that a standard position outside the track should be defined within certain limits for the contact surface of the contact rails in relation to the position and level of the running rails and recommends that in respect to new electrically operated lines and extensions to existing lines the following regulations should be issued for securing the interchangeability of running: (1) The contact surface shall be in the horizontal plane; (2) the gage measured between the center of the horizontal contact surface of contact rails and the gage line of the nearest rail of the corresponding track shall be 1 ft. 4 in.; (3) the vertical height of the contact surfaces above the plane of the top table of the running rail shall be for top-contact rails 3 in., for under-contact rails 1½ in.; (4) the vertical height of the contact rail above the plane of the top table of the running rail shall be such as to provide the necessary clearance from the load gages from time to time in use; (5) the under-contact rail where employed shall provide for the engagement of the contact shoe being made from the side nearest to the running rail; (6) above the level of the under-contact surface no part of the contact rail construction shall be at a less distance than 1 ft. 1½ in. from the gage line of the nearest contact rail, and below the level of the under-contact surface at a less distance than 1 ft. 7½ in. from the gage line of the nearest track rail; (7) the vertical distance between the underside of any contact shoe in the three positions and the plane of the top table of the running rail shall not be less than 1½ in.

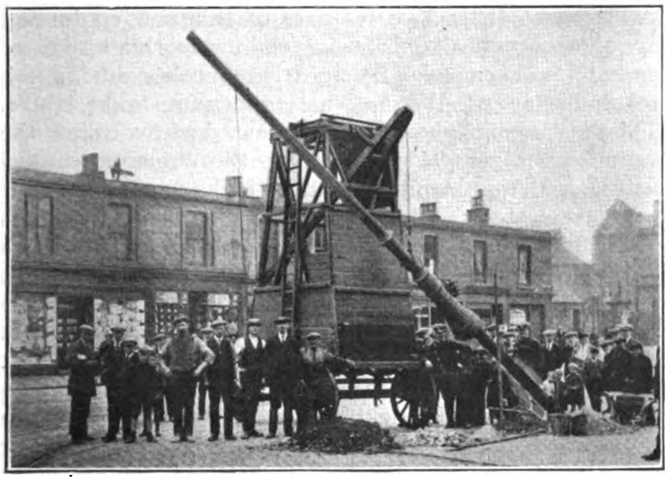
STANDARDIZED OVERHEAD COLLECTION

In respect to overhead collection, it is essential for the interchange of electrically operated trains that the position of the overhead live wire and the clearances between the live wire and the fixed and moving structures as well as the width and operating range of the collector gear shall be such that any train may collect current from all electrically equipped railways. The committee therefore recommends that in respect to new lines and new electrical equipment on existing lines the following regulations should be issued for securing interchangeability of running: (1) The standard clearances shall be, between the underside of any overhead live wire or conductor and the maximum load gage likely to be used on the line in the open, 3 ft.; through tunnels and under bridges, 10 in.; between any part of the structure and the near point of any live overhead wire or conductor, 6 in.; between the rail level and overhead conductors at crossings, 18 ft.; at places where there is a likelihood of men in the conduct of their duties having to stand on the top of engines or vehicles, 20 ft.; between any part of the collector gear and any structure, 3 in. (2) The horizontal distance of the contact wire from the plane to the center line of the track and perpendicular to the surface of the track rails shall be within the following limits: At a height of 18 ft. above the level, 1 ft. 3 in.; at a height of 4 in. above the maximum load gage likely to be used on the line, 1 ft. 9 in. (3) The weight and construction of the contact wire and support shall be suitable for the passage of collectors exerting an upward pressure of 25 lb. to 40 lb. (4) The width of the renewable contact surfaces of the collectors at right angles to the track shall not be less than 4 ft. and the extreme width over the horns of the collector shall not exceed 7 ft. 6 in.

The committee concluded that it was unwise to draft any regulations limiting the drop of potential on uninsulated return conductors. It said that the cases of harmful effects due to potential drop in excess of that allowed by the tramway act had been few and unimportant and readily corrected by the railway companies on their own initiative. The only question was the effect of these currents on the instruments in observatories, and the committee felt that regulations should be limited to the portion of electric railways within the vicinity of the observatory.

Edinburgh Corporation Tramways Begin Overhead Construction

Although the motor omnibus has displaced the cable cars in Edinburgh, Scotland, on the majority of routes, additional factors presented their application on the route from Leith to Edinburgh. To allow a continuous trip between the two cities at the least cost, electrification appeared most promising. The photograph reproduced herewith shows the staff of the Edinburgh Corporation Tramways present at the erecting of the first pole to support the tramway overhead construction since the tramways passed into the hands of the municipality. A special portable derrick furnished means of rapid setting of the tubular steel poles.



SETTING TUBULAR STEEL POLE IN EDINBURGH

The London General Omnibus Company has just completed a motor coach which has many new features. The seats are arranged so that a zigzag gangway runs the entire length of the coach. There is ample room for every passenger. The most striking new feature which the coach displays, however, is the arrangement of the hood, which, when it is not in use, is folded away in front of the driver. It is claimed for this device that, among other advantages, it gives the driver a better view to the rear of the coach, decreases the rear overhang, and prevents damage to the hood when the coach is being reversed.

Letters to the Editors

A Correction in Discussion on Trolley Wire

AMERICAN COPPER PRODUCTS CORPORATION

NEW YORK, Oct. 26, 1921.

To the Editors:

In your issue of Oct. 18, page 633, included with the summary of remarks before the convention of the American Electric Railway Engineering Association, I am quoted as expressing preference for numerous reductions in wire drawing. This is contrary to my opinion in the matter. In substance, my remarks on this subject were that we would agree with the majority that the heavy draws produce wire of at least equal results physically and of more uniform hardness; that is, we get away from the skin hardness by the heavy draws.

I would appreciate it if you would make this correction.

HORACE A. STAPLES.

What Merchandising Means

NEW YORK, Oct. 31, 1921.

To the Editors:

In the efforts to "merchandise" electric railway service, has there been enough thought given to the quality of the goods?

Some people—fewer every day—ride on the street cars because they have to. Merchandising must be directed to winning, or winning back, the others.

In the last analysis, the only way to fight the bus, the private car and the sidewalk is to make the street car service more attractive. If this is not done, no amount of propaganda can save the industry.

To make the service more attractive, the manager must absolutely get the point of view of the passenger. The best way to do this is for the manager to ride his cars and himself study every point of contact of the passenger with the transportation system—the wait on the corner, the stop signs and landing places, the car signs, the steps, the method of fare collection, the cleanliness of seats and windows. The most minute impressions should be studied by the manager, for little things, either good or bad, very often produce general impressions.

No one can talk merchandising and ignore zone fares. There are millions of people in this country walking short distances every day who would ride if the fare for their journey were less. Because a zone-fare system failed in New Jersey is no proof that the principle can never be applied in this country. In some of its many forms it is now in use in many places in this country. The street railway must aim to adapt its service to the needs of the greatest possible number of people.

The subject of civility of employees is hackneyed, but it must be confessed that there is still much to be desired in this line. Shall we throw up our hands or shall we look for new influences and methods in place of old ones which have failed? Some roads have attained a fair degree of success in the matter of courtesy to passengers. On every road there are some men who treat their passengers like human beings. Does this not hold out hope that improvement along this line is not impossible?

J. A. EMERY.

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Brake Equipment for Paulista Railway

The Electric Locomotives Are Provided with a Combined Vacuum and Air Pressure Brake Equipment and Arrangements for Regenerative Braking Are Also Made

THE brake equipments for the electric locomotives now going into service on the electrified portion of the Paulista Railway in Brazil have several new features. As the cars to be handled by these locomotives are equipped with the automatic vacuum brake, it was necessary to make provision on the locomotive for controlling this type of brake equipment. As these electric locomotives weigh from 100 to 140 tons, it would take from six to eight vacuum cylinders of 28-in. diameter to give the proper braking force for each locomotive, and as there is quite a list of other apparatus besides brake equipment that must be supplied, it is evident that the vacuum brake could not be utilized on the locomotives themselves, although arrangements had to be made to handle trains of cars so equipped.

The simple straight air locomotive brake equipment could be used for handling the locomotives alone, but to apply it in conjunction with the vacuum train brakes would require the operation of two separate valves by the engine man at the same time, which is objectionable. Moreover, as two separate operating valves could not be mechanically connected so as to operate simultaneously without destroying the independent operation of the locomotive brake, this might prove impractical. The brake as adopted provides for connecting the vacuum and air pressure system, so that a reduction in the air pressure brake pipe would be followed by a locomotive brake application of the same proportionate amount as that realized on the cars and the train. Also, the release of the train brakes automatically causes a corresponding release of the locomotive brakes. Both of these are accomplished without interfering with possible independent release or application of the locomotive brakes at any time.

DETAILS OF BRAKE EQUIPMENT

The brake equipment of these locomotives consists of a motor-driven air compressor of 21 cu.ft. displacement with a 7½-hp. direct-current motor operating on 95 volts. This supplies the compressed air for the locomotive brake system and for the air-operated auxiliaries. The vacuum for the train brake system is obtained by a motor-driven vacuum pump having a displacement at full speed of 150 cu.ft. per minute. This is driven by a 10-hp. direct-current motor operating on 95 volts. The exhauster operates at full speed only during the release of the vacuum brake. At all other times it operates at half speed to maintain the vacuum against leakage. On some of the Paulista locomotives the air compressor and vacuum exhauster will be combined into one unit driven by a single motor. In this case they will both operate continuously at normal speed.

The locomotive brake operating parts are in general the same as are used on all modern steam locomotives. Two brake cylinders are mounted on each truck, one of which operates the brakes on the driving wheels on that side of the truck. Air pressure is admitted to and released from these cylinders by a distributing valve, which is the principal operating device of the Westinghouse Air Brake Company's E.T. locomotive equipment. Two engineer's brake valves are required at each control stand, one of which is called the independent brake valve for operating the locomotive brakes only and the other is called the automatic brake valve for operating both train and locomotive brakes.

TWO TYPES OF BRAKES OPERATE IN HARMONY

The most distinctive features of this new equipment are those provided for causing the locomotive brakes to operate in harmony with the train brakes during the manipulation of the automatic vacuum brake valve. This is accomplished by two new devices called the "application control valve" and the "release control valve," which are connected in both the vacuum and air pressure systems. They consist of diaphragms, springs and valves so arranged as to preserve a certain balance between the vacuum and air pressure. When the vacuum is reduced to apply to train brakes the application control valve causes a corresponding proportionate reduction of air pressure in the pressure brake pipe which connects it to the distributing valve and causes the latter to operate exactly as if it were in an air pressure system. When the vacuum is reinstated to release the train brakes the application control valve admits a sufficient amount of main reservoir air to the pressure brake pipe to cause the distributing valve to assume the release position and to release the locomotive brakes. The release control valve is provided so that in case the vacuum brakes are graduated off in steps, instead of being entirely released at once, the locomotive brake cylinder pressure will be released proportionately in about the same number of steps.

These locomotives are also arranged for regenerative braking and it is considered necessary to prevent the application of the power brakes during the time that the locomotive is regenerating, as both retarding forces acting together would be likely to cause the wheels to slide. This is accomplished by a special cap on the distributing valve, which contains a magnet and valve so arranged that during regeneration the distributing valve will not operate. Immediately upon release of the regeneration the power brakes become active exactly as if the regeneration had not been used.

Turbo-Generator Operated Five Years with But Few Stops

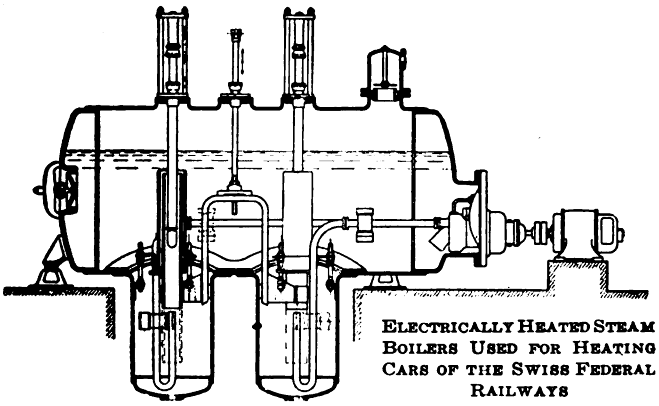
FOR five years a 3,200-kva. turbo-generator has been operating in the power plant of the city of Saskatoon, Canada, without a breakdown. The unit was installed by the Westinghouse company in 1914 and was put into operation Nov. 24 of the same year. Except for a short period in the summer of 1919 it has been continuously available for service.

A summary of performances given by city engineers show that the governor operated between extremes of load which varied from 300 to 2,850 kw. in perfect control. The only portion of the entire equipment that was ever removed was the governor pedestal cap for the purpose of renewing a gasket on the gland runner joint. The condenser has proved reliable. On one occasion when ice shut off the water intake seventeen times in an eight-hour run no trouble to the tubes or plates occurred under this unusual strain.

There were two runs of long duration. The first of these took place from Oct. 6, 1916, to April 22, 1917, and the second from June 12, 1917, to March, 1918. In the first run the load factor was 46.3 per cent, while in the second it was 46.6 per cent.

The Electric Steam Boiler

THE APPLICATION of a 15,000-volt, single-phase current directly to the water in a boiler for the purpose of generating steam by electricity was described in the Aug. 6 issue of ELECTRIC RAILWAY JOURNAL. Some further details regarding the boiler construction are now available. In the construction of boilers for alternating-current voltages from 1,000 to 15,000 volts, no special heating elements are used. With the lower voltage, one electrode is used, and with the high voltage two electrodes, the water in each case forming the rheostat. The accompanying illustration shows the construction used for the electrically heated boiler in service for heating trains of the Swiss Federal Railways where a single-phase, 15,000-volt current is used.

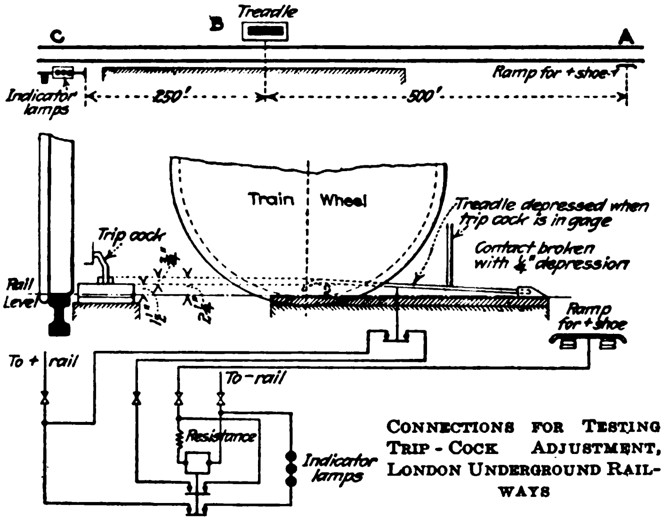

ELECTRICALLY HEATED STEAM BOILERS USED FOR HEATING CARS OF THE SWISS FEDERAL RAILWAYS

Extensive tests made on large electro-boilers with alternating current of 16⅔ cycles showed that there is no danger from any possible gas generation. The regulation of the current in relation to the steam demand is effected either by controlling the depth of immersion of the electrodes in the water, or by changing the position of an insulated cylinder placed coaxially with the electrodes and thereby increasing or decreasing the length of the path of the current through the water. The latter method has been highly developed by the Brown-Boveri Company in Switzerland. For the automatic maintenance of a constant steam pressure, the insulating cylinder may be connected to a float. This insulating cylinder may consist of earthenware for low voltage, or porcelain for high voltage. With large output boilers quartz only will resist the action. To provide the necessary cooling of the electrodes, in large output boilers, a water circulating pump is provided.

Trip-Cock Test on London Underground

THE Metropolitan District Railway, London, formerly tested the trip cocks on its trains at the St. James's Park station, but the method used was such as to cause what was practically an emergency stop. Aside from this shaking up of train and pasengers, the scheme had the disadvantage that it did not apply to every train and to every trip.

These objections have been overcome by the trip-cock testing devices now installed at the Charing Cross station on both tracks, shown in the accompanying diagram. As each passing train operates the device an indication is given at once in case the trip-cock arm is incorrectly adjusted or out of gage horizontally to more than ¾ in. up or down, or vertically within ½ in.



CONNECTIONS FOR TESTING TRIP-COCK ADJUSTMENT, LONDON UNDERGROUND RAILWAYS

About 750 ft. back of each starting signal there is installed a ramp on the side of the track opposite to that of the positive conductor rail (as distinguished from the negative conductor rail used in London) and having the same relative height and position. About 250 ft. from the starting signal a detector is attached to the end of a tie, set 8 in. from the running rail, also on the side opposite to the positive conductor rail, but about 2¼ in. above rail level. A lamp indicator, showing a purple light, is mounted on the starting signal post or adjacent to the signal.

As the train passes over the ramp the collector shoe energizes the latter by transfer from the collector shoe on the other side, and a relay, which switches on the light in the indicator, is thereby actuated. This relay is held up through a contact on the detector, but as a train with correctly adjusted trip cocks passes the latter the detector is operated to de-energize the relay and extinguish the indicator light. Should the trip cock be out of gage, or otherwise incorrect, the detector will not be operated. The continued illumination of the indicator light will tell the motorman that the trip cock is out of adjustment.

Railway Topics Discussed by A. S. M. I.

Municipal Engineers Meet in Baltimore and Consider Traffic Rules, City Planning, Rapid Transit and Paving—Specifications for Track Construction Proposed

A FOUR-DAY convention of the American Society for Municipal Improvements, the twenty-seventh annual meeting of that organization, was held in Baltimore, Oct. 25-28. A large number of papers and reports were presented, among them a paper on rapid transit systems by Robert Ridgway of New York, printed on another page. Abstracts of a number of other reports or addresses of especial interest to electric railway companies are given below:

TRAFFIC AND TRANSPORTATION

The report of the committee on traffic and transportation was devoted to a consideration of the reduction of street congestion, to jitney traffic and to a recommendation for the establishment, in municipalities having a population of 100,000 or over, of a highway transport division. The duties of this division would be to deal with all matters pertaining to traffic and transportation which affect the economic designs and maintenance of streets and their efficient use by pedestrians and all classes of vehicles. One of the most important functions of such a division would be to make highway transport surveys as preliminary to the design and redesign of streets and the formulation of efficient traffic regulations. On the subject of reduction of street congestion and jitney service, the report says:

"Based on a careful analysis of public passenger transportation, your committee considers that it is highly desirable, from the standpoints of economic public service transportation and the efficient use of municipal streets by traffic, that the society should strongly condemn the deve'opment of 'wildcat,' so called, jitney service. Not only is the installation of such service undesirable from the standpoint of the overcrowding of streets with five-passenger public transportation vehicles, but it is obviously unfair to public service corporations, operating under franchises, to be forced to compete with a jitney service, which almost universally is operating on an uneconomic basis. The present overcrowding of some of the principal thoroughfares of the city of Detroit with hundreds of five-passenger jitneys furnishes a striking example of this type of public service transportation development."

In the discussion following this report, Prof. Arthur H. Blanchard of the University of Michigan advocated the principle of compelling jitneys to operate only under municipal franchises by the terms of which they could be forced to render adequate service, as are the street railway companies. Such a method of operation, he announced, is in effect in Detroit, where groups of jitney buses have been formed into companies. He opposed the practice of permitting jitney buses to operate on the same streets as street railway lines, citing the case of one company in Michigan which has been forced to suspend service on account of jitney competition. It was brought out in the discussion, also, that the public may find jitney service agreeable during the warm months of summer, but that when winter comes the value of an inclosed street railway car is better appreciated.

License fees for motor vehicles operating on city streets, Professor Blanchard believes, are too low. In England, he pointed out, a substantial charge is made for the use of city pavements by buses and trucks. He forecast a wide utilization of motor-truck lines for freight haulage to be installed and operated by the railway companies.

In large cities, where traffic is congested, Professor Blanchard stated the trackless trolley is not an economical means of transport. The concentrated wear caused by these vehicles, he said, is responsible for ruts in pavements.

PUBLIC SERVICE COMMISSIONS AND MUNICIPALITIES

In presenting an abstract of his paper on "The Relations Between Public Service Commissions and Municipalities," Major Ezra B. Whitman, of Norton, Bird & Whitman, consulting engineers, Baltimore, and a member of the Public Service Commission of Maryland, made a plea for the establishment of equitable rates for such utilities as street railway corporations and gas companies, even though this should mean a raising of rates, in order to prevent the companies from going into receiverships. It has been the recent practice in Maryland, in certain cases, to allow a corporation a temporarily increased rate, pending a final decision by the Public Service Commission. Such action is necessary, he pointed out, because changing conditions in the cost of labor and materials take place far more rapidly than it is possible for public service commissions to give their decisions. Often such deliberations take from six months to two years and involve detailed valuations of property. Major Whitman made the point that public service corporations can live only so long as capital is attracted to them, and this means the establishment of rates which will assure a reasonable profit on the investment.

CITY PLANNING

The report of the committee on city planning urged the establishment, in every city of 50,000 inhabitants and upward, of a city planning office with at least one well-trained employee. In the development of a city plan the studies should be made in the following order: (1) Major streets plan, (2) transit plan covering street car lines, (3) transportation plan covering steam and electric railroad locations and terminals, (4) public recreation plan, (5) zoning plan, (6) civic art.

STREET RAILWAY PAVING

This was the first report of a new committee, of which C. E. DeLeuw of Chicago is chairman. It was not presented for adoption A number of abstracts from letters of city engineers describing street railway track and paving construction in their cities were given, as well as some drawings and statements of these engineers on the various details of construction which have been found successful or unsatisfactory. The report then recites factors which require study in selection of tracks and pavements therefor. These seem to be taken largely from reports of the committee on way matters of the American Electric Railway Engineering Association for 1914 and 1915. The latter committee is also quoted directly on conclusions presented in 1915 on track pavements.

It also contained a proposed specification for street railway pavements and track construction, submitted for discussion. The specification contains sixteen sections, which bear earmarks of rather hasty preparation. The first ten sections of the specification are reprinted below. These are followed by five sections for stone, brick, wood, asphalt and concrete pavements and a final section on "grade." An objectionable feature of the latter is a proposal that the outer rails of double tracks shall be ¼ in. below the inner rail.

PROPOSED SPECIFICATIONS FOR STREET RAILWAY PAVEMENTS AND TRACK CONSTRUCTION

I. *Excavation.* 1. The contractor shall excavate the space to be occupied by the tracks to a depth of —— inches below finished grade. Any soft, spongy or otherwise defective material shall be removed from the subgrade, and replaced with sound material.

2. The subgrade, shall be thoroughly rolled with a three-wheel roller weighing not less than 10 tons where practicable. In places inaccessible to the roller compression will be secured by tamping.

II. *Subsoil Drainage.* 3. In all soils except sand, gravel or sandy loam, subsoil drainage shall be provided.

4. This shall be done by laying either 4- or 6-in. tile pipe in a trench surrounded by crushed stone, gravel or cinders. The drain shall be laid under the center of each track or midway between tracks, as may be determined by the character of soil.

5. Provision shall be made for connections leading from the base of rails to the subsoil drains, at frequent intervals.

6. Subsoil drains shall be connected to the sewers by means of vitrified tile pipe of a suitable size.

III. *Foundation.* 7a. Plain Ballasted Construction. The ballast shall be evenly spread in the trench so that, after being thoroughly compacted with a three-wheel roller weighing not less than 10 tons, it shall have a minimum depth of —— inches.

8a. Ballast shall consist of clean, hard, durable crushed stone or gravel graded so as to pass a 2-in. screen and be retained on a ¼-in. screen.

7b. Concrete Slab Sub-ballast Construction. Upon the subgrade prepared as above described, shall be laid a portland cement concrete slab —— inches in depth. The concrete shall conform to the A. S. M. I. specifications for concrete for pavement foundations.

8b. After the concrete slab has set a layer of ballast shall be laid to a maximum depth of 3 in. Ballast shall consist of clean, hard, durable crushed stone or gravel graded so as to pass a ⅜-in. screen and be retained on ¼-in. screen. Ballast shall be well compacted by tamping.

7c. Solid Concrete Construction. Upon the subgrade prepared as above described shall be laid a concrete foundation which shall be constructed integral with the pavement base The concrete work will follow immediately after the surfacing and lining of the track. The final concrete shall be brought to a height —— inches below the top of the rail and shall coincide with the grade established for top surface of pavement base. Concrete below and around ties and rails shall be thoroughly rammed and tamped. If the engineer deems it necessary, cement grout shall be poured so that all voids will be filled. Care shall be taken in tamping under and around the tie and rail so that the surface and line of the track shall not be disturbed. In no case shall the ends of ties be covered by a board while placing the concrete.

8c. The concrete shall conform to the A. S. M. I. specifications for concrete for pavement foundations.

IV. *Rails.* 9. The rails used shall be of a type and weight which shall meet the approval of the engineer The T-rails shall comply with specifications of the American Society for Testing Materials.

The high T-rails and girder rails shall comply with the specifications of the American Electric Railway Engineering Association.

V. *Rail Joints.* 10. Rail joints shall be modern bolted, riveted or welded joints. The joint selected shall product the effect of a continuous rail. The type of joint and the method of making shall be approved by the engineer and be subject to his supervision.

VI. *Rail Fastenings.* 11. The rail shall be brought to proper gage and fixed securely to ties by track spikes or screw spikes. Clips shall be used in all cases when crew spikes are used. The type and dimensions of rail fastenings shall be approved by the engineer.

VII. *Tie Plates.* 12. Upon each tie and under each rail shall be placed a tie plate. The size, type, and weight of tie plates and the method of fastening to the ties shall meet with the approval of the engineer.

13. When tie rods are not used, suitable brace tie plates shall be placed as directed by the engineer.

VIII. *Ties.* 14. Wood Ties (untreated). All ties shall be either No. 1 white oak or 90 per cent heart long-leaf yellow pine.

15. All ties must be square edged and sound and sawed out of straight-growing timber. They shall conform to specified dimensions, be out of wind, with sawed ends, and straight and parallel faces. Ties shall be free from splits, shakes, loose or decayed knots, or other imperfections which may impair their strength or decrease their durability.

16. The standard dimensions of all ties shall be 6 in. in depth, 8 in. in width and 8 ft. in length. A variation from the standard dimensions of ½ in. in depth and width and 1 in. in length will be permitted, provided that not more than 20 per cent of ties under the standard dimensions will be accepted.

17. Wood Ties (treated). All ties shall be of long-leaf yellow pine, short-leaf yellow pine, loblolly pine, Norway pine, Oregon fir, cypress, white oak or red oak.

18. Ties shall conform to the specifications in paragraphs 15 and 16 as to quality and standard dimensions.

19. The air-seasoning of timber is preferred before steaming, but where sufficient time cannot be allowed for this fresh cut timber will be allowed to be substituted for treatment.

20. The character of the antiseptic solution and the method used shall be subject to the approval of the engineer.

21. The spacing of ties shall be not more than 24 in. center to center.

IX. *Pavement Base.* 22. After the foundation has been constructed, the track laid and brought to proper alignment and grade, the pavement base shall be laid. It shall be of concrete which shall conform to the A. S. M. I. specifications for concrete for pavement foundations. Concrete shall be thoroughly rammed and tamped around ties and rails.

23. Care shall be taken in tamping around the tie and rail so that the surface and line of the track shall not be disturbed. If the engineer deems it necessary, cement grout shall be poured so that all voids shall be filled. In no case shall the ends of the ties be covered by a board while placing the concrete. Care must be taken to have the outside edges of the concrete base conform to the dimensions. The concrete shall extend from the bottom of the ties to a grade above the tops of the ties —— inches below the top of the rail.

X. *Rail Filler.* 24. The spaces under the heads of the rails and next to the webs shall be filled ahead of the pavement with portland cement mortar composed of one (1) part portland cement and three (3) parts torpedo sand. At the option of the engineer mastic may be substituted consisting of asphaltic concrete binder.

Status of Electric Railway Light and Power Securities*

Decided Improvement in Electric Railway Situation Shown During Past Year—Details Given—Customer Ownership, Valuation and Other Topics Considered in Report to Investment Bankers

By H. M. Addinsell

Chairman of Committee on Public Service Securities,
Investment Bankers' Association

THE past year of general business depression has accentuated the inherent stability of public utility business as a class. The tremendous industrial activity of 1920 greatly increased the demands on the utilities, which were called upon to expand their facilities for service to an unusual degree. But it was an ordered expansion. There was no such peak of production as was the case in the industrial field. On the other hand, when the depression set in there was not the same drastic falling off in gross receipts.

Both periods, of course, brought their problems. After the war interest rates were high. Prime mortgage securities could be sold only at such prices as would yield the investor an income of 7 per cent and more. This, of course, made it rather embarrassing for a company which, faced by large additional demands from its customers, had to raise money for additions and extensions, but had nothing to raise it on except the 5 per cent bonds authorized by the open end mortgage it had drawn up before the war. It was imperative that the extensions and additions be built and built quickly. The commissions demanded it; also it would have been bad business not to satisfy the urgent needs of good customers. In some cases the problem was solved by issuing 7½ per cent and 8 per cent notes secured by a larger face amount of the 5 per cent bonds.

This, however, was an obvious makeshift and the situation was not really met until the details of the so-called series mortgage had been worked out. This type of mortgage contains all the safeguards to the investor found in the best open end mortgages of the pre-war period, but in addition provides that bonds may be issued in various series bearing such interest rates and due dates as the directors may deem advisable. This makes it possible for the company always to have available against its needs for money for additions and improvement prime securities which will meet the demands of the market in which they are to be sold.

Unfortunately even this does not solve the whole problem. One of the most important of the safeguards to the investor contained in modern mortgages is the provision that bonds may be issued only against a certain proportion of the proposed additions. This proportion is generally 75 per cent or 80 per cent. Thus a large amount of money still remains to be raised from the sale of junior securities. Debenture financing is always expensive and is rarely satisfactory, though it may be used as a temporary expedient in times of emergency. The greater part of this money must, therefore, be raised by the sale of stock.

Right here there comes another serious difficulty. Many states have a law which forbids companies to sell their stock at less than par, but if a company must pay over 7 per cent for the money it raises on its mortgage securities, how is it to sell at par a 6 per cent or 7 per cent preferred stock? The answer is obviously that it cannot, and the very difficult situation that has been thus created has finally made legislators in many states consider seriously a plan which economists have been advocating for over a quarter of a century; that is, the issuance of stock of no stated par value. The advantages of this plan are manifold. The shares, like any other shares, are worth exactly as much as the property behind them is worth, but they bear on their face no misleading statements as to their value. Consequently such stock cannot come under the above legal restriction and the company can set it in any market on the same basis which is then current for other securities of the same intrinsic worth. New York has had a no par value law since 1912. Since that time other states have followed New York's lead, and many states now have such laws on their books while similar measures are pending before the legislatures of several others.

THE LOCAL SALE OF PUBLIC UTILITIES SECURITIES

In this committee's last annual report mention was made of the success which many utility companies were making in the sale of large amounts of their preferred and even their common stocks direct to customers and employees. At that time there were pointed out the manifold advantages of such local distribution of a company's securities. In the first place a new security market of by no means inconsiderable proportions is opened up. It has been estimated that since the plan was first adopted about seven years ago over $100,000,000 has been added to the capital of public utility companies from this source. Probably a still greater benefit is the good will obtained. The relations of the company with its public and with its employees are greatly improved. The manager of the publicity department of one company which has accomplished much in this connection stated recently: "Specific instances of improved public relations are many, including a remarkable history of rate increases, the majority of which were obtained without controversy by simply showing the facts. We hear little or nothing of municipal ownership any more at properties where we have home shareholders."

It should, however, be borne in mind that in undertaking the sale of its own securities, a company assumes certain duties and obligations toward the purchasers of those securities. These purchasers, it must be remembered, are mostly people of comparatively small means who are not accustomed to scrutinizing carefully or judging the merits of investment opportunities. To them the utility company has always seemed a financial pillar of strength. In many cases they have considered it, in spite of published figures to the contrary, a veritable gold mine to its owners. To them, the opportunity to buy this stock is an opportunity to share in profits that they have always considered absolutely certain. A careless or unscrupulous company might, in some cases, sell stock that had no real value behind it. This would be a most dangerous practice. Not only would such a company be running the risk of losing the confidence and respect of its local public, but it would be getting back to the same old condition of inflated capitalization which proved so disastrous in the past. It is thus plain that stock which a company expects to market direct should be issued under the same conservative restrictions which would be demanded if the issue was to be made through investment bankers. It should represent actual investment in the property and the price should be in line with the current quotations for securities of a similar class.

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*Abstracted from the report of the committee, presented at the annual convention of the Investment Bankers' Association of America, New Orleans, La., Oct. 31, 1921.

COMPETITION FROM TAX EXEMPT SECURITIES

Tax exempt securities have a direct bearing and restraining influence on the marketing of gas and other utility securities and this is a matter which is now receiving considerable attention. Philip H. Gadsden recently appeared before the House ways and means committee on behalf of the three large utility associations and urged that public utilities be placed in a special class for taxation purposes and also opposed the issuance of any further tax exempt securities. It has been estimated that there are $7,000,000,000 par value of tax exempt securities issued by state, municipal and school governments now outstanding. The continued issuance of tax free bonds of local governments carrying high rates of interest is attracting investors to the detriment of investments offered by private enterprise and agitation for limiting the tax exempt borrowing power of local governments is growing. In public utility circles sentiment is increasing to prohibit the further issuance of tax exempt securities.

WATER POWER DEVELOPMENT AND SUPERPOWER PLANS

One of the most important and interesting developments in the power generating field is the progress that is being made toward the development of water powers on navigable streams, on public lands and on the forest and other reserves. This development has been made possible by the Federal water power bill. The enactment of this law has met with tremendous response from people who seem to be willing to take the responsibility for the development of the potential power made available. Up to June 30, 1921, the commission reported that there had been filed with it applications aggregating 14,675,000 hp. affecting thirty-three states, the District of Columbia and Alaska. This amount is five times greater than the aggregate of all applications with the federal government in the preceding fifteen years. The projects applied for vary in size from less than 100 hp. up to the 3,000,000 hp. scheme of the Southern California Edison Company on the Colorado River. The chief present defect in the act is its failure to provide adequate means for its expeditious administration. In spite of this handicap, the commission has accomplished many things in the first year of its operation.

There is, of course, no possibility of immediate development of all the projects applied for. The market could not absorb the power even if the construction could be financed. But at least there is now available a practical method for a progressive development of water powers, which may be undertaken as rapidly as financial conditions and market requirements will warrant. After many years of obstruction on the part of so-called conservationists, the country has now adopted a program for the real conservation of our exhaustible fuel supplies by throwing upon the indestructible and self-renewing water powers the production of large amounts of motive power.

SUPERPOWER SYSTEMS

Closely allied with the movement for conservation of fuels by development of new water powers, is the movement for conservation through the more efficient use of facilities already in operation. The United States Geological Survey, under the special direction of Congress, has been engaged for the past year and more in a survey of the power resources of the Atlantic seaboard between Boston and Washington, studying the practicabilities and advantages of a co-ordinated superpower system, and certain preliminary estimates made public last spring point out the enormous coal saving which could have been effected in this zone during 1919 if the facilities which are proposed had been in existence at the time. It may be said that to a certain extent the welding of individual systems into superpower systems is already taking place in many localities. The whole question is one which is of great interest to the investment banker, and one in the solving of which he will undoubtedly play a leading part.

THE ELECTRIC RAILWAY SITUATION

During the past year the electric railway situation has shown decided improvement. The facts have proved the truth of the statement that adequate traction service is indispensable to the comfort, convenience and prosperity of any important community. To most of us this principle is self-evident, but in some cases it has taken an absolute breakdown of the system to bring it home to shortsighted politicians who had been exploiting their local companies for selfish purposes. Other communities have profited by the example of their less fortunate neighbors and have lightened their companies' burdens before the breakdown came. In still other instances the situation has been solved by the interposition of a state commission.

The measures for relief have been various. There have been a few instances in which the city has taken over the roads from the company, usually giving in exchange mortgage bonds on the system. This sort of transaction does not, however, in and of itself, solve the problem; it merely transfers to the city the responsibility for making the system self-supporting in the face of excessive wages, high commodity prices and jitney competition. Undoubtedly some municipal authorities will try to take the easiest way out and make up from the city treasury losses caused by a popularly low fare, but it is highly improbable that the taxpayers will allow such an experiment to be long continued.

The steps taken in various communities have, of course, differed in accordance with the needs of each situation. In the first place, there has been a more or less general raise in fares. A summary compiled early in the year from figures supplied by the American Electric Railway Association showed that the traction companies in over 85 per cent of all cities in this country of over 25,000 population were, at that time, charging fares which ranged from 6 cents to 10 cents. Among the ten largest cities of the country, New York was the only one which still retained the 5-cent fare. Many companies have obtained relief from burdensome paving obligations and other forms of special taxes. In particular, it is becoming generally recognized that unregulated bus competition is not only unfair to the street railways, but is in the long run positively detrimental to the best interests of the public. There is of course, a legitimate field for the buses. Used properly their flexibility makes them most valuable as feeders to bring to the car lines riders from sparsely settled outlying districts that are just opening up. This function they can probably fulfill most efficiently and economically when operated as an integral part of the railway system; at the very least, they should be subjected to the same country as are the other transit facilities in the community. It is most gratifying to note that many states, notably Connecticut, have taken a firm stand in putting all public carriers under the Public Service Commission and requiring all such carriers to secure a certificate of convenience and necessity before beginning or continuing operation.

None of these remedies, however, will cure an over-capitalized company. Such situations must be cleaned up from their very foundation. In these cases, an actual valuation should be made and the capitalization of the company adjusted to a real basis of the property's worth. A new franchise should be obtained embodying such provisions as are necessitated by the needs of the particular situation. Enlightened opinion is coming more and more to favor the so-called service-at-cost franchise which provides machinery for adjusting the rate of fare to insure an income sufficient to provide for all operating expenses, adequate maintenance and depreciation and the interest and dividends which represent the wages paid to capital actually invested in the business. In what is possibly its best form the service-at-cost franchise provides also for a premium on efficient management in the form of a rate of return becoming progressively higher as fares are reduced.

In addition certain factors in the general economic situation have been of material assistance to electric railways. There has been a slight but actual reduction in wages. It is estimated that the average wage index in August, 1921, was 218 as compared with the peak of 232 in September, 1920, and 100 in 1913. To the railways with their large bills for platform labor, this has been a material saving. For example, it is estimated that the recent 10 per cent cut in the wages of the employees of the Interborough Rapid Transit Company means a reduction of $2,600,000 in that road's operating expenses during the coming year. A particularly encouraging feature of this wage reduction is that, for the most part, it has been effected by individual negotiations on the part of each road and without great friction. This can only mean that the employees are taking an added interest in the welfare of their companies which may prove to be a deciding factor in the avoidance of future labor troubles. Reduction in the cost of materials has not been so general. Particularly in manufactured articles, such as cars and car equipment, it has almost been negligible, but in some materials which have a very general use, such as copper, the decreases have been marked.

COMMISSION REGULATION

The state regulatory commissions were originally created to place a curb on the utility operators in their supposed exploitation of the public. At that time there was a general feeling, which still persists to a limited extent, that such restriction upon private enterprise would discourage the investment of further capacity in the business and would prevent its proper and necessary development. The critics of regulation, however, seem to have under-rated the spirit of fairness with which the commissions took up their work. Hardly had regulation become an established fact when the war broke out. Within a few years rising wages and commodity prices had so increased operating expenses that many utilities were losing money. The commissions, however, realizing the fundamental necessity of maintaining the utility industry in the best possible condition, were fair in recognizing the necessity for increased rates.

This was not, of course, what the demagogues and politicians had counted on and numerous attempts ensued to arouse popular opposition to the regulatory bodies. In at least two states the gubernatorial elections last fall were fought, and won, on platforms calling for the abolition of the commission. So far as can be learned, however, there is no general public demand for the abolition of state regulatory bodies. In the two cases mentioned above, the campaigns were strongly affected by national consideration. In one of these states the candidate who stood strongly for regulation sent a telegram to the governors of all the other states asking for their opinions in the matter. He received thirty-six replies. The wording of those replies, of course, differed but in their substance all were in fundamental agreement with the statement from Massachusetts, that the commission had proved its usefulness and was here to stay.

PROPER METHOD OF VALUATION STILL UNDETERMINED

There are, to be sure, many problems which have not yet been solved. One of the most important of these is probably the adoption of a uniform and comprehensive scheme for the valuation of utility properties. There is an almost universal tendency to restrict the right of utility companies to earn more than a stated return on the present value of their properties as going concerns. It is thus of the utmost importance to the investment bankers that they be able to form some idea of what valuation will probably be placed by the commission upon a property, in order that they may judge to what extent the securities of the company may be safely issued.

As yet the question remains in a chaotic condition. The various commissions have contributed little helpful thought on the subject, due largely to the limitations of the cases presented to them and the fact that counsel when appearing before them have felt that they must be guided by the peculiar exigencies of each case, and not attempt to present the subject of valuation beyond its relation to the particular case under consideration. Strictly on its merits, therefore, neither angle of the question has obtained a full presentation. Public utility operators have very varying views on the subject and engineers are more or less hampered by the varying purposes for which they are asked to make valuations. Replacement value seems still to be the best guide the investment banker has as to the value of properties for loan purposes, provided always of course that the properties are reasonably productive, are permitted to earn a fair return on the cost of reproduction, and have been reasonably maintained. This method has its serious drawbacks. By reason of the changes wrought by the war the prices to be used in figuring replacement values have become a new and very difficult problem. At best this method is only what has been aptly termed an "intelligent guess," but it is perhaps the most "intelligent guess" that has so far been arrived at. Perhaps in time the commissions may evolve a new and better system. It is a question of the utmost importance to investment bankers and one which should receive their earnest attention. A sub-committee is studying this question and will report on it shortly.

Many other problems are constantly coming up for solution. With the readjustment of commodity prices has come a temporary lowering of costs of labor and essential materials, but it is as yet by no means certain that this is not a mere temporary condition so far as the utility business is concerned. It is, therefore, necessary to these utilities that they be allowed to maintain their present rates to cover previous losses in operation and to re-establish a credit for the carrying on of the large construction program which has been deferred for the past four years.

It is gratifying to note the acceptance of these facts by the regulatory bodies, and a far better understanding by them of utility problems. The regulation of utilities is upon a broader and more comprehensive basis with wider recognition of the influence of fair treatment leading to the profitable operation of the utility upon the welfare and development of the community served.

CONCLUSION

It will thus be seen that the public utilities have come satisfactorily through a year of general depression and that during the year progress has been made by the various groups affected by the industry—operators, investors and the public served—toward a more complete realization of the fundamental unity of their interests. In particular the state commissions are arriving at a steadily clearer understanding of utility problems and are rendering valuable assistance toward their solution. All these factors have tended to increase public confidence in the industry and public utility securities are returning to their old favor with investors.

Subways for City Transportation*

When a Rapid Transit System Becomes Necessary—Relative Advantages of Subways and Elevated Railways—Facts About New York System

By ROBERT RIDGWAY
Chief Engineer Transit Commission, State of New York

RAPID transit systems for cities are comparatively modern institutions and are the result of the phenomenal growths of urban communities during the past seventy-five years. In the smaller cities of a century ago there was nothing in the conditions to require local rapid transit, so, of course, no one gave much, if any, thought to the problems which were to vex the descendants of the more placid folks of those days except the few persons, always found in every community, who are gifted with a far-seeing vision into the future. Merchants and other business men of the small town or village of the past lived within walking distance of their shops and offices. This, of course, was before the days of the automobile. As the community grew in size and the distance between home and office became too great to walk morning and evening tramcars and omnibuses were considered sufficient to take care of the transit needs. The trend to the cities resulted in the wonderful growths indicated by the census figures of the past eight or ten decades and then the question of rapid transit began to be discussed. New York, being the largest of our American cities, naturally felt the urge first, and soon after the ending of the Civil War the agitation began which still continues and which, on account of its importance to the people, has often been made the political issue of municipal campaigns. It is one of the leading issues at the present time and has been and is being widely discussed from every possible point of view.

Every man is intensely interested in the local transit facilities of his city because they affect his comfort and convenience so intimately and because any of their defects or shortcomings are so apparent to him. He remembers that he had to wait for his subway train and was obliged to stand in discomfort all the way home when he ought to have had a seat. Water supply and sewage, while quite as important to his well being, have a relatively mild interest for him so long as the sewer does not become choked and back up into his cellar and wholesome water flows when the faucet is turned. The water supply structures and the sewers are out of his sight and he does not think of them until they fail to function properly. Few citizens think of what they cost or whether they are well designed and honestly constructed.

If the transit system of a city could be established before the population arrived, the city plan would in many cases be very different from what it now is. Whether better or worse would, of course, depend upon the wisdom and far-sightedness of those who did the planning, but it is impossible to look far into the future or to foresee the advance in the art of construction and the revolutionary changes which take place from time to time in the methods of transportation. Who in New York a century ago would have believed that the wide river separating Manhattan Island from Long Island would be bridged and tunneled as it has been since that time or that electric traction would have been developed to the state it has reached today? I am afraid if an attempt had then been made to lay out a rapid transit system to fit our present needs the experts would have made a sad mess of it because they would have had to deal with too many unknown factors. It is not wise to design transportation systems or other utilities for the needs of a time too far ahead. Railway structures and equipment, like battleships, become obsolete, and then, in part at least, are liabilities rather than assets, except the right-of-way, which in nearly every case retains and generally increases in value.

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*Abstract of paper presented at the annual convention of the American Society for Municipal Improvements, Baltimore, Oct. 28, 1921.

RELATIVE MERITS OF SUBWAYS AND ELEVATED RAILWAYS

Subways have the great advantage of being out of sight. After they are built they permit the streets under which they run to be used to the fullest extent. Operation in them is noiseless to those on or above the street surface, and they do not obstruct light, air or access to property. While it is not as pleasant to travel below the ground as above it, train operation in subways is not affected by weather conditions and when the stations are located at shallow depths they are very convenient of access. Subways have the effect of materially enhancing real estate values in the portions of the city they serve, particularly in the vicinity of stations. The principal argument against them is the cost, which from New York's experience is from four to five times that of a steel elevated railroad of the same capacity.

Prior to the war, New York's subways cost to construct, including track, stations and other appurtenant work and including also the maintenance and underpinning of abutting buildings and the maintenance and restoration or reconstruction of surface and sub-surface utilities, but excluding the furnishing and installation of third rail, signals, lights and other equipment, from $700,000 per track-mile in an outlying portion of Brooklyn to $2,500,000 per track-mile in a very congested section of lower Manhattan. Similar costs at pre-war prices for a steel elevated railroad were about $275,000 per track-mile for a three-track line and about $235,000 per track-mile for a two-track line. These costs would be much greater at the present time. To put it in another way, a given amount of money for rapid transit construction would build from four to five times as much elevated line as subway. With these facts in mind it would seem that subways, notwithstanding their many advantages, must be confined to the congested portions of a city, using elevated structures or open cuts for the extensions into the less congested and outlying parts. It is a fact that other considerations than financial ones sometimes govern. For instance, an elevated railway could be constructed in the narrow street of the most intensely used business section of a city for a fraction of the cost of a subway, but public opinion might not permit it to be built there and might insist upon having the subway notwithstanding the much higher cost.

Few cities have subways, largely because they are so costly to build. New York, I believe, has a greater mileage of them than all other cities of the world combined because conditions there are such as to make subways necessary for the large, intensively developed areas.

Compared with subways, elevated railroads are simple to construct and can be built in far less time. In normal times, an elevated structure can be finished ready for track in from eighteen to twenty-four months of the date when work in the field is begun, and the discomfort to the public and interference with traffic on account of the construction confined to a small part of this period. The disturbance of the street surface and of the utilities underlying it is relatively slight. With a section of a subway on the other hand, from three to four years' time is usually required for construction and, except where it is at such depth that the work is done by tunneling methods, it requires generally the entire reconstruction of the street and of the sewers, water and gas mains and other structures beneath it.

An analysis of fifty-seven subway contracts showed the total expenditures on account of them to have been distributed as follows:

Item of Work	Percentage of Cost
Earth excavation	25.6
Rock excavation	15.9
Concrete	14.0
Riveted steel, furnished and erected	7.4
Rolled steel, furnished and erected	7.2
Steel rods, furnished and erected	1.0
Underpinning buildings	6.5
Supporting existing railroads	2.7
Construction of new sewers	3.8
Relocating pipes and ducts in street	2.8
Waterproofing, railroad ducts and miscellaneous work	13.1
Total	100.00

RAPID TRANSIT SYSTEM IN NEW YORK

It is not within the purview of this paper to go into the details of these contracts, which are of such importance to New York City and which have been and are being discussed so much, both favorably and otherwise. It is of interest, however, to know that the cost of constructing the dual system will be, when completed, over $400,000,000 and of equipping the lines and improving and extending the companies' own lines over $180,000,000. These costs include the city-owned lines built between 1900 and 1913, but do not include the extensive companies-owned lines constructed prior to 1913. About one-quarter of the construction cost and all of the equipment cost are borne by the two operating companies, and the two systems will include, when completed, approximately 70 miles of subway, 17 miles of railroad in open cut below street grades and on embankment, 126 miles of steel and concrete viaducts and bridges, a total of 213 miles of railroad and 619 miles of single running track. All but 10 miles of this total mileage of railroad is in operation.

The number of passengers carried by the dual system; that is, the rapid transit lines, for the year ended June 30, 1921, amounted to over 1,418,000,000. The average on business days is about 4,172,500 and the maximum for one day was about 4,929,000.* These figures are exclusive of the passengers carried by the surface lines, the bus lines and the suburban services of the trunk line railroads. The following table indicates the ticket sales at some of the more important subway stations of the congested zone:

ANNUAL TICKET SALES FOR YEAR ENDED JUNE 30, 1921

INTERBOROUGH RAPID TRANSIT COMPANY
(Borough of Manhattan)

Portion of original subway on lower Broadway and Fourth Avenue—now part of the new Lexington Avenue Line.

Stations	No. of Tickets Sold
South Ferry Station	1,732,200
Bowling Green	6,961,700
Wall Street	9,435,100
Fulton Street	14,803,100
Brooklyn Bridge	15,238,000
Fourteenth Street	15,862,000
Forty-second Street (Grand Central)	28,970,900
New Seventh Avenue Line	
Wall Street	9,584,100
Fulton Street	4,190,210
Park Place	4,525,800
Chambers Street	6,487,500
Fourteenth Street	10,093,000
Thirty-fourth Street (Penn. Station)	23,071,850
Forty-second Street (Times Square)	29,568,260
Borough of Brooklyn	
Borough Hall	9,945,100
Atlantic Avenue	19,929,720

The intensively developed portion of New York is beyond question a subway district, but the roads are taken out of the ground as the outlying or less congested portions of the city are reached, and the extensions are carried on elevated structures.

The stations are of the local and express types. The local stations are located from ¼ to ½ mile apart and the express stations usually at longer intervals, generally from 1½ to 2 miles apart. The typical local station has side platforms and those of the express stations are usually between the local and express tracks. In the Interborough Subway the platforms of the express stations are about 480 feet long to accommodate their ten-car trains, the cars of which are 51 ft. 2 in. long. The platforms of the original local stations now accommodate six-car trains, while those constructed within the past ten years are designed for the full ten-car trains. The cars of the Municipal Railway Corporation are 66 ft. long and the platforms of their local and express stations are now made 530 ft. long, to accommodate eight-car trains.

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*This occurred in February, 1920, on the occasion of a snowstorm which partially tied up surface car traffic and thus increased subway traffic.

Recent Association Bulletins

THE Bureau of Information and Service of the American Electric Railway Association has prepared the reports mentioned below during the past month, and they are now available to member companies upon request: (1) A brief summary of the causes that brought companies into the hands of receivers; (2) a new compilation of cities in which fares have been changed, showing population, cash fare, ticket rate, date of change and number of fare changes granted; (3) a summary of the replies to a questionnaire of the committee on economics of schedules explaining methods of fixing running time; (4) a statement of the policy of public utility commissions in the various states in regard to the issuance of school tickets; (5) month by month statement of electric railway revenues and traffic for the first nine months of 1921 compared with 1920.

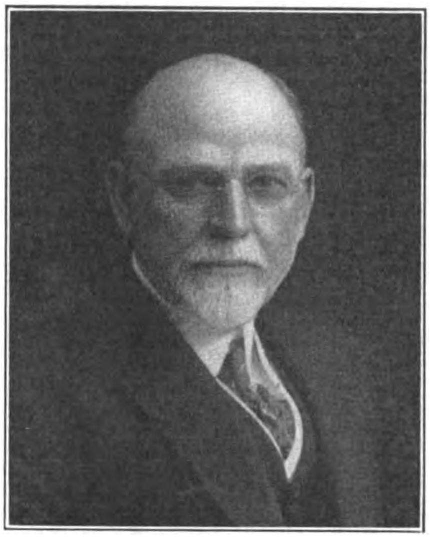
Mr. McGraw Discusses Business Revival

At the Annual Meeting in Chicago of Associated Business Papers He Points Out How the Business Press Can Help

"THERE are two great classes in the world today—those who look on the world in chaos and see no hope for the future and those to whom the world disaster is but an inspiration for greater effort. I am putting the business papers in the latter class.

"Some one has pointed out that there are people who liken existence to life in a squirrel cage—eternal movement and eternal sameness—but the leader of today is the man looking straight ahead with new thoughts or with new vision of old thoughts. The business publisher as never before must grapple with the great problems before us, with new thought and new vision of world conditions confronting us in order that they may be solved and harnessed for the welfare of humanity."

With these words James H. McGraw, president McGraw-Hill Company, Inc., began an address on "What Business Papers Can Do to Speed the Revival of Business" at the annual convention of the Associated Business Papers, Inc., at Chicago on Oct. 24.



JAMES H. McGRAW
President McGraw-Hill Company, Inc.

Mr. McGraw then outlined briefly the business situation in Europe and America, told how intimate the connection was between the business condition in each and criticised the inaction of Congress on pending legislation for part of the uncertainty in which business men find themselves as regards future development. Continuing, he said, in part:

"Each of the situations referred to has a present-day bearing on American business. What is more, some of them will determine how America is to do business for many years in the future. If American business is to function up to the new position that has come to it during the war, and that necessarily follows from the fact that the center of world finance and of world influence has shifted to our shores, these governing conditions must be interpreted in terms of their influence on every industry. We may become, if we have but the knowledge, the foresight and the energy, what England has long been—the market center of the world. But we can take this position only if we have a race of business men equal to the occasion—a race worthy of a world-wide commercial dynasty.

"How shall American business men get this conception, how shall they rise to this opportunity unless the business press carries the message to them in each issue, strong with knowledge of the situation and its bearing on American business, convincing in the wisdom of the remedies it suggests, invincible in the enthusiasm and courage it displays? It is no job for weaklings, but for the broadest-gaged man that the country commands. It will not be accomplished by editors chained to their desks, nor by mere reporters nor by publishers who are bearish on America's future. It can only be accomplished by broad vision and the gospel of work.

"We must help mobilize American opinion on the stabilization of European currencies. We must not be squeamish in demanding whatever rearrangement of the German reparations may be necessary for the stabilization in Germany—realizing that a stable Germany is essential to a normally functioning economic world. When Russia comes back, as she must, when the other weakened powers are in a position again to buy in normal quantities, the business press must picture the opportunity and be the apostle of whatever credit structure is necessary to bring these nations again into the world economic family. As to every other factor in the European and the world situation, business papers must rise to the occasion and see to it that American business has a wise and courageous policy.

"Studying the problems that are closer to home, we find many avenues along which business papers can work in speeding the revival of business.

"War breeds extravagance. In spite of the noble ideals which inspired this nation to take up the great conflict across the seas, the inevitable result was the accumulation of innumerable wastes and habits of extravagance. We could not help it, but we must overcome the habits and tendencies which were developed throughout our entire social and industrial fabric by that terrible conflict. As a tangible example of what can be done, Herbert Hoover has focused the attention of industry upon the unnecessary wastes which are sapping the vitality and reducing the productivity of our nation.

"We are appalled when our attention is called to criminal wastes of life through accidents and negligence, the prodigal waste of our natural resources through underdevelopment or political chicanery, the prodigious waste of materials through mismanagement and inefficiency. But of all the wastes which affect our happiness and prosperity, the waste of time and human effort is the greatest and has the most damaging influence. If the business papers collectively and individually can instill into the minds of the thinking men of industry the gospel of intelligent work, we will have performed a tremendous service. Never has there been such an opportunity. Never were our industries more in need of help. Never would they be more grateful for true and full pictures of conditions for wise counsel, and courageous leadership, as a result of unselfish devotion.

"To do all this costs money. Men who can dominate an industry, be they editors or publishers, are not to be held with paltry salaries or poor prospects. Such men are in demand by the aggressive businesses of the country. Not only are the requisite leaders high-priced men, but they must be equipped with competent staffs. A man who is out in the forefront of an industry cannot be burdened by desk detail.

"It is evident then that the business papers need larger incomes. We need them not that our own pockets may be lined with profits but that we may turn back into American business a degree of service which in turn will be a fruitful developer of our industrial and commercial life. This is a time when we should think how much we can give rather than how much we can get. We should give all that we can first, hoping there will be a margin of profit. This is a time for more patriotism, for greater leadership and for less selfishness. The business papers must make the first investment, living up to this thought. With the opportunities that are ours today, the watchword must be: Dividends small; Service large. We must be bulls on American business and not fear to make an investment in the affections and confidence of American business men. If we extend help to American business when it is down, if we help to bring it up, we can safely count upon a full reward when the sun of prosperity shines.

PUBLISHING DIFFICULTIES

"I am fully mindful that while I am urging this wider service, we ourselves are under fire from American business. Prices are falling in many lines and American business demands that we, too, reduce prices, reduce our advertising rates. This demand, we business publishers know, is not justified. Business papers did not profiteer nor did they raise rates during the war in proportion to their increased costs. By rigid economies and reduction of profits they held off their rate increases until their properties went into red ink or the certainty of red ink was just ahead. Then, much belated, our rates were moderately increased, but those increases were small compared with the increases on other products. Meanwhile, the standards of our service to the American business had been constantly raised. The war has forced us all to higher journalistic levels, and today the services which we are rendering our industries are incomparably greater than they were before the war.

"It is to be hoped that our mechanical costs of production will be lowered and we shall receive more per dollar for printers' wages, but, even should those decreases come, the larger margin that would thereby be left between gross revenue and operating expenses is sorely needed right now to bring the business papers to a level equal to the great opportunity for service which I have tried to picture. With all business papers raised to a proper plane, we would return to American industry a hundredfold whatever margin may come to us between gross revenue and the hoped-for reduced operating costs. In other words, the added revenue will not go to dividends but into better service to readers and advertisers."

CO-OPERATION AND A BROADER VISION

Mr. McGraw then pointed out how business publishers could co-operate to a greater extent than they are now doing so as to give better service. He concluded his address in the following words:

"I will not attempt to recount all of the factors which enter into the problem of adjustment which is before us. But I do want to bring a thought before you, which is given in the words of Thomas Hughes:

> Who has the clearest and intensest vision of what is at issue in the great battle of life, and who quits himself in it most manfully, will be the first to acknowledge that for him there has been no approach to victory except by the faithful doing day by day of the work which lay at his own threshold.

"In brief, I bring to you as leaders of thought among thinking men that what this country needs more than anything else is to learn anew the gospel of work. Intelligent work, untiring work, work in its most homely sense. We cannot talk ourselves into prosperity. We cannot argue ourselves into stability, but we can work ourselves out of the valley of depression and up to the heights of plenty. We can do these three things.

"First, everybody get busy at his present task, and make the most of it.

"Second, everybody consider winning the peace in the same spirit as characterized the winning of the war.

"Third, the business papers, by article, editorial and personal service, show that selfishness has now no more place than in war time. That interest in the welfare of all men, individually and as society, lies at the basis of prosperity.

"In conclusion, let me say, we must consecrate ourselves to giving a full measure of the best service we have within us. As a nation, and as publishers, we must quit our petty quarrels and arguments and devote ourselves to the tasks that lie before us. We had to fight and destroy to win the war. We will have to work and build to win the peace. The first nation that gets hold of the idea that the only salvation comes from work will come out on top and really win the peace.

"The business papers have an opportunity such as has never come to them before, to direct the thinking of industry into sane channels. Let us demonstrate by our own untiring efforts to serve and by our diligence in meeting the problems of the day that we have accepted the gospel of intelligent work as the big step in speeding the revival of business."

American Association News

Executive Committee Meets

The first regular monthly meeting of the executive committee of the American Association was a well attended, busy one at Association Headquarters Friday, October 28. If the first meeting of the committee is typical, the adoption of the monthly meeting plan suggested by President Gadsden will prove of great value to the association on account of the close touch and active management which the executive committee is thus enabled to give to its activities.

Executive Secretary Welsh presented a report concerning the membership of the Association as of October 28, 1921, compared with October 31, 1920. A total loss of two railway companies and 12 manufacturer companies is indicated. Since the meeting of the executive committee on August 5, the following members have been added:

Railway Member: Danbury & Bethel Street Railway Company.

Manufacturer Members: Witherow Steel Company, Copper Clad Steel Company, Loes & Dilworth, United Lead Company, Lowe Brothers Company.

The membership committee will take up with members who have suggested resigning from the association the question of their continuing.

In consideration of the mid-year conference, the executive committee decided it would be advisable to have it in Indianapolis at the home town of the president, Mr. Todd, and a committee of five was authorized to make preliminary arrangements.

The report of the publicity committee was submitted by Mr. Storrs for Mr. Collier, the chairman, who could not be present. This report embodied the principles suggested by Britton I. Budd at the convention, that the executive committee take direct and personal action with reference to the greater use of publicity and the more extended use of the Advertising Section of the Association throughout the industry. The committee reported that an arrangement had been made between the committee on publicity and the *Aera* advisory committee, now the publications committee, for the conduct of a regular publicity and advertising section in *Aera*, and between the Transportation and Traffic Association and the publicity committee for the carrying out by the advertising section of suggestions made by the safety and merchandising transportation committees. The executive committee approved the report, as well as the suggested form of letter.

On recommendation of the Transportation and Traffic Association, submitted by its president, L. H. Palmer, the executive committee approved the action of the T. & T. Association, with reference to adopting the freight classification prepared by the joint committee of the T. & T. and Accountants Associations. The T. & T. Association had recommended that companies put into effect for the calendar year, 1922, this standard classification, so that sufficient data would be available at the end of the year to furnish a clear idea of the cost of handling freight.

The next question to come before the committee was the application of the new constitution to the status of individual membership of men employed by municipalities in railway work. After much discussion, the interpretation which the reorganization committee and the previous executive committee had intended to be made on the phrase "except that officers and employees of non-member companies shall not be eligible to election as individual members" be retained. This is understood to mean that the term non-member companies should include municipalities or municipal railways, not members of the association, as well as private railways not members of the association. Discussion hinged on the point that municipal railways cannot become members.

J. H. Pardee then presented the report of the Finance Committee showing an audited statement for the first 11 months ending September 30, 1921, with estimated expenditures for October. This report showed, as of October 31, 1921, a balance sheet of $28,955, of which $7,149 is cash. Comparative financial statements for 1920 and 1921 were also given, showing the present operation to be on a more efficient and less expensive basis.

On recommendation of the Finance Committee, the Executive Committee adopted a series of resolutions necessary to put into effect the provisions regarding the handling of moneys and safe-guarding of funds contemplated by the new constitution.

The question of trackless transportation being up as a result of a communication from an outside body, the executive committee decided to ask the Engineering and the T. & T. Associations to appoint committees to co-operate with the American Association committee on trackless transportation to work under the guidance of the latter.

A communication from the Engineering Association, submitted through its president, C. F. Kimball, brought up the question of employing an engineer at Association headquarters to take care of the technical and statistical work of the association in which the Engineering Association is particularly interested and to assume some of the duties which Executive Secretary Welsh has had to relinquish since he took up executive duties. Both this question and Mr. Kimball's reference to the possibility of paying certain expenses of committees in order to get greater committee activity were referred to the Finance Committee for recommendation.

In accordance with the constitutional provision that the executive committee should authorize special committees, if necessary, the committee took action authorizing the following committees: *Education*—co-operation with educational institutions. *Electrolysis. Excess profits tax. Mail pay. Trackless transportation. Valuation.*

The committee also authorized a special committee of five with E. F. Wickwire as chairman, to enlist the co-operation of all manufacturers in line with the policy Mr. Wickwire outlined in his speech at Atlantic City. This committee was to act under the general advice of the Public Policy Committee. The committee also authorized the continuance of representation of the American Electric Railway Association on the joint committee of National Utility Associations.

On account of the fact that the fourth Friday in November comes, this year, immediately after Thanksgiving Day, the executive committee decided to hold its November meeting one week later, Friday, December 2, at Indianapolis.

The following members of the executive committee were in attendance at the meeting: R. I. Todd, president; C. D. Emmons, J. N. Shannahan, F. R. Coates, F. E. Webster, L. H. Palmer, R. P. Stevens, W. H. Sawyer, H. G. Bradlee, John G. Barry, C. R. Ellicott, Samuel Curwen, L. E. Gould, George Tontrup, Lucius F. Storrs, W. Caryl Ely, C. L. Henry, J. H. Pardee and the executive secretary, J. W. Welsh.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Galveston Case Significant

Supreme Court at Washington Will Hear Rate Case in Which Confiscation Is Alleged.

The Supreme Court of the United States on Dec. 5 will hear the appeal in the case of the Galveston (Texas) Electric Company vs. the City of Galveston involving the validity of the ordinance enacted by the city of Galveston abolishing the 6-cent fare and restoring the 5-cent fare on the railway lines in the city. This case has been long in the courts and the company has appealed to the court of last resort for a decision.

This litigation has an interesting history. It began when the Galveston Electric Company announced that fares would be increased from 5 cents to 6 cents, claiming the right under terms of its franchise to charge whatever fare it deemed necessary to meet operating costs and provide a fair return on its investment. The 6-cent fare was maintained for a time until the city could take action to declare the 6-cent not justified and to enact an ordinance restoring the 5-cent fare. The traction company then went into the federal court, claiming the 5-cent fare confiscatory and asking relief therefrom under the Federal statutes. The traction company asked an injunction restraining the city of Galveston from enforcing the 5-cent fare ordinance. Judge J. C. Hutcheson of the United States District Court for the Southern District of Texas at Houston appointed Judge Dannenbaum of Houston as master in chancery to take evidence touching the company's invested capital, operating costs and revenues, and report thereon.

Judge Dannenbaum conducted an extensive investigation in Galveston, and as a result recommended to Judge Hutcheson that the 6-cent fare be allowed, his finding being that this fare was necessary to provide operating expenses, depreciation fund and yield a return of 8 per cent on the fixed valuation of the property.

Judge Hutcheson, however, disagreed with the findings of the master and rendered final decision in the case, holding that a 5-cent fare provided adequate return on a valuation which he placed below that found by the master, and refusing to grant the injunction sought. This was on Feb. 10, last. Attorneys for the company at once set about to take the case to the Supreme Court on appeal, and an order was entered by Judge Hutcheson in his court on May 30 granting right of appeal to the Supreme Court on a writ of error.

The assignment of errors on which the appeal was based set out eight instances in which it is claimed the court erred in ruling favorably for the defendant, the city of Galveston, chiefly in sustaining exceptions to the findings of the master in chancery appointed to place a valuation of the company's property for rate-making purposes.

Both the finding of the master, and also the approval of the court in regard to establishing of the present valuation by adding 33⅓ per cent to the pre-war cost of the plaintiff company's property for rate-making purposes, is set out for error.

As another reason assigned for error, it is contended that no actual period of operation was taken in which to test the desirability of the ordinance and fix operating costs. "On the contrary," it is set out, "it was assumed that the revenue for the year ending June 30, 1921, would be twice the revenue for the six months' period ending Dec. 31, 1920, and that operating expenses for the year ending June 30, 1921, would be the same as for the year ending June 30, 1920."

Deferred maintenance, which accrued during the war period, it is contended, was not given proper allowance. The court allowed $70,000 yearly for maintenance, it is stated, when "the evidence adduced" showed $104,000 as the normal charge.

It is also assigned for error that the master, having found 4 per cent per annum as the proper allowance for depreciation, applying same to present fair value of depreciable property as found by him, the defendant excepted and the court sustained their exception, "thus excluding from the fair value as found by the master all overheads and various other items included therein, resulting in annual depreciation allowance of $45,240 in the place of $66,824.40, allowed by the master."

Certain sums allowed by the master as part of base value for rate-making purposes as proper, for brokerage, to which defendants took exception and the court sustained them, are assigned as error.

The sum of $200,000 was the amount the master allowed for rate-making purposes for going concern value, it is stated, whereas the defendant's exception to this valuation was sustained by the court, the plaintiff holds, erroneously. Exception was also taken and erroneously sustained, it is claimed, to the amount of income taxes, $16,254, paid during the year ending June 30, 1920, which the plaintiff holds the master properly allowed as operating expenses.

$139,750 in Penalties Sought

An action to recover $139,750 from the International Railway, Buffalo, N. Y., has been started by the city of Buffalo as a test case to determine whether the municipal authorities or the Public Service Commission has jurisdiction over the service rendered by the railway. The suit is brought to recover alleged penalties for failure to operate owl cars on a half-hour schedule on one local line as required under the company's franchise agreement. The railway contends that it complied with an order of the Public Service Commission when it stopped owl service on certain lines and that the city is without authority to restore the owl service.

Fare Adjustment Asked

Public Interests Outweigh Investment and Chartered Rights, Says Connecticut Utility Commission.

The Connecticut Company trustees are being urged to try a 5-cent fare in Bridgeport by Chairman Richard T. Higgins, the other members of the commission concurring. This is the latest move for reduced fares in Connecticut. It has followed closely the development in Norwalk referred to elsewhere in this issue. On Nov. 10 the commission will hold a hearing on the petition of the city of Bridgeport asking for a fare reduction.

Chairman Higgins in a letter to the trustees of the company points out that the city of Bridgeport is the critical point in the State from a street railway transportation standpoint and that unless there is a change in trolley car rates there the commission will be forced to grant additional jitney routes. The trustees take the stand that the lines of the company should be treated as one unit. Salient features of Chairman Higgins' letter are:

1. That the commission has very materially eliminated unfair and destructive jitney competition.
2. That the investment and chartered rights of the company must be subordinate to the paramount interest of the public.
3. That the company should be prepared to adapt itself to changing conditions.
4. That the habit of riding should be promoted by the rendition of cheap and frequent service.
5. That the operating revenues and expenses of each division should be kept separate, thereby permitting an adjustment of rates for each such division.
6. That the methods of transportation must conform to economic conditions.

Chairman Higgins' letter to the trustees expresses the attitude of the commission on the critical condition now existing and confirms the belief that conditions have changed materially since the high rate was made effective; also that the 10-cent rate is more than the traffic can bear.

About the time the letter was written President L. S. Storrs informed the trustees that the company had derived a net income of more than $1,000,000 in the first few months of the year.

In a reply to the commission Judge Walter C. Noyes, chairman of the company's federal trustees declares that by granting a fare reduction in Bridgeport, the unity of the system would be destroyed. He expresses the hope that next spring the trustees will be in a position to consider a change that will effect the entire system.

Judge Noyes, writing under date Oct. 25, informed the commission that if it ordered a 5-cent fare in Bridgeport the trustees will see to it such order is fairly and fully complied with.

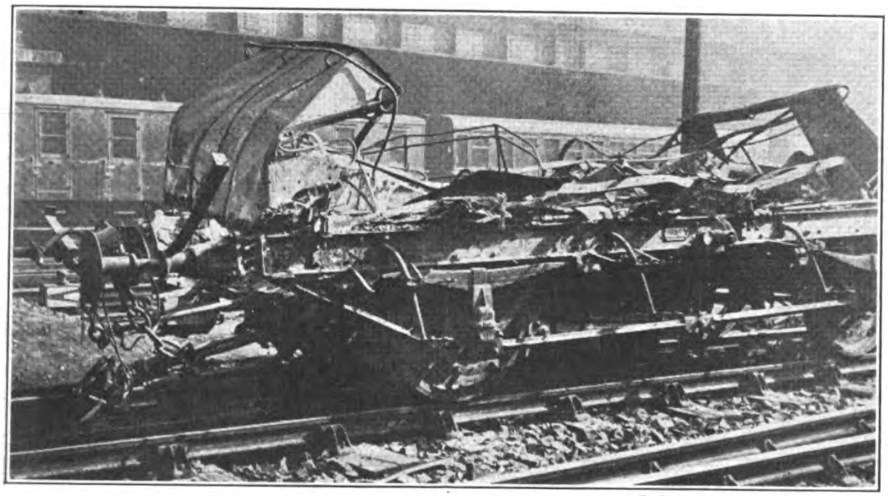
Railway Asks Relief.—The Muskegon Tracton & Lighting Company, Muskegon, Mich., through its directors, has applied to the City Commission for assistance in its financial difficulties. In a letter addressed to the Commission the company reports losses for four months amounting to $18,772.

Provisions of New Franchise Being Considered

The city of Houston, Tex., is considering provisions of the new franchise which is to be negotiated with the Houston Electric Company. This action is made necessary by the recent rejection by the voters of the city in the referendum election on the franchise which had been submitted by the traction company. City Attorney Sewell Meyer has proposed to the City Council that the company should first be required to establish a flat 6-cent fare in the city or issue books of twenty tickets for $1. The City Council has taken its recommendation under advisement, but has made no announcement as to whether it would be included in the new franchise provisions. The Mayor and members of the City Council have said that the first consideration in framing the new franchise will be service, and that the company will be bound in such a manner that service must be given.

Paris Subway Wreck Kills Forty

Forty persons were killed and a hundred were injured recently when two suburban trains of the Paris subway system collided in the Batignolles tunnel near the St. Lazare station. Both trains were crowded and the coaches caught fire following the crash. Many were burned to death.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THE REMAINS OF ONE CAR WHICH FIGURED IN THE PARIS SUBWAY WRECK

Trackless Trolley Advocated by Street Railway Director

Charles R. Barnes, street railway commissioner at Rochester, N. Y., is an open advocate of the trackless trolley. He has recommended vehicles of this type to the City Council for use by the New York State Railways for crosstown service. At the same time that this proposal was made permission was sought to extend the existing electric railway tracks on Clinton Avenue north from the present terminus at Norton Street to the Ridge Road.

Mr. Barnes stated that both he and President James F. Hamilton of the New York State Railways had decided after investigation that trackless trolleys were most suitable for such crosstown service as Rochester needs. The commissioner of railways emphasized the immediate necessity for such service and asked for investigation of the plan. His communication was referred to the committee on law. In presenting the matter Mr. Barnes said:

> While the president of the railway and I have come to the conclusion that the trackless trolley is the means best suited to supplement the present trolley system in this city, its adoption is such a radical change from prevailing methods of transportation and so important, that I feel before final action is taken that it should be fully discussed and an opportunity given to all interested to express their views on this subject.
>
> Therefore, I would respectfully suggest that this communication be referred to some committee of your honorable body for that purpose.

Municipal Railway Construction Praised

Frederick Boeken, superintendent of the San Francisco (Cal.) Municipal Railway, recently made a tour of inspection of Detroit's municipal street railway lines. Mr. Boeken was passing through Detroit on his way back to San Francisco after having attended the recent convention of electric railway men in Atlantic City.

In view of the way in which Detroit is committed at present to a program of municipal ownership of its railway lines the daily papers there were quick to seek out Mr. Boeken for an expression of opinion as to the lines now being built there and for comment on the progress in municipal operation that has been made in San Francisco. He is quoted by the Detroit *News* in part as follows:

> You will probably hear much criticism of the small safety cars—at first. But don't let that disturb you. Both from experience and hearsay I know the one-man cars give excellent service and meet every demand of the public. I saw one of the Peter Witt type of large cars which the local municipal lines will use, and it seems to me that that type of car will be entirely adequate to take care of the heavy traffic on Woodward Avenue and other main thoroughfares.
>
> The track now being built in Detroit is not only entirely adequate to carry the traffic, but, in all my railway experience, I have never seen neater construction. You must have a marvelous organization here to have constructed so much and such good track in so short a time.
>
> Detroit has used what is called the "rigid" type of construction—that is laying the ties and rails in cement. The Detroit United, I am told, still lays its ties on a sand foundation with brick and stone supports. That's old stuff in the railway world. Out in San Francisco we build very much the same as Detroit is building its new lines. Some of the tracks have been down nine years, have given excellent service and are still in good condition.

Differences Being Adjusted

Reconciliation Reached Between Security Holders at New Orleans Helpful Toward Traction Settlement

A quarter page display advertisement published recently in the local papers at New Orleans, La., invited holders of the 4½ per cent bonds of the New Orleans Railway & Light Company, to deposit their bonds with Jan. 1, 1922, and all subsequent coupons attached with any one of four depositaries of the committee.

This announcement followed reports published in the New Orleans papers that an agreement had been reached among the security holders of the several classes. The report could not be confirmed.

R. S. Hecht, chairman of the committee representing the holders of the 4½ per cent bonds of the New Orleans Railway & Light Company, and president of the Hibernia Bank & Trust Company, one of the signers of the advertisement, is represented as having predicted an early settlement of the local railway tangle, though he was unwilling to make public the probable plan of settlement.

G. M. Dahl, representing the eastern interests of the New Orleans Railway & Light Company, while confident that a settlement is not far off, declined to go into details. He indicates, however, that an agreement had been brought about between junior security holders and 4½ per cent bondholders.

The conferences that have been held by Commissioner Maloney, of the Public Utilities Department, with interested parties, have resulted in his plan of settlement being perfected, with the result that it will be submitted to the Council for approval as soon as the time is opportune. Not until the approval of the Council has been obtained, however, will final negotiations be conducted with the company and the security holders. The matter has been delayed by the Mayor's illness.

A movement has been under way for about a month looking to the establishment of bus transportation in New Orleans by popular subscription. The parties back of the undertaking are the Anti-Eight-Cent Car Fare League, supported by the Women's Federation of Clubs and the Central Trades and Labor Council. The organization claims to have 70,000 subscribers to its stock, which is being sold in small denominations on the installment plan.

On Oct. 30 it was stated that the security holders of the company after many protracted meetings with the members of the Commission Council have finally evolved a plan of settlement along the lines of the Maloney plan, which they have asked the Council to adopt. This modified Maloney plan is one that is said to be acceptable to all the security holders at interest, including the fraction that demurred to the preferred position given the holders of the 4½ per cent bonds under the original Maloney plan.

Commissioner of Public Utilities Maloney spent a good part of the afternoon of Oct. 29 in going over the modified plan with City Attorney O'Keefe, with the view of learning the legal right of the city in the proposed agreement and to what lengths the city was committed under the plan. After these representatives of the city have satisfied themselves on the points involved nothing more will remain to be done but submit the plan to the Commission Council for its approval. It does not follow, however, that this will mark the end of the matter. The company will have to be reorganized on the lines outlined in the original Maloney plan; the receiver discharged; more money obtained; and the necessary enabling acts passed by the Commission Council.

Those in possession of the facts upon which it is now generally believed a solution of the company's troubles will be reached are unwilling to discuss the details for publication. Nothing will be known definitely until the matter is presented to the Council. It goes without saying, however, that the modified Maloney plan, if approved by the Commissioner of Public Utilities, will be adopted.

The value of the property of the company, for tax assessment purposes for 1921, has been reduced by the Louisiana Tax Commission $2,510,680 below the assessment of 1920. The loss sustained by the city in this reduced assessment is made up, however, by the amount that applies to the city general fund receivable from the percentage tax on gross receipts for the year. The gross receipts for this year under the present 8-cent fare will be about $15,000,000 as against $12,583,560 for 1920. This tax goes direct to the city general fund.

Candidate Curran Another Five-Cent Apostle

Henry H. Curran, coalition candidate for Mayor in New York, made public on Oct. 29 a statement of his position on transit.

In it he came out unequivocally for the retention of the 5-cent fare and for such amendments to the transit commission act passed by the last Legislature as would return to the city complete control of all traction contracts.

Proclaiming himself an advocate of home rule, he declared this campaign was "a fight to the finish to find out whether Hearst rules New York or whether the people of the city still enjoy local self government."

As Mr. Curran sees it the transit problem in New York has come to assume three distinct aspects. They are:

1. The question of home rule.
2. The retention of the 5-cent fare.
3. Improved and extended service.

Mr. Curran said:

> I have repeated over and over again my firm conviction that this city is entitled to control its local affairs, free from outside domination.
>
> I opposed the transit law as soon as it was drafted last winter. I said it was wrong and unjust to take from us our control over contracts made by us in good faith and executed by the expenditure of millions of dollars of our own money.
>
> Home rule is right, and I say that right comes ahead of party. Right comes first.
>
> When I am elected Mayor I propose not only to test the constitutionality of the transit law but to fight with all the strength and energy I possess to have it amended. I am going to have a bill drafted and introduced at Albany restoring to our city the control over our transit contracts that this law took away from us.

While the stage has not yet been reached where the different steps and details of the procedure toward securing the ends Mr. Curran has in mind can be worked out, still he has stated specifically his ideas on some of the points as follows:

> Before all else, the valuation of the roads must be right. Every drop of water must be squeezed out. If there is no earning power under the 5-cent fare, that is in the contract, I say there is no marketable value beyond what one man would pay another for such a property.
>
> Also, I am fundamentally and unalterably opposed to the "sliding scale or barometer" fare. I shall oppose any plan that does not render it impossible at any time in the future, or under any circumstances, to exact more than a 5-cent fare, or any plan that alters or modifies the city's present contract right to insist upon a 5-cent fare, with free transfers between all parts of the new system.

$200,000 Storm Damage

Utility at Tampa Crippled Temporarily, but Not Seriously Injured—Railway Must Meet Repaving Costs

Practically 5 miles of track washed out and one car damaged, along with the loss of the stream of nickels for two days, represent the traction loss of the Tampa (Fla.) Electric Company due to the storm which broke on the morning of Oct. 25 and for forty-eight hours isolated Tampa, doing total damage of $800,000 to $1,000,000. In addition to the losses named, the line will also have to pay for the repaving of more than 4 miles between its tracks. Very few of the poles supporting the trolley were washed down, though a score or more throughout the city were blown over. Most of those blown over would, however, probably have had to be replaced before long.

The trouble zone was the Bayshore Boulevard, traversed by the Port Tampa line. There is no seawall along the 5-mile drive and the electric line tracks were on the bayward side of the highway. Very little, if any, of the track was lost, estimates at this date being that all of the rails and practically all of the ties are intact. Practically all of the brick are available, the main cost being relaying.

Manager Hanlon estimates that the entire damage to the electric company, trolley, and lighting systems is about $200,000.

The trolley damaged was abandoned about half way down the drive when high water flooded the power station cutting off the current. The damage to the power plant will be slight.

The city of Tampa proper was without lights just one night. Fallen wires in all parts of the city delayed the turning on of current to the outlying sections of the city, but within ninety-six hours of the passing of the storm, which raged on Oct. 25 with decreasing vigor after 3 p.m., the entire city and the suburbs were enjoying lights again. The papers, hotels and other downtown places including the Franklin Street whiteway, had lights Wednesday night.

In St. Petersburg early estimates of the damage were excessive. It develops that the entire damage to city property, including a recreation pier, valued at $20,000, washed away, will only be $65,000. This is the estimate of R. E. Ludwig, director of public utilities. The principal damage to the trolley lines, which are municipally owned, was the loss of a half mile of track and trolley when the pier went down and part of the approach was washed away. In addition some poles and lines were blown down.

The entire damage in the storm area, spread over a score of counties, and with only a dozen individual losses over $2,000, will be considerably less than $5,000,000, more than a third of which total is accounted for by fallen fruit in the citrus groves.

Interurban Ordered to Pay

In a case involving the death of Walter Berg, a joint employee of the Utah Power & Light Company and the Bamberger Electric Railroad the Industrial Commission of Utah has concluded that the Bamberger Electric Railroad is purely an intrastate carrier, and has ordered the railroad, in conjunction with the power company, to pay Mr. Berg's widow compensation as a result of his death.

The case came on for hearing last August, after which the commission ordered compensation paid to Mr. Berg's wife. The Bamberger Electric Railroad petitioned for a rehearing, contending that it was an interstate road and not subject to the orders of the Utah Industrial Commission. This contention was taken under advisement. The commission now finds that the Bamberger Electric road is an employer subject to the provisions of the Utah compensation act.

The findings of the commission are of considerable importance in Utah, since it indicates the stand of the commission that all electric roads operating in the State, with the possible exception of the Utah-Idaho Central, are intrastate roads and are subject to the compensation act. It is probable that the case will be taken to the federal courts by the Bamberger road, owing to the importance of the issues involved.

Three-Wire Electrolysis Mitigation System Working Successfully

The three-wire system as used for the mitigation of electrolysis in Winnipeg and its installation were described in the Electric Railway Journal, for March 26, 1921, since which time the system has been completed and placed in operation. In order to determine whether the railway's contract with the city had been fulfilled, it was agreed that an examination should be made by outside experts. The engineering services of Albert F. Ganz, Inc., were therefore retained jointly by the city, the telephone and the railway interests, and the installation was examined early in October by Prof. L. A. Hazeltine and C. F. Meyerherm of this organization.

After a study of the operating results, conferences were held with the various interests concerned and a joint meeting was held on Oct. 4. At that meeting it was agreed that before the system was finally accepted as being a proper remedy for the mitigation of electrolysis a further six months test should be made. In the meantime, the railway is to keep a careful record of the readings of the voltmeters and is to furnish Mr. Hazeltine and the city authorities with copies of these reports from time to time. After studying these results, a further investigation will be made into the system next spring.

Professor Hazeltine said that the records so far obtained indicated that the system was working satisfactorily and had produced the results contemplated. The principal remaining requirement is to have assurance that these results will be continued permanently.

General Fund Not Available to Meet Costs

A vote of the people is necessary before the general fund may be used for maintenance and operation of the Seattle (Wash.) Municipal Railway. This is the opinion recently expressed by Judge J. T. Ronald of the Superior Court in a decision overruling the demurrer of the city of Seattle to the suit of the fourteen taxpayers to enjoin the city from using money from the general fund in the operation and maintenance of the system.

The suit is one brought by S. B. Asia and thirteen other taxpayers and the demurrer interposed by the city was to an amended complaint in which the plaintiffs sought injunction against the tapping of the general fund by the city. The case was argued on Oct. 14. The city demurred on the grounds that there was a defect of the parties-defendant, and that the facts did not justify a cause of action.

In his decision, Judge Ronald held that the amended complaint of the taxpayers does not attack the legality of the deal or the validity of the bonds, and therefore the Puget Sound Traction Light & Power Company was not a party to the suit. On the point involving the loan of money from the general fund to a special fund the court cited a decision of the Supreme Court in which it was held that such loans could not be made in cases where the special fund had no constant and fixed source of supply. The city may now stand on its complaint and appeal to the Supreme Court or file an answer in the case and allow it to go to trial on its merits.

Elevated Lease Negotiations Broken Off

Mayor Moore, of Philadelphia, Pa., has terminated the negotiations with the Philadelphia Rapid Transit Company over the terms of a lease of the Frankford elevated line and has announced his intention to have the line operated by the city as a separate and independent unit of the city's transportation system.

The apparent hope of the Mayor is that the railway will see what he considers the error of its ways before the completion of the work and accept the idea of the city.

At present the points of junction between the elevated railways built by the city and that built and operated by the railway is separated only by a few feet. As one writer put it, however, the structures might just as well be a mile apart, for the distance is not one of inches, but dollars. As this authority explained, the Philadelphia Rapid Transit was willing to come in and operate the Frankford road, but not at a loss, and though the city administration consented to a lease containing a guaranty against it, the lease went into the discard when Council began amending it. The attitude of the company was that it should be indemnified for any loss in its operation or created by the diversion of traffic from the surface lines.

In commenting editorially on the breaking off of the negotiations, the Philadelphia *Ledger* said:

> The present warring forces in the city administration must get together, recast the high-speed transit program and prepare and put through plans that will be self-supporting, regardless of the effect upon the Rapid Transit Company. Whether this shall mean the carrying of the terminus of the Frankford line into the center of the city and the linking of it with lines to be built north and south and to the far southwest is the practical problem to be solved. But a point has been reached when a decision should be arrived at that will bring to an end the interminable delays of the last ten years and give to the citizens transportation facilities commensurate with the city's needs.

Wages Cut in Louisville

An agreement was reached on Oct. 29 by employees of the Louisville (Ry.) Railway and the company under which a reduction of 5 cents an hour in the wages paid to trainmen became effective on Nov. 1. Employees represented by the general committee of the Co-operative Welfare Association conferred with the officials of the company in the office of President James P. Barnes and an agreement was quickly reached. The reduction will affect about 1,500 men. It will result in an annual saving of about $250,000 for the company.

This decision followed a series of conferences and reports relative to a possible 10 to 20 per cent reduction in wages. The men all felt that a reduction was justified, in that the 7-cent fare has failed to improve the financial condition of the company materially, but they were not all agreed on the amount of the cut. The individual differences of opinion were soon all overcome in the suggestion that the cut be made 5 cents an hour.

Under the new schedule motormen and conductors on city lines will receive 36 cents an hour for their first three months, 38 cents the next nine months and 43 cents an hour for the second year and thereafter. Men on the interurban lines are paid 1 cent an hour more. Reductions in wages of other employees will be made on the same basis.

At the conferences with the men and in a formal statement to the public Mr. Barnes took the position that the failure of the 7-cent fare to yield anticipated increases in revenue made it necessary to practice further economies.

Both the Louisville Railway and Louisville & Interurban Railroad are included in the arrangement, as it is one organization, although the interurban lines are operated by a separate corporation.

Defrauders Punished

The fraud has been making himself conspicuous of late on the lines of the Columbus, Delaware & Marion Electric Company, Columbus, Ohio. Two offenders have been arrested and sentenced.

Dewitt Powell, who was employed by the company as a night watchman, after studying the combination of the safe in the ticket office at Columbus, succeeded in stealing several small amounts of money ranging from $5 to $59. He was arrested in June and sentenced on Oct. 21 to serve from one to seven years in the Mansfield reformatory.

The second offender against the same property was one Floyd Waln, who camouflaged a broken arm as the result of falling over something in the aisle of an interurban car. He later confessed that his object was to defraud and was given thirty days in the Dayton workhouse and fined $10 and costs.

A Biography of George Westinghouse to Be Published

Through a committee of the American Society of Mechanical Engineers a biography of George Westinghouse of 330 pages is soon to be published. The author is Col. Henry G. Prout; for many years an associate of Mr. Westinghouse in the Union Switch & Signal Company, and prior to that time editor of the *Railroad Gazette*. Publication of this biography is in charge of a committee of the A.S.M.E., and an opportunity is now being given to members of the four foundation engineering societies to enter subscriptions, which vary in amount according to the kind of binding desired.

The present edition of the biography of Mr. Westinghouse is a limited one. Later it is expected that a popular edition will be issued.

News Notes

Power House to Be Dismantled.—The power house of the Atlantic and Suburban Railway at Pleasantville, N. J., is being dismantled and the machinery is being shipped to a dealer in the south.

Wants Franchise Renewed.—The Coal Belt Electric Company, Herrin, Ill., has applied to the City Council for a renewal of its franchise. The present franchise has four years to run, but the Missouri Pacific Railway, which owns and operates the Coal Belt line, wishes to know definitely if a renewal of the franchise at this time can be expected. The city is asking that the company straighten its line and run out South Park Avenue to the city limits on the south and to pave its right-of-way as conditions to a renewal of the franchise.

Right to Operate Restored.—The Bridgeport and Waterbury auto service has been restored by an order issued from the office of the Public Utilities Commission, which has issued a certificate of convenience to the Bridgeport & Waterbury Passenger Service, Inc., formerly the Bridgeport & Waterbury Taxi Service. The company has resumed its jitney service between Bridgeport and Waterbury, but on a revised running schedule, extending it to 11 o'clock at night. The office of the company has been moved from Water Street to 54 Golden Hill Street, Bridgeport.

"It's Up to Each Employee."—Mayor Charles H. Ellis, of Camden, recently delivered an address on "Relations Between Railway Employees and Officials" before the employees of the Public Service Railway of Camden. The city executive related how he could not take sides in the questions of railway business before the public. He pointed out how the entire company was often condemned for the actions of one conductor or motorman and said that it was up to each employee to aid the company. Martin Schreiber, general manager of the Southern Division, spoke on the organization of an athletic association among the trolleymen.

Financial and Corporate

$1,370,585 Gain in Income

Remarkable Record Made by Eastern Massachusetts for Nine Months—Operating Ratio Down

The Eastern Massachusetts Street Railway, Boston, Mass., in the quarter ended Sept. 30, increased its income by $242,127 in the face of a reduction in gross receipts of $665,360. For the nine months ended with September the increase in income available for bond interest and rentals was $1,405,977 despite a decline in receipts of $1,707,451, as compared with the corresponding period of 1920.

The ratio of operating expenses and taxes to total revenues has been cut down from 95.5 per cent in the first nine months of 1920 to 78.2 per cent for the same period this year.

Detailed statements for the quarter and nine months ended Sept. 30, compared with the corresponding periods of the previous year, follow:

Three months ended Sept. 30:	1921	1920
Operating revenue and income	$2,952,940	$3,618,300
Operating expenses and taxes	2,258,963	3,166,450
Gross income	$693,976	$451,850
Bond interest and rentals	399,136	392,319
Net income	$294,840	$59,530
Nine months ended Sept. 30:		
Operating revenue and income	$8,590,798	$10,298,249
Operating expenses and taxes	6,721,576	9,835,005
Gross income	$1,869,221	$463,244
Bond interest and rentals	1,199,762	1,164,370
Net income	$669,459	*$701,126

*Deficit.

While gross revenues still show a material contraction as compared with the corresponding period a year ago, this is more than offset by the firm grasp which the trustees have secured on operating expenses. This program of economy is strikingly reflected in the statement of earnings for the nine months ended with September, when a decline of $1,708,000 in revenues was neutralized by a cut of $3,100,000 in expenses.

The impression is not altogether correct that prevails in some circles that the company's shrinkage in costs of operation has been brought about entirely by the use of one-man cars and the reduction in wages of the blue-uniformed force. The officials have combed the shop forces thoroughly and it has been found that a substantial saving in the number of employees could be accomplished without measurably lessening the amount of work turned out. The cut in office expenses is exemplified by the fact that the Boston force now consists of about fifty as contrasted with the maximum number of 245, and, in addition, a less expensive suite of offices is occupied than was formerly maintained under the old regime.

Early in October the company opened its new power plant at Quincy Point, which will burn oil for fuel, thus resulting in a material saving. This plant takes care of the entire power requirements of the road south of Boston, and the economies effected thereby should be reflected in future earnings statements.

It will be a regular policy of the company henceforth to issue quarterly earnings statements. Any additional curtailment of operating expenses which may be effected in the future will be immediately passed on to the public in the shape of lower fares or better service.

Shore Line Doing Better

Another profitable month of operation of the Shore Line Electric Railway, Norwich, Conn., is shown under the management of Receiver Robert W. Perkins, who has just filed his account with the Superior Court. The profit for the month of September was $3,660. For 1921 the road has shown deficits the first six months, but a profit in operation for July, August and September. The deficits have been $3,749 in January, $61,112 in February, $3,264 in March, $2,296 in April, $1,411 in May, $1,027 in June. The profits have been $7,439 in July, $7,441 in August, and $3,660 in September. The report shows the receipts from passengers during September were $23,227. The payroll for the month was $12,340. Power purchased cost $6,248, and various other items brought the total expenses up to $26,924. while the total income was $51,849. The receiver had a cash balance on hand Sept. 1 of $80,665. His cash balance on Oct. 1 was $105,590.

International $248,033 Behind

H. G. Tulley, president of the International Railway, Buffalo, N. Y., has submitted to the board of directors the January-September statement of earnings "in order to supply the information necessary to overcome the thought expressed by the Buffalo City government that the earnings of the company justified the consideration of a lower rate of fare."

For the nine months ended Sept. 30, 1921, the company shows a deficit of $248,033 against a net income of $185,147 for the same period of last year. The gross earnings, which were $7,909,003, were insufficient by $1,110,565 to provide for maintenance, depreciation, etc. In this period there was a decrease in passenger travel of 17,589,363. Over the entire system 161,244,303 passengers were carried for the nine months of 1921 against 178,833,666 passengers in 1920.

In his statement Mr. Tulley refers to the expenditure of $2,000.000 in betterment and improvement this year. From January to September, 1920, the wages amounted to $3,832,037, against $4,072,926 for the same period this year, despite the fact that two reductions have been put into effect so far this year, one in May and the other in August. These two reductions represented an operating economy of approximately $458,000 annually.

In answer to the plea of the city of Buffalo to reduce the fare Mr. Tulley maintains that this step is out of the question. The present rate is 7 cents or four tickets for 25 cents.

Part of Road Sold

New Haven-Saybrook Branch of Shore Line May Resume Service Under New Control

Indications are that the portion of the old Shore Line Electric Railway between Flanders and New Haven, Conn., will not be junked after all, for in the Superior Court for New London County on Oct. 29 Robert W. Perkins, receiver of the Shore Line, was authorized to sell the property to the Finance & Reorganization Company, New York.

According to the papers filed with the clerk of the court, $20,000 in cash is to be paid to the Shore Line receiver as soon as the contract is signed; $205,000 in cash within forty-five days thereafter, and $175,000 in first mortgage bonds of the Shore Line Traction Company of an issue not to exceed $1,000,000. The Finance & Reorganization Company agrees to buy the bonds from the receiver for $50,000 cash in a year.

The seller agrees to transfer the franchise and other rights west of the Connecticut River to any corporation to be named by the Finance & Reorganization Company which is authorized by law to receive these franchises and to operate a railway thereunder.

Eight passenger cars, two motor freight cars and six flat cars are included in the sale aside from the trackage, etc., which comprises the main line of railway with turnouts and sidings from State and Ferry Streets, New Haven, to Old Saybrook and thence to Chester Cove; from Guilford Green to the end of the Stony Creek line in Branford, and from Ferry Road in Old Saybrook to Flanders Corner at the junction of the line between New London and Niantic in East Lyme.

This is the section of the former Shore Line Railway west of the Connecticut River for which Receiver Perkins once before, about July, 1920, negotiated a sale to Louis I. Levinson, Newburgh, N. Y., who paid $17,000 cash and then defaulted on the purchase after he had taken up and removed some of the trackage between Deep River and Chester and between Guilford and Stony Creek. Mr. Levinson gave a bond for $50,000 for the fulfillment of the contract, but under this most recent action the release of this bond is part of the agreement.

I. T. S. Subsidiaries Plan Financing

Five subsidiary companies of the Illinois Traction System, Peoria, Ill., have filed application with the Illinois Commerce Commission for permission to issue additional stocks and bonds. These are:

Bloomington & Normal Railway & Light Company $69,000 of first general mortgage bonds, $65,000 of bond-secured gold notes and $73,000 of preferred stock.

Danville Street Railway $84,000 of refunding gold bonds.

Urbana-Champaign Railway, Gas & Electric Company $442,000 of consolidated and refunding mortgage bonds.

Madison County Light & Power Company $69,0000 of first mortgage bonds and $67,000 of bond-secured gold notes.

Galesburg Railway, Light & Power Company $400,000 of consolidated and refunding mortgage bonds and $300,000 bond-secured gold notes.

Eastern Pennsylvania Stockholders Organize

A committee of stockholders of the Eastern Pennsylvania Railways, Pottsville, Pa., in a letter to stockholders asks the deposit of sufficient stock to authorize that body to attempt a financial reorganization of the company. The letter states the company will need funds in the future for improvements and extensions and that the financial structure is such that the securities could not be sold at a reasonable price to obtain these funds.

Outstanding obligations in the hands of the public are as follows:

Underlying bonds	$434,000
First mortgage bonds	4,446,500
Notes payable (partly secured by bonds)	158,230
Preferred stock	946,820
Common stock	3,917,350

Earnings for the twelve months ended Aug. 31, 1921, are as follows:

Gross		$2,174,083
Net after rentals, taxes and depreciation		$542,472
Deductions:		
Interest on prior liens	$26,350	
Interest on bonds and floating debt	231,377	
Amortization of debt disc. & exp.	13,783	$271,510
Balance		$270,962

No dividends have been paid on the preferred stock since 1907, and no dividends have ever been paid on the common.

The letter also states that only $826,000 face amount of bonds are in the company's treasury and that some of these are now deposited as collateral. It further says that on account of general conditions and the large issue of bonds in proportion to past earnings, the price obtainable is and has been very low and that even if a fair price would be obtained there are not sufficient bonds available for a power installation which certainly will be required in the near future.

A committee representing the bondholders was formed in 1919 to look after the interests of holders of first mortgage 5 per cent gold bonds, and, although it is still in existence, no definite action has yet been taken. It is proposed to reorganize the company by a joint action of bondholders and stockholders.

$3,330,000 of City Street Railway Bonds Sold

A syndicate composed of Kuhn, Loeb & Company, Hallgarten & Company, and Kidder, Peabody & Company, New York, recently submitted the highest bid, 100.27, for $9,563,000 municipal 5 per cent, 5¼ per cent and 5½ per cent bonds of the city of Detroit. The second best bid was 100.177, submitted by Harris, Forbes & Company and Lee, Higginson & Company. The National City syndicate bid 100.052 and the Guaranty Company and associates bid par and a cover fee of $8,000.

The bonds were divided as follows: $5,201,000 of 5½ per cent bonds for general municipal improvements, due 1922 to 1951; $1,062,000 of 5 per cent bonds for general improvements, due 1922 to 1950, and $3,300,000 of 5¼ per cent street railway bonds, due in 1940, 1942 and 1943.

The high bid was accepted and the bonds were offered for public subscription during the week ended Oct. 22.

Toronto Purchase Arbitration Dragging

The arbitration hearings have been resumed under which the price will be fixed that the city of Toronto is to pay for the property of the Toronto Railway. At the sessions during the week ended Oct. 29 Fred Hubbard, assistant to R. J. Fleming, former general manager of the Toronto Railway, was on the stand. He merely gave a general outline of the company's activities without any detailed technical information. The hope originally was that the negotiations could be concluded by Jan. 1 so as to permit the liquidation of the Toronto Railway early in the new year, but unless the arbitration is speeded up the prospects are not bright that all the evidence will be in much before that time.

Financial News Notes

Stock Dividend Declared at Detroit.—The Detroit (Mich.) United Railway has declared a stock dividend of 2½ per cent in lieu of the regular cash payment which would ordinarily be declared.

$4,000,000 Bond Issue Offered.—Drexel & Company, Philadelphia, Pa., recently offered $4,000,000 of Georgia Railway & Power Company twenty-year 7 per cent general mortgage gold bonds to be dated Nov. 1, 1921, at 97 and interest yielding more than 7½.

Mr. Schupp Made Permanent Receiver.—Otto Schupp, temporary receiver of the Saginaw-Bay City Railway, Saginaw, Mich., has been made permanent receiver of the company. The creditors of the company will meet on Nov. 25 to consider the form of inquiry into the company's affairs.

Petition in Bankruptcy Filed.—The Liberty Transit Company, which operated in Riverside, N. J., has filed a petition in bankruptcy in the United States District Court at Trenton in which it gives liabilities of $14,421, and assets of $11,125. The court has referred the petition for a hearing at Trenton before Samuel D. Oliphant, referee in bankruptcy.

One-Man Cars Purchased with Notes.—The Department of Public Utilities of Massachusetts has approved the petition of Massachusetts Northeastern Street Railway, Haverhill, Mass., that it be allowed to issue $30,000 of 7 per cent notes maturing serially until October, 1924, the issue to be given with $10,000 in cash in payment for six new one-man cars.

Railway Guarantees Power Bonds.—Shareholders of the Winnipeg (Man.) Electric Railway have ratified by-laws making possible the guaranteeing of bonds for the new Manitoba Power Company, controlled by the railway. Arrangements were also made for a contract under which the railway will take power from the power company. The development possible under the new plan is 168,000 hp.

Application to Foreclose Planned.—Application to foreclose mortgages of the Syracuse & Suburban Electric Railway, Syracuse, N. Y., amounting to $550,000 will be made in special term of the Supreme Court by the Fidelity Trust Company, Philadelphia, and it is expected an order directing the sale of the property within the next two months will be granted. The proceeding is a step in the pre-arranged plans for the reorganization of the company and the property is to be bid in by the bondholders.

Wants to Abandon Line.—The Carolina Power & Light Company, Raleigh, N. C., has sought permission from the City Commissioners to abandon its line on Cabarrus and Bloodworth Streets. The line, known as the Smithfield Street line, runs a distance of eight blocks. Permission for abandonment is sought as a result of decreased patronage and also because of paving expenses which must be met by the company in view of the recent announcement that Bloodworth was to be paved and made a state highway.

Court Suggests Hearing on Suspension.—Judge Evan Evans of the federal district court acted on Oct. 28 to stop the operation of all Fox River valley interurban lines and the Aurora and Elgin city lines of the Aurora, Elgin & Chicago Railroad, which is now in the hands of a receiver. Judge Evans directed that the Illinois Commerce Commission and all persons interested in the street and interurban lines, including officials of municipalities where they are operated, should appear before him Nov. 21 to show why operations of the lines should not be discontinued. The third-rail lines of the Aurora, Elgin & Chicago system, which connect Chicago and Fox River valley cities, are not affected by the order.

Receivership Case Postponed Again.—Federal Judge Julius M. Mayer has granted a further adjournment until Dec. 20 on the order to show cause why a receiver should not be appointed for the Interborough Rapid Transit Company, New York, N. Y. Judge Mayer in commenting on the situation declared it would be a novel thing for a court of equity to proceed in a receivership action when only two-tenths of 1 per cent of the creditors demanded it. J. L. Quackenbush, counsel for the railway, told the court that of the $38,144,400 of notes owed on Sept. 1 of this year, 92.9 per cent had been deposited for extension by the holders. He declared that at the present there are $2,710,900 in notes outstanding.

Court May Modify Its Finding.—Objection to the final entry and decree drawn in the settlement of the litigation over the Cincinnati & Dayton Traction Company was made by a group of Cincinnati, Hamilton & Dayton attorneys, who recently appeared before the Court of Appeals at Cincinnati, Ohio. A decision defending the rights of mortgagees and the bondholders was handed down by the court some months ago, together with an order for the appointment of a master commissioner to determine the interest in the power plant, stock and earnings, and an entry upon this was prepared by the court, but was objected to on various grounds. The hearing at which the lawyers from the three cities were present was upon these objections and the points involved and at the conclusion the court decided to redraft its entry in conformity with some of the suggestions agreed upon. It was practically decided at the session that Attorney Froome Morris, Cincinnati, will be appointed the master commissioner in the case.

Traffic and Transportation

City's Case Disproved

Messrs. Sullivan, Fleming and Duck Show Fallacies of City's Men Seeking Lower Fare in Chicago

Attorneys for the Chicago Surface Lines began on Oct. 25 to present their defense of the 8-cent fare before the Illinois Commerce Commission. The city had closed its case several days previously. It was expected that all evidence would be in by Nov. 5 and a prompt decision is looked for.

The city's case, as previously announced in the ELECTRIC RAILWAY JOURNAL, was based on alleged economies suggested by engineers for the city. Among these suggestions were a proposed operating cost of $2.40 per car hour and a speeding up of cars through the congested district.

These claims were largely offset by the testimony of J. V. Sullivan, assistant to the president of the surface lines, who presented an exhibit for several companies showing expenses per car hour, including taxes and depreciation. The figures were for the last fiscal year. They follow:

Chicago (surface)	$3.16
New York Railways	4.05
St. Louis	3.42
Kansas City	3.84
Milwaukee	3.43
Philadelphia	3.27
Boston	5.80
Detroit	3.78
Third Ave. (N. Y.)	3.56
Twin City	3.69
Buffalo	3.84
San Francisco (Municipal)	3.45

It had been stated by one of the city's witnesses that he understood the cost on the municipal system of San Francisco to be $1.98. Another exhibit of Mr. Sullivan's showed the running time in Chicago, exclusive of layover time, to be 10.64 m.p.h. This time was faster than that of any one of the thirteen other systems mentioned.

Harvey B. Fleming, chief engineer for the companies, also introduced many exhibits to show that the plans offered by the city's witnesses were not practicable. He testified about the proportion of other vehicles using the tracks of the company and showed that cars travel almost twice as fast when using tunnels as when operated over bridges. Engineer Jackson for the city had proposed abandoning the three tunnels and two bridges which now carry one-fourth of the traffic out of the loop district.

John J. Duck, company auditor, presented numerous statements which showed the burdens carried by the companies, these having been left out of the city's calculations for low operating cost. There was considerable discussion about the disposition of the renewal fund of the companies. The commissioners appeared to have in mind that this should not be kept for future depreciation. It was shown that the companies had spent about $750,000 recently for new cars. This purchase was financed with capital taken from the renewal fund by order of the previous commission. The commission agreed to consider a plan for re-routing submitted by John A. Beeler for the companies last February. It was claimed that this would allow 11 per cent more track capacity in the congested district.

Mayor Extends Relief—Temporary Jitney Service Approved

Mayor Peters of Boston on Nov. 1 signed the license which had received favorable consideration from the Boston City Council, granting the Norfolk & Bristol Bus Company a right to operate jitneys in Hyde Park. This will insure a 15-cent fare from Hyde Park to Boston, as against the present 20 cents, the jitneys operating over the territory otherwise served by the Eastern Massachusetts Street Railway. In connection with his approval of the license the mayor said:

> Before finally determining my approval of the jitney license for the Hyde Park district I conferred with the trustees of the Boston Elevated and the Eastern Massachusetts Street Railway Company and found that they were unwilling to make any compromise which would meet the perplexed situation.
>
> I feel that the people of Hyde Park should have this relief, temporary as it may be, until some time in the future when these street railway companies may come to an agreement.
>
> I therefore approve the license granted the Norfolk & Bristol Bus Company, with the understanding that when an arrangement can be made between the Boston Elevated and the Eastern Massachusetts Street Railway Companies to give the Hyde Park district service at a satisfactory rate I will recommend to the City Council that the jitney license be immediately revoked.

Railway Withdraws Request for Ten-Cent Fare

Judge James E. Goodrich, chief counsel for the Kansas City (Mo.) Railways recently withdrew at Jefferson City the petition of the company to advance the fare to 10 cents. The matter has been pending for more than a year.

The city ordinance prohibiting jitneys from using streets on which street car tracks are located, together with the general good will of the public, enabled the receivers to withdraw the application for the rate hike, according to Francis M. Wilson, one of the receivers.

When the receivers took charge of the property about a year ago they found that testimony already had been presented to the commission on an application to increase the rates.

The request for an increase had been argued and submitted for a final decision. But the receivers, unfamiliar with the conditions of the company and of its necessities, asked the commission to defer rendering its decision until they could determine the actual condition of the company.

Despite the fact that the application for an increased fare has been withdrawn, receivers for the company say the present rate is inadequate to pay operating expenses and a return on the fixed indebtedness of the company.

Despite the passage of the city ordinance regulating the jitney traffic, about 150 jitneys are still operating.

Master Appointed in Jersey

Special Statutory Court Selects Judge Haight to Hear Fare Case Testimony

Associate Justice Pitney of the United States Supreme Court refused on Oct. 26 to issue a stay against the 8-cent fare recently granted to the Public Service Railway for its lines in New Jersey. Justice Pitney, however, did not throw out the petition, but merely declined as an individual member of the court to assume the responsibility for issuing an order. He said:

> I prefer that a matter of this gravity should be passed on by the entire court. I do not think it should be acted on by an individual justice.

Justice Pitney suggested, and counsel agreed, that the petition for the stay be addressed to the full bench and that the necessary motion be made before the court on motion day, Nov. 7. Attorney General McCran and L. Edward Herrmann, counsel for the state and the Public Utilities Commission, respectively, said they would immediately take steps to get their application before the full court. In the meanwhile and until the court acts, the 8-cent fare order remains in operation.

At the outset of the hearing Justice Pitney informed counsel that their applications for permission to file an appeal to the highest court was unnecessary; that appeal lay as of right by reason of the petition of appeal allowed and signed at Trenton by Judge Rellstab, one of the members of the Special Statutory Court that allowed the 8-cent fare. The papers could be moved from the court at Trenton to Washington for review, said the justice, by the issuance of a precept.

Mr. McCran for the state and Mr. Herrmann for the commission pivoted their argument for the day on the contention that the special statutory Federal Court had exceeded its jurisdiction in allowing the 8-cent fare and, further, that the action was an invasion of the rights of the state.

Former Federal Judge Thomas H. G. Haight, Jersey City, has been appointed by Federal Judge John Rellstab as special master to take testimony in the application of the Public Service Railway for authority to put into effect a 10-cent fare. Under the provisions of the temporary injunction recently granted by special federal tribunal, restraining the Board of Public Utility Commissioners from interference the railway is now charging an 8-cent fare with an additional cent for each transfer issued. This is an increase of 1 cent over the 7-cent fare established by the Board of Public Utility Commissioners.

Judge Rellstab in his order designating former Judge Haight as special master directs that he proceed immediately with the taking of testimony in the case and that he report his determination at the earliest possible date. The report of Judge Haight will be used as the basis for the establishment of a permanent rate of fare under the provisions of a Congressional statute authorizing a public utility to have recourse to the federal courts in cases where the established rate of fare is so low as to be considered confiscatory.

Judge Haight is recognized as one of the ablest members of the bar in New Jersey. He served as United States District Court Judge and also as United States Circuit Court Judge. He was appointed to both of these posts by former President Wilson.

Low Fares No Incentive

Baltimore Official Says People Ride on the Cars Only When They Have To

"People ride on the cars only when they have to, and no matter how low the fare they cannot be induced to take unnecessary rides." This is the opinion of C. D. Emmons, president of the United Railways & Electric Company, Baltimore, Md. It was expressed by him in discussing the suggestion that the company reduce the fare to 5 cents during the hours when traffic is lightest.

The officials of the company also doubt the efficacy of the suggestion that a freight service be established by the company as a possible means of increasing revenues. On this subject Mr. Emmons said:

> The United seriously considered the establishment of a freight and express service and even had a complete survey of the local situation made by an expert from Boston, but in his report he declared that a freight service could not be operated profitably in Baltimore.

Mr. Emmons said that as soon as increased receipts produce a sum larger than the present surplus over operating expenses now allowed the company his company will extend the present city fare zone into the recently annexed territory.

Net Earnings Rise Though Traffic Decreases

The United Railways carried 18,976,056 revenue passengers in September, as compared with 21,187,535 in September, 1920, a decrease of 2,211,479, or 10.4 per cent. Revenue passengers last month were 402,911 fewer than they were in August, though the company's net earnings showed a gain in September over August, less having been spent on maintenance.

The suggestion about the possible establishment of freight service by the company was made by Col. J. L. Wickes, transportation expert of the Public Service Commission. Colonel Wickes said:

> This matter came under discussion at the recent meeting of the American Electric Railway Association and was a subject of the paper by J. Rowland Bibbins of Washington, D. C., and is a question which I believe now is occupying considerable of the attention of railways and those interested in transportation elsewhere.

Shreveport Wins Fight for One-Man Cars

The City Council of Shreveport, La., has granted the Shreveport Traction Company permission to use one-man cars on the Union Depot line, but has reserved the right to order discontinuance of the one-man cars and a return to the standard two-man cars at any time the one-man cars may be found to be unsatisfactory. The use of one-man cars in Shreveport was ordered discontinued about a year ago by the city, and court action followed in which the city finally won.

Since that time the railway has been using only two-man cars, but has several times made application to the City Council for permission to operate one-man cars as an experiment in order that the patrons might have an opportunity to compare one-man car service with that afforded by the regular two-man cars. Railway officials assert that the improvement in service made possible by the one-man cars will prove so satisfactory that the use of one-man cars on all lines in Shreveport will result.

Five-Cent Experiment

Connecticut Commission Seeks to Meet the Public Demand by Ordering Short Test in Norwalk

The Public Utilities Commission of Connecticut has decided to try a 5-cent fare in Norwalk for a ninety-day test period. The order of the commission is the result of the recent petition of the city of Norwalk for reduced fares. With New Britain, Stamford, Bridgeport and Hartford seeking lower fares, the decision is of statewide interest. In its order the commission states that the reduction is an experiment and that it is made with the hope that a reduction in the rate will increase the usefulness of the railway to the public and result in added revenues.

The commission adds:

> The test period may show that public patronage is insufficient and that some other rate, more than 5 cents, is the economic rate to install.

The matter came before the commission on petition and was heard on Oct. 19. According to the ruling of the commission, the new or reduced fare will go into effect on or before Nov. 6. The Connecticut Company is directed to supply weekly reports as to the number of passengers carried over the line between Norwalk and South Norwalk, over which territory the reduction in fare is ordered. The revenues and operating expenses of this division are to be kept separate from other divisions.

The order of the commission also says:

> It is apparent from all of the evidence submitted from the past record of transportation service in Norwalk that independent jitney service between Norwalk and South Norwalk would ultimately and inevitably cancel and prevent such street railway service, not only upon this line but upon all other lines in the Norwalk division. The Connecticut Company is to supply a reasonably frequent passenger service over the points mentioned at a 5-cent fare, either by street cars or automobile buses, or both.

Trustees Want Action Deferred

President Storrs of the Connecticut Company is quoted as declining to comment on the decision. Morgan G. Brainard, Hartford, one of the federal trustees of the company, said that the decision was contrary to the wishes of the trustees, who felt that any change in fares should be statewide in scope.

The Public Utilities Commission has received from the trustees of the Connecticut Company a statement setting forth their attitude in fare reduction in reply to the commission's query for a statement of that position. In their statement, it is understood, the trustees concede that the time is soon approaching when fares must be reduced, but they are firmly of the belief and opinion that fares cannot be reduced until next spring. Operation on the trolley lines of the State in winter is more expensive than in summer and the traffic is lighter, so that the trustees feel and believe the financial conditions do not warrant any general reduction of fares at this time. It is the intention of the trustees, it is understood, that the fare situation will be taken in hand anew next spring and the reduction question settled in accordance with conditions prevailing at that time.

Low Fare Cars Withdrawn

Sanctioning of Jitney Prompts Boston Elevated to Withdraw Five-Cent Line

Another critical stage has developed in the competition between the jitney and the electric railway in Massachusetts. This time the Boston Elevated Railway and the city of Malden are affected. Incidently the Boston Elevated has declared a policy in cases where competition between the two services takes on the form it has assumed in Malden.

Effective on Nov. 12 the Boston Elevated will withdraw its surface car service from a section in Malden which is being served by jitneys. There has been competition on that particular line for some time, but the railway has consented to operate side by side with the jitney because the jitney was in a sense an outlaw, tolerated but not officially sanctioned by the city. Then on account of many complaints against the jitney the city government passed a jitney ordinance. Mayor Kimball signed the ordinance despite the warning from the railway and accepted a bond from the owner of the jitney line.

Malden was the first city in which the Boston Elevated Railway decided to try the 5-cent fare experiment for purely local rides. The company found it a success. The number of passengers increased about 75 per cent under the 5-cent fare, but on the line in question the jitney is taking away half the traffic from the elevated, and as soon as the jitney became officially recognized by the city through the passing of an ordinance and acceptance of a bond, the trustees of the Boston Elevated declared their policy applicable to Malden and will withdraw the trolley service from the line between Malden Square and Maplewood.

Commission Asked to Reconsider Bus Ruling

Nov. 1 was set as the rehearing date for the case of the Aurora, Elgin & Chicago Railroad, Aurora, Ill., against the Smith Bus Line. The Illinois Commerce Commission recently authorized this bus company to provide a twenty-two mile service, which decision was opposed by the railway. The case was reviewed in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 22.

The Smith Bus Line started in operation between Aurora and Batavia on a State Aid road alongside the tracks of the receiver using a street corner opposite the Aurora Terminal of the Aurora, Elgin & Chicago Railway for its Aurora terminus. At Batavia the line opened a waiting station about three blocks from the car line on the opposite site of the river.

It is claimed that the only territory served by the bus line, not served by the railroad would be the three blocks along Wilson Street and at the hearing testimony was offered that there was a demand for such service and a witness testified that such a request had been made but that it had been refused. It is said that the company contends that no council request was made for an extension of tracks in Batavia.

If the order is not set aside the case will be taken to the courts. The order provides that consents of municipalities must be obtained as set forth in Commission General Order No. 68. These consents have not been obtained.

Court Refuses Injunction

Judge Orien S. Cross in the Ottawa Circuit Court recently declined to grant an injunction sought by the city of Holland to prevent the 3 cent a mile increase in the rates of the Michigan Railroad between Holland and Macatawa. The city contended that the new rates were contrary to the franchise agreement.

Judge Cross ruled that the court had no jurisdiction in the matter since the Supreme Court recently held that the Legislature by the enactment of the Glaspie law took the right of fixing fares between villages and towns out of the hands of municipalities.

Men Agree to Operate One-Man Cars—City Prohibits Them

Employees of the Schenectady (N. Y.) Railway on Oct. 22 signed the agreement submitted by the company to operate one-man cars. On Oct. 24 the Common Council of the City of Schenectady passed an ordinance prohibiting the operation of one-man cars in the city limits.

The officials of the Schenectady Railway are going ahead and equipping one-man cars. They have none ready for operation as yet, but propose to ignore the ordinance, believing it will not prevail unless the Public Service Commission should decide in its favor. Officials feel there is little likelihood of its doing this in view of the fact that in Troy it has dismissed the complaint of the city to prohibit the use of one-man cars. The Troy decision is referred to in the following item.

Commission Approves of One-Man Operation

The Public Service Commission has dismissed the complaint of the city of Troy, N. Y., over the operation of one-man cars by the United Traction Company. Mayor Fleming at the request of the Common Council scught to restrain the railway from using this type of car.

In a report to the Commission, C. R. Vanneman, hearing deputy says:

> Subsequent to the hearings an unannounced visit was made to Troy. Taking one of the cars operating on the Albia line from regular service we ran it over all sections of Troy in which one-man cars are being operated or may hereafter be operated. Every conceivable test of which we could think was made on all the grades.
>
> No unfavorable or erroneous action of any of the devices was observed.
>
> At the hearings mention was made of two accidents in Massachusetts in which the one-man cars were involved. I have communicated with the Department of Public Utilities of Massachusetts respecting these accidents and have been informed that neither was caused by any factor of one-man operation.
>
> After carefully considering the evidence, and having in mind the tests and studies of the operation of the cars which I have made, I am of the opinion that they may be safely operated on any of the streets in the city of Troy on which the lines of the United Traction Company are located providing the recommendations set forth in detail respecting guards over trolley wires, operation over steam railroad crossings, etc., are complied with immediately, and provided further than stringent regulation be laid down respecting the operation of cars by motormen only when they are in position and able to keep proper lookout ahead, and that when for any reason the motormen must for any appreciable time direct his attention away from the track ahead, he must be required to bring his car to a stop.

In dismissing the complaint the commission ordered the railway to provide more safeguards against accidents at grade crossings, to add to its present equipment for fighting snow and to equip all grade crossings of steam and electric tracks with a metal guard over the trolley wire.

Philadelphia Rapid Transit Wants to Quit Freight Service

The Philadelphia (Pa.) Rapid Transit Company has requested and received the consent of the Public Service Commission to extend until Nov. 30 the time fixed for the discontinuance of the freight service on its line, and the interchange of freight with the Philadelphia & West Chester Traction and the Lehigh Transit Company. The original intention of the company was to discontinue the service on Oct. 30. Shippers who would be affected by the suspension of the service hope that a way may be found out of the difficulty, but the railway is opposed to any extended continuance of the service. The company's stand in the matter has been explained as follows:

> For several years prior to the world war, the Philadelphia Rapid Transit Company operated a trolley freight service, which, however, was always limited by reason of the competition of the better-equipped steam railway and express lines, and also because the larger shippers used motor trucks whenever their business developed in such a way as to make it profitable for them to do so.
>
> P. R. T. made its decision to discontinue the freight business because its continuance would necessitate making large capital investment for new freight equipment, relocation of the main receiving station at Front and Market Streets, because of over-congestion, and the immediate establishment of a new freight station in place of the Eleventh and Colona Streets station, now condemned for a recreation centre.
>
> P. R. T. is chartered solely as a passenger-carrying company, and has urgent need for all available capital to keep pace with its increasing passenger business; and, even if additional capital were obtainable, it would be unwise for P. R. T. to make large investment for freight service, in view of the fact that the State is eliminating toll roads and is engaged in an extensive program of improvement which will result in a constantly increasing amount of light freight being carried on motor trucks, as evidenced by the department stores and other large deliverers of goods now using motor trucks in transporting freight to points reached by this trolley freight service.
>
> Steam railways are by law common carriers of freight and have large investments in equipment and terminals. Some street railways, which have exercised the power of eminent domain have like corporate obligation, but P. R. T. is not of this number.
>
> Further duplication of steam railway investment by street railways for freight service only serves to unnecessarily increase the cost of all service rendered and should, for that reason, be discouraged.

One-Man Cars Upheld

The Commission on Public Utilities in Boston, Mass., recently denied the petition of the Newburyport City Council to forbid the operation of one-man cars by the Massachusetts Northeastern Street Railway.

The ruling follows in part:

> The commission has caused an examination of these lines to be made by its inspection department. The operation of one-man cars on the Newburyport end of the line is comparatively recent and is attended with more or less delay on account of this fact, but the conditions on the line present no operating difficulties different from those on many other lines throughout the state upon which one-man cars are in successful operation.
>
> We believe that when the operators and the public have had more experience with this style of operation, the troubles complained of will gradually correct this. If this does not prove to be the case, after a fair trial, the matter can be easily brought again to the commission's attention. The petition is therefore dismissed.

Transportation News Notes

Fares Reduced in Eureka.—By purchasing books of tickets patrons of the Eureka (Cal.) Street Railway can ride for 5 cents in place of the 6-cent cash fare. This reduction in fare comes within one month after the city took over the property. The former company was known as the Humboldt Transit Company.

I. C. C. Jurisdiction to Be Determined.—An investigation was ordered on Sept. 30 by the Interstate Commerce Commission to determine whether or not the Washington Railway & Electric Company, Washington, D. C., over whose depreciation charges the Interstate Commerce Commission has jurisdiction, is a carrier subject to the Interstate Commerce act. The case was assigned for hearing in Washington on Oct. 17.

Mayor Against Bus Service.—Mayor Newton Brainard of Hartford, Conn., will refuse to sign a petition of the Common Council which provides that the Connecticut Company establish before Jan. 1, 1922, a motor bus line running in the south-central part of the city. It is said that the Mayor holds to the opinion that the territory in which the bus line was to run is a congested section of the city and that it is now adequately served by the electric railway.

Railway Answers Complaint.—The West-Penn Railways has filed an answer to the complaint of the city of McKeesport which demands lower fares on the ground that wage reductions have produced increased revenues for the company. In its statement the company gave some figures to show the cost of operation. For the last eleven months the gross receipts of the McKeesport branch of the West Penn Railways were $465,000, with $47,000 net income. The company claims an expense of $500,000 on track and roadway.

Opposition to One-Man Cars Withdrawn.—The committee on railroads and bridges of the Common Council of Milwaukee, Wis., has recommended for indefinite postponement the Dietz resolution seeking discontinuance of the operation by the Milwaukee Electric Railway & Light Company of one-man safety cars in the city. The committee had held several hearings on the subject and had received a report from the City Safety Commission indorsing one-man safety car operation. This report was abstracted in the ELECTRIC RAILWAY JOURNAL of Oct. 1, 1921, page 570.

Hearing Held on Intrastate Rates.—According to John E. Benton, general counsel for the National Association of State Railroad and Public Utility Commissioners, the Interstate Commerce Commission is seeking to impose a "dead uniformity of rates" in the various States. Mr. Benton expressed this view to the Senate on Oct. 29 and reiterated previous arguments to the effect that local conditions were a factor that must be considered in fixing rates. Senator Poindexter joined in Mr. Benton's criticisms of the Commission toward intrastate rates.

Personal Mention

Commission Officer Impressed

General Andrews Returns, Highly Pleased with Railway Studies Made in Large Cities

"The thing which impressed me most forcibly and the fact at which I was so agreeably surprised in my recent visit to several of the representative railways in the East and middle West was that the type of men who are either managers or operators of these properties are keen, wide-awake and intensely devoted to giving the public the best possible service." This was the statement made recently by Brigadier-General Lincoln C. Andrews, executive officer of the New York Transit Commission. General Andrews was accompanied on his trip by C. E. Morgan, assistant general manager of the Brooklyn (N. Y.) City Railroad; William E. Thompson, superintendent of transportation, and John S. McWhirter, superintendent of equipment Third Avenue Railway, N. Y. The properties visited included those in Philadelphia, Cleveland, Kansas City, Chicago and others on the route.

General Andrews, who has charge of the commission's working organization, made this whirlwind trip which, although lasting but two weeks, gave him an opportunity to become acquainted with the operating problems confronting the industry as a whole. It was his belief that wherever any differences between the railway and the public had been satisfactorily settled the managements did not merely let the public attitude remain at a stage of indifference but actively grasped the opportunity and capitalized it to gain the wholehearted confidence and cooperation of the people. This was not a conclusion drawn from a view of the situation existing on one property but was his composite impression. He expressed the view that if some understanding could be reached between the transit companies and the people of New York, all other differences would almost automatically adjust themselves.

General Andrews was keenly interested in the development and the successful installation of safety cars in many cities. According to him the outstanding case of their application to city traffic is Terre Haute, where the lines are operated with safety cars entirely. He considered it remarkable that 65 per cent additional service could be given at a 10 per cent decrease in operating expenses.

Until his appointment by George McAneny, chairman of the commission, General Andrews had always been an army man. He saw service in the World War and after the armistice became assistant provost marshal general of the American Expeditionary Forces. His recent foreign duties were preceded by a long service career. Following his graduation from the United States Military Academy in 1893 he was assigned to the infantry and later to the cavalry, with which he was connected at the time of the Spanish-American War. In the battle of Santiago he was aide to General Summer.

General Andrews did not return to the United States from the Philippines until 1903, when he was appointed an instructor of cavalry tactics at West Point. He was later in charge of cavalry instruction at the first Plattsburg Training Camp.

Mr. McGraw Elected President of A. B. P.

James H. McGraw, president of the McGraw-Hill Company, Inc., publishers of the ELECTRIC RAILWAY JOURNAL, was elected last week president of the Associated Business Papers, Inc. The meeting of that association was held in Chicago on Oct. 24-26. The main topic of the discussion was the part that the publishers should play in speeding the revival of business. The keynote address was delivered by Mr. McGraw. An abstract of this address will be found on another page.

Among important business matters receiving the attention of the convention was the auditing of publications of free circulation by the Audit Bureau of Circulations. A resolution was passed requesting the "ABC" to discontinue the auditing of such publications since free circulation is contrary to the basic principles of legitimate publishing and circulation statements have the effect of misleading advertisers who have come to associate the "ABC" with ethical standards of publishing.

The new officers elected for the ensuing year in addition to Mr. McGraw were: Vice-president, A. O. Backert, Penton Publishing Company; treasurer, Fritz Frank, Iron Age Publishing Company.

Judge Haight Appointed Special Master in Jersey Fare Case

Former Federal Judge Thomas H. G. Haight, Jersey City, has been appointed by Federal Judge John Rellstab as special master to take testimony on the application of the Public Service Railway for authority to put into effect a 10-cent fare. Judge Haight is recognized as one of the ablest members of the bar in New Jersey. He served as United States District Court Judge and also as United States Circuit Court Judge. He was appointed to both of these posts by former President Wilson.

General Manager of Wheeling Property Resigns

J. D. Whittemore, for several years general manager of the Wheeling (W. Va.) Public Service Company, has left Wheeling for New York to locate. He was the honor guest at a farewell dinner at the Wheeling Country Club recently given by C. P. Billings of the Wheeling Traction Company. Intimate friends and business associates of Mr. Whittemore were present to bid him farewell and extend him their best wishes for his future success. There were many expressions of regret at Mr. Whittemore's departure.

John J. Coniff acted as toastmaster. Conceiving an imaginary loving cup, Mr. Coniff stated that if all the good wishes that will follow Mr. Whittemore could be placed in it, it would be filled to the brim. Mr. Whittemore responded with an appreciation of the friendships he formed here and by thanking his friends.

W. J. Torrens Appointed Equipment Man of Second Avenue

William J. Torrens has been appointed superintendent of equipment of the Second Avenue Railroad Company, New York. Mr. Torrens was formerly with the Metropolitan Street Railway Company, New York, in the old cable days and continued with the above company during the electrification of the cable roads. He remained with the company as foreman until the segregation of the Metropolitan in 1907 and then became master mechanic of the Second Avenue Railroad. In 1910 he resigned to accept a position in Seattle as master mechanic, continuing there until 1919, when he became affiliated with the McKinley system, in direct charge at Ottawa, Ill.

Toronto Street Railway Employees Banquet R. J. Fleming

On Saturday, Oct. 29, the Toronto Railwaymen's Union, Division 113, entertained R. J. Fleming, former general manager of the Toronto Railway, and the members of the Transportation Commission, at a banquet in the Labor Temple, the occasion serving as a formal farewell by the railway employees to their former general manager.

In addition to 900 railway employees there were present Mr. Fleming, Chairman P. W. Ellis, Fred Miller and General Manager H. H. Couzens of the Toronto Transportation Commission, which is now operating the street railway; Works Commissioner R. C. Harris, General Manager Wilson of the Toronto & York Radial Railway, also several other officials of the Toronto Railway who served under Mr. Fleming. President Merson of the Union presided.

K. D. Leavitt is no longer connected with the Oakwood Street Railway, Dayton, Ohio.

E. I. Edgecomb has resigned as claim agent of the Syracuse Northern Electric Railway, Syracuse, N. Y.

A. Gorman has been appointed superintendent of the Corning & Painted Post Street Railway, Corning, N. Y.

M. J. Sullivan has resigned as chief engineer of the Kingston Consolidated Railroad, Kingston, N. Y.

Roy C. Megargel of New York has been elected president of the Southern New York Power & Railway Corporation, Cooperstown, N. Y., to succeed Joseph B. Mayer.

E. E. McWhiney has been appointed assistant secretary of the Doherty Operating Company, New York, and L. W. Wallace has been made an assistant treasurer.

M. M. Freeman has accepted the position as treasurer of the Claremont (N. H.) Railway, succeeding George E. Tenney.

Col. Laird of St. Louis, Mo., has been appointed to the newly created position of first vice-president of the Central Power & Light Company, Walnut Ridge, Ark.

E. Z. Wallawer, formerly vice-president of the Southwest Missouri Railroad, Webb City, Mo., has been promoted to fill the vacant office of president. H. C. Rogers of Carthage, Mo., has been appointed to fill his former position.

John Nichol has succeeded John H. Watkins as vice-president of the Pine Bluff Company, Pine Bluff, Ark. J. L. Longino, secretary and general manager, has also taken over the duties of the treasurer, J. A. Whitlow, who has left the company.

H. B. Fleming has followed **W. W. Crawford** as vice-president on both the Calumet & South Chicago Railway Company, Chicago, and the Southern Street Railway, Chicago. Mr. Fleming is also vice-president and chief engineer of the Chicago City Railway.

George N. West has been appointed treasurer of the Manchester (N. H.) Street Railway. He has also taken the position as treasurer of the Manchester Light & Power Company, which owns the Manchester Street Railway. He has replaced L. E. Flint, who now has the title of assistant treasurer.

Obituary

Odell W. McConnell, lawyer and head of the street railways of Helena, Mont., died recently at the age of fifty-three.

Harry Hamilton, sixty years old, died in Youngstown, Ohio, on Oct. 8 after a long illness. He was the builder of the Park and Falls Street car line in Youngstown.

Thomas Edward Mullen, chief train dispatcher of the Brooklyn (N. Y.) Rapid Transit Company, died suddenly at Saratoga, N. Y., several weeks ago. He was forty-six years old.

Winthrop G. Bushnell of New Haven Conn., died suddenly of heart disease on Oct. 23. Mr. Bushnell had been prominent in the development of electric railways in Connecticut and at one time was representative of the General Electric Company in that state.

Frederick Heis, roadmaster of the Interborough Rapid Transit Company, New York, died several months ago. Mr. Heis, who was 63 years old at the time of his death, had been an employee of the Interborough and its predecessors for thirty-seven years. He entered the service as trackman in 1884 and through rapid promotion became roadmaster in 1904. Mr. Heis, by years of close application to the track maintenance work of the company, performed under difficulties due to location and frequency of trains, hardly equaled elsewhere, became a most efficient and valued employee.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

A Feeling That Price Liquidation Has Reached Bottom

After personal visits to a number of coal consuming centers, and a telegraphic survey of the situation among wholesalers, George H. Cushing, managing director of the American Wholesale Coal Association, has reached the following conclusions:

The stocks of high priced goods of all kinds have about been worked off. Manufacturers everywhere are buying raw material only after they have orders for the finished product, manufacturing the raw material into a finished product as quickly as possible, and are making shipments almost instantly. Everywhere there is a definite feeling that price liquidation has reached bottom on the present wage scale. Everywhere there is a feeling that business activity is starting to resume and there is an expectation of a price recovery.

Almost uniformly public utilities have on hand a thirty day supply of coal. There was no general belief that the railroad strike would occur. There was a little precautionary buying but not much. In one or two places there were slight price advances. Generally the market was dull.

Proposed Electric Railway Project in India

A large supply of electric energy will be required, according to *Electrical Industries*, in connection with the proposed electrification of the suburban lines of the G. I. P. To insure the supply of electricity it is proposed to interconnect the Andhra Valley, the Tata power and the hydro-electric companies. It will require nearly 17,000,000 kw.-hr. per annum to operate the railway from V. Telminus to Kurla; when extended to Thana, 29,000,000 kw.-hr., and when extended to Kalyan, 36,000,000 kw.-hr.

Bids Asked for Subway Construction

The New York Transit Commission is requesting sealed bids for the construction of Route No. 67, a part of the Queensboro Subway Rapid Transit System, to be received at the office of the Commission, at 49 Lafayette Street, Borough of Manhattan, New York City, until November 9, at 11:30 a.m. Route No. 67 is to be a two-track subsurface railroad extending under East and West Forty-Second Street, Bryant Park and West Forty-First Street, from about the westerly line of Vanderbilt Avenue to about the westerly line of Eighth Avenue, in the Borough of Manhattan. The work to be done will include the care and support of surface, subsurface and overhead structures, the maintenance of traffic and the restoration of street and park surfaces. The method of construction will be partly by tunneling and partly by excavation from the surface. The contractor must within forty-two months from the delivery of the contract complete the railroad and such other work covered by the contract as may be necessary to put the railroad in condition for operation and must complete all other work covered by the contract within forty-eight months from the delivery of the contract.

Motor Demand Expected

Demand for Railway Motors Still Light Although Heavier Sales Are Anticipated

Demand for railway motors is light, according to leading manufacturers. Electric traction companies are said to be buying new rolling stock only when absolutely necessary. The trend for some time has been so much toward safety cars that the number of motors of larger horsepower bought for the heavier types of cars is now rather small compared with the types used on safety cars. Safety car equipment, principally motors, has reached a state of standardization with the result that delivery conditions are very favorable indeed. One of the largest motor manufacturers in the country is optimistic regarding future business on the ground that the attitude of the public toward electric railways has improved in respect to higher fares and increased transportation facilities. In some cases where fare reductions have been made or where new fare methods have been employed, receipts have been kept up in spite of the industrial depression. Virtually all of the lines are in need of additional equipment, this company states. Heretofore, more cars at the old rates in many cases meant greater loss in operation, however, and the money with which to make extensions has been lacking. Demand, as a result, has not been as great as it would have been if the railways could finance new equipment.

Manufacturing conditions are quite favorable at present. One manufacturer has announced a reduction in wages which took effect on Nov. 1. This cut brings labor costs down to a level so that finished products can be quoted at a figure resembling that of the prewar times. The shortage of gears and insulating material that prevailed at this time last year is no longer a factor. Producers are anticipating their needs well in advance, keeping a good running stock of material on hand at the factory. A reserve supply of motors is also maintained with each of the car builders, it is claimed, as that reasonable shipments can be made.

At this time there seems to be considerable hope by the leading interests that manufacturing conditions will permit a reduction of prices in the near future. The view that the high level attained by railway motor prices since the war was caused very largely by the exorbitant demands of labor all along the line, from the ore in the ground to the finished product, was certainly justified. Recent months, however, have seen cuts in these contributory industries.

Rolling Stock

Androscoggin & Kennebec Railway, Lewiston, Me., ordered from the Wason Manufacturing Company on Sept. 23 three standard safety cars equipped with G. E. 258 ball-bearing motors and C. P. 25 air compressors.

New York, New Haven & Hartford Railroad, which, as has been previously announced, has ordered three rail motor buses to be operated on some of the short branch lines, has specified that the bodies to be mounted on the rail chassis shall be furnished by the Osgood-Bradley Car Company, Springfield, Mass.

Track and Roadway

Lincoln (Neb.) Traction Company is building two new double-track curves in connection with the rerouting plans which will take effect shortly.

Burlington County Transit Company, Hainesport, N. J., has been requested by the Burlington County Board of Freeholders to change the location of the tracks and place them in the middle of the road on High Street, Burlington.

The Northampton, Easton & Washington Traction Company, Easton, Pa., has completed the removal of the line from the side to the center of the road between Phillipsburg and Post Colden. The work required some time.

New York State Railways, Rochester, N. Y., has sought permission to extend its line on Clinton Avenue north from the present terminus at Norton Street to the Ridge road. The railway also recommends trackless trolleys for cross-town service.

Cincinnati, Ohio.—The contract for constructing the fifth section of the rapid transit loop, Cincinnati (Ohio), has been awarded to the Hickey Bros. Construction Company, Columbus, O., builders of sections 2 and 3. Their bid was $153,965. The engineer's estimate was $188,240.

Cincinnati (Ohio) Traction Company, through Walter Draper, vice-president, has announced that it will lay new tracks on Vine Street between McMillan and Mulberry Streets, a distance of one mile. Cars using this thoroughfare will be detoured over a different route while the construction work is in progress.

Toronto, Can. The Transportation Commission of Toronto has approved the plan to extend the Dundas Street line west across Yonge Street to the corner of Dundas Street east and Victoria Street to make a new cross-town car service and relieve congestion. The commission will go ahead with the construction of the connecting link soon as the city provides a right-of-way.

Jacksonville-Pablo Beach, Fla., Stone & Webster have been asked to build the proposed trolley line from Jacksonville to Pablo Beach, a distance of more than twenty miles, and according to reports made to the meeting of the South Jacksonville Commercial Club, the Boston corporation has the plan under advisement. This corporation owns the Jacksonville Traction Company which is now in the hands of a receiver and the South Jacksonville interests. Such a line will serve South Jacksonville, Arlington and smaller towns, besides the colony at Pablo Beach and Atlantic Beach, both prominent winter and summer resorts.

Power Houses, Shops and Buildings

Los Angeles (Cal.) Railway has completed the construction of the Garvanza Automatic substation at Avenue 54 and Buchanan Street. It is to improve power conditions in Eagle Rock Valley, and a part of the northern territory.

Northampton, Easton & Washington Traction Company, Easton, Pa., will build within the next six months a small substation building. The railway will also purchase and install two 300-kw. rotary converters with necessary equipment.

Trenton & Mercer County Traction Corporation, Trenton, N. J., through its president, Rankin Johnson, has informed the Trenton City Commission that the company will place its feed wires in conduits along Lincoln Avenue, leading from the power station. The work will cost approximately $25,000 and will be begun at once.

Professional Note

Stovel & Brinkerhoff is the name under which is announced the partnership of R. W. Stovel and H. A. Brinkerhoff, engineers and contractors. Mr. Brinkerhoff is well known for his work in connection with the construction of the Pennsylvaia Station in New York City, of which he was general superintendent of construction in charge of the installation of all mechanical and electrical equipment. Mr. Stovel was the engineer in charge of the Paoli and Chestnut Hill electrifications of the Pennsylvania Railroad and the electrification of the Elkhorn grade of the Norfolk & Western Railway, projects which were executed while he was associated with Gibbs & Hill, from 1914 to 1917. Both men were for many years connected with Westinghouse, Church, Kerr & Company, and both were later associated with Dwight P. Robinson & Company, subsequent to the consolidation of the two companies. Mr. Stovel was graduated from McGill University in 1897 as an electrical engineer and in 1900 he received the degree of master of science from the same university. He served with the Pittsburgh & Lake Erie Railroad from 1898 to 1903 in the design and construction of the Pittsburgh Terminal Station and the McKees Rocks repair shops of that road. From 1903 to 1914 he was associated with Westinghouse, Church, Kerr & Company. He served with the A. E. F. in France as lieutenant colonel and had charge of the mechanical and electrical equipment at all ports used by the United States army in France. Mr. Brinkerhoff was connected with the "C. & C." Electric Company as mechanical draughtsman from 1893 to 1897. In that year he became associated with Westinghouse, Church, Kerr & Company. He continued with that organization until 1920, when the company was consolidated with Dwight P. Robinson & Company, at which time he became the head of the industrial engineering division in the new organization. During the war he was managing engineer in charge of design and construction of United States nitrate plant No. 2 at Muscle Shoals. Both men are members of the American Society of Mechanical Engineers, and Mr. Stovel is a member of the American Institute of Electrical Engineers and the Engineer Reserve Corps, U. S. A. The new firm is prepared to undertake investigations and reports on industrial engineering problems, the purchase and generation of power, the operation and economy of power plants, and the design, construction and equipment of steam and electric power stations, manufacturing plants and railroad shops. Offices have been established at 136 Liberty Street, New York.

Trade Notes

Griffin Wheel Company, Chicago, has opened sales offices in the Rialto building, San Francisco. W. H. Snedaker, formerly in the Tacoma office for the company, has been place in charge of the new office.

E. L. Windenburg, who has been appointed office manager of the Cleveland branch of the Cutler-Hammer Manufacturing Company, fills the vacancy made by the sudden death of A. F. Loomis on Aug. 2. Mr. Windenburg has been with the Cleveland office since February, 1919, when he left the aërial service of the United States Navy.

The Motive Power Lubricant Co., 130 N. Wells Street, Chicago, has taken over the lubricant business of the Cassco Bar Metallic Packing Company, which manufactures Cassco lubricated waste and Cassco plain grease. While retaining identical quality, the products of this company will be known in the future as "frictionless lubricated waste," "frictionless grease light" and "frictionless grease heavy."

Belden Manufacturing Company, Chicago, has announced the appointment, which was effective Nov. 1, of C. P. Cushway to be manager of the cable and specialties department. Mr. Cushway will have supervision over that part of the business pertaining to telephone, automobile and appliance cord assemblies, cordage, flexible cable and insulating materials, and to this work brings several years of experience in the engineering department of the Company.

George T. Hansen, for ten years district manager of the Allis-Chalmers Manufacturing Company at Salt Lake City, Utah, has resigned to enter private business. E. N. Greenleaf, who has been Mr. Hansen's assistant, will become the new district manager of the Allis-Chalmers Company. Mr. Hansen has devoted his time since Sept. 15 to the practice of mining engineering and to looking after his mining and oil interests.

Electric Tamper & Equipment Company, 1400 West Adams Street, Chicago, under the management of C. Jackson, vice-president and general manager, has taken over the electric tie tamping business of the Kalamazoo Railway Supply Company. This electric tamper was developed by Mr. Jackson for the Kalamazoo Railway Supply Company and introduced into railway service last year. The operation of the device was found to be satisfactory, and a number of equipments have lately been placed in service.

Locke Insulator Manufacturing Company on Oct. 1 moved its New York office from the Woolworth Building to the twenty-first floor of the Equitable Building, 120 Broadway. A month before this change C. H. Wheeler took over charge of the New York territory from Kent Hawley, who returned to the factory at Victor, N. Y., as chief engineer. Mr. Wheeler has been for nineteen years with the General Electric Company. Seven years of this time was spent at Schenectady, and since 1909 he has been in the general office in New York.

D. K. Chadbourne has been appointed manager of the New York office of the Westinghouse Electric International Company. Mr. Chadbourne came to the Westinghouse Company through the George Cutter Company before it was affiliated with the Westinghouse, as he was successively Western district manager and Eastern district manager of the latter company from 1912 to 1920, when he joined the Westinghouse Electric International Company. Before becoming connected with the Cutter interests, he spent six years with the Allis Calmers Company. Mr. Chadbourne was graduated from the Purdue University in 1906.

Oswald Dale has resigned from the Irvington Varnish & Insulator Company, Irvington, N. J., of which he was vice-president and general manager. He had been with the company for five years. He was previously with the General Electric Company for eleven years, nine years of which were spent in the department of supervision of production and two years in the insulating division. For two years prior to that he had been in charge of the heating-device production of the Cutler-Hammer Manufacturing Company. Mr. Dale has just returned from a nine weeks' trip in England and France, where he has been investigating the market for insulating materials.

New Advertising Literature

The Sangamo Electric Company, Springfield, Ill., has issued bulletin No. 57 (suspending No. 49) on "Switchboard Meters, Alternating-Current, Direct-Current and Ampere-Hour."

Bailey Meter Company, Cleveland, has issued bulletin No. 42, entitled "Bailey Boiler Meters," superceding No. 41, and bulletin No. 160, entitled "Multi-Pointer Gages for Draft and Other Factors."

Spencer Trask & Company, New York, have just issued a folder entitled "Present Opportunities in the Bond Market." Besides containing a discussion on the probable future trend of the bond market, a list of current investment offerings is given.

Whiting Corporation, Harvey, Ill., has issued a new crane catalogue No. 158 which supersedes No. 151. The revised catalogue describes and illustrates the company's standard crane designs and contains several tables of standard clearances.

Chicago Pneumatic Tool Company, New York, has announced the publication of Bulletin No. 710, which describes steam, belt and motor-driven dry vacuum pumps. This is the first bulletin issued on this subject by that company.

Chicago Pneumatic Tool Company, New York, has issued Special Publication No. 674 which will be of particular value to users of pneumatic tools. It gives complete specifications which users of such tools can have as a handy ready reference when ordering these products.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

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Advertise—
And Keep It Up

WITH a product which is on sale twenty-four hours a day, with public relations never completely solved, why should not railways adopt and carry out a continuous advertising program? Is it any wonder, with the rather sporadic newspaper advertising of most railways, that the public, when the railway does advertise, wants to know "what the railway wants to put over now?"

The psychology of advertising is to keep continually at it. The public ought to be educated to expect to find the railway's "ad" in the same place every day, and it ought to be one of the best parts of the paper, too—there is "copy" galore. The newspaper reader should be led to remark, as he does occasionally of the advertising in other lines, "I am watching your advertising."

Advertising for particular purposes, for "direct results," is sometimes partially successful, but seldom if ever wholly so. This is particularly true of public utilities, which seldom desire direct results except when some controversy is present, when part of the public already has an opinion and when many, knowing the railway has a particular object in view, ascribe some ulterior motive.

It is better to have a public with which the railway is in constant communication by advertising. By nature the public is not particularly interested in any railway company; it is only mildly interested in transportation—until a failure or an inconvenience occurs. The way to gain that interest, to divert the thoughts of the public to the railway, is to advertise. And the advertising must be continuous to be effective. As the ELECTRIC RAILWAY JOURNAL has often urged in the past, spend at least as much in advertising as is received from advertising.

Mayor Hylan's Re-election
and New York's Traction

MAYOR HYLAN'S re-election in New York was only what was expected, after he had made the 5-cent fare the chief issue in his campaign. It meant nothing to the average voter that the question of fare cannot be determined by the Mayor or that Mr. Hylan during the past four years has made no effort to present a constructive plan to settle this question. Throughout, he has acted merely as an obstructionist. Nevertheless, people cannot be expected to become enthusiastic over any plan which means a higher charge to them for a utility service, and it is an old dodge of politicians to drag fare questions into an election campaign. Tom Johnson won four times on this issue in Cleveland, and then finally lost because he was obliged to put into practice the ideas he had been advocating. Detroit and Chicago have afforded other examples of the same kind of issues. It is to be regretted that in the New York campaign this year Mr. Curran, the opposition candidate, did not declare positively for a just fare, no matter what it might be, but the results would probably have been no different. Possibly the New York *Times'* explanation is pertinent when it says that New York is just naturally Democratic, and that for this reason a Republican as a Fusion candidate has little chance of election unless he is of outstanding ability and high civic reputation.

Fortunately the traction situation in New York will not be settled by the election last Tuesday. The matter is in the hands of a State commission, and its chairman has announced that it is going forward with its plan for hearings, which will begin on Nov. 15. Mayor Hylan can bluster during the next four years, but there is every reason to believe that long before this time has passed the traction situation will be settled in a sane way.

Of the following, however, there can be no doubt: The election has shown—with a majority of more than 400,000—that the companies have a tremendous problem in public relations ahead of them, even though the Transit Commission can formulate a definite constructive plan. There is need of the industry's greatest ability in the line of winning enlightened public interest and therefrom confidence.

Mayor Wilson's Defeat
and Bridgeport's Traction

IN RATHER sharp and almost paradoxical contrast to the result of the New York election is that of Bridgeport, Conn., the scene of the interesting jitney bus-railway controversy of last year. For ten years Clifford B. Wilson has been Mayor of Bridgeport. Transportation has been one of his hobbies. His sole platform plank this year was "more jitneys and the return of the 5-cent fare," and on this he was defeated. This is beyond understanding when compared to New York, or else the traction issue is less important than sometimes supposed. Mr. Wilson's opponent, Mayor-elect Atwater, refused to commit himself to any program or policy as to fares or jitneys, saying that he could form no policy until he acquired office and studied the facts. Yet he was elected. And this from the city which patronized jitneys till the Connecticut Company had to suspend service and which has been the principal petitioner before the State commission requesting a fare adjustment from the present 10-cent fare! Verily, it is paradox.

Politics—
and Railways

A COMPLETE examination of the relation of transportation issues to mayoralty and other elections on Tuesday last would show many more interesting and some enigmatical results.

In Youngstown, Ohio, for example, the mayor-elect ran on an eccentric platform favoring, among other things, the abolition of street cars and the adoption of unrestricted jitney service. In Detroit, the principal issue was the traction question, with both candidates in the non-partisan election favoring municipal ownership but with Mayor Couzens re-elected on his particular municipal ownership plan. Also in Detroit, other traction issues, both passed, were the ousting of the Detroit United and the authorization to purchase trackless trolleys! Were it not so serious, the submission of such questions as the latter to popular vote should provoke the gods to laughter! In Norwalk, Conn., the defeated candidates ran on a platform of more jitneys and reduced fares.

When one considers such results as these with those of New York and Bridgeport, conclusions are hard to draw, except possibly what has already been mentioned in these columns. This is that intelligent judgment on such matters is hard to expect from the public and that so long as business matters like transportation policies are allowed to be footballs of politics, the public in the end is the loser through the resulting impediment to proper development of public service. There is still a long way for the industry to go in the education of the public to appreciation of the Federal Electric Railway Commission's statement that "The electric railway problem admits of a satisfactory solution, once the elements that compose it are made known and the principles of ordinary economic and business common sense are applied."

"Don't Ride Your Auto to Work" a National Publicity Program

ONE of the most common comments today is that the private automobile is the greatest competitor the railway has. Why not tell these auto users how much it is costing them, and do it in a national way?

A case comes to mind of a railway engineer who, in a social evening, asked two of his neighbors to make estimates of the cost of going to and from work in their private automobiles. One answered $1.70 and the other $1.45. His own figures indicated $1.30 (they all had cars of the same make). It took no more than the comparison of these estimates with the known 15 cents on the street car to make street car riders of these neighbors.

There are millions—surely many, many thousands—of such cases, scattered nation wide. A nation-wide educational campaign should be started to deal with it. Why is this not a fitting duty for the advertising section of the association?

Chicago's Subway Again Up for Discussion

FOR the *n*th time, Chicago is taking up a discussion of subway construction. How serious a discussion is to be entered into this time remains to be seen, but the periodic babble has started and most every one in official circles is getting on the band wagon, whether or not he is sincerely interested in seeing a subway built. In fact, there is good reason to believe that a considerable part of the "city hall" is sincerely interested in seeing to it that no truly earnest plan is undertaken, for there are such tremendous political possibilities in bringing some kind of a traction plan including subways into the next mayoralty election in 1923 as the campaign issue.

The present discussion differs from the preceding ones mainly in the increased size of the traction fund. This has now accumulated to more than $30,000,000. This sum is adequate in itself to make a very substantial start on a subway system. And it could be spent to the very great improvement of the present traction systems and consequent benefit of the public if spent for providing facilities for the use of the present elevated and surface line companies, following out the initial construction program of the plan formulated by the Chicago Traction and Subway Commission in 1916. This plan was very comprehensive and one which would have given Chicago perhaps the best transportation facilities of any city in the world. It was prepared by experienced and highly competent engineers at a cost of $250,000, but received only a superficial consideration and was then dropped. This plan is available and is still good; all that is needed is the honest disposition to take the proposition out of politics and determine to go ahead.

Here Is a Chance to Find Out What the Trolley Bus Can Do

ASSUMING that the municipal authorities of New York City will keep accurate records of investment and operation, including receipts and expenditures, and will permit them to be made public, there will soon be available some valuable and authoritative data on the actual operating results of trolley bus operation. Such data will be very welcome material for checking up the comparative costs of this kind of transportation with that of the gasoline-driven motor bus and the safety car. Heretofore, we have been obliged to rely almost entirely upon more or less hypothetical estimates of trolley bus costs. There will then be a real opportunity to judge of the advisability of using the trolley bus in new territory with infrequent service.

As detailed in the Oct. 15 issue, trackless trolley service was inaugurated by the municipal authorities on Oct. 13 on two routes on Staten Island, a borough of the city of New York. Eight new trolley buses have been purchased, several of which have just been delivered, and a trial trip on Oct. 8 was made the occasion of a public celebration by the Staten Islanders.

Two routes are operated, one 2.6 miles in length, the other 4.4 miles. Both routes radiate from the same junction point with an existing street railway line. This new service is designed to furnish sorely needed transportation to communities not hitherto served, except by sporadic independent automobiles and taxicabs at extortionate rates.

Owing to certain legal restrictions preventing at the present time the ownership and operation of motorbuses as a municipal undertaking in New York City, the officials were practically limited to the use of the trolley bus as an alternative to the construction of a regular railway line. In other respects, there is much to point to the motor bus for use in service of this general nature, if recent estimates of cost are at all sound. The routes are through sparsely settled territory, with regular schedules on a relatively infrequent service of twenty minutes, which provides ample facilities for all the traffic. One of the principal arguments for the trolley bus seems absent here. In considering the maintenance of rolling stock, it is usually assumed that the vehicles will be cared for in the shops of an existing electric railway, but in the present instance these cars can only be brought to the shops of the municipal line by being towed several miles; consequently, an independent maintenance organization will have to be established.

It is safe to predict that the development and progress of this new departure in transportation by the city of New York will be watched with great interest, not only by railway operators throughout the country who are following closely the expansion of rail-less transportation, but also by the manufacturers of electric railway rolling stock and the automobile builders.

Bradford and Leeds Furnish Useful Data

IN CONNECTION with this question of trackless trolley costs, the figures from Leeds and Bradford, presented on another page in this issue, are of timely interest. The figures from the British experiences should assist in studies being made in this country as to the possible field, at least from a cost standpoint, for trackless trolleys in the United States.

This much, however, must be recognized—that cost of service is only one element in determining the adoption of trackless trolley, motor bus or safety car. It is not necessary to try to list all other elements, but it is worth while always to keep in mind that in comparing costs on past or present performance, this is only one factor in the future of any particular problem.

Bankers See Better Times Ahead

AN ENCOURAGING note as regards electric railways is sounded in the report of the committee on public service securities, presented at the annual meeting of the Investment Bankers' Association of America, just concluded in New Orleans. Railway men have felt for some time, and have so expressed themselves, that except for certain isolated cases the industry had rounded the corner of depression. It is a satisfaction to hear the same feeling expressed at a meeting of investment bankers. The report of the committee, it is true, did not declare that the convalescence period of the electric railway industry was over. Many problems remain yet to be solved. Nevertheless, the report did point out a number of encouraging facts, such as a gradual reduction in the cost of materials and labor, more enlightened public opinion upon the injurious effect on public service of jitney competition, the merits of service-at-cost franchises and a better understanding of utility problems by regulatory bodies.

The report, which was published in last week's issue of this paper, included also certain warnings by the committee to utilities. One of these was a plea for conservatism in connection with the sale of utility stock directly to customers. While such sale is highly commended from many points of view, the report declares that any such stock should be issued under the same conservative restrictions which would be demanded if the issue was to be made through investment bankers. It should represent actual investment in the property, and the price should be in line with the current quotations for securities of a similar class.

It is to be hoped that these injunctions will be heeded. As yet, comparatively little along this line, certainly with electric railway securities, has been done. The plan has many advantages, but any abuse of the practice is sure to react on the company itself and to some extent on the industry as a whole. Of course no security, even of a utility, is immune from business vicissitudes. Every buyer of securities takes a chance. Nevertheless, the issuing company should make sure that he has such a business chance and that the security is worth the price asked for it before it is put on sale.

The Tax-Exempt Security an Enemy to Proper Progress

AGAIN the taxation progress in Congress seems to be in the opposite direction from the overwhelming public political sentiment, at least as regards the effect on public service corporations. While the social and political policy is toward the integrity of private property and against public ownership, the fiscal policy seems to force public ownership of utilities on the country. By this is meant that the present tax program makes it harder and harder for public utilities to get new capital, thus tending to force the public to provide the money through municipal and state governments. This means public ownership, which the public as a body does not want.

With a limitation on earnings, with a graduated income tax still high in surtax rates, with untold millions of tax-exempt securities available, there seems slim chance to look to any but the very limited income class to provide new capital, and the savings of this class have been shown to be woefully inadequate for public utility needs to meet the demands for increased service. Add to this situation the increased corporation tax, and even the possible profits which may be put back in the business are reduced.

Why cannot Congress take some immediate action with reference to the McFadden-Smoot amendments which would prevent the issuance of any future tax-exempt securities? Any move in that direction, even though time would be required for it to become effective, would prove to be very beneficial. The government itself has a good deal of refunding next year and later, and if Congress would, in refunding, refuse to issue tax-exempt securities, it would be a wonderful benefit to the country in more ways than one.

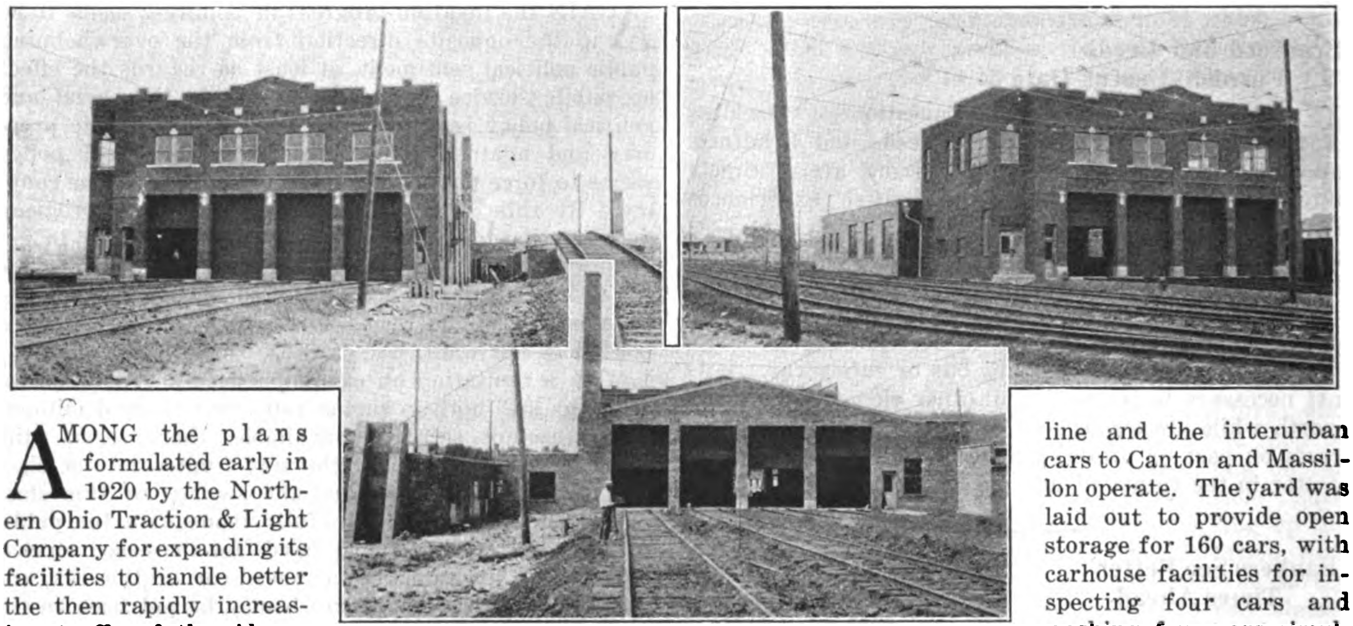
This question of tax-exempt securities has more serious aspects than merely the effect on public utility growth, though that is serious enough to be startling. There is almost an orgy of spending by public officials on more or less useless civic buildings, on municipal and state improvements which are nice but unnecessary, on federal "pork bill" improvements, etc.

This is no argument against needed public improvements which can well be financed on the public's credit without the use of the tax-exempt feature. But the point is that the tax-exempt security has distorted the spending of the nation by the reduction of possible constructive expenditures by corporations and individuals and by the increase of expenditures by public bodies. So long as this country has the graduated income tax, this security is a menace to the proper investment of the country's savings.

The present is an opportune time to register disapproval of an untoward fiscal policy, even though it may be impossible to change the present revenue bill. The utilities, so far as their particular interests are concerned, have been ably represented at Washington by P. H. Gadsden for the joint committee. But this is not enough. There must be continuous agitation for the best revenue policy in order that there be progress and that ultimately the tax-exempt security may be eliminated.

Dead Mileage Saving to Pay for New Car Storage Facilities

Flexible Track Layout and Tipple for Loading Sand and Coal at New Car Yard of the Northern Ohio Traction & Light Company in Akron Are of Special Interest—Small Carhouse Provided for Inspection and Washing

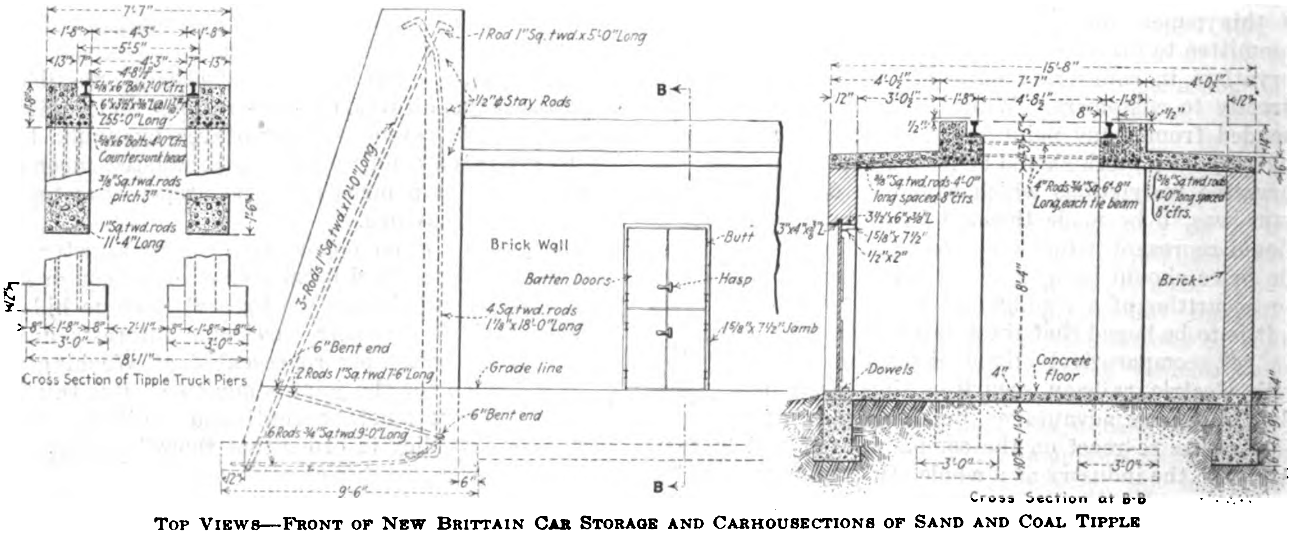


TOP VIEWS—FRONT OF NEW BRITTAIN CAR STORAGE AND CARHOUSE SHOWING OVERHEAD CONSTRUCTION, STORAGE TRACKS AND APPROACH TO TIPPLE. BOTTOM VIEW, REAR END OF CARHOUSE SHOWING TIPPLE AND COAL STORAGE AT LEFT AND OIL HOUSE AT EXTREME RIGHT

AMONG the plans formulated early in 1920 by the Northern Ohio Traction & Light Company for expanding its facilities to handle better the then rapidly increasing traffic of the Akron, Ohio, city lines, was one which contemplated the enlargement of the main shops by making use of part of the carhouse adjacent for shop purposes. To do this would deplete the car storage facilities then available. Also, the supply of service to the heavy traffic center of plants 1 and 2 of the Goodyear Tire & Rubber Company, located well out on the East Market Street line, involved a rather large amount of dead mileage each day. Furthermore, there was need for additional storage and inspection facilities. To meet these several requirements, therefore, the company decided to build a new open storage yard and small carhouse at the end of the East Market Street line in East Akron. The new facilities are called the Britain car yard and carhouse. The yard is 857 ft. deep with 309 ft. frontage on Englewood Avenue, over which the East Market Street city line and the interurban cars to Canton and Massillon operate. The yard was laid out to provide open storage for 160 cars, with carhouse facilities for inspecting four cars and washing four cars simultaneously.

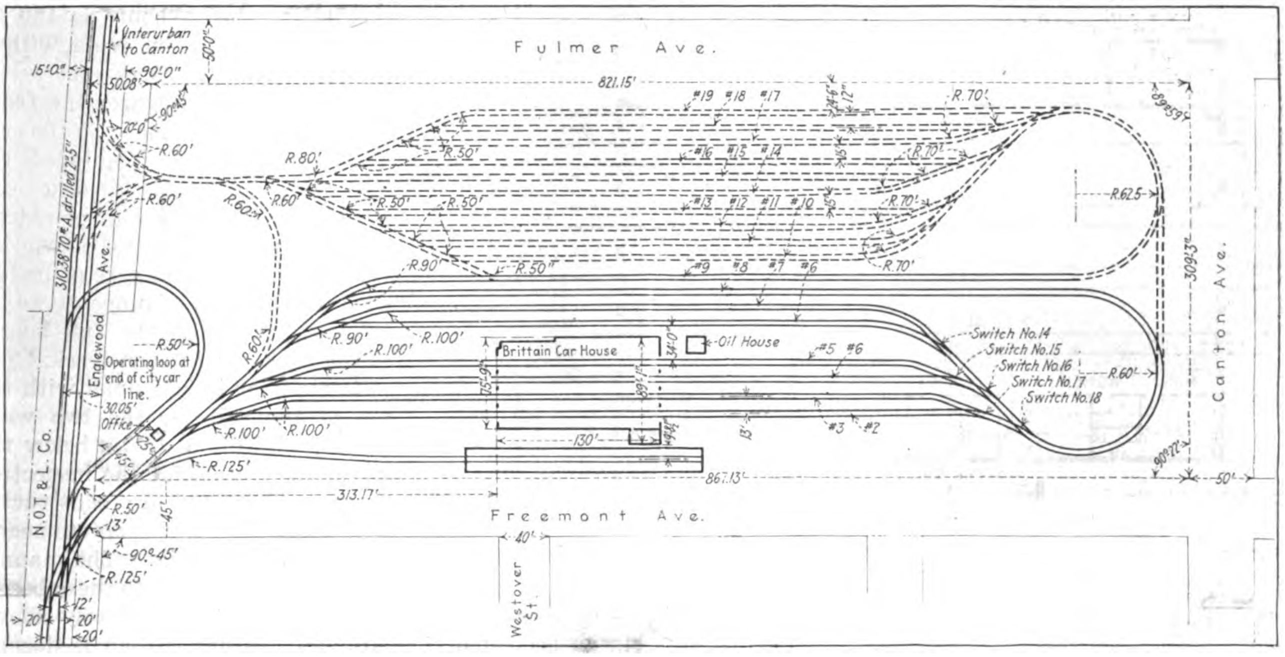
Owing to the very decided and sudden slump in business in Akron, the storage facilities for only eighty cars were completed and the rearrangements at the main shops were postponed indefinitely. With things so materially changed, and the traffic and daily car mileage very much reduced, the expected savings from the new carhouse and storage will be realized only in part for the present. Under normal business conditions, however, it was estimated that the new facilities would reduce the dead mileage some 55,600 car-miles a year, which, if valued at 30 cents a car-mile, would produce an annual saving for the company of $16,680.

The cost of the yard and carhouse as estimated in January, 1920, was approximately $212,000, so that the saving in dead mileage effected, had the traffic of that


Cross Section of Tipple Truck Piers

Cross Section at B-B
7'-7"
1'-8"
4'-3"
1'-8"
5'-5"
13"
7"
4'-3"
7"
13"
4'-8½"
1'-8"
⅝"x6" Bolt 2'-0" Ctrs.
6"x3½"x⅜" L @ 11⅞"
255'-0" Long
⅝"x6" Bolts 4'-0" Ctrs.
Countersunk head
⅜" Sq. twd. rods
pitch 3"
1'-6"
1" Sq. twd. rods
11'-4" Long
8"
1'-8"
8"
2'-11"
8"
1'-8"
8"
3'-0"
3'-0"
8'-11"
1 Rod 1" Sq. twd. x 5'-0" Long
½" ϕ Stay Rods
3-Rods 1" Sq. twd. x 12'-0" Long
B
Brick Wall
Batten Doors
Butt
Hasp
4 Sq. twd. rods
1⅛"x18'-0" Long
1⅝"x7½" Jamb
6" Bent end
2 Rods 1" Sq. twd. 7'-6" Long
Grade line
6" Bent end
6 Rods ¾" Sq. twd. 9'-0" Long
12"
9'-6"
6"
B
3"x4"x⅜" L
15'-8"
4'-0½"
7'-7"
4'-0½"
12"
3'-0½"
1'-8"
4'-8½"
8"
1'-8"
½"
12"
½"
⅜" Sq. twd. rods 4'-0" long spaced 8" ctrs.
3½"x6"x⅜" L
1⅝"x7½"
½"x2"
4" Rods ¾" Sq. 6'-8" Long, each tie beam
⅜" Sq. twd. rods 4'-0" long spaced 8" ctrs.
Brick
8'-4"
Dowels
4"
Concrete floor
1'-9"
10"
3'-0"
3'-0"
1'-9"

TOP VIEWS—FRONT OF NEW BRITTAIN CAR STORAGE AND CARHOUSECTIONS OF SAND AND COAL TIPPLE


Interurban to Canton
Fulmer Ave.
15'0"
90'0"
50.08'
50'0"
821.15'
90°45'
20'0
R.60'
R.60'
R.80'
R.60'
R.60'
R.50'
R.50'
R.50'
R.90'
R.50"
#19 #18 #17
#16 #15 #14
#13 #12 #11 #10
#9 #8 #7 #6
24'6"
12"
15'
15'
R.70'
R.70'
R.70'
R.70'
R.62.5
89°59'
309'3"
Canton Ave.
310.38'10" A drilled 2'5"
Englewood Ave.
R.50'
Operating loop at end of city car line.
30.05'
Office
N.O.T. & L. Co.
R.60'
R.90'
R.100'
R.100'
Brittain Car House
75'9"
89'1"
34'0"
Oil House
#5 #6
Switch No.14
Switch No.15
Switch No.16
Switch No.17
Switch No.18
R.60'
R.100'
R.100'
R.125'
130'
13'
#3 #2
90°22'
867.13'
50'
313.17'
45'
R.50'
13'
Freemont Ave.
40'
Westover St.
90°45'
R.125'
12'
20'
20'
20'

GENERAL LAYOUT OF NEW CAR STORAGE YARD IN EAST AKRON, OHIO

time continued, would have more than carried the new investment which also provides additional facilities.

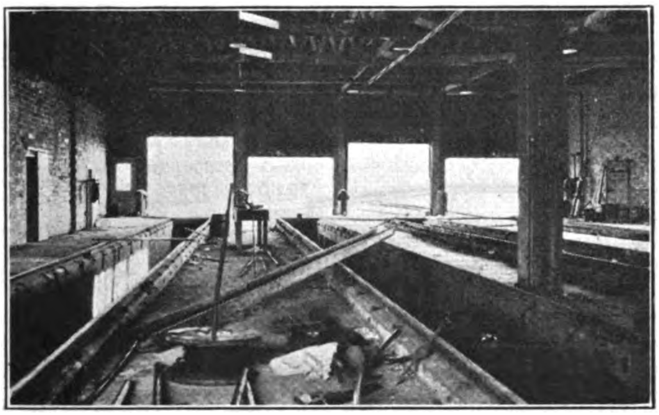
GENERAL LAYOUT OF THE YARD

Of particular interest among the many features of the yard is the layout of track and general plan. In the first place all movements of cars in the yard are entirely separated from the main-line operation, thus avoiding to a maximum degree any interference with the regular operation of cars in service, or any delay due to yard derailments. While the new storage yard is located at the end of one of the city lines, the loop for this line, which occupies a portion of the front end of the tract of ground, is built entirely separate from the storage yard trackage. Aside from the special work connections with the main line, all of the track and special work in the yard is of the open type and hence easily maintained. Furthermore, the special work and curves entering the tipple track are so constructed that standard steam railroad cars with M.C.B. equipment can be operated over it.

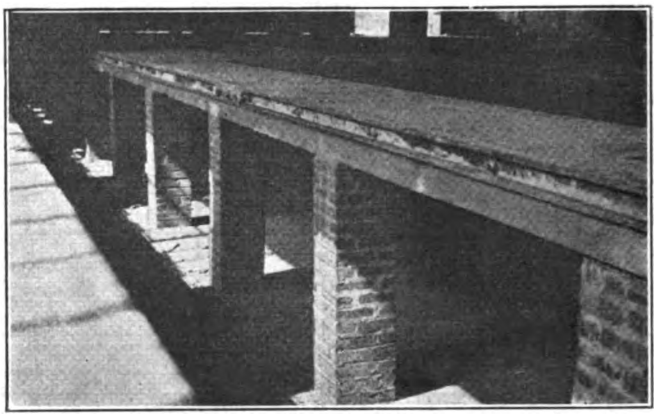
The layout of the tracks provides great flexibility in the handling of cars in and out of the yard and in shifting them about the yard for inspection and washing purposes. The track for the whole yard is laid out in two parts, only one of which has been built for the time being. Each part is to be served by a direct connection to the main line, whence a ladder track makes possible the placing of a car on any one of the tracks of the group. All these tracks again converge into a ladder track and a loop at the rear end of the property, so that there is almost no movement of cars that cannot be quickly and expeditiously accomplished. The special work in every case has been kept of the simplest form by so placing the switches as to avoid any overlapping of special work. The overhead work is of the substantial backbone construction type and well strung to avoid trolley-off trouble.

Of the nine tracks installed in the yard at the present time, the first track serves the tipple described later on, four tracks extend through the carhouse and the four remaining tracks are available for storage only.

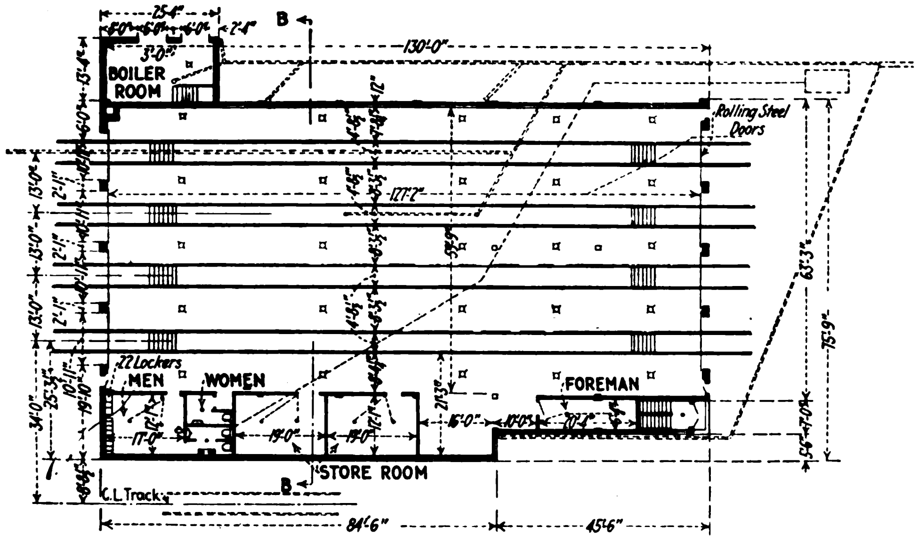
Ultimately, a second loop at the front end of the property will be made available by a connection from the present ladder track to the lead-in track of the second group of storage tracks. This will be provided for emergency use in case a car in regular service should become derailed on the shorter loop. Meantime, it is possible to loop the cars in an emergency by operating them through the present storage yard and around the loop at the rear end of the property, by



INTERIOR OF CARHOUSE NEARING COMPLETION SHOWING RAIL FASTENING ON INSPECTION TRACKS



OPEN PIT CONSTRUCTION AND LATERAL BOLTS FOR HOLDING RAIL ON WASH TRACKS


25'-4"
B
130'-0"
BOILER ROOM
Rolling Steel Doors
127'-2"
75'-9"
63'-3"
22 Lockers
MEN
WOMEN
FOREMAN
STORE ROOM
C.L.Track
B
84'-6"
45'-6"

FLOOR PLAN OF THE NEW BRITTAIN CARHOUSE

leaving track No. 9 and any other tracks in the yard open.

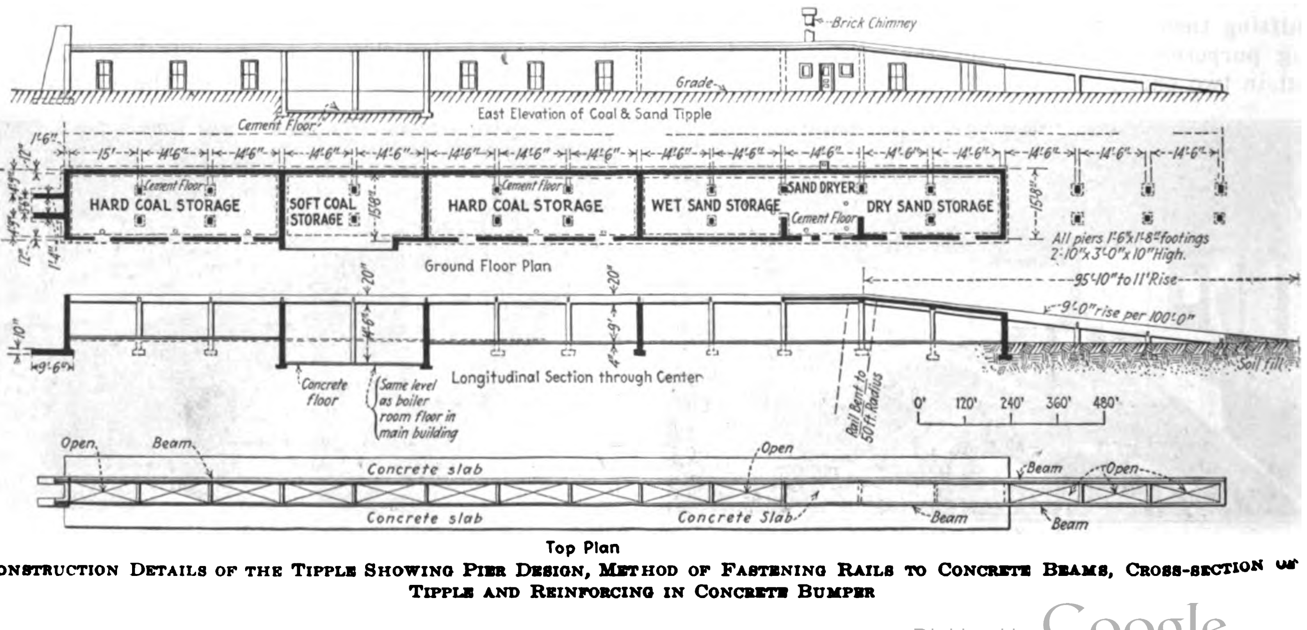
The track in the yard is constructed with 80-lb. A.S.C.E. rail with continuous joints and electrically-welded bonds, oak ties and cinder ballast. The special work is all of the iron-bound type with double-tongue switches having two adjustable connecting rods and spring ground throws. The first four switches leading into track No. 1 are designed for standard M.C.B. flanges to permit the receiving of sand and coal in carload lots on the tipple. These switches are 13 ft. 6 in. long and have a 150-ft. inside radius, while all other switches have a 100-ft. inside radius.

CONSTRUCTION OF CARHOUSE

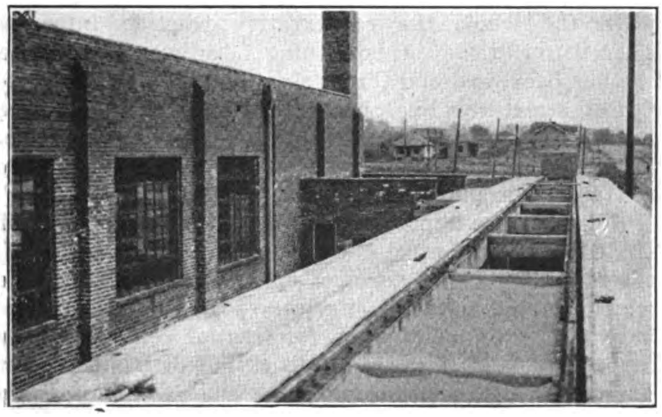
From the accompanying drawing showing the layout of the new storage yard, it will be noted that the new carhouse occupies a central position from front to rear in the yard and that four of the storage tracks pass through the carhouse. This provides storage space in front of the carhouse for cars to be inspected or washed and in the rear of the carhouse for cars that have been inspected or washed and are again ready for service. The assignment of cars to tracks upon entering the yard is directed from the small brick office just inside the yard, where a car upon entering stops to deposit the fare box. The carhouse is 130 ft. long by 75 ft. 9 in. wide with a second story for offices and trainmen's quarters built over the front 46 ft. Two of the tracks in the carhouse are especially equipped for inspection work while the other two tracks have been laid out primarily for washing. Eight cars can be simultaneously taken care of inside, with ample room. An open-type pit extends practically the full length of the carhouse in each track. The concrete floor is laid flush with the top of the rail for the two wash tracks, while it is 15 in. below the top of the rail beside the inspection tracks. The pits are constructed with brick piers and concrete beams underneath the rails. The manner of fastening the rails to these beams is of particular interest, and as this is clearly shown in an accompanying drawing, no description is deemed necessary.

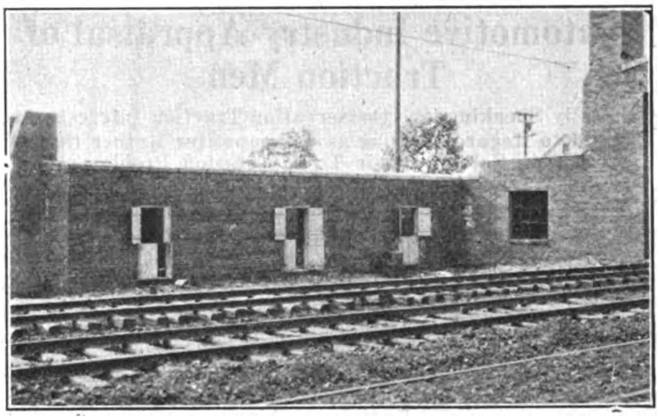
The building is constructed of red rough-faced pressed brick, fireproof partitions and wood trestle supporting the roof. On the main floor a series of rooms along the east side of the building provide an office for the carhouse foremen, two storerooms for supplies, and locker and toilet facilities for men and women employees engaged in inspecting and washing cars. An oil room is provided in a small brick building located just behind the carhouse. The west side of the building is formed almost entirely of windows, Fenestra steel sash being used. Four Kinear rolling steel doors close off each end of the building.

The second story is partitioned off and the walls sand-finished, providing offices for the train dispatcher, division superintendent and assistants. There is also a locker room to accommodate 250 trainmen, shower bath and toilet facilities, and a large bright club room for the trainmen. The interior finish throughout the building is good, but very plain, as is also the exterior finish. Heating of the building is accomplished with a Keewanis smokeless boiler and a Warren & Webster steam heating system. Radiators are installed both overhead and at the floor level along the west wall


Brick Chimney
Grade
East Elevation of Coal & Sand Tipple
Cement Floor
HARD COAL STORAGE
SOFT COAL STORAGE
HARD COAL STORAGE
WET SAND STORAGE
SAND DRYER
Cement Floor
DRY SAND STORAGE
All piers 1'-6"x1'-8" footings 2'-10"x3'-0"x10" High.
Ground Floor Plan
95'-0" to 11' Rise
9'-0" rise per 100'-0"
Soil fill
Longitudinal Section through Center
Concrete floor
Same level as boiler room floor in main building
Rail Bent to 50 ft. Radius
0' 120' 240' 360' 480'
Open
Beam
Concrete slab
Open
Beam
Open
Concrete slab
Concrete Slab
Beam
Beam
Top Plan

CONSTRUCTION DETAILS OF THE TIPPLE SHOWING PIER DESIGN, METHOD OF FASTENING RAILS TO CONCRETE BEAMS, CROSS-SECTION OF TIPPLE AND REINFORCING IN CONCRETE BUMPER





CONCRETE BUMPER AND COAL STORAGE BINS AT REAR END OF TIPPLE. APPEARANCE OF THE TOP OF THE TIPPLE. THE BOILER ROOM IS LOCATED IN THE SMALL BUILDING BETWEEN TIPPLE AND CARHOUSE. NOTE ALSO LARGE WINDOWS IN THE CARHOUSE

beneath the windows, and also one radiator at either side of each rolling steel door at both ends of the building. This location of radiators is expected to give particularly satisfactory heating.

As a steam road connection is available, special facilities have been provided for receiving and handling sand and coal. These consist of a tipple, extending alongside the carhouse and adjacent to the boiler room, and ample storage bins. This tipple is built with brick walls with concrete piers to support the track, the details of which are given in an accompanying drawing. The approach to the tipple is over a 9 per cent grade. The rails on the tipple rest on heavy angle irons inset in the corner of concrete beams, so that the top of the rail is practically flush with the top of the beam.

STORAGE BINS BENEATH TIPPLE TRACK

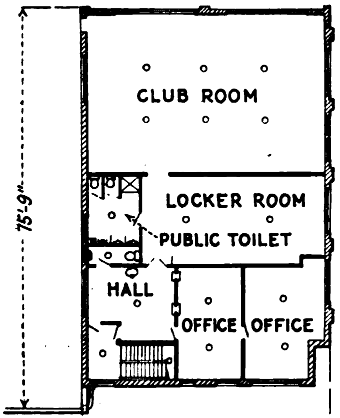
Storage bins for hard coal, soft coal, wet sand and dry sand are provided in the space underneath this tipple track and the space between rails on the tipple is open except over the dry sand storage bin. Material received in carload lots is, therefore, hauled onto the tipple and dumped from bottom dump cars directly into the proper bin. The bin immediately adjacent to the boiler room and communicating with it has capacity for five carloads of soft coal. There is also storage space for ten cars of hard coal for use in the cars and five carloads of wet sand. A small room between the wet sand and dry sand storage bins is to be used as a sand dryer, a smokestack having been built to serve the dryer. A top plan view, side elevation, lateral cross-section and vertical cross-section of this tipple are shown in an accompanying drawing.

Fire protection for the car yard is afforded by numerous fire hydrants placed at various places about the property. No sprinkler system was installed in the carhouse. E. D. Eckroad, engineer maintenance of way, was responsible for the construction of the new layout in East Akron.

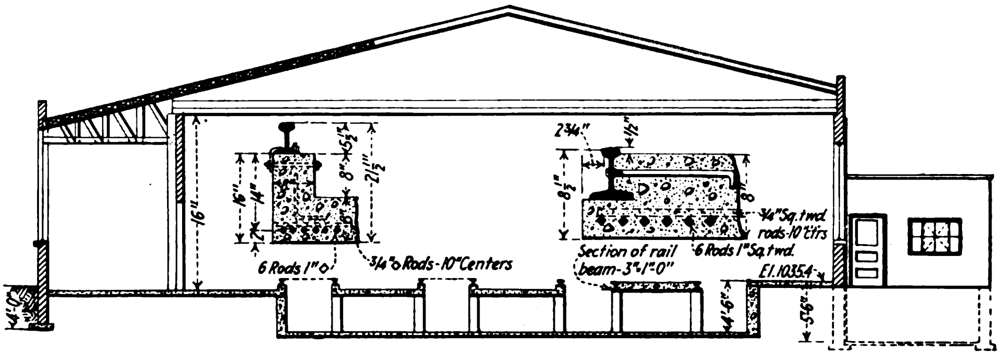
Influence of American Electrification Practice

IN THE past whenever the question of electrification has been taken up the matter of increasing the capacity of a section of steam railway has probably been the greater factor, rather than reduction in operating expenses. Now the high price of coal throughout the world has brought the latter factor into the greater prominence.

An item published in *Commerce Reports* recently says that in many of the larger countries abroad the heavy trunk-line electrification projects in the United States have been very carefully studied and are very frequently referred to by foreign consulting engineers in their reports, and that in several instances standard American plans have been adopted practically complete by engineers advising foreign governments on steam railway electrification. It is believed that the experience of American manufacturers in developing reliable heavy railroad equipment in this country will be of considerable help in furthering heavy traction electrification abroad.



FLOOR PLAN OF OFFICES AND TRAINMEN'S QUARTERS ON SECOND FLOOR



CROSS-SECTION THROUGH CARHOUSE WITH DETAILS OF METHODS USED IN FASTENING RAILS

Automotive Industry Appraisal of Traction Men

Generally Speaking, the Conservation Traction Interests Are Held to Regard the Bus as a Competitor Rather than Ally in Solving Their Transportation Problems

AN ARTICLE recently published in *Automotive Industries* (Oct. 13, 1921) commented on the attitude of the traction interests toward the motor bus and the lack of any comprehensive solution of the problem of motor bus competition. This was written by Sinclair Gluck, managing editor of the *Commercial Vehicle*, and reflected his views of the recent Atlantic City electric railway convention, when he stated many of the allusions in speeches to bus competition showed clearly that members considered it a danger rather than a possible ally, with no attempt to face the issue directly. Taking the convention as a whole, Mr. Gluck declared that the motor bus may be said to have been almost entirely disregarded as a possible factor in passenger transportation.

In his analysis of the points brought out Mr. Gluck showed that there were two factions present. On one side were the conservatives who seemed to regard the bus as a menace, and nothing more, to their business. They were greatly in the majority. The other and more progressive side consisted of but a few men, some of whom already had actually installed buses to cooperate with their trolleys. These regarded the bus not only as a possible but as an actual ally. These men, however, made no headway against the weight of opinion ranked against them.

LITTLE EFFORT TO SOLVE PROBLEM

In the passenger transportation business there is an organized influential group of men. These include electric railway interests as well as the manufacturers of buses and of truck chassis that are more or less convertible into buses. It is necessary for both of these important groups to work in a fundamental constructive way to solve many of the transportation problems, but there was little effort along this line at the convention. Men in the transportation business—men of vision who look to a better, broader and more satisfactory market—may have held hopes for such a development in this convention, but such hopes were justified to a very limited extent.

Short-haul passenger transportation work is in a chaotic state, the article goes on to say, and points out that here and there, in cities such as New York and Washington, well organized, efficiently operated motor bus lines work in conjunction with street car lines to a greater profit to both and more general satisfaction to the public. In other cities there are more or less well-organized bus lines competing with the street cars at a profit to themselves and at a heavy loss to the electric lines. In other places jitneys operate on a shoestring and are cutting down the number of street car patrons at little profit to themselves. Elsewhere buses have tried to compete and have failed. The difference in the outcome has depended upon local conditions and the efficiency with which each type of transportation was organized and operated.

There can be no doubt in the mind of the intelligent transportation observer, however, that there is a field for short-haul bus operation. And there should be no doubt in his mind that the bus is to be reckoned with in that field.

On the whole the conservative traction interests seemed to concede the best thing to do was to legislate the bus backward and through publicity extoll the benefits of street car lines both to municipalities and the general public and to decry buses as undependable, incapable of handling traffic and unwilling or unable to stand their share of municipal duties and taxes.

But far more important was the mistaken attitude of the convention toward the entire problem. After all, the most economical form of transportation is the one which should and will survive. The question fundamentally is not one of profit for traction companies now in business and in no hurry to go out of business, but one of solving the problem of the most economical and efficient form of transportation in each locality and under each set of conditions.

Either the street car lines are of real and permanent value to the communities in which they operate or they are not. If they are not of permanent value in their particular communities, the directors and stockholders should read the writing on the wall and either get out of a bad business altogether or adopt the type of transportation which will solve the problem in their communities—for if they are not of real and permanent value, they will not survive.

The article then goes on to quote extracts from the remarks of H. B. Flowers, chairman of the association's committee on trackless transportation, that the trackless trolley and the motor bus must be conceded a place in the sun and that more time should be granted the committee to inquire further into this important subject. Attention was also directed to the comments of F. E. Frothingham, J. K. Newman, Edwin Gruhl and J. P. Barnes on motor bus competition.

Summing up these comments, the writer held that unorganized jitney buses have done much in many communities to damage the prestige and decrease the profits of street car lines. If this is the case, properly organized and efficiently operated bus lines will surely do more damage. And these bus lines are coming. Therefore, where bus lines are practicable it would seem obvious that there are only two courses of procedure open for the street car line in certain cases—either to organize and operate the inevitable bus lines themselves or go out of business.

The article closes with arguments for a proper chassis and body design, the full details of which have not yet been worked out. It is pointed out that to construct a chassis which will be ideal for city bus work will mean much research and designing effort and possibly the installation of additional machinery to manufacture the final design. It is but natural that the manufacturers are reluctant to undertake this work without any knowledge of the extent of the market on which they can depend for the sale of the ideal vehicle when completed. For this reason there is a strong inclination on their part to recommend the use of present standard truck chassis equipment for buses. But the bus is coming and with it will come the ideal chassis.

No fewer than 4,000,000 passengers are carried daily by the Underground Railway Companies in London. An acceleration of train service has recently been made so that now during the rush hours 816 cars per hour pass through Earl's Court, one of the busiest stations. At the Charing Cross station, which is a stop on three separate lines, a total of 1,215 cars per hour pass through during the peak.

SMALL CATERPILLAR TRACTOR PROVES VERY EFFECTIVE IN CLEANING SNOW FROM DOWNTOWN SPECIAL TRACKWORK

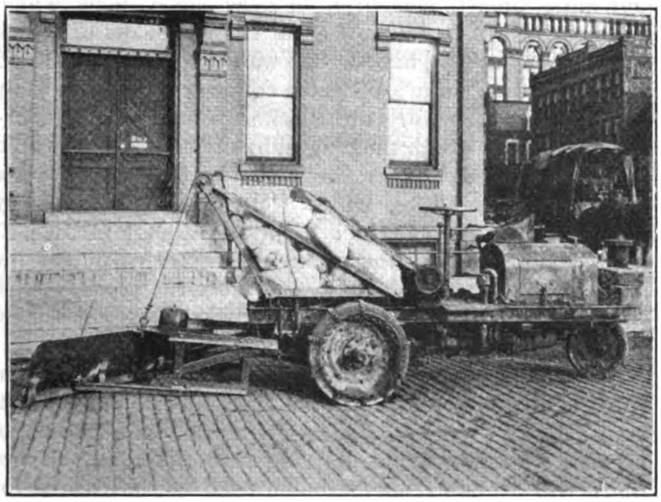
Special Snow-Fighting Equipment

The Milwaukee Company Makes a Substantial Reduction in the Cost of Removing Snow from Streets—Heavy Wing Plow Built for Clearing Highway in Emergency Situation—Description of the Methods Employed to Continue Operation Without Interruption

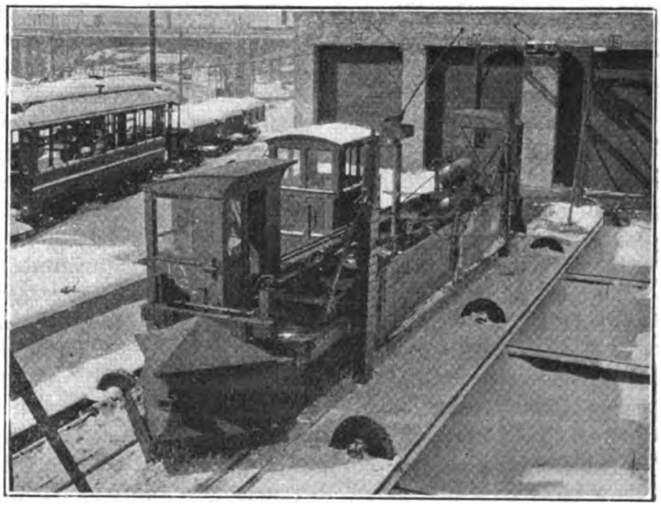
SUBSTANTIAL savings in the cost of clearing snow off intersections and off company property have been made by the Milwaukee Electric Railway & Light Company by the substitution of small motorized plows for the laborer with a shovel. Gasoline engine tractors of two types are proving very effective in this work. One of the accompanying pictures shows a caterpillar tractor made by the Cleveland Tractor Company clearing away the very heavy snow which surprised Milwaukee in the storm on April 15, 1921. This caterpillar tractor is equipped with a 20-hp. engine and is used primarily for removing the snow from the special trackwork at street intersections and to clean off the loading spaces where passengers must stand to board the street cars. It will remove the snow from a 50-ft. x 60-ft. intersection and push it over to the side of the street in ten or fifteen minutes. One man and this machine will do an amount of work in clearing away snow equal to that done by at least ten men. Besides thus economizing on labor costs in clearing a certain location, it has the advantage of being able to move quickly from one location to another requiring snow removal. This machine has been found to be so effective in this work that the company plans to purchase another one this year. Furthermore, a study is being started to work out some machine for picking up the snow after it has been moved over to the curb line by this tractor and loading it into a truck for hauling it off the street. If this is accomplished, the familiar sight of large gangs of men shoveling snow for the car company after a heavy storm will be seen no more in Milwaukee.

The plow and raising and lowering device are readily detached from the tractor, which is employed in various other ways in the summer. It is used to haul a slusher for small excavating jobs, for spreading ballast, snaking rails and ties, pulling sections of construction track, backfilling, etc. It is one of the busiest and handiest pieces of equipment used by the department of way and structures of the Milwaukee company.

Another type of motor equipment used for the removal of snow is a Clark truck tractor, also shown in



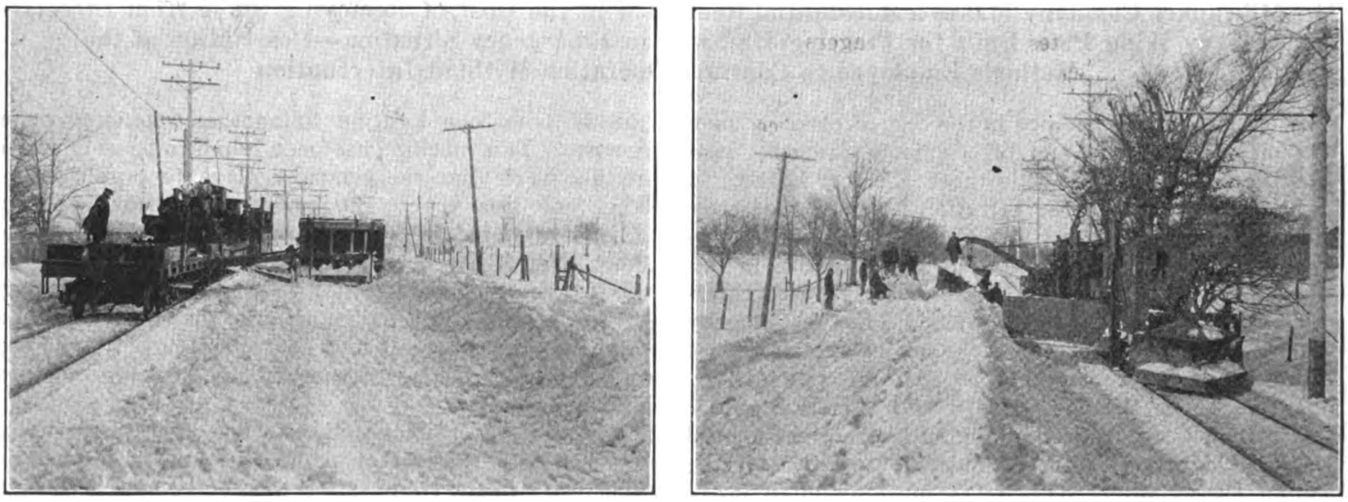
THREE-WHEEL TRACTOR USED FOR REMOVING SNOW FROM SIDEWALK



SPECIAL WING PLOW FOR CLEARING AWAY SNOW ON THE INTERURBAN LINES an accompanying illustration. This is a three-wheel truck steered from the rear, enabling the machine to be turned on a radius of 8 ft. and maneuvered into corners and cramped places where it is impossible to get any other machine. This tractor is equipped with a 6-ft. blade or plow which is raised and lowered by means of a hand winch. The plow can be set either at right angles to the direction of travel or at an angle of 60 deg. by simply changing the position of the bolt in the strut seen at the left of the picture.

In winter this machine is used particularly for cleaning snow from the sidewalks along company property, in front of carhouses, from special trackwork layouts in the outskirts of the city and such miscellaneous snow removal jobs. It is equipped with a 25-hp. engine and will travel 12 m.p.h. in moving between jobs. It is estimated that it will do work equal to at least eight men in removing snow from sidewalks.

In summer the plow is removed and a regular hand-operated dumping body is put on for use in hauling materials, tools, or anything in connection with construction and maintenance work. In this capacity it will do the work of two or three teams, and forms an outfit that the track department has found almost indispensable. The company has two of these Clark tractors.



At Left, Clearing the Highway to Keep Traffic Off the Interurban Tracks, Showing Folding Wing Plow in Operating Position, Followed by Heavy Special Plow Projecting Out Into the Highway. At Right, Folding Side Wing Snow Plow Controlled by Three Air Cylinders

An accompanying picture shows a special wing plow constructed by the Milwaukee Electric Railway & Light Company, for removing snow on the interurban lines. In addition to the nose plow, this car is equipped with a unique wing plow for moving the snow back away from the track. The two sections of this wing plow are hinged together at one end, with the opposite ends supported in vertical steel slides and connected to the piston of an air cylinder mounted on top of each support. By admitting or releasing air from these two cylinders, the blades of the plow are raised or lowered.

One of these vertical slides is attached to a carriage which is free to slide longitudinally on the floor of the car, its position being controlled by a third air cylinder. When this carriage is pulled toward the middle of the car, the two vertical slides are brought closer together and the two sections of the plow fold out from the side of the car forming the triangular wing plow. When this snow plow is in use, as an obstruction is approached, the wing is simply pulled back straightening into a position parallel with the side of the car and then forced out again after the obstruction is passed. This is done by simply admitting and releasing air in the horizontal cylinder controlling the position of the wing. This wing will clear snow from a space 8 ft. outside the track.

To meet a very special condition which was confronted on account of the very heavy drifting of snow in January, 1920, along the Milwaukee-Racine-Kenosha interurban line and in the main highway to Chicago, which it parallels, the Milwaukee company developed a very unique side-wing plow to be used in conjunction with the car just described. Heavy snow storms and wind had resulted in very heavy drifting which made the highway and the interurban line impassable. After the company had cleared the track, motor trucks and various other vehicles began driving in the track, as it was the only place they could go, and became stalled and so interfered with the operation of the cars that the revenue from the line was almost completely lost. Appeal to the county and highway authorities to clear the highways in order to remove the necessity for driving on the tracks resulted in the employment of a number of men with shovels to attack the problem, but because of the enormous accumulation of snow, the headway made was insignificant.

In order to get cars operating, therefore, the Milwaukee Electric Railway & Light Company jumped in and built almost over night a very heavy plow which was attached to the side of a flat car by means of heavy steel framework. This flat car was then coupled behind two motor cars and a steel cable connected from the plow to the forward motor car to take up part of the enormous thrust to which the plow subjected the car to which it was attached. With the help of the folding wing plow described above, which went ahead, followed by this special plow, of which an illustration is shown, it was possible to clear the packed, heavy snow out of the road for a distance of 16 ft. out from the track. With the road thus opened up, motor trucks were not forced to travel on the track.

Since this experience, Milwaukee and Racine Counties have co-operated with the traction company to install a large number of snow fences at open points, to prevent the snow from drifting into the road. Hence there will probably not be much need in the future for this unusual plow, which will be appreciated by the company, as it was very hard on track and equipment.

Trackless Trolleys at Work Abroad

What Kind of Service Is Now Given by Trackless Trolleys and at What Cost?—First-Hand Data on Several of the Most Important Installations Are Presented, Together with Comparisons Against American Estimates—Bradford and Leeds Discussed in This Article

BY WALTER JACKSON
Consultant, Mount Vernon, N. Y.

DURING the spring and summer of 1921 considerable time was spent in Europe making detailed studies of trackless trolley operation, as American manufacturers were preparing to take up this form of transportation in a serious way. Indeed, since then an experimental installation has been made at Richmond, Va.,[*] and the first installation for regular service has been made on Staten Island, in New York,[†] while several more, like Detroit, are in the offing. The subject, therefore, is timely; and as most of the foreign installations are not radically different in engineering details, the experience gained in their operation may be helpful to American operators.

As a matter of courtesy to the managers who have so frankly stated their experiences, this article will refrain from extended comments and will deal only with the individual situations as found, except for occasional comparisons of actual British with estimated American costs.

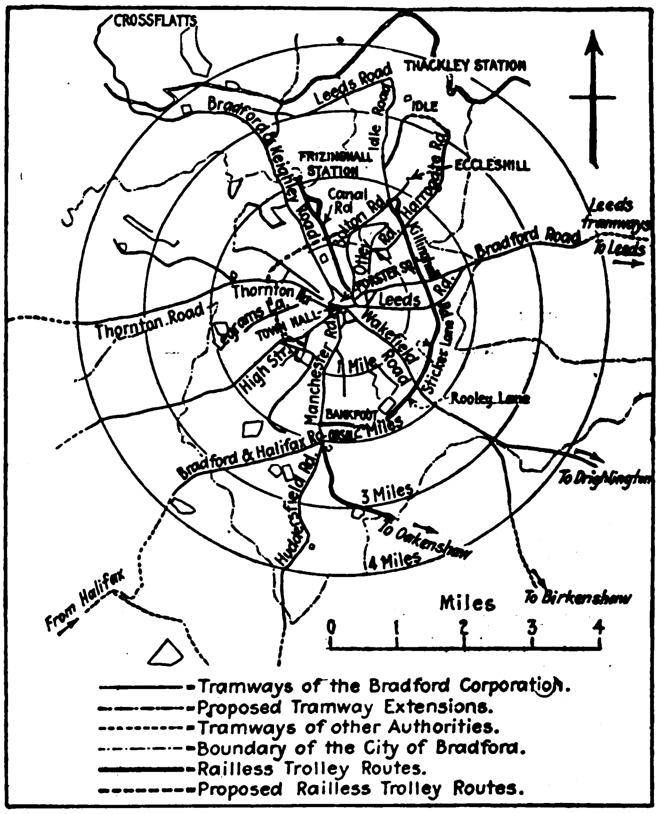
VARIETY OF INSTALLATIONS CHOSEN

From a technical standpoint, it was desirable to confine the study of trackless trolleys to that type which has some form of under-running current collector and standard trolley construction. The only over-running or carriage collector type system examined was the Mercedes-Stoll system at Vienna, where the nearness of the manufacturer made it fair to assume that the installation was being operated under more favorable conditions than the older, like-style (Cedes) installations in Great Britain.

Visits were made to Leeds and Bradford in England as representing places of considerable experience in the co-ordination of rails and rubber tires; to Teesside, as representing the largest all-trackless undertaking, and to York, as representing the latest available installation.

BRADFORD AND LEEDS THE PIONEERS—RECENT COSTS

The Bradford Corporation Tramways, which serves a population of 370,000, started its first trackless trolley on June 24, 1911. This installation was over a 1.25-mile connection between two track routes in a thickly-populated district. The present routes total 9.5 miles and are made up of the extension of a track route, of a half loop tying six track routes together and of a purely independent route from the center of the city along Canal Road to Frizinghall; in short, each route meets a different situation. Topographically, the situation is not favorable. The older parts of Bradford lie in a trough, so that grades of 6 per cent and even more have to be negotiated. Canal Road is the most favored, being both level and smooth-paved. The paving is usually a granite block, kept in better condition than similar paving in many American cities, but nevertheless not the sort of paving conducive to minimum energy use. There are sections, however, where tar macadam or other smooth paving has been introduced.


CROSSFLATTS
THACKLEY STATION
IDLE
ECCLESHILL
Leeds Road
Bradford & Keighley Road
Idle Road
FRIZINGHALL STATION
Canal Rd
Bolton Rd
Harrogate Rd
Killinghall
Otley Rd
Leeds tramways
To Leeds
Bradford Road
FORSTER SQ.
Leeds Rd.
Thornton Rd
Thornton Road
Legrams La.
TOWN HALL
Wakefield Road
High St.
Manchester Rd.
1 Mile
Sticker Lane
Rooley Lane
BANKFOOT
2 Miles
ODSAL
Bradford & Halifax Rd.
Huddersfield Rd.
3 Miles
To Drighlington
To Oakenshaw
4 Miles
From Halifax
To Birkenshaw
Miles
0
1
2
3
4
Tramways of the Bradford Corporation.
Proposed Tramway Extensions.
Tramways of other Authorities.
Boundary of the City of Bradford.
Railless Trolley Routes.
Proposed Railless Trolley Routes.

THE CO-ORDINATED TRANSPORT ROUTES OF BRADFORD, ENGLAND

Rail-less Routes

Canal Road, from Forster Square to Frizinghall, including loop around Gaisby Lane, etc.	2 miles	1232 yards
Cleckheaton Road, from Odsal Top to Oakenshaw	1 mile	1122 yards
Killinghall Road, from Leeds Road to Bolton Road	2 miles	242 yards
Rooley Lane, from Bankfoot to Wakefield Road	1 mile	1231 yards
Sticker Lane, from Wakefield Road to Leeds Road	1 mile	552 yards
Total	9 miles	859 yards

Note: Ministry of Transport in 1921 refused permission to run double-deck trackless buses in excess of 5 long tons on Eccleshill, Idle and Thackley (present track) sections.

The rolling stock comprised seventeen single-deck, twenty-eight-seat two-man buses and one double-deck fifty-one-seat two-man bus. Owing to the excessive platform costs, R. H. Wilkinson, general manager, who designed the double-decker, has also made plans for a thirty-seat one-man single-decker to be 21 ft. 9 in. over all with a wheelbase of 156 in., and for a six-wheel double-decker, the latter now being under way. Before discussing the new double-decker it may be well to give some costs which are based almost entirely upon the operation of the seventeen twenty-eight-seat single-deckers, whose loaded weight must not exceed 11,200 lb. (5 long tons) and whose propelling equipment consists of two 20-hp. motors.

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[*] June 25, 1921, ELECTRIC RAILWAY JOURNAL.

[†] Oct. 15, 1921, ELECTRIC RAILWAY JOURNAL.

In converting the financial figures into American money values, exactness is impossible because of the fluctuating rate of exchange. However, the matter is simplified by assuming the penny (d.) to be worth 2 cents. On this basis it will be observed that the operating cost was 41.2 cents against an income of 26.4 cents per bus-mile. It would not be fair, however, to cast discredit upon the trolley bus because of this low earning power for the reason that it is now only used in the poorer traffic territory where a trackway would have even heavier losses. This is indicated by the fact that the average earnings per trolley car-mile in the same year were 54.2 cents. The operating expenses per car-mile approximated 49.3 cents, but were less per seat-mile, since the usual Bradford trolley car is a double-decker.

TABLE I—BRADFORD TROLLEY BUS REVENUES AND COSTS, YEAR ENDED MARCH 31, 1921

Traffic revenue	£21,384
Traffic revenue per bus-mile	13.2d
Bus-miles operated	387,543
Average bus-miles per day per bus	118
Average schedule speed, miles per hour	7.7
Total kilowatt-hours for operation	470,427
Kilowatt-hours per bus-mile	1.213
Passengers carried	3,437,803
Average traffic revenue per bus-hour	8s. 5.75d
Power cost per bus-mile	1.82d
Total operating expenses per bus-mile	20.6d

The schedule speed of 7.7 m.p.h. with a twenty-eight-seat bus is based upon an average of six stops per mile. Energy for propulsion and lighting alone (no heating) averaged 1.213 kw.-hr. per bus-mile and as the cost was 3.64 cents, the cost per kilowatt-hour was 3 cents (1.5d) at the bus. The platform cost was 14.2 cents per bus-mile. Reduction of total operating expense in this direction, through one-man operation, with vehicles of improved design, is placed by Mr. Wilkinson at 8 to 12 cents. As the operating expense for the 1921 fiscal year was 41.2 cents, the later type, if it saved say 11.2 cents, would bring the estimated cost of operation of a thirty-seat vehicle down to 30 cents per bus-mile. This cost is in itself an estimate but is based upon ten years' experience as compared with the advance cost estimate of 19 cents per bus-mile operating expense for a thirty-seat American 10,000-lb. light bus made by J. C. Thirlwall in his study: "The Urban Transportation Field Analyzed," ELECTRIC RAILWAY JOURNAL, Oct. 1, 1921. Table II shows the detail costs for the year ended March 31, 1921. It also shows the standard form of accounts used at Bradford and elsewhere to arrive at the cost of service rendered by the trackless trolley.

The foregoing statement does not cover investment charges. As of March 31, 1921, the capital account shows £13,866 for electrical equipment of routes and £16,987 for trolley buses. This is equivalent to £1,460 per mile of four-wire construction and to £999 per bus. Mr. Wilkinson is allowing for a useful life of fifteen years on future buses built to street car standards. The present buses purchased in 1911-1912, he says, have outlived their usefulness. In connection with the individual items in the operating account presented, it should be stated that the trackless buses are charged their prorata for such general items as superintendence, general officers, administration, etc. The insurance charges are actually lower. Mr. Thirlwall's Table III covers only four headings in all, so that comparisons cannot well be made except that his 0.7 cent for "maintenance of way and structure" is less than the 1.258 cents shown in Table II, under the headings of "contributions to maintenance of roads" and "electrical equipment" (referring to overhead line). Up to this year (preceding the roads bill with tax based on seating capacity) the buses were charged 0.75 cent per mile run for road maintenance. Mr. Thirlwall's "power" charge of 2.3 cents is based upon an energy consumption of but 1 kw.-hr. per bus-mile and a delivered cost of 1.5 cents per kilowatt-hour, whereas the Bradford power cost of the fiscal year ended March 31, 1921, was 3.64 cents based upon an energy consumption of 1.2 kw.-hr. per bus-mile without heating and a cost of 3 cents per kilowatt-hour. It will be seen later, however, that the newest bus does better in ratio to weight. The greatest divergence lies in maintenance of equipment, to which Mr. Thirlwall has assigned 4 cents per bus-mile whereas Bradford's 1921 figure shows 13.4 cents per bus-mile without allowance for minor charges like "buildings and fixtures" and "workshop tools and sundry plant." Part but not all of this difference is due to age.

One strong reason for a lower operating expense as regards labor would appear to be the higher output in bus-miles per hour figured by Mr. Thirlwall, namely, 10 m.p.h. as against Bradford's 7.7 m.p.h. However, the experience of operators on the thin-traffic routes for which either gasoline or trolley buses are used is that one has a toss-up between higher running speeds or longer layovers. In either case, bus-hours have to be paid for whether the vehicles are running or not.

DOUBLE-DECKER CUTS TRACKLESS COSTS

Mr. Wilkinson is so enthusiastic for rail-less electric operation, as against the trackway, that he has figured it would actually pay to use the trolley bus for service in any density of traffic whatsoever, assuming that the June, 1921, estimates of £22,000 a mile for single and £46,000 a mile for double track in paving still hold. To give fair scope to the trackless bus for heavier service it is, of course, necessary to raise its capacity. This he has already achieved in part through the construction of a fifty-one-seat double-decker, and there is also under way a six-wheel double-decker seating fifty-seven people. The six-wheel construction is required to meet government regulations as to permissible weight per

TABLE II—DETAIL OF OPERATING COSTS OF BRADFORD CORPORATION TRACKLESS TROLLEYS FOR YEAR ENDED MARCH 31, 1921

	In Pence per Bus-Mile	
Traffic Expenses		
Superintendence	0.043	
Wages motormen and conductors	7.106	
Wages of other traffic employees	0.311	
Cleaning and oiling buses	0.849	
Fuel, light and water for depots	0.199	
Ticket check (tickets, inspection, etc.)	0.441	
Uniforms and badges (furnished free)	0.298	
Miscellaneous	0.171	
Licenses	0.200	
		9.618
General Expenses		
Salaries of general officers and staff	0.454	
Administration and establishment expense	0.028	
Store expenses	0.076	
Rates and taxes	0.409	
Printing and stationery	0.090	
Fuel, light and water for offices	0.026	
Accident insurance and compensations	0.125	
Fire and other insurance	0.009	
Miscellaneous	0.128	
		1.345
General Repairs and Maintenance		
Contribution to maintenance of roads	0.280	
Electrical equipment (overhead line)	0.349	
Buildings and fixtures	0.238	
Workshop tools and sundry plant	0.202	
Trackless cars	6.718	
		7.787
Power Expense		
Cost of current at 1.5d per kilowatt-hour	1.821	1.821
Total working expense		20.571

axle. The standard surface trolley car seats sixty passengers.

The fifty-one-seat double-deck trolley bus was placed in service on Nov. 6, 1920, and up to March 31, 1921, it had run 15,453 miles at an average energy consumption of 1.685 kw.-hr. per mile. The weight of this bus was given as 16,576 lb. (7 tons, 8 cwt.). The bus is run over a variety of paving including granite block and tar macadam. It is equipped with solid tires renewed on a contract basis of 1.5 cents per mile. The original tires were changed after running 21,000 miles.

The bus is equipped with a single 40-hp. motor which has a double-reduction chain drive to the rear axle equipped with the usual differential gear. For routes having grades, the management would use a 60-hp. motor. This method of drive sets up the body so high that it is not possible to stand upright on the upper deck within Bradford's clearance limitations. In the six-wheel bus, however, the floor is 7½ in. lower. This gives three risers from ground, viz., 11 in., 11 in. and 10 in. The springs are underslung instead of being supported over the axle boxes. The objection offered to the gear and pinion drive is that the roads are not smooth enough. The chain drive used is not incased and therefore is subject to grit and dirt, but this has not proved a serious matter. The buses also have a sliding shoe for making rail contact when the bus is operated over a single-positive trolley wire route. This shoe, which is located in front of the bus, also acts as a fog guide.

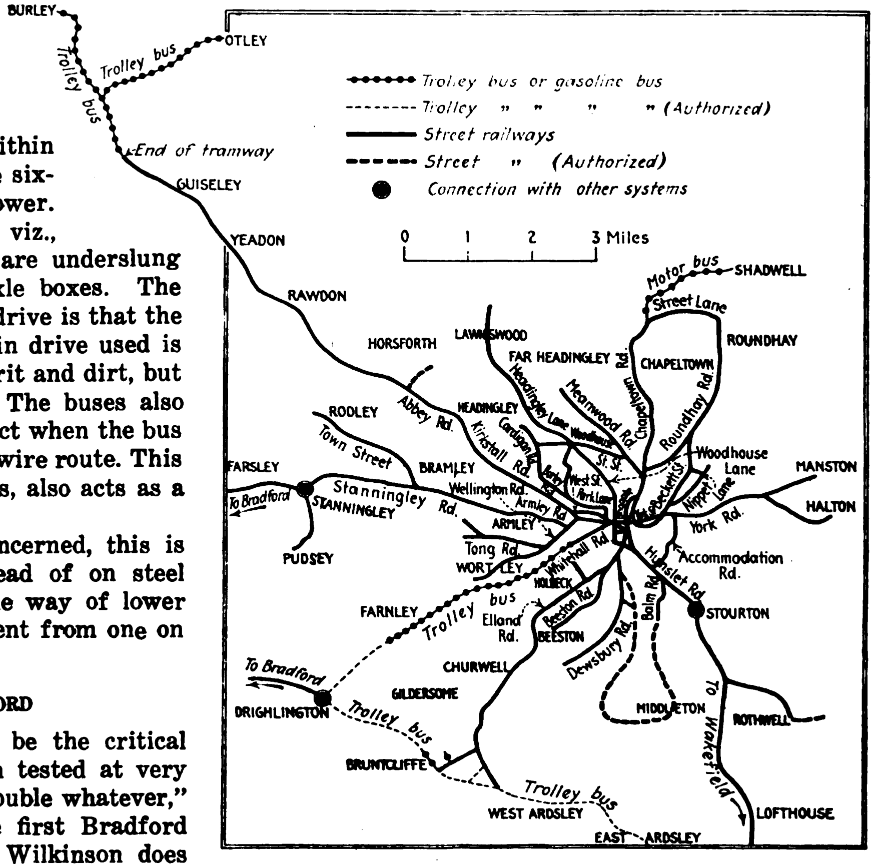
So far as general construction is concerned, this is really a Bradford car on rubber instead of on steel tires, and much is hoped from it in the way of lower upkeep costs. A ride is not very different from one on the solidly-built cars of this system.

GENERAL NOTES ON BRADFORD

"The trolley, which may be said to be the critical feature, works admirably. It has been tested at very high speeds . . . and it gave no trouble whatever," are phrases from a description of the first Bradford installation in 1911. Apparently, Mr. Wilkinson does not agree, for he has since replaced the swiveling type trolley wheel by a cast-iron shoe of his own invention. This shoe, shown in an accompanying illustration, is provided with a lubricating groove to decrease wear on the wires. In case this sliding shoe strikes an obstruction it will fall back to avoid fouling. A pull on a cord attached to the collector suffices to restore the shoe to the wire. Stops on the shoe likewise prevent it from swiveling beyond a predetermined point. Besides holding to the wire better, the Wilkinson shoe is lighter and costs less to operate than the usual 5-in. wheels.

The danger of collision in fog has been minimized by the use of an indicator which shows the bus operator in feet how far he is off center. This device, which indicates as much as 14 ft., is also one of the general manager's inventions.

It is noteworthy that whereas the twenty-eight-seat buses cost £999 each to March 31, 1921, the proposed one-man thirty-seat bus was figured at from £1,700 to £1,800. On an exchange basis of $4 to the pound, this gives either $6,800 or $7,200, showing how close British and American costs run at this time. As a matter of fact, if the British bus were upholstered as expensively as the American vehicles, the cost would run up to £2,000. The original investment cost of £1,460 per mile of route has advanced to £4,500 for overhead system plus £6,000 for feeder cables or a total of £10,500 per mile. This presents an interesting contrast to Mr. Wilkinson's estimates for the overhead and feeders per mile in case of rail installations for the same locations. In the case of double-track rail lines the overhead with but single trolley would cost £4,000, while the availability of a rail return would bring the cost of feeder cables down to £3,800. On the assumption that double track would cost £53,800 in all (£46,000 for rail and paving, £4,000 for overhead and £3,800 for feeders)' against £10,500 for trackless trolley, Mr. Wilkinson figures out that even a two-minute headway would be handled more cheaply with trolley buses than with cars.


BURLEY
Trolley bus
Trolley bus
OTLEY
End of tramway
GUISELEY
YEADON
RAWDON
Trolley bus or gasoline bus
Trolley " " " " (Authorized)
Street railways
Street " (Authorized)
Connection with other systems
0 1 2 3 Miles
Motor bus
SHADWELL
Street Lane
ROUNDHAY
HORSFORTH
LAWNSWOOD
FAR HEADINGLEY
CHAPELTOWN
Headingley Lane
Meanwood Rd.
Chapeltown Rd.
Roundhay Rd.
RODLEY
Abbey Rd.
HEADINGLEY
Kirkstall Rd.
Cardigan Rd.
Woodhouse
St. St.
Woodhouse Lane
MANSTON
Town Street
FARSLEY
BRAMLEY
Park Lane
West St.
Wellington Rd.
To Bradford
Stanningley Rd.
STANNINGLEY
Armley Rd.
ARMLEY
York Rd.
HALTON
Nippet Lane
Beckett St.
PUDSEY
Tong Rd.
WORTLEY
Whitehall Rd.
HOLBECK
Hunslet Rd.
Accommodation Rd.
FARNLEY
Trolley bus
Elland Rd.
Beeston Rd.
Balm Rd.
BEESTON
STOURTON
To Bradford
CHURWELL
Dewsbury Rd.
GILDERSOME
DRIGHLINGTON
Trolley bus
MIDDLETON
To Wakefield
ROTHWELL
BRUNTCLIFFE
Trolley bus
WEST ARDSLEY
LOFTHOUSE
EAST ARDSLEY

IN LEEDS THE MOTOR BUS, THE TROLLEY BUS AND THE TROLLEY CAR ALL HAVE A PLACE IN PASSENGER TRANSPORTATION SERVICE

At a conference of British executives, some exception was taken to the range of the track figures, but Mr. Wilkinson stood firmly on the ground of his own experience in building and operating high-class paved track. At any rate, it is obvious that Bradford must be fairly well satisfied with the reliability of the trolley bus since it is willing to extend its use to heavy routes whether for new lines or the changeover of existing lines where the rails have been worn out.

FRONT DRIVE INTRODUCED AT LEEDS

The Leeds Corporation Tramways, which serves a population of 542,000, was co-pioneer with its neighbor Bradford, inasmuch as it also opened its first route (3.7 miles) on June 24, 1911. Today a total of 8.8 miles is in operation over thin-traffic routes. Some of the original buses were equipped with a single 28-hp. motor, but later specifications call for two 23-hp. motors. Both types seat twenty-eight passengers. In the two classes of motor buses, as installed, each motor drives one rear wheel through a double-reduction worm and chain gearing. Within the last year or so, J. B. Hamilton, general manager, and J. S. Hamilton, assistant chief engineer, have been trying a front drive in order to reduce energy consumption, improve adhesion and also obtain a lower rear entrance. One motor is mounted forward and the other motor is mounted behind the front axle. Each front wheel is driven by one motor through an intermediate spur gearing. By July, 1921, some eighteen months' experience had been obtained through the trial of this drive on an old bus. It has since then been put on a new bus carrying two 23-hp. motors.

DOUBLE-DECK TYPE OF TROLLEY BUS OPERATED BY BRADFORD CITY TRAMWAYS

As at Bradford, the original Parliamentary restriction against double-deck trolley buses has stood in the way of their earlier use. It is now possible, however, to go ahead in this direction. Leeds is doing so by designing a fifty-five-seat vehicle. Up to the present time, the trolley bus routes of Leeds have not served any heavy traffic, but with double-deckers it will be feasible to replace the Whitehall Road trolley car route now operated with thirty-seat single-deck cars. At present, the trolley bus to Farnley makes use of this trackway for about 0.75 miles from the city center. When the track in this densely-traveled section is removed or covered over with 3 in. of tar macadam it will be feasible to install a trolley bus turnback to take care of the short-haul traffic now handled by the trolley cars. The corporation also intends to build a trolley bus route to serve the Morley football grounds, using high capacity buses.

On that part of the line where operation is over the trackway the negative trolley of the buses is put out of action. The buses take power from the positive wire and use a skate hinged at the rear of the bus to complete the circuit. By means of the hinge the skate can be raised or lowered to make the necessary rail contact.

The original Leeds bus bodies as purchased were of the front entrance and exit type. The home-built bodies introduced about 1914 have service doors at both front and rear. The twenty-eight-seat body and chassis weighs approximately 10,000 lb. The maximum speed of these vehicles is 15 m.p.h. and a schedule speed of 8 m.p.h. is maintained. There is no regulated number of stops per mile. This is impossible considering the nature of much of the districts served. As headways vary from twenty to thirty minutes, it is clear that a higher schedule speed would simply mean longer layovers.

SOMEWHAT LOWER OPERATING COSTS AT LEEDS

It has been shown that the Bradford operating expenses were 41.2 cents for the fiscal year ended March 31, 1921. The Leeds cost is on a similar basis for the same year and is 28.5 cents. A comparison of the items charged against trolley bus operation in each case is presented in Table III.

The chief differences between the Bradford and Leeds accounting lies in the fact that certain general items at Leeds have not been prorated apparently against the trolley bus, possibly because the Leeds trolley bus mileage was but 195,401 against 9,981.473 car-miles, whereas Bradford ran 387,543 trolley bus-miles against 5,959,861 car-miles. The sum of the items termed "superintendence," "wages of other traffic employees," "salaries of general officers and staff," "stores expenses," "printing and stationery" and "fuel, light and water for offices" shown in the rail car column amounts to 0.912d. or 1.8 cents. Adding this to the total cost of 28.5 cents (14.25d.) would make the Leeds operating cost come to 30.3 cents as against 41.2 cents shown for Bradford.

Examination of the Leeds figures in detail shows there the principal factors for this difference of 10.9 cents per bus-mile lie. Leeds "wages of motormen and conductors" were but 9 cents (4.505d.) against Bradford's 14.2 cents (7.106d.) charge. This is accounted for in part by the fact that the Leeds buses are served by a man and boy instead of by two men at full pay. Table III also shows that platform expense on Leeds rail cars was 11.8 cents (5.9d.) while that on the buses was but 9 cents (4.505d.).

Power expense in Bradford was 3.64 cents (1.82d.) as against only 1.64 cents (0.822d.) in Leeds due to the lower cost per kilowatt-hour and less energy consumption. Leeds figures show 0.77 kw.-hr. per bus-mile as against Bradford's 1.2 kw.-hr. per bus-mile. A pertinent reason for Bradford's higher energy consumption is that while the Leeds buses in 1921 aver-

TABLE III—VARIATIONS IN RAIL AND TROLLEY BUS OPERATING COSTS AT LEEDS IN PENCE PER VEHICLE-MILE—YEAR ENDING MARCH 31, 1921

Traffic Expenses	Trolley Bus	Rail Car
Superintendence	None	0.189
Wages motormen and conductors	4.505	5.900
Wages of other traffic employees	None	0.261
Cleaning and oiling vehicles	0.828	1.046
Cleaning, salting and sanding track	None	0.251
Fuel, light and water for depots	0.197	0.099
Ticket check	0.087	0.448
Uniforms and badges	0.175	0.244
Licenses (miscellaneous)	0.147	0.143
Total traffic expenses	5.939	8.581
General Repairs and Maintenance		
Road maintenance (permanent way, track, etc.)	0.161	1.286
Electrical equipments of line	0.086	0.319
Buildings and fixtures	0.024	0.117
Workshop tools and sundry plant	0.062	0.067
Vehicles (including bus tires)	6.227	2.839
Miscellaneous	0.061	.....
Total maintenance	6.621	4.628
General Expenses		
Salaries of general officers and staff	None	0.272
Store expenses	None	0.082
Rents	None	0.012
Rates and taxes	0.303	1.029
Printing and stationery	None	0.070
Fuel, light and water for offices	None	0.038
Accident insurance and compensations, other insurance	0.556	0.416
Miscellaneous	0.012	0.199
Total general expenses	0.871	2.063
Power expenses	0.822	1.719
Total working expense	14.253	17.046

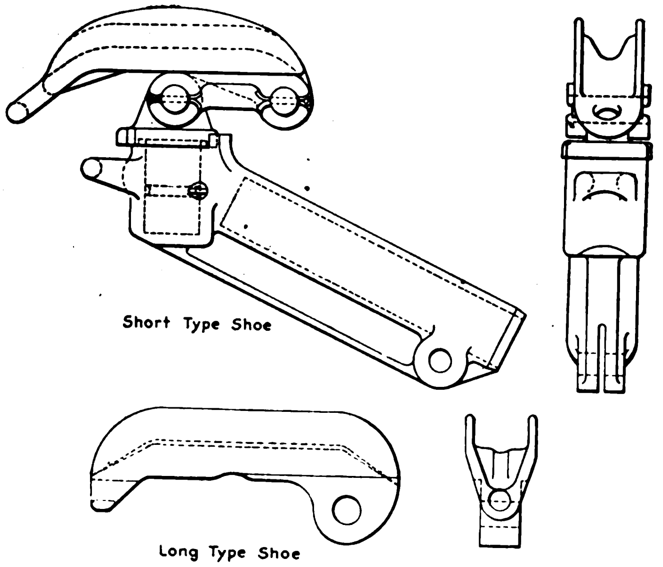
aged but five and one-half passengers per bus-mile, the Bradford buses average nine passengers per bus-mile with more than 95 per cent of the mileage made with but twenty-eight-seat buses.

The 1921 Leeds cost for "general repairs and maintenance of buses" was 12.4 cents (6.227d.) per bus-mile. This is almost the same as Bradford with 13.4 cents (6.718d.), including guaranteed solid tire cost of 1.5 cents per mile. These figures do not include auxiliary shop charges. They are of the highest significance in view of the belief that American trolley buses of like capacity and weight would cost only 4 cents per mile (J. C. Thirlwall in article noted) or 5 cents (K. F. Simmon, ELECTRIC RAILWAY JOURNAL, Sept. 10, 1921). Mr. Stocks' average figure of 6.5 cents (ELECTRIC RAILWAY JOURNAL, Sept. 24, 1921) is more in line with what may be expected eventually. It may be added that in 1921 Leeds set aside 2.89 cents (1.44d.) for a redemption fund based upon a bus life of ten years, compared with Mr. Thirlwall's figure of 3.7 cents and Mr. Stocks' weighted average figure of 2.118 cents. The best way will be to take trolley bus upkeep and bus depreciation together, because it is very hard to draw the line between maintenance and replacement. We then have:

	Cents
Leeds, 1921	15.29
Stocks	9.70
Thirlwall	7.7

These figures would indicate that we cannot be certain that the American trolley bus will cost as little as anticipated simply because it is a blend of known car and known bus-chassis costs. British trolley bus operators are still experimenting with forms of collectors and types of drive despite the experience and careful study of a decade. Parenthetically, it may be remarked that much of the same optimism as to costs also appears in many gasoline bus estimates.

It is not without interest to say that while Leeds buses which average twenty-eight seats, cost 12.4 cents per mile for upkeep, the considerably older Leeds cars, which average fifty-six seats, cost but 5.66 cents (2.83d.) per mile for upkeep. On a basis of equivalent seating capacity, *i.e.*, two buses for one car, the astonishing ratio of 24.8 cents against 5.66 cents, almost four and a half times as much per seat, would be obtained.

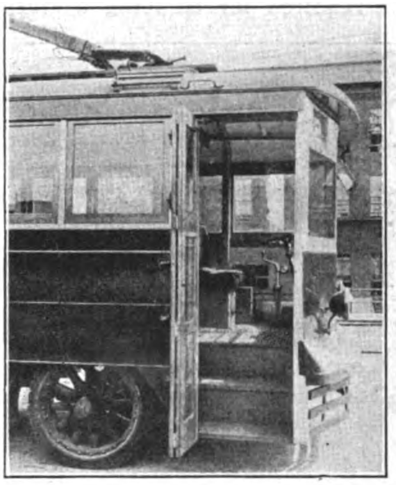


DETAILS OF WILKINSON SKID TROLLEY SHOE AS USED BY BRADFORD TROLLEY BUSES

Automatic Control for Rail-less Cars

Foot Control with Three Running Speeds Perfected by the Cutler-Hammer Company—It Operates on the Current-Limit Principle with a By-Pass Button for Emergency Acceleration

IN THE article which appeared in the ELECTRIC RAILWAY JOURNAL for Oct. 1, 1921, the rail-less car recently developed by the J. G. Brill Company was described, although very little was said about the control, except that it consisted of the relay contact system. This type of control, which was designed by the Cutler-Hammer Company, is operated by a foot master controller located on the floor in front of the driver's seat and interlocked with a reversing switch. In previous designs of the rail-less trolley made by other manufacturers, it was considered necessary to use only the plain manually operated drum controller, which was mounted on the car floor and operated by a system of rods and toggle joints. Actual experience, however, with this form of construction resulted in the conclusion that due to the wear of the various joints, it was impossible for the operator to correctly "feel" the various positions of the control. It was decided, therefore, to go to the complete automatic control for the Brill rail-less bus.



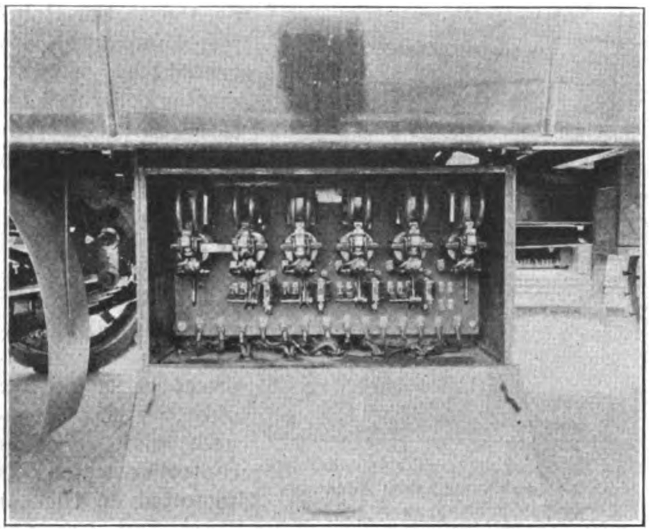
KIND OF TROLLEY BASE USED CAN BE SEEN IN THIS VIEW, ALSO ARRANGEMENT OF CONTROL

This control is of the selective series relay or current limit acceleration type, which means that the motor would always be accelerated with a constant current regardless of the load. The control is designed so that the operator has available three separate running speeds.

The equipment furnished consists of a foot-operated inclosed master switch mounted on the floor to the left of the steering wheel with a release operated by a spring which returns the switch to the off position operated. It is mechanically interlocked with the reversing switch, which is mounted underneath the car and operated by a projecting handle so designed that the handle cannot be removed unless the reversing switch is in the neutral or off position, thus providing complete safety. The magnetic contactor panel shown in the accompanying illustration is inclosed in a waterproof case, mounted underneath the car. A set of grid resistors mounted in open frames underneath the car was also furnished by the Cutler-Hammer Company.

As noted from the photograph reproduced, the contactor panel consists of an asbestos lumber board of proper strength and moisture resisting quality which supports a row of six magnetic contactors each provided with railway type of magnetic blowout. Two of the contactors handle the main-line current completely, disconnecting it in the off position. The remaining four contactors are used for current limit acceleration as previously described. To prevent any possibility of the contactors closing in any but the proper sequence due to irregularity of the roads, neutralizing springs were provided on each contactor, together with a progressive electrical interlock. The contactors consist of a pressed steel frame and of an impregnated shunt coil of the continuous duty type. Main contacts are easily renewable. The switch, which is designed with very light weight, is speedy in operation.

In order to provide sufficient torque for insuring complete acceleration of the motor, a bypass push button is mounted on the car directly in front of the operator. Its purpose is to bring in the initial acceleration switch in case extra torque is required for climbing a steep grade. The accelerating period is based on a rate of from 1½ to 2 m.p.h.p.s. on an average level pavement. To secure this it is only necessary for the operator to press the pedal all the way down whenever he wishes to start the vehicle, while it is possible quickly to avoid danger of collision in any traffic jam by resorting to the bypass button, which makes available the emergency torque of the motor. Its use, of course, is not required for average running conditions on an ordinary grade.



THE CONTACTOR PANEL IS MOUNTED IN AN ACCESSIBLE POSITION ON THE UNDERSIDE OF THE BODY

The automatic control just described was installed on the Brill trolley bus in connection with the G.E.-258-D commutating pole, railway-type of motor, rated at 25 hp. at 600 volts for continuous operation with a 65-deg. C. rise. The ultimate control selected for this type of work must be as simple as possible and require the least amount of space in the cab about the operator. It must be consistently light in weight and mounted where convenient for regular inspection of the master contactor panel to take place.

100 per Cent One-Man Operation Successful

SINCE Sept. 27, 1920, all cars of the Cedar Rapids and Marion City Railway used in city service in Cedar Rapids, Iowa, have been operated with one man. This includes thirteen safety cars which are standard except for separate entrance and exit doors and ten double-truck cars. The latter are equipped with 24-in. wheels and four baby motors and air-operated doors, but no safety devices. They seat forty-four passengers and weigh 22,000 lb. A check of the service secretly made by the city after one-man operation of all cars was introduced and comparing the service then with what it had been under two-man operation of the double-truck cars showed that during the period of the check 99 per cent of all cars were operated on time; which was 12 per cent better than the record made the year before with two-man operation.

E. C. Allen, general manager, states also that the number of accidents shows a reduction of 57 per cent as compared to two-man operation, there having been no platform boarding and alighting accidents since one-man operation was begun. While the change to one-man operation, accompanied by a reduction in wages from 60 cents to 50 cents an hour maximum, started off with a three-day strike, the trainmen now like the one-man operation better than the old plan, according to statements made by them, including the president of the local union.

The population of Cedar Rapids is 47,000 and the rate of fare is 7 cents cash with four tickets for 25 cents. A headway of fifteen minutes is maintained on all lines throughout the eighteen hours. In the central part of the city the operation of various lines over the same tracks makes headways of seven, five and 3.5 minutes. The daily average number of passengers carried is 20,000 and the average system speed is 8.5 m.p.h.

Road Test on Long Bus Run

THE statistics given below are from a run made last month from New York to Aberdeen, Maryland, by an International-Mack motor bus E-25 AB type, equipped with LM shock insulators. The distance covered in the round trip was 352 miles, as measured by hubodometers, and the bus carried twenty-three passengers on the outgoing trip and ten passengers on the return trip. The figures are of interest to show performance for a run of this kind.

Item	Unit	Total	Per Day
Mileage run	Miles	352	117
Average distance between stops	Miles	32	....
Elapsed time for round trip	Days	3	....
Actual time on road	Hours-minutes	21:25	7:08
Running time	Hours-minutes	18:33	6:11
Standing time en route	Hours-minutes	2:52	0:57
Average schedule speed	M.p.h.	16.4	....
Average running speed	M.p.h.	19.0	....
Maximum average speed between stops	M.p.h.	28.0	....
Maximum speed under power	M.p.h.	33.0	....
Maximum speed coasting	M.p.h.	42.0	....
Miles per gallon of gasoline	Miles	6.4	....

Electrical Transmission Vs. Coal By Rail

H. W. SMITH in the September issue of the *Electric Journal* has written an interesting article on the relative economics of transmitting electrical energy on high-tension lines versus the shipment of coal by rail.

As an example, a double-circuit tower line 90 miles long with 500,000 circ.mil conductors was used for voltages of 110,000, 132,000, 154,000 and 220,000. The cost of all lines, substations and buildings was figured on present-day costs and a spare line and transformer were included. The cost was worked out on a basis of 50 per cent and 100 per cent "use" factor. Use factor means that for any given demand the losses are taken for the percentage of the total time this demand is on the system. Fixed charges on the lines were taken at 12 per cent and at 14 per cent on power plants and substations. At 50 per cent use factor for demands per line varying from 80,000 to 300,000 kw. the cost of transmission will vary from but 0.22 to 0.18 cent per kilowatt-hour and for 100 per cent use factor from 0.14 to 0.12 cent per kilowatt-hour With a modern plant burning 1.5 lb. of coal per kilowatt-hour and with a $2 per ton freight rate the cost of rail shipment is 0.15 cent.

Dixie Terminal Opened

The New Terminal in Cincinnati, Ohio, Provides Facilities for 165 Cars per Hour, Which Enter the Building on Two Levels

THE Dixie Terminal Building, Cincinnati, Ohio, was opened for service on Oct. 22. Its use provides terminal facilities for all cars of the South Covington & Cincinnati Street Railway entering and leaving Cincinnati. The handsome building is the last word in terminal construction. When fully completed the terminal, which cost approximately $4,000,000, will remove all Green Line cars from surface lines in the heart of the city and will expedite trans-river transportation greatly. A total of 165 cars an hour will discharge and take on passengers at the terminal during the rush periods.

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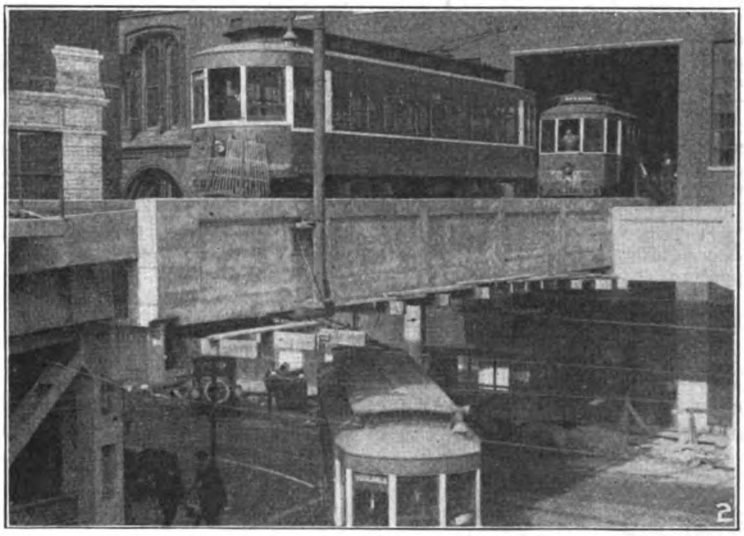
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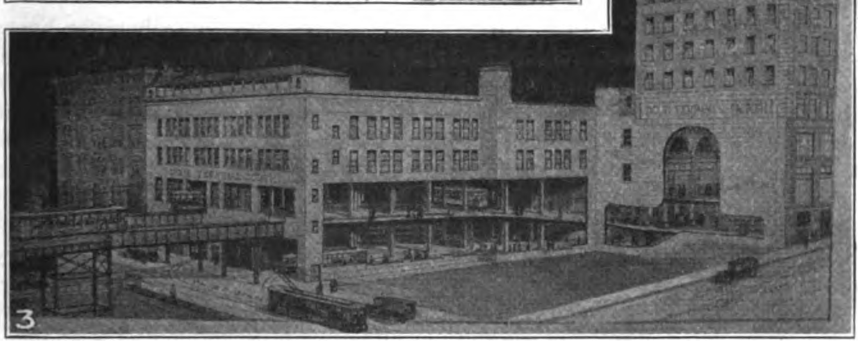
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DIXIE TERMINAL BUILDING

No. 1. Front of the New Terminal Building.

No. 2. The suspension bridge is linked up with the new building.

No. 3. Sectional perspective view of Dixie Terminal Buildings.

The terminal is divided into two concourses, one for the Kenton County cars of the South Covington & Cincinnati Street Railway and the other for the Campbell County trolleys. The Kenton County cars go into the terminal one story above the street level, on approaches built from the Suspension Bridge which connects Cincinnati with Covington. Campbell County cars run into the building from the street level. The incoming cars run in as far as the loop, discharge their passengers, pull around the circle, take on passengers and continue on their routes.

This same method is used by the Campbell County cars, but instead of proceeding over the Suspension Bridge they travel east on Third Street to Broadway and across the Central Bridge to Newport, Ky. Seven of the double-truck cars or nine of the old style cars can enter and leave the terminal at one time. There are two large entrances at the terminal proper. The interior is arranged in such a manner that congestion is almost impossible. Turnstiles are installed at the extreme northern end of the terminal and passengers pay their fares at the turnstiles before reaching the loop where they board the cars. The turnstiles are capable of passing 12,000 passengers an hour. When the rush is the greatest extra turnstiles will be installed.

The plan provides that all passengers alight in the south part of the terminal building, follow a pathway into the main building and choose their exit either through the Walnut Street door or through the concourse, south stairway and arcade. Car patrons southbound use the main entrance and descend the north stairway.

The building was designed by Garber & Woodward, architects, while the construction work was supervised by the Ohio Building & Construction Company. All interior trimmings are of metal. The general illumination of the arcade which leads from the main building to the entrance of the terminal is by indirect lighting, the fixtures being invisible.

The floors and wainscoting of the main building are finished in Botteine marble. The ceiling in the arcade is painted and when the lights are on it has a typical Italian effect. A restaurant, newstand and cigar shop are located in the entrance leading to the concourses. More than 5,000 persons, including the prominent men of the city and the mayors of all of the surrounding municipalities whose citizens will have occasion to use the terminal, took part in the ceremonies of dedication.

Are the Trolleys the Only Practical System of Transportation?

The Motor Bus, with Its Lower Annual Investment Charges of $2,000 per Mile of Route, Is Shown to Have Many Advantages Over the Trolley Car

BY GARDNER W. PEARSON
Practising Attorney and Patent Lawyer and Former Adjutant-General of the Commonwealth of Massachusetts, 1911-1914 and 1916-1917,
Lowell, Mass.

. **EDITORS' NOTE:** The following is an abstract of remarks made at the hearing of the Massachusetts Department of Public Utilities on comparative costs of transportation by motor bus and trolley car, Sept. 22, 1921, and reduced to writing by Mr. Pearson for the sake of accuracy. It is presented here for the purpose of indicating to railway men a kind of thinking and opinion which is held by many educated and intelligent persons who are a part of what is vaguely called "the public." The editors of this paper, as well as others who are closer students of the transportation problem than Mr. Pearson apparently is, will see errors and weaknesses in some of the statements and arguments. The article does show, however, that there are intelligent people devoting thought and study to local transportation problems, and that there is a sentiment for a dependable unified or at least co-ordinated transportation system.

AT THE recent hearing before the Public Utilities Department of Massachusetts on the cost of service rendered by motor buses and by electric trolley street cars there seemed to be a desire on the part of certain electric railway advocates to cloud the issue and to shout "jitney" whenever the subject of motor buses was mentioned.

That class of irresponsible jitneys operated by independent unbonded drivers was not the subject of the hearing, but it was a discussion of the safety, comfort and cost of operation of motor buses and trolley cars where both were operated by a responsible company. The trackless trolley had no part in the discussion.

When we talk of transportation we should consider that it has developed from pack mules, ox teams, stage coaches, canalboats and horse cars through street cars run by cable, by storage batteries and finally from trolleys.

Canals were an effective means of transportation until the faster steam railroads came, and the horse car on rails was more effective than the stage coach drawn over the poor roads of the '60s and '70s. There was a time when the trolley car was in general the best and cheapest method of transportation obtainable, but it now is a serious question whether or not it is the best for all classes of urban transportation on the public streets.

When we talk about a "natural monopoly" for transportation, we clearly do not mean for all kinds of modes of transportation, for there are in Massachusetts alone 200,000 privately owned automobiles that carry probably one million people daily.

MOTOR BUS VS. TROLLEY CAR ADVANTAGES

There are some comparisons between the motor bus and the trolley car running on rails which it may be of interest to consider. For comfort, the bus with pneumatic tires running on any kind of a decent street is much to be preferred to the trolley car with flat wheels running on worn out and poorly aligned tracks. On some lines it is almost impossible to read a newspaper because the cars shake so badly. Moreover, the buses are much quieter.

For safety, it must be remembered that the bus can not only stop but can turn out to avoid a collision, where the car cannot. A bus equipped with proper brakes and rubber-tired wheels can stop quicker than a car running on a slippery steel rail. The bus can take on and let off passengers at the sidewalk, whereby their safety is conserved. Then, too, there are no highly charged trolley wires connected with the operation of a bus that are likely to fall and kill passengers.

In regard to dependability of service, the development of the automobile engine to its present high state of reliability has cut down to a minimum delays that were once of common occurrence. We also hear a lot about snow, but as a matter of fact the motor bus has demonstrated that it can be operated through a considerable amount of snow without the need of a plow. And besides, when travel is otherwise impossible it would be very easy to utilize caterpillar tractors of the tank type to pack down the snow. As a matter of fact, there have been many cases where snow has stopped the trolley cars and the motor buses have kept on running.

It is also apparent that a single trolley car can blockade a dozen, and that their operation is not as elastic as the motor bus, which can move around any blockade.

WHAT LEGISLATION HAS DONE TO THE TROLLEYS

In the past the Public Service Commission and the legislators allowed the enactment of the eight-hour-work-in-ten law to go into effect for electric cars. The commission also insisted that the roads run big heavy two-man cars all through the day, whether there were any passengers or not. There are today many such cars in operation which were purchased at the time when the expert of the Massachusetts commission insisted that the one-man car was too dangerous to be allowed to be used on any road.

With motor bus service, operation can be shifted from small one-man buses like the London cabs during the dull hours to larger buses, perhaps with trailers, during the peak hours.

In regard to speed, it is apparent that wherever buses have replaced trolleys, the speed has about doubled. The reason is not difficult to see. A bus can worm through traffic and apparently travel faster than the average trolley car. On that account it can be made smaller, with the result that passenger interchange can be accomplished more quickly.

On the matter of expense, the state regulation did not permit sound financing or did not insist upon it. Very few business concerns can survive unless they are permitted to have a surplus, and this was not permitted by our state regulation. We now have the day of reckoning and it looks as if the old rule that a business must run at a profit or be junked would apply to the trolleys.

As a matter of fact there seems to be no reason why the owners of trolley securities should be considered sacred. When any other business fails to meet expenses, it quietly goes out of existence and those who have invested their money in it are the losers. There seems to be no reason why investors should not lose their money if street railways cannot be operated at a profit.

We cannot escape the fact that the motor bus operated on streets and roads built and maintained either by municipalities or the state saves a first cost per mile of $30,000 at least for tracks. With interest at 5 per cent and depreciation figured at 2 per cent, this means that the trolley companies have an expense of $2,000 per mile of track per year. The motor bus therefore has the advantage of at least $2,000 per mile of route per year, or about $5 per day. This handicap is too great, in my judgment, for the trolleys in many cases to overcome. It may be a fair proposition to require automobiles and auto buses to pay a larger tax in order to maintain the roads, but that is looking into the future and is not the existing condition.

The present Massachusetts street railway law is based on the theory that fares should depend on "cost of service." This means that, no matter how recklessly the roads are run, the public must pay the piper, and there is no incentive except the fear of utter bankruptcy to hold down the trustees and the directors of street railways.

Coupled with the cost of service regulation is a provision that permits the trolley roads to operate motor buses, but they have not done so to any extent because, in spite of the apparent saving of $5 per mile of route per day, they claim that such motor buses cannot be run at a profit.

It is my belief, and it appeared to be the belief of the last Legislature, that the Public Service Commission should cease to act solely as judges sitting in state to hear the super-specialist representing only the side of the trolley car, but should go out and investigate actual transportation conditions in all its phases so as to present unbiased facts to the Legislature.

I do not contend that electric interurbans, subways and elevated roads or improved one-man cars should be abolished, and I submit that the trolley car still has its uses, particularly on private rights-of-way, but I insist the motor bus should be given a fair show.

I also believe that the trolley car experts have been blind in not taking up any and all auxiliary methods of transportation, thereby discouraging competition. They, as well as the Public Service Commission and the Legislature, have really been attempting to sweep back the tide of scientific progress instead of looking to find a better and cheaper means of transportation for different traffic conditions.

We can get nowhere by refusing to face the facts. To my mind the Ford car and good roads have been the real street railway competitor. The public now demands better and faster service and intelligent time-tables. What is needed, it seems to me, is a Commissioner of Transportation, who, with broad views and powers, will consider not only one method of transportation but all. His functions should be constructive, not obstructive or destructive.

Even the head of the Massachusetts Highway Commission insists that the steam railroads cannot compete with auto trucks in handling freight on less than fifty-mile hauls as the truck saves rehandling and does not require freight terminals. I believe he is right.

Perhaps it is not yet too late for the urban trolleys to come back, if guided by the actual transportation situation as could be developed through a State Commissioner of Transportation who would consider not only finances, but fares and wages, as applied to the latest scientific developments in motors and types of coaches.

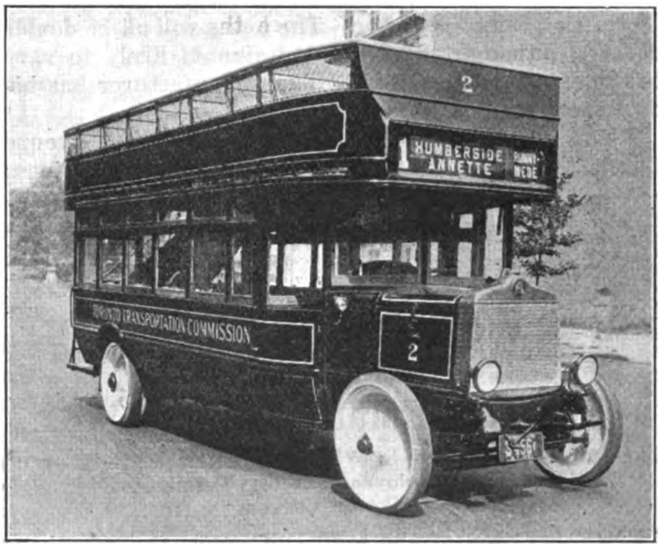
With some such central authority to assign certain territory to each transportation system or corporation ruinous competition would be eliminated. We would then have a co-ordinated system of transport which would not permit motor bus and trolley car competition between the same terminals, but which would allow the trolley to tap one territory and the motor bus to tap another.

Toronto Railway Puts on Buses

Four Types of Vehicles to Be Used—At Present Four American-Built Double Deckers Are in Service—The Others Are on the Way

THE Toronto Transportation Commission has established a motor bus route along Humberside Avenue from Dundas Street west to Quebec Avenue, then along Annette Street to Runnymede Road, in West Toronto, a distance of 1.36 miles. This route provides a means of transport to a thickly populated section, north of Bloor Street, hitherto without any system of transit, connecting with existing trolley lines. The fare for a ride is 7 cents, with free transfers to and from connecting cars, and to date the service has met with general popular approval. The average number of passengers carried now approximates 6,000 per day, of which about 550 are local riders, who do not transfer to the trolleys. Standees are not permitted.

The service maintained calls for a five-minute headway during the morning rush hours, a ten-minute headway from 9 a.m. to 4:30 p.m. and a five-minute headway again during the evening rush hour, tapering off to a ten-minute headway later in the evening. On Saturday, the five-minute headway commences at 1 p.m.


2
1 HUMBERSIDE ANNETTE RUNNYMEDE
TORONTO TRANSPORTATION COMMISSION
2

FOUR FIFTY-ONE-SEAT DOUBLE-DECKERS, BUILT BY THE FIFTH AVENUE COACH COMPANY, ARE ALREADY IN SERVICE

Already real estate values in the territory served have increased 10 per cent and the storekeepers at the junction with the trolley cars report an increase in daily receipts of 15 per cent or more. Two even go so far as to say they have had a 20 per cent gain.

The scheduled time for a one-way trip is ten minutes. This permits a one-minute layover at the end of each half trip and allows nine minutes to make the run of 1.36 miles. The average schedule speed works out 8.16 m.p.h. The runs are based on eight hours per day and the men are paid the same sliding scale of hourly rates as the platform men on the trolley cars. Time and a quarter is paid for overtime on weekdays and time and a half for work on Sundays and holidays.

It took but four days to break in the drivers because one of the requirements of employment was experience in driving trucks. Three experienced repairmen who passed the drivers' test and for whom there was no place were given jobs as shop men. One is always on duty, each working eight hours. They make repairs, answer road calls, make general inspection and keep the buses clean. This also put an experienced driver in the garage at all times in case some one "missed" or had an incapacitating accident. All conductors were taken from the regular force of men used on the cars.

The buses are housed in the Dundas carhouse on Ritchie Street, between Dundas and Roncelalles Street. Here tentative facilities are maintained for taking care of the buses. A new garage which is being built alongside this carhouse is now almost completed.

The vehicles are painted sagamore red for three reasons. This color, it is claimed, has a higher visibility; it also gives both employees and riders an incentive to keep the paint on the vehicle in better condition and also causes a decrease in the number of accidents due to greater care being exercised by others.

Four different types of buses will ultimately be used by the Toronto Commission. Four Type L double-deck fifty-one-passenger buses have been received from the Fifth Avenue Coach Company, New York, and these are now in service. One bus has also been contracted for from each of the following builders, the Leland Company and the Associated Equipment Company, two English concerns, as well as one from the Eastern Canada Motor Company, Hull, Que. The buses will all be double deckers, although the general design is likely to vary to the extent that each individual manufacturer has his own specifications.

The four type L buses ordered from the Fifth Avenue Coach Company have the following general dimensions:

Height over all (unloaded)	10 ft. 5 in.
Length over all	24 ft. 5 in.
Width over all	7 ft. 6 in.
Wheel base (175 in.)	14 ft. 7 in.
Wheel treads, front (66⅜ in.)	5 ft. 6⅜ in.
Wheel treads, rear (72 in.)	6 ft. 0 in.
Seating capacity, inside passengers	22
Seating capacity, outside (passengers)	29
Size of solid tires	36x5

Status of Employees on Strike

The Question Involved Is Whether or Not the Relation of Employer and Employee Is Fully Terminated by a Strike or Lockout

THE question of the status of employees who have left service collectively for the purpose of securing better conditions of employment is one on which varying opinions have been expressed. Strictly speaking, strikers have severed their employment relation, whether it was under contract for a fixed period or terminable at will. However, in a number of cases the courts have recognized a middle status effective within certain limits, giving striking employees a position differing from both those in employment and the public at large.

The subject is discussed at length in the September issue of the bulletin published by the Bureau of Labor Statistics in Washington. In this bulletin the status mentioned is described as follows: "The relationship is an anomalous one, yet distinctive, and of such nature as to secure to the parties certain correlative rights under which acts may be performed that would assume a different aspect if done by absolute strangers or in different circumstances." Thus organizers from the outside may be enjoined from interfering with labor conditions, being in no wise agents of "employees," as was held in a case before the Supreme Court of the United States. But former employees in association with others have been held to retain such an interest in the affairs of their former employer as to make it lawful for them to picket and persuade in a peaceable manner, though incidentally interfering with the employer's free and unrestrained control of his business. This is on the ground that though strikers are not on the payroll of the employer, and so are not actual employees, the relation of employer and employee is not fully terminated by either a strike or a lockout. However, where a strike has failed and the employer refuses to recognize former employees, their places having been filled and normal production continuing, the temporary anomalous condition is held to have terminated, and striking employees can not be regarded as any further interested, and whatever rights to be recognized they may have had at one time are extinguished.

This principle is applied in a recent case (In re Division 132 of Amalgamated Association of Street and Electric Railway Employees of America, 188 N. Y. Supp., 353) which was decided by the Appellate Division of the New York Supreme Court, May 17, 1921. It involved the construction of a contract between the labor union named and the United Traction Company, Troy, N. Y. The contract contained provisions to the effect that the company would "through its properly accredited officers treat with the properly accredited officers and committees of the association on all grievances that may arise." The agreement was to continue in force for one year ending June 30, 1921. A supplemental agreement provided for an increase in wages to continue during this year on condition that the company be granted permission to charge increased fares on or before Nov. 1, 1920. This permission was not granted, and the increase was withdrawn in accordance with the terms of the contract. However, the members of the employees' union protested this action, which was announced on Jan. 22, 1921, and on the twenty-eighth of that month, when the change was to be made, the employee members of the association walked out, "leaving the traction company incapable of immediate performance of its obligations to the public."

There was an agreement to arbitrate controversies arising as to the rate of wages within thirty days prior to the expiration of the agreement. Obviously this was a limited agreement as to arbitration, but the employees demanded that their protests against the reduction of wages be referred to arbitrators. The court held that in leaving employment as they had on Jan. 28 "they committed a breach of contract, and if there had been a valid agreement for the arbitration of all controversies they would have relieved the traction company of the obligation to perform." The court pointed out further that in view of the limitation upon the subject matter of the agreement there was no obligation on the part of the employer to submit the question arising in January to arbitrators supposed to function only on questions arising in June following. "The election on the part of the employees to abandon their employment in disregard of the contract made in their behalf by the petitioners (the labor union) could not impose an obligation which was not provided in the contract. . . . The former employees have no ground for complaint, because they are no longer employees, and because the time fixed by the contract for its operation in any event has not yet arrived."

In view of these conclusions the order issued by the Supreme Court in special term directing the company to submit to a trial before a jury on the issues presented was reversed, and the petition of the labor organization dismissed on the ground that the petitioners had no standing under their violated agreement.

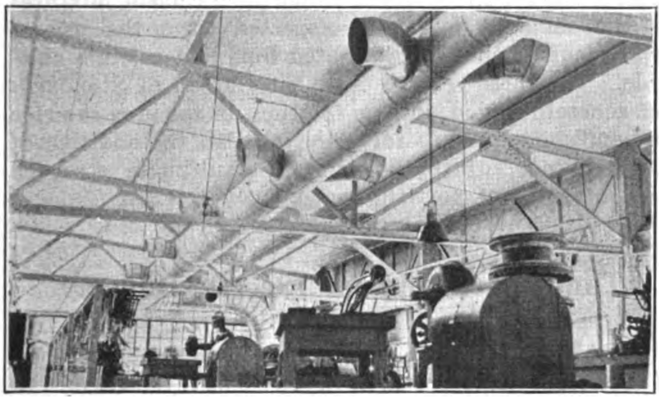
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Effective Shaving Exhaust System

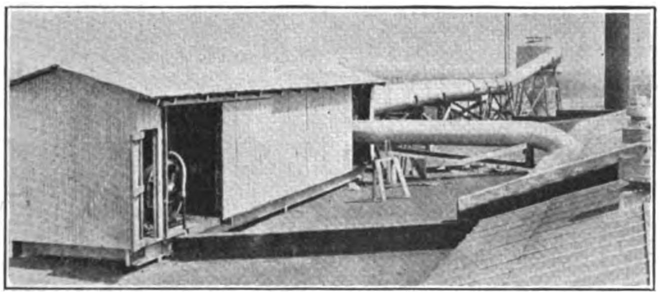
Shavings and Sawdust Accumulating from Woodworking Machinery Carried by an Exhaust System from Wood Mill to Power House of Electric Railway

THE Pacific Electric Railway of Los Angeles, Cal., has just completed and placed in operation at its new Torrance shops a most efficient shaving exhaust system. The shavings and sawdust which accumulate from the woodworking machinery in the wood mill are collected and disposed of in the power house. The collector lines run to a separator which is located on the roof of the power house. From the separator the material passes by gravity down a system of pipes and gates and is turned into the fuel storage bin or into either of the 250-hp. Stirling boilers in the power house for immediate fuel consumption by operating the gates in the pipe line from the floor of the boiler room.



Arrangement of Ventilating Tubes and Collector Lines

The exhaust system consists of a twin 72-in. fan driven by a 125-hp. motor. The main lead pipe from the fan to the separator is 40 in. in diameter and the two main collector lines leading into the fan are 32 in. in diameter. These latter are reduced in accordance with the requirements of the machines which they serve. The length of the discharge pipe from the separator to the fan is 176 ft.



Motor Driven Fan Installed on the Roof of the Mill

The motor and fan are located on the roof of the mill, which is a two-story structure. This was made necessary due to lack of space in the wood mill and also to keep the disagreeable noise of operation away from the workmen. Its location on the roof also places the motor in a position where the average suction line and discharge line are of approximately equal length.

Accelerating the Setting of Cement Mixtures

The Rapid Setting of Concrete Repair and Replacement Work is Essential, as Serious Problems Arise from Interrupting and Diverting Traffic for Any Extended Length of Time

THE Capital Traction Company, Washington, D. C., has been using a material commercially known as Cal in concrete mixtures for about six months, and finds that its use materially aids the initial setting of concrete. From the construction so far undertaken the introduction of this material in concrete mixtures gives a very hard concrete in about thirty-six hours. The Capital Traction Company has found this material of particular advantage in building its conduit track under traffic. The difficulty experienced when not using Cal has been that the cement requires too long a time to get the initial set and therefore poor results are obtained due to the vibration of the rail and yokes from attempting to operate cars before the concrete is thoroughly set.

Need for a Practical Material for Hardening Cement Is of Great Consequence

A demand for a practical and efficient material for accelerating the hardening of portland cement mixtures has received considerable attention in recent years. The need for such a material becomes of more consequence with the introduction of more rapid methods in construction and replacement work. Serious problems arise when it becomes necessary to interrupt or divert traffic for the duration of time required for concrete to harden sufficiently. The increased cost of lumber for forms has necessitated a more judicious use of such material, and its removal for further use as soon as the strength of the concrete will allow. This applies even more to the use of steel forms, which are rapidly replacing wooden forms in a great many types of concrete construction.

Considerable work toward the development of an accelerator for concrete has been done by the U. S. Bureau of Standards, which found that calcium chloride was the most effective of the various substances tested. Inasmuch as the use of commercial calcium chloride in concrete is attended by difficulties caused by its highly hygroscopic property and by the handling of the solution, the idea was conceived of introducing the salt by means of Cal, a material by which the above difficulties might be eliminated.

Cal is a material obtained by pulverizing the dried or undried product resulting from a mixture of either quicklime or hydrated lime, calcium chloride and water. It is a dry white powder which may be handled in much the same way as hydrated lime, and with the same general keeping qualities. It is much more convenient to handle and use in making concrete than calcium chloride, either fused or in concentrated solution. Upon exposure to the air Cal gradually takes up carbon dioxide and becomes somewhat damp. However, tests indicate that long exposure does not affect its action as an accelerator of the hardening of portland cement mixtures.

TIME SAVED AND LESS DELAY TO TRAFFIC

The setting of normal portland cement mixtures may be hastened by Cal to an extent which is very desirable in concrete construction requiring a finished surface. The finishing operation may proceed with much less delay after the concrete has been placed, which should result in cutting down overtime labor. This hastening of the set is not objectionable in any type of construction providing the concrete is placed soon after it is gaged with water. It is believed that Cal increases the workability of portland cement mixtures. However, no attempt was made to measure the extent of this effect, because up to this time no satisfactory test has been developed for measuring the workability of various portland cement mixtures.

Unsound cements may be greatly benefited or made sound by an addition of Cal. This effect was produced in neat pats subjected to the steam test and in mortar test pieces stored in air. Limited tests indicate that quicksetting cements, either fresh or having become quicksetting on aging, may be made normal by the addition of Cal as used in cement mixtures. There was no indication that the amount of efflorescence appearing on the surface of cement mixtures exposed to the weather is increased by the use of Cal.

The series of tests on the effect of Cal on steel reinforcing bars which were imbedded in a thin layer of Cal cement mortar and exposed to the weather for eight months without showing any sign of corrosion, while favorable, is too limited to give assurance that corrosion will not occur under these conditions. Caution should, therefore, be exercised in the use of Cal in concrete containing steel reinforcement when the concrete is to be freely exposed to the weather or excessive dampness. It is believed that no bad effect will be produced in ordinary building construction.

Undried Cal mixed with portland cement causes greater deterioration in the quality of the cement during storage than that which ordinarily takes place. Therefore, Cal should be added to the concrete materials during the mixing operation, preferably before the water is added.

All portland cement mixtures treated with Cal attained greater strength at the two-day and seven-day periods than the corresponding untreated mixtures. The percentage increase in the strength of mortar at the two-day period obtained by an addition of 5 per cent Cal to cement ranged from 40 to 140. The strength of the treated mortar at two days was equal to the strength of the untreated mortar at three and one-half to eight days. These calculations are made from the results of tests in which the test pieces were stored in water, damp sand or a damp closet.

Treated mortars stored in the laboratory air attained at two days strength greater than that of the untreated mortar at twenty-eight days. This was due to the rapid drying out of the small test pieces and the comparatively slow rate of gain in strength after the two-day period. However, this indicates that Cal is especially advantageous in cement mixtures which are necessarily subjected to any drying-out action.

The increase in strength produced by 5 per cent Cal in concrete mixtures at the two-day period ranged from 52 to 135 per cent, and the strength of the treated concrete at the two-day period was equal to that of the untreated at from three to four and one-half days. On an average this represents a saving of approximately one-half the time in operations which are dependent upon the strength of the concrete at early periods. The effect of the air storage in the concrete tests was lessened in degree, owing to the high relative humidity which existed throughout the storage period.

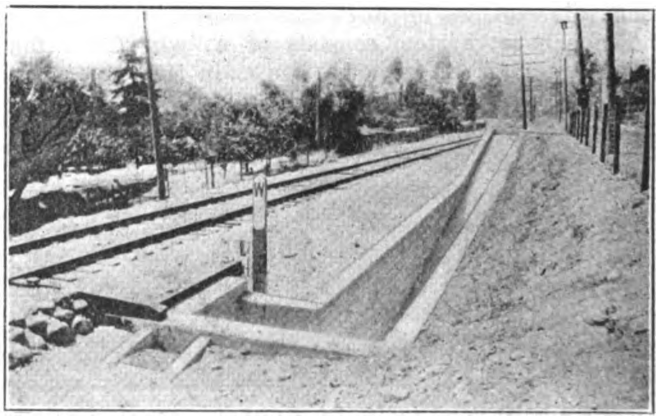
It should be remembered that the increase in strength resulting from an addition of 5 per cent Cal does not represent the maximum which may be obtained except in very rich mixes. As much as 15 per cent Cal was used in mortar tests, giving an increase of 220 per cent at the two-day period.

The general effect of Cal on portland cement mixtures is the same as might be expected from the use of equivalent amounts of hydrated lime and calcium chloride. The three-year tests by the Bureau of Standards on concrete gaged with a solution of calcium chloride are sufficient grounds for believing that the addition of Cal will not injuriously affect the ultimate strength and integrity of portland cement concrete.

Tunnel Crossing for Electric Railway Passengers

A SAFETY tunnel recently constructed under the steam line railroad near Sycamore Grove in Los Angeles provides a safe means of exit from a regular stop on the street car line at that point. Steam trains pass this location at a high rate of speed and when groups of electric railway passengers alight there is danger of serious accidents if they cross the steam tracks at grade.

To eliminate this grade crossing a tunnel with inclined approach has been constructed, as shown in the accompanying illustration. As the level of the ground beyond the steam railroad tracks is considerably lower than on the side where the electric railway tracks are located, the exit from the tunnel is practically on ground level, which makes it necessary to have but one incline. The safety tunnel was built by the city of Los Angeles.



TUNNEL CROSSING UNDER STEAM ROAD TRACKS

Commissioners Recommend Private Ownership

At Recent Convention of Utility Commissioners, Committee on Public Ownership and Operation Makes Clean-Cut Report Urging Private Ownership and Maintenance of Higher Rates

THE following report of the Committee on Public Ownership and Operation is given in full as it embodies some principles which the National Association of Railway and Utility Commissioners has adopted as fundamental in the interests of most intelligent and successful provision of public utility service. The report is not a "snap judgment." It is the result of several years of study by the utility commissioners who have to regulate utilities and who have a more nearly complete view of the situation than is privileged to any other group.

To the National Association of Railway and Utilities Commissioners:

In 1917 there was created by the National Association of Railway and Utilities Commissioners a special standing committee known as the "Committee on Public Ownership and Operation." The report of the first committee made at the thirtieth annual convention of this association, November, 1918, outlined an elaborate program of study of the subject, and the two reports of subsequent committees have dealt with various aspects of the question. The limited space available in this present report precludes the setting out in full of the results of any detailed study of the question and circumscribes this report to a condensed expression on the most salient and important factors involved.

There are, as we see it, only two elemental aspects of the question of public utilities, viz.:

1. Publicly owned, either with public or private operation; and
2. Privately owned and privately operated, either with or without public regulation.

This committee takes the negative view as to the first and the affirmative as to the second, *i.e.*, with public regulation; and sets out its reasons therefor in the following:

Government is instituted among enlightened, civilized peoples in order to insure to the majority of the governed the greatest degree of freedom, liberty and happiness. There is no other sound reason or excuse for the existence of government, if we grant the truth of the principle that all government derives its just powers from the consent of the governed.

This granted, it is then no less true that a sound theory of government would dictate that there should be as little governmental interference with legitimate business activity as is consistent with the protection of the rights and property of the citizens and their enjoyment of life, liberty and the pursuit of happiness.

We take it that these general principles are now but axiomatic. If these be the great basic truths that they are generally and universally conceded to be in this country, then it naturally and logically and inevitably follows, as a necessary conclusion, that the less governmental encroachment there is upon the domain of private business initiative and incentive, consistent with the fair and equitable protection of the rights of the majority of citizens, the more nearly does such government approach the real functions of sound government, as is laid down by our forefathers in the basic principles of the creation of our republic. It necessarily and logically further follows that government is then not instituted, as one of the ends of its creation, for the purpose of the ownership and operation of what are essentially and basically private business. Public utilities are essentially such, provided the public is given fair and adequate service at a reasonable cost. Public, governmental, regulatory bodies are created for this latter purpose only, and can have no other reason for their existence at the expense of the public. However, the safeguarding of these essential rights of the people do make the existence of such bodies a real necessity.

Again, a closer examination of the application of these general principles, we submit, but bears out the conclusion reached. In the ownership and operation of such utilities by government, it is practically impossible to exclude the influence of politics. As long as human nature and self-interest is as it is, and before the coming of the dreamed-of Utopia or millennium, the subtle influence of politics would almost inevitably creep in, however ingenious the safeguards that might be thrown around it. Again, with every change of political administration would come a change of business administration of such utilities, with its consequent change of business policy. This would be fatal to their operation under sound principles of economy and business efficiency.

As illustrative of this fact, we may be pardoned for calling attention to two late outstanding examples in this country, viz.: the government operation of railways and the creation, management and operation of the United States Emergency Fleet Corporation. The first of these is now almost past history, except the readjustments to private ownership and operation and the liquidation of the staggering operation-loss debt of $1,800,000,000 resulting from the twenty-six months of government operation.

The United States Shipping Board and its subsidiary, the Emergency Fleet Corporation, were created in 1917, as a war measure to provide adequate transportation of troops overseas. Since the signing of the armistice, November, 1918, it has been operated as a business corporation. It has over $3,000,000,000 worth of property. For the first two years after the armistice there was an extraordinary boom in shipping. Yet the statement of its business operations from its inception to June 30, 1920, shows the following astonishing financial results from operations, viz.:

Revenues received....	$817,271,542.00
Expenses	1,002,396,579.00
Operating loss........	$185,125,037.00

Yet privately managed British merchant fleets reported, during the same period, net profits on their investment ranging from 20 to 40 per cent. The latter were privately owned and managed, under certain reasonable government regulations; the former was government owned and operated. The difference in the respective systems of management is responsible for the difference in the results. This we believe sufficiently speaks for itself.

However, it may not be amiss to call attention to a few other cases where government ownership and operation has been in recent years tried. The largest example, carried to its ultimate logical conclusion, is found in the communistic régime in Russia. The plans upon which their theory is based apparently are wholly logical and should work out successfully, if only they had a new and different kind of human being to deal with; but human nature being what it is, such plans will not and do not work out in actual practice. The result of the attempt to put these into actual practice is known to the whole world. Another example is the tramways of Glasgow; they are said to be a model of municipal ownership, and they are, yet the tax rate of Glasgow has steadily risen. The English telephones are owned by the government; they are not self-supporting. The people of this country would not for a moment submit to such service as they give. Our telephone service at its worst is better than theirs at its best, and yet our tolls are lower. Instances of public ownership and operation might further be multiplied. The results are practically all the same. Also, private ownership and operation under municipal or community regulation has also been tried in this country in many instances. Instances of these are found, among others, in the states of Washington, Arkansas, North Dakota, etc. However, wherever tried, it has proved a practical failure, with either a resultant increase in rates beyond the reasonable value of the service rendered, or the breaking down of the utility in question with a large proportion of its operation costs borne by taxation.

Business is essentially management; not a plant, nor blue prints, nor rules; but is men. Business is the functioning of a highly skilled managing personnel, a buying and selling organization, trade connections, and the intangible but valuable good will, in addition to plant and equipment, and even finances. The latter constitute but the instrument, the former the business. The criterion of successful business is the periodical balance-sheet. Government is essentially a political concern; it necessarily thinks and acts politics. Politics are not concerned with the profit or loss showings of balance-sheets; but are vitally concerned with political campaign showings. "Passing the buck" in critical situations is necessarily one of politics' favorite pastimes. Basic conditions of politics make it so. Making quick decisions and assuming responsibility is an essential part of the life-blood of business. The two are uncongenial bedfellows. Again, as above mentioned, changes in political administration necessarily bring about changes in administrative policy. Changes in administrative policy are costly and bring about unsettled business conditions. Continuity in adherence to a sound, tried business policy is an essential to continued successful business operations, and the maintenance of the concurrently necessary business good will. This is at least difficult, if not impossible, in the publicly owned and operated public utility. The ultimate conclusion in the last analysis is self-evident to all thinking men, and forces us to discard the public owned and operated public utility.

There then remains only the privately owned and operated public utility, either with or without public regulation. All experience has shown, as is generally conceded, that such, without a regulation by a representative body of those who are dependent for service upon such utility, is both unwise, unsound and unfair to the public served. By the process of elimination, there then remains only the public utility regulated by an authoritative governmental body in close touch with and sensitive to the needs of the public served.

Such regulatory governmental bodies, however, at the same time must be sufficiently wise and fair and farseeing to stand between the utility in question and unthinking, hasty public clamor, not based upon full knowledge and careful thought. Public utilities are subject to the same financial laws of operation as are private enterprises. They must operate successfully in order successfully and adequately to fulfill their duty of service to the public, not only in the present, but in the near future. This is peculiarly true at the present time; and for the reason that for the last five years their revenue rates did not proportionately increase with their rapidly increased costs of operations. It therefore follows that, in order to maintain a just, equitable balance and to even keep such utilities out of bankruptcy, it is necessary to maintain their higher rates longer than would to the layman seem necessary, judging by the surrounding decline in commodity prices. To follow any other policy would be to put such utility out of business, and to discontinue that service to which the public is so justly entitled, and which is now more necessary to the return of the vast bulk of private business to the desired goal of normalcy.

The foregoing considerations force the committee to the conclusion that the present system of private ownership and operation under public regulation is the logical, just, equitable and best system of conducting the business of public utilities that has or can be devised to meet the needs and requirements of both the utilities in question and the public by them served.

The report was prepared by a committee composed of A. G. Patterson, chairman; William C. Bliss, James Causler, H. H. Williams and Frank R. Spinning. The report was presented on Thursday morning, Oct. 13.

Amortization of Discount on New Securities*

Commissions Should Assume Responsibility of Permitting This—Analysis Made of Typical Case to Show Amounts Required

BY CYRUS PEIRCE
Banker, San Francisco

THE question of doing a large portion of the financing of public utilities through the medium of junior securities is becoming of more and more importance all the time, but before it can be done in any large way two vital points must be safeguarded.

First, the income of the company must be sufficient and so stabilized that the dividends on these junior securities will be paid with the same punctuality as the interest on the funded debt, and, second, the security upon which the issues are based must be ample to safeguard the principal. In order to accomplish these two things, it seems to me to be necessary for the Investment Bankers' Association to use the weight of its influence with the various public utility commissions to the end that the rates may be adequate not only to pay the dividends but to build up the physical property to the extent where there shall be at least one dollar of physical property for each dollar of the junior securities outstanding that may have been sold to the public.

This brings us right to a question which seems to me to be the heart of the whole matter, and that is the proper amortizations of discounts. It has been current practice to amortize the discount on an issue of bonds throughout the life of that issue. In theory that is probably correct and is not materially harmful. But what about the discounts on preferred stocks and common stocks? What is the proper period in which the difference between the par value of these stock issues and the amount derived from their sale should be made up, and how?

It has been current practice recently when public utility bonds are issued to limit the issue at par and the face amount of the issue to 75 per cent of the cost of the improvements to be made. Therefore, the other 25 per cent, and in addition thereto such discount from the sale of the bonds as the company is compelled to stand in order to market them, must be made up. Somewhere, somehow, the utilities have been called upon to find this money. It is now the fashion to provide this from the sale of stock. In most cases it is preferred stock. It is customary to say to an intending investor that every dollar he puts into the preferred stock is represented by a dollar of fixed assets, and this is true in most instances. It also is true that recently most utilities had to sell their preferred stocks on an 8 per cent basis, which, if the stock is a 6 per cent stock, means the sale of it at about 75. Ordinarily 8 per cent is all a company is permitted by the commissions to earn on the investment. Therefore, there is no profit to the company. The earnings do not provide a means by which these discounts may be quickly amortized or a surplus built up to protect the investor further. The result is that there is little chance of there being an increase in the intrinsic value of the securities of the corporation, which are junior to the preferred stock and which should be the vehicle for providing additional equity, and as their market can't improve, their price cannot go up. Consequently, the price at which the company must continue to sell its preferred stock remains low, discounts continue excessive, and the vicious circle goes on.

This attitude on the part of regulating bodies too closely restricting earnings cannot help but eventually result in two things. First, that the sale of junior securities will become increasingly difficult at increasingly relatively higher costs of money, and, finally, that it will become impossible to raise money from that source at all because the company cannot afford to pay the price which investors will demand where there is regulation of security but no assurance that the issuing corporation will have such earnings as will enable it to administer its financial affairs along those lines which experience has shown to be necessary. Those lines are that there should be sufficient earnings to enable the corporation to lay up in lean years a reserve which may be applied to dividends as an assurance against the time, which always recurs in every corporation's experience, when earnings will not be sufficient to pay such dividends. This reserve, of course, also constitutes an assurance of the continuity of the promised dividends upon the preferred stock, and over and above this, there should be sufficient earnings to make it possible for the company within a comparatively short space of time to build up in actual property against which no securities can be issued an equity equal in par value to the amount of discount upon its outstanding securities.

If a company were static, this would be easy, but in a growing company where the annual construction requirements run into the millions, this has become a grave problem and the cord is being drawn tighter each year around the neck of the unfortunate corporation.

Assume, for example, that a company spends $10,000,000 cash in one year for a new development and issues against it $7,500,000 of bonds and $2,500,000 in preferred stock which are sold at 90, *i.e.* the company has installed property which cost $10,000,000, but against which it has received but $9,000,000. Then $1,000,000 must be provided from some source and that amount is immediately reflected in floating debt. This may temporarily be carried as an open account and then as notes in favor of the vendor, and finally, when the vendor must be paid, these notes or their successors find their way into the hands of the banks with which the company does business. The result is that the company has made permanent capital expenditures of $1,000,000 and obtained the money therefor by using bank credit which is a highly improper proceeding as credit must never be confused with capital.

What is the remedy?

The $1,000,000 of deficiency to be provided should be made up by the sale of common stock. It is apparent, however, that after the common stock is sold there is no property value behind it. It, therefore, must either bear such a dividend as to make it a good speculation, or it must be safeguarded, and the only way that it can be safeguarded is to build up the property value behind it. Assume that the $1,000,000 is provided by the sale of common stock at 75. This would mean that there must be sold common stock to the par value of $1,333,333, against which, as stated before, there is no property value. Under present conditions this stock is not salable, but the public service commissions must be brought to a point of view to regard the discount of $1,333,333 as a construction charge to be added to the property value, which is more or less fallacious, or it must allow the company to make sufficient earnings to pay not only the interest on the bonds and the dividends on the $2,500,000 preferred and $1,333,333 common stock and to provide proper depreciation, but, over and above all this, earnings sufficient to build up within a reasonable time, say five years, a property value of $1,333,000. In other words, it must allow that company to earn, in addition to the above items, $266,666 each year in additional property, against which no securities, either bonds or stock, may be issued. When something of this kind, and only when something of this kind, is done, can a reasonable amount of the financing of our public utility companies be properly done through the sale of junior securities. It seems to me that it is the duty of this association to go on record in such a way that we who are financing public utility companies, and the companies themselves, may use the findings of this association as the leverage upon the various utility commissions to the end that they will take this stand and permit such earnings.

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*Abstract of address presented at annual meeting of the Investment Bankers' Association of America, New Orleans, La., Oct. 30-Nov. 2, 1921.

Meeting on Tie Standardization

RULES covering standardization of grades and sizes and inspection of wood, cross and switch ties are to be drawn up as a result of a tie standardization conference held in Washington Oct. 25. The conference was called by the American Engineering Standards committee at the request of the American Railway Engineering Association and the United States Forest Service. All present strongly favored the establishment of standardized rules. There was some objection to the grouping of woods for preservative treatment and it was decided not to include the question of preservatives. It was decided that the rules should be sufficiently comprehensive to include all classes of wood ties. This was done so as to include the ties used in mines and light railways generally as well as on steam and electric railways.

The organization of a bureau of inspection will be necessary, but it was decided to leave that step to the producers and the consumers.

The conference recommended to the American Engineering Standards committee that the Forest Service and the American Railway Engineering Association be appointed as sponsors to organize a sectional committee. Producers and consumers are to be represented on the committee which is to be directly responsible for the preparation of the standards. The standardized rules are to be presented to the American Engineering Standards committee with the recommendation that they be adopted as the American standards.

A. A. Stevenson, chairman of the American Engineering Standards committee, presided and P. G. Agnew, secretary of that organization, acted as secretary of the conference. Others in attendance were: John Foley, American Railway Engineering Association; C. S. Kimball, American Electric Railway Association; H. P. Haas, A. L. Kuehn and C. L. Warwick, American Society for Testing Materials; Dudley Holtman, National Lumber Manufacturers' Association; L. P. Keith, West Coast Products Bureau; E. R. Shepard, Bureau of Standards; W. C. Nixon, National Association of Railroad Tie Producers; Charles N. Perrin and Frank R. Buck, National Hardwood Lumber Association; Earle H. Clapp and H. S. Betts, U. S. Forest Service; David G. White, Forest Products Laboratory, Madison, Wis.

Handling Employees' Claims*

Methods of Collecting from Owners of Foreign Vehicles Who Have Injured Employees While They Were at Work—Policies Pursued by Member Companies in Handling Claims of Employees While Not at Work

BY S. A. BISHOP

General Claim Agent Pacific Electric Railway, Los Angeles, Cal.

EVERY employer has a natural human interest in the welfare of his employees. When one of those employees is injured through the negligence of a third person, I, for my employer, come immediately to his assistance with an offer to investigate the facts of the accident and to effect, if possible, a satisfactory settlement. The claim agent's training and experience have fitted him to care for such a claim as effectively as it can well be done, and the employee, realizing this, is rested from a mental burden which, perhaps, he can ill afford to carry during the period of his convalescence. This service is gratuitous, and is a part of my company's welfare work.

But the workmen's compensation, insurance and safety act of the State of California has created for employers a particular interest in the claims of their employees against third persons whose negligence has been responsible for personal injury while the employee was engaged in his line of duty. While imposing a liability for the payment of compensation by the employer at the usual rate to the injured employee, the act also fixes upon the third person the same liability toward the employer, in the amount of compensation paid, or for which the employer may become obligated, as such third person may have toward the injured employee himself for his losses, as established by the facts of the accident. This mutual interest in pressing the claim against the third person culminates in the claim agent's conducting the negotiations leading up to a settlement, and, if necessary, the prosecution of a law suit by the railway company's law department. The employee is thus relieved from a burden which he is reluctant to assume, and the employer in donating his services retains the close co-operation of the employee in recovering the compensation paid.

In those cases, where the amount of damage is substantial, the first information to be determined is the third person's ability to meet a judgment if it can be obtained. If he is the owner of things of value, here or elsewhere, then, at least, there is the assurance that when all attempts at an amicable adjustment have failed, there is left the privilege of having the issues determined by a court of law, with the positive assurance that if a satisfactory showing can be made to the jury, damages can be recovered for the employee. However, the proposition of collecting damages from the owner of a foreign vehicle, where such vehicle has been the instrument in producing the employee's injury, presupposes that such owner in being a non-resident is also judgment proof in the home state of the employer.

Where an employee has been so unfortunate as to have been struck by a vehicle of foreign ownership, when there are so many vehicles in California owned locally, I consider his chances for recovery of damages slim. This is true because of the difficulty of reaching assets outside of the State. And the chances are even slimmer if the vehicle owner is judgment proof in his home state, and perhaps not even the owner of his own automobile. In such cases there is nothing left but to make demand upon this third person and rely, for satisfaction, upon the kindness of his heart. For information as to the stranger's financial standing in his own community, I have called upon claim agents of railways in adjacent neighborhoods for searches through county records and have reciprocated like demands in my own city.

When the search reveals this negligent third party to be the owner of property and able to meet the just demands upon him, and has not already motored beyond the State's borders; and where the damages are substantial and demands for payment have not been met, suit should be immediately instituted so that service can be had while the defendant is yet within the State court jurisdiction. Once service is had we care not where goeth our stranger. The employee recovers; his action for damages is joined with that of his employer for the amount of compensation paid, and upon trial the plaintiff takes judgment upon the facts, or the defendant defaults by his failure to appear. In either case the judgment may be sued upon in the home state of the defendant, a second judgment had, and, finally, levy of execution against his assets.

Now, we have to consider the event wherein our third party, the defendant, has left California, hurrying home because of the press of business. He has evaded service issuing from the State court and leaves behind the remedy of action in the United States District Court, with jurisdiction over claims arising from torts between parties of diverse citizenship.

A suit in the District Court has the advantage of requiring but one action before levy of execution in the foreign state, as against the two actions required by procedure through the State court. Opposed to this is the disadvantage, fatal to the action of small demand, arising from the $3,000 minimum-value rule applicable to District Court actions. In addition to this is the difficulty of securing a unanimous verdict.

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*Paper presented at the annual meeting of the Pacific Claim Agents' Association, Butte, Mont., Aug. 25-27, 1921.

The disadvantages attendant upon suing out a judgment upon the facts in the foreign state may be of less moment than those incident to the other two methods suggested. This may be so if the claim agent can call upon attorneys of his acquaintance in the foreign state who have his confidence that the case will be tried well, and that the fee will be compatible with the service rendered. And yet, because of the unavailability of witnesses for use in the foreign state and the great distance over which the negotiations would have to be conducted, probably this method of collection is seldom, if ever, used. I have, however, made adjustments in this manner to advantage.

The method by far the best, however, is to convince the foreign automobile owner that he owes the claim and accept his payment of it.

I have pleasure in reporting that the policy of the Pacific Electric Railway in the matter of claims of employees growing out of injuries received by the act of third persons while the employee is not at work for his employer is to take over without expense to him the negotiations and effect a settlement of his claim, if possible, out of court. We have quite an extensive program for welfare work. Our employees' club harbors many kinds of amusements and is the meeting place for secondary organizations which interest the employees in outdoor sports, athletic events and the like. During the summer months the employees have the benefit of an extraordinary summer camp in the San Bernadino Mountains. An annual picnic at the seashore attracts everyone who is free. The gratuitous handling of claims for employees by our claim department is merely a part of this admirable scheme. While only a very small percentage of our employees are unfortunate enough to require that kind of service, yet the benefit to those few individuals is great enough and the appreciation of employees sincere enough to make the service an item of respect in the general plan.

Kentucky Utility Association Resumes Meetings

THE annual meeting of the Kentucky Association of Public Utilities will be held at the Seelbach Hotel, Louisville, Ky., on Nov. 22. This will be the first regular meeting since the discontinuance during the war.

At the morning session following the report of the secretary and treasurer an address will be given by James P. Barnes, president Louisville (Ky.) Railway, entitled "Outlook for the Electric Railway Industry." Martin Insull, past-president of the National Electric Light Association and vice-president of the Middle West Utilities Company, Chicago, Ill., will be the guest of honor at the luncheon.

Three addresses will be given at the afternoon session. The subjects of these addresses are: "Public Safety," by George H. McClain, manager Louisville (Ky.) Safety Council; "Financial Outlook," by Richard M. Bean, president Louisville National Bank; and "Functions of a Public Utility Association," by A. Bliss McCrum, secretary Public Utilities Association of West Virginia, Charleston, W. Va.

The Genteel Faker*

Filching Money from Public Service Corporations Is Considered a Mark of Rare Business Ability by One Class of Claimants Which Must Be Dealt With

By F. J. Lonergan

Claims Attorney Portland Railway, Light & Power Company, Portland, Ore.

"GENTEEL" is defined as the state of being well bred or refined; stylish or fashionable. "Faker" is one who fakes. In the vernacular, "fake" means to cover up or alter defects or imperfections in, especially with intent to deceive; to fabricate in order to deceive; one who originates a fake or humbug. Notwithstanding the contradiction in terms between "genteel" and "faker," it would seem that, from the beginning of man down through the ages to the present time, there is much evidence of the presence and activities of what may be termed th "genteel faker."

The claim agent of every railway company has met the "genteel faker," for the claims department is a veritable clearing house for the practice of their wiles. It is one of the real serious matters that confront the claim agent, because it is often very difficult to penetrate their mask of respectability, and more difficult still to obtain a jury that will see through their disguise.

It is strange, but nevertheless true, that there are many people in every community who have no qualms of conscience when dealing with a public service corporation, particularly a railway company. In the ordinary affairs of life they are scrupulously honest and their integrity is never suspicioned or doubted. They will not defraud the grocer, the butcher or the baker. They deal open-handedly in all ordinary business affairs. But when an injury has been sustained at the hands of a railway company, to them even-handed justice no longer prevails.

Instances are not at all uncommon where a person of prominence having met with an accident involving personal injury presents a claim based upon fraud, deceit and exaggeration. If the claim agent attempts to make a thorough investigation as to the nature of the alleged injuries he is met with rebuff, and ofttimes open insult. The claim agent is charged with doubting the honesty and veracity of the injured party and is denied an interview, and many times the company's doctor is not permitted to make an examination. In the event the claim agent fails to make settlement, which settlement does not mean compromise but surrender, then the controversy is taken into the courts. Such a claimant experiences no difficulty in producing numerous witnesses to his alleged pains and sufferings. In most instances, the pains and sufferings consist of facial contortions, bodily gymnastics and moans and groans during the presence of friends and neighbors who are depended upon to later convey what they have seen and heard from the witness stand.

Policy settlements, so called, is another phase presented by the genteel faker. It not infrequently happens that those who have considerable business dealings with the company threaten the claim agent that unless the matter is settled in accordance with their demand the business relations with the company will be broken and service will be obtained elsewhere. The claim agent is thus confronted with a very delicate situation, and all his skill and tact is not sufficient to offset the hold-up. The highwayman with mask and gun who demands your money takes a chance, but the genteel faker, to use the vernacular, has that game backed off the boards.

How can the claim agent obtain the best results in dealing with the so-called genteel faker? In some instances to be firm and outspoken may meet with success, although many times when the claim agent so acts he is publicly denounced as a crook, a scoundrel and a blackguard.

Where a claimant is obsessed with a notion that no wrong can be done in dealing with a public service corporation, and that to filch money from such a company is an indication of rare business ability, education and publicity would seem to be the only remedy. If the community were educated to know and to feel it has an interest in the welfare of the public service corporation, in that the money that the company makes and saves will be reflected in the betterment of service and lowering of rates, some good might be accomplished. If publicity were indulged in freely concerning false, fraudulent and exaggerated claims it would undoubtedly awaken the sleeping conscience of even the genteel faker. For after all, education and publicity are the only great and true weapons of defense on behalf of public service corporations.

Knowing that the companies are desirous at all times of doing the fair and square thing in the matter of settlement of claims, there is no reason why the company through the claim department should not feel entirely justified in bringing to its aid a properly and well-informed public. The only fear of the genteel faker is exposure and knowledge of the truth on the part of others. And this being so, the path of duty of the claim agent lies before him.

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*Abstract of paper presented at the annual meeting of the Pacific Claim Agents' Association, Butte, Mont., Aug. 25-27, 1921.

Solomon in all his glory had not such clever genteel fakers appearing before him as the claim agent of today has to deal with. If Solomon were here now, he could learn much by one day's visit to the office of the claim agent.

Effect of the One-Man Car on Traffic Hazard*

One-Man Cars in Spokane Have Bettered the Two-Man Car Accident Record, Although There Has Been a 50 Per Cent Increase in the Number of Automobiles Since Their Introduction Three Years Ago

By THOMAS G. A. ASHTON
Claim Agent Washington Water Power Company, Spokane, Wash.

"EXPERIENCE is the best teacher," and judging from the experience of the Washington Water Power Company the effect of the one-man car on the traffic hazard has been most favorable. The Washington Water Power Company, one of the pioneers in the one-man car operation, had its system fully equipped with one-man cars on July 1, 1918, and since that time has operated none other than one-man cars on its city lines. We operate sixty-six cars eighteen hours a day and thirty-three trippers five hours a day. During the time the sixty-six cars are running we have a headway of twelve minutes. While the trippers are on we have a headway of five minutes. This same headway has been maintained since 1915, there being no change made when the one-man cars were put on.

The traffic hazard has in our city, as in most cities, greatly increased since we started to operate the single-end cars. On July 1, 1916, there were 6,493 automobiles in Spokane County. On July 1, 1918, the day our company started to use the one-man cars exclusively, there were 12,294 automobiles, while on July 1, 1921, there were 19,325, an increase of 7,021 since we made the change from two to one-man cars.

Regardless of this increase in the worst traffic hazard we have shown a reduction in traffic accidents. In the three years previous to the placing in operation the new type of carrier we had 1,324 traffic accidents, divided as follows: Automobiles, 1,023; horse-drawn vehicles, 147; bicycles, 44; motorcycles, 31; pedestrians, 79. During the three years of the one-man car we have had 1,292 traffic accidents, divided as follows: Automobiles, 1,151; horse-drawn vehicles, 36; bicycles, 16; motorcycles, 13; pedestrians, 76; showing a decrease of 22 traffic accidents, regardless of the large increase of automobiles. During the three years previous to July 1, 1918, we ran 10,375,648 car-miles and had 1.28 accidents to every 10,000 car-miles. We operated 1,205,535 car-hours and had 10.9 accidents every 10,000 car-hours. During the three years since July 1, 1918, or the one-man car period, we ran 10,400,881 car miles and had 1.27 accidents to every 10 000 car-miles. We operated 1,292,241 car-hours and had 10 accidents every 10,000 car-hours.

Upon inquiry I learned that the Municipal Street Railway, Calgary, Canada, another pioneer in this type of operation, has had the same experience. This railway was exclusively equipped with one-man cars in the fall of 1917. I have been advised by the management of the Terre Haute, Indiana & Eastern Street Railway that its experience with the one-man cars has likewise been profitable. Its report shows one accident for every 13,227 car-miles with the one-man car and one accident for every 8,476 car-miles with the two-man car. The traction company of Spokane has had a decrease of 6⅜ per cent in traffic accidents during the first six months it has operated the one-man cars.

In Spokane we have to contend with every kind of traffic condition. We operate over grades as high as 12½ per cent. We have sharp curves on grades. The climate is such as to give us snow, sleet and fog. We are also bothered on some of our lines with leaves on the track, which is one of the most dangerous things any street railway has to be bothered with. All our cars are routed through the congested district, passing through one central point

We do not operate the small safety cars, but a standard type, practically the same as our old double-end cars. They are double-truck, four-motor equipment, weighing 26½ tons, 44 ft. 9 in. long and seating forty-two passengers.

An advocate of safety has said, "There is a reason for everything but a woman getting off a street car backward." So there must be a reason for the one-man car reducing the number of traffic accidents. In the first place you have placed the entire responsibility for the safe operation in the hands of one man. There is no chance for a misunderstanding of signals. In backing up the operator is required to go to the rear of his car.

If an automobile suddenly cuts in front of him he does not have to rely upon a signal to tell him to stop. The near-side stop is compulsory with the one-man car. This to my mind is the cause of the elimination of most traffic accidents. Passengers being picked up at the near side of the intersection cause the car to cross the intersection more slowly, thus enabling the motorman to stop his car more quickly. The construction of our type of car is such that the over-hang is in front, thus preventing pedestrians and vehicles which are standing close to the car from being struck by the over-hang as the car rounds the curve.

In point of importance it will therefore be seen the work of the investigator ranks high. It affords the basis and foundation of all settlements and the defense of all litigated claims. Without a high-class investigating bureau the success of a claim department is bound to be limited. While the work of the investigator is at times vexatious and his difficulties many, still the satisfaction of a task well done goes far to mitigate the discouragements with which his path is strewn. And just in passing, let this impression be recorded, that the person in charge of the investigators should not forget that a word of praise where deserving is a staunch stimulant to the morale. Certain it is that the intelligent young man of today in the field of investigations will attain success if he but put forth an honest, conscientious effort and the way will open for bigger and better things.

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*Paper presented at the annual meeting of the Pacific Claim Agents' Association, Butte, Mont., Aug. 25-27, 1921.

"The Soul of Service"

AT THE meeting of the American Gas Association held in Chicago, Nov. 9-11, among the papers presented was one called "The Soul of Service," by W. H. Rogers, Public Service Gas Company, Paterson, N. J. This paper is one discussing what Mr. Rogers says is "old stuff" but always with us, the service of public utility corporations.

In speaking of the street railway company, Mr. Rogers says: "The soul of the street railway company is the will and the desire of owners, managers and employees so to handle transportation of human beings, so to operate trolley cars, that every man, woman and child in the community will want to ride in these trolleys and will be satisfied and willing to pay to the company adequate and reasonable fares."

Starting with the three great characteristics of man, known as spirit, soul and body, Mr. Rogers defines these as:

(a) Spirit is what really exists. Spirit is reality. In man, it is that part of man which knows—it is his mind.

(b) Soul is the consciousness of existence. Soul is the seat of the active will and of the affections, desires and emotions.

(c) Body is the outcome, the result, of the activity of spirit, guided and controlled by soul, by the will, by our desires.

He then goes on to say: "The spirit of the street railway company is the idea of satisfactory transportation for men, women and children, for everybody, for the whole public."

As to the body, Mr. Rogers asks "Does not the body of each of our companies consist in the opinion which has grown up in the minds of our customers and the public regarding these companies?"

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Saginaw Votes for Return of Street Cars

Mayor's Proposal for Return of Cars Is Now Before Committee Representing Security Holders

A plan for the resumption of electric railway service in Saginaw, Mich., under the direction of a board of trustees appointed by the Council who have had no former connection with the operation of the Saginaw-Bay City Railway was proposed by Mayor B. N. Mercer on Nov. 8 and adopted by the Council at a special meeting. A summary of the proposal was transmitted to New York by wire, where Otto Schupp, trustee of the local property, appointed by the Federal Court, is meeting with the protective committee representing the bondholders.

SPECIAL MESSAGE FROM MAYOR

The matter was brought to the attention of the Council in a message from the Mayor, who made the following recommendations: Appointment of the five trustees to operate the property under a trust agreement from the bondholders' committee, the rate of fare to be four tickets for 25 cents with universal transfers, five school tickets for 25 cents, and a cash fare of 8 cents. Elimination of jitney competition on streets traversed by street cars. Price for current to be fixed by Public Utility Commission.

It is generally believed the Council's action is the result of two outstanding features which have occurred during the last week to ten days. The Council had before it for consideration a proposal of the Wolverine Transit Company, Detroit, to install a motor bus system in Saginaw provided some agency would dispose of $125,000 worth of advanced transportation. The financing question was submitted to the board of commerce, but the board declined to act favorably on the subject. The local newspaper started a referendum and by a tremendous majority the people voted for the return of street cars at an increased rate of fare, and the elimination of jitney buses. A straw vote which was to have been taken in each of the city's voting precincts as proposed by one member of the Council it is believed now will be dropped as the action of the Council Tuesday makes this unnecessary.

RECEIVER IN NEW YORK

It is generally believed in Saginaw that if Mr. Schupp is unable to have the protective committee representing the bondholders accept the proposal of the Council, it will at least result in a counter proposal being made and if it is honest and fair, it will be accepted by the city and street cars will again run.

Under the Mayor's plan the trustees are to act without compensation and none of the former officers of the traction company is to be employed. The only salaried official is to be a capable superintendent.

In his message to the Council Mayor Mercer points out that beyond any doubt the sentiment is for street cars and against municipal ownership of either buses or street cars and the only solution left for the city is the resumption of street car service without jitney competition.

A definite answer is not expected before Nov. 12.

Recently the Council by a four to one vote accepted the proposal of the Wolverine Transit Company which calls for an advanced sale of $125,000 worth of transportation, which funds will be used to help pay for the buses as they are delivered.

The plan was referred to the board of commerce by the Council and after two meetings the transportation committee of the commerce board appointed a sub-committee to investigate the financial condition of the company as to its ability to go through with its part of the program and two disinterested engineers to investigate the construction of the bus and report on the cost and their adaptability for use in a northern climate.

City Must Pay Cost When Utilities Move for Municipal Railway

A decision handed down by the United States Supreme Court on Oct. 24 in the case of the Postal Telegraph Company vs. San Francisco, establishes an important precedent in the municipal railway field. The decision holds that in the operation of a municipal railway the city is acting not in a "governmental capacity" but in a "proprietary capacity," and that the city must pay the costs of removals or changes in location of other utilities occasioned by the construction or extension of a municipal railway.

The San Francisco case has been in litigation since the third and fourth tracks were laid on Market Street from Geary Street to Van Ness Avenue. These tracks were laid on portions of the street that had never before been used for railway lines and under which were the conduits of the Postal Telegraph Company. When the tracks were built these manholes had to be changed or the conduits moved. The city acknowledged the company's rights to maintain its conduits, but held that those rights did not carry with them the right to use the street to the exclusion of the municipal railway line.

The company objected to paying the costs but did the work with the understanding that it would be reimbursed if the courts ruled that the city should pay. The case was carried to the United States Supreme Court where the decision of the lower courts was sustained and the city was ordered to pay the cost of the manhole changes.

Deficit in Davenport in September

Electric railway operation in Davenport during the month of September, 1921, showed a deficit of $36,106, according to a report of the Tri-City Railway. The report showed total receipts of $56,178, while the company had operating expenses of $55,331, with $5,452 in taxes and $4,084 in interest.

Mayor Couzens' Policies Indorsed

Result of Detroit Election Taken to Mean City Is Satisfied with Municipal Program

Unofficial returns of the Nov. 8 election in Detroit, Mich., indicate that James Couzens was re-elected Mayor. He received a vote of nearly two to one over Daniel W. Smith. Mr. Couzens' majority was about 33,000 out of total vote of less than 115,000.

The ouster ordinance compelling the Detroit United Railway to remove its tracks and equipment from Fort Street and Woodward Avenue, put on ballot by initiative petition after it had been passed by the Council, carried by majority of 35,000. According to statement attributed to A. F. Edwards, vice-president of the Detroit United Railway, the company will bow to the will of the people as expressed at election and will discontinue service on Fort Street and Woodward Avenue on or about Nov. 25. It is estimated that about 50,000 riders per day use the two lines.

The charter amendment fostered by Mayor Couzens and the Street Railway Commission empowering the commission to engage in trackless transportation using trackless trolleys and buses was carried by majority of 26,000. This amendment was defeated in the October primaries.

The re-election of Mayor Couzens is accepted as an expression of people of Detroit for municipal ownership and for the continuance of the program started during the Mayor's last term.

Eight of the nine councilmen were re-elected, only one new member being elected to fill vacancy.

COMPANY STATED ITS CASE

A special edition of *Electric Railway Service*, the official publication of the Detroit (Mich.) United Railway, which was suspended with the June 17 issue, was put out on Nov. 5. In it the company took occasion to explain the ouster ordinance which was placed on the ballot for the Nov. 8 election. This measure was concerned with car service on Fort Street and Woodward Avenue. In referring to the ouster ordinance the company's publicity department stated that it was felt that the matter of service on the Fort Street and Woodward Avenue lines was so important as to call for the revival of the paper in a special edition.

It was cited that the Detroit United Railway had taken no part in the political fight drawing to a close with the election, nor was the company making any campaign to influence the electorate in their vote on the ouster ordinance. Attention was called to certain facts because, in the company's opinion, the effect of the ouster ordinance upon the people of Detroit had not been as fully and completely discussed in the public press as so vital a measure deserved.

In reviewing the conditions it was stated that the Detroit United Railway had refused to accept $388,000 as the price for the Woodward Avenue line from the Grand Belt Line on Milwaukee Avenue to the Detroit River, and the Fort Street and West Jefferson lines from Artillery Avenue to the eastern terminals of these lines, including Cadillac Square turning facilities. The price mentioned, it was pointed out, covered not only the tracks but the overhead system of poles and wires as well. The company said:

> Should the ordinance be approved by a majority of the voters and the civic authorities insist upon it being made effective, then within ten days after the vote has been declared official, which will probably be Nov. 15, the company must stop service and within ninety days the property will have to be removed.

SERVICE MAY BE CUT OFF

The company sees not less than three months of confusion depending upon weather conditions, and still further delay and confusion while the Street Railway Commission is constructing new tracks to replace the ones torn up. During that time, it is cited, street railway service to and from the north end of Woodward Avenue would be cut off.

With the completion of the city tracks, car riders above the Grand Belt line would have to pay two fares to reach the heart of the city and congestion would be greater because of the cars of the Hamilton, Twelfth and Linwood lines of the municipal railway being routed over Woodward Avenue instead of the present routes. The Fort Street and Woodward Avenue lines are referred to as large transfer lines used by people from all parts of the city. The final warning was given that the company would not accept the city's offer, pointing out that in the 1919 appraisal of the properties by the Public Utilities Commission these tracks were valued at $2,500,000.

In denying the report that the company would accept the city's offer rather than spend a large sum in obeying the ordinance if it were approved, the fact was pointed out that there is an underlying mortgage of $1,200,000 on the Fort Street line maturing in 1924. The bonds secured by this mortgage were in the hands of the public before the line was purchased by the Detroit United Railway, and if the company accepted $388,000 for the parts of Woodward and Fort lines mentioned it would practically mean more than half the amount or $194,000 for the Fort line. There would be a deficiency of more than $1,000,000 so that if the company is to lose $1,000,000 it might as well lose the entire $1,200,000, it is cited.

HOLDER OF MORTGAGE BRINGS SUIT

The Woodward line above Pallister Avenue cannot be secured by the city except by agreement for years to come because of existing franchises, some of which have been granted to the company on perpetual terms. The question was raised, would it not, therefore, be better for the people of Detroit to have the price to be paid for the Fort and Woodward lines arrived at by arbitration, all things to be taken into consideration, including the fact that the franchises on parts of the lines considered have expired?

Suit has been filed in the Circuit Court for the city against the Detroit United Railway and the Guaranty Trust Company, New York, to clear title to the 29 miles of so called day-to-day lines which are to be taken over by the city according to recent arbitration. The Trust Company holds the mortgage on the Detroit United Railway system and refuses to release mortgages on the track and equipment upon which the arbitration board fixed a price. The suit filed by the Corporation Counsel will determine whether the Trust Company or the Detroit United Railway is to receive the money for the day-to-day lines, to be paid according to the terms of the arbitration.

Transit Plan Hearing Nov. 15

Inquiry Before Commission in New York Will Continue Three Days a Week

The Transit Commission of New York City has fixed Tuesday, Nov. 15, as the date for the beginning of its public examination of the street railway and omnibus companies, and has served notice upon the representatives of each of the companies coming within its jurisdiction to appear at its offices, at 11 o'clock in the forenoon of that day.

The commission about three weeks ago announced that it would make no effort to proceed with these examinations during the progress of the city election campaign. It declared at that time that, while the publication of the plan in outline had brought forward some suggestions bound to prove constructive and of a helpful tendency, there had, on the other hand, been a pronounced disposition in some quarters to make the matter a football of politics through the employment of prejudiced misrepresentation and abuse in place of dispassionate inquiry.

POLITICS ELIMINATED

The commission is of the opinion that the subsequent course of the campaign has fully justified this view. It has been convinced that any attempt to develop the plan through the medium of the proposed examinations before the end of the campaign would have been futile. As the commission has previously pointed out, its program has nothing to do with current politics, and its action will not be affected either one way or the other by the issue of the election. Its functions are clearly defined by law, and it will proceed, immediately following the election, as the law directs, to complete its general plan of reorganization along the lines it has already indicated.

The examination of the companies is likely to occupy several weeks. The commission plans to sit on Tuesday, Wednesday and Thursday of each week until this stage of its work is complete. It will then be prepared to put the draft of its plan in final form for submission to the city authorities and to the several companies for the formal action of each.

Under the law, public hearings will be held upon this final draft, and at various other stages as the consideration of the plan proceeds. It is the purpose of the commission to make these hearings as broad as may be desired and to afford the fullest opportunity for public discussion not only of the plan itself, but of the valuations to be placed upon such railway properties as may be taken for incorporation in a unified system and the processes through which these valuations are reached.

The commission, as it has already announced, will require as a primary condition that the new system, when put under operation, shall retain the city-wide 5-cent fare. It is, moreover, confident that if its plan is adopted and the cost eliminations and economies it has in view are made possible, the five-cent fare will be retained without future disturbance.

The order of the commission directing the attendance of the representatives of the railroad and omnibus companies was served upon nearly eighty companies and individuals representing those companies, covering every street railroad in the city, with the exception of the Hudson & Manhattan Railroad. Receivers, where there are such, were also served.

Maximum Pay at Louisville Forty-three Cents

The wage scale for platform employees in effect on the lines of the Louisville (Ky.) Railway was incorrectly stated in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 5. The schedule for city operation (in cents per hour) is as follows:

First year	33
Second year	35
Third year	37
Fourth year	39
Fifth year	41
After the fifth year	43

For interurban operation the scale is 1 cent per hour over the above rates.

Election Results of Nov. 8

The traction issue was injected into the political campaigns in New York, Bridgeport and Youngstown to a greater extent perhaps than in any of the other cities except Detroit, to which reference is made elsewhere in this issue.

In New York Mayor Hylan, the pronounced advocate of the 5-cent fare, was re-elected with an overwhelming plurality. He defeated for office Henry H. Curran, who in a last hour announcement threatened to undo some of the work of the Legislature of last year in passing a bill creating the New York Transit Commission, under which Governor Miller hopes to bring about a settlement of the traction situation in New York.

In Bridgeport, where the battle between the trolleys and the jitneys has been waged for several years, Mayor Wilson went before the people on the avowed platform of jitneys and the 5-cent fare. His opponent, Mr. Atwater, was reticent about the traction situation, but indicated that any moves made by him in connection with this matter would be taken only after a full study had been made of all the details entering into the situation. The people of Bridgeport evidently want the traction situation settled in a business-like manner, for they have voted Mr. Atwater into office.

At Youngstown George L. Oles has been elected Mayor. Mr. Oles is regarded as something of an eccentric. He would turn the streets over to the jitneys and jail citizens who pay taxes under the recent revaluation. He conducted a whirlwind campaign extending over a period of several weeks, in which he called to his aid every device of the publicity promoter. Mr. Oles is a local merchant of Youngstown and although he has lived for many years outside the city limits he removed to that city in time to take up his residence and qualify for election to office.

Uniform System Proposed

California State Railroad Commission Recommends Uniform Accounting for All Motor Utilities

Frequently the State Railroad Commission of California meets with attendant delay in trying cases of motor freight, passenger, express and mail-carrying lines that operate on the public highways in the state, as the majority of motor utilities do not keep their books in sufficient shape to permit the commission's accountants properly to analyze the claims of the utilities for an increase in rates. The Railroad Commission has full jurisdiction of these motor transportation lines as to regulation of rates, operating schedules and other fixed rules. Therefore, the commission took it upon itself to prepare a uniform system of classification of accounts and recommend that it be put in force and be complied with. On Aug. 19, 1921, the commission forwarded its tentative form of a system of accounts to every auto freight and passenger-carrying line within the State, asking that the carrier comment upon and criticise the proposed schedule of accounts.

The proposed plan as worked up by the commission was for the purpose of aiding this type of carrier as much as possible, so that he could keep his books in such shape to tell how he stood as to making or losing money in his business. After the commission considered that the tentative schedule of accounts had been in the carriers' possession a sufficient length of time two meetings were scheduled to hear the carriers' views as to accepting the proposed classification; however, the commission made it known that the system of accounts was not to be forced upon the carriers.

It was known that several of the larger motor utilities were keeping their books under some sort of system of uniform accounting, but the commission desired to adopt a system uniform to all. The first hearing was held at San Francisco on Oct. 24 for the carriers in the northern part of the state and a second hearing was held in Los Angeles on Nov. 1 for the southern section. At the northern hearing little opposition was met, as practically all the carriers entertained the commission's plans; however, one carrier opposed showing in any one month his returns under income accounts for revenue returns from sale of round-trip tickets. He desired to show in his monthly income account report to the commission the revenue from actual haul and to carry the revenue unaccounted as yet from the return portion of the round-trip ticket in a suspense account until services had been rendered for the other portion of this class of ticket. This privilege met with the favor of the commission and other carriers so affected.

The commission's tentative schedule is in some manner similar to the Interstate Commerce Commission's uniform system of classification of accounts as prescribed for electric lines. The commission divided it into two classes—Class A and Class B. Class A is for companies whose revenues are in excess of $20,000 per annum, while Class B is for companies whose revenues are for only $20,000 or less.

The commission only outlined a system of accounts for Class A companies, stating that it was so generally prepared that it could be applied to both classes; however, the commission stated that it was optional with the Class A companies to set up a subdivision of the accounts as outlined by the commission, as the commission realized that the larger carriers had more complex problems of accounting than the smaller companies.

In the hearing at Los Angeles one of the largest motor utilities operating out of Los Angeles desired that the commission elaborate upon its tentative schedule of accounts. The commission's schedule includes asset and liability accounts, income accounts, revenue and expense accounts. This carrier contended for privilege to keep its accounts by lines, so in cases of application for rate changes the true cost of operation and income of particular lines could be determined.

The carrier also contended that the commission's depreciation account should be broadened to include obsolescence of motor equipment, as there was a constant improvement in types of motor buses and trucks, and that frequent changes in motors were required to get more mileage at less cost.

Likewise, the prediction of any possibility of changing from gas-driven motor cars to other types due to fuel situation and other modern improvements in motor cars. Also, it was asked that some provisions be made for an account to cover motive power, as difference types of motors were used on various equipment. Such motors are changed from time to time for improved types, and the cost of these changes and maintenance should be accounted for.

Objection was also made to the commission's miscellaneous account carrying insurance of all classes. It was asked that an account known as "Loss and Damage" should be added to cover insurance carried on damage or injury to others' property or person. The general insurance account would then cover insurance, buildings and carhouses.

The tax accounts were reviewed. There was little opposition as to the commission's plans to have the state and local taxes deducted from the operating expenses, while the accounting schedule provided that the federal taxes be deducted from the income account. In this respect the commission followed to some extent its classification of accounts that has been effective for some years for gas, electric light and water corporations.

At the close of the hearings the commission stated that it was its intention to draft a classification of accounts and to make it effective as soon as possible. The commission's accountants are to call on all the motor utilities to instruct and aid them in installing this new uniform system of accounts.

Public Ownership Recommended

The public utilities committee of the Board of City Development of Amarillo, Tex., through its chairman J. N. Riggs, has filed its report recommending public ownership of all public utilities, including street car lines, in that city. There has been considerable dissatisfaction in Amarillo over the street car service and the line has been placed in receivership and service discontinued for a time. The people of the city finally took the lines over and are now operating them.

"No Smoking Allowed"

The Chicago *Journal* recently published the following dialogue which contains a significant moral presented in an effective way and perhaps of special interest from the standpoint of merchandising transportation.

(Scene: The front platform of a street car. Typical hard-boiled motorman is gossiping with passenger. Second passenger enters from car smoking a cigarette. Motorman glares at cigarette and then at sign "No Smoking Allowed on Platform." Second passenger continues to smoke with studied indifference.)

Motorman (continuing conversation with first passenger): When the union tells me to walk out, I walk.

First Passenger: Ha, ha! So does everybody else.

Motorman (glaring at second passenger): Y'can't smoke out here, buddy.

Second Passenger: Why?

Motorman (savagely): It's against the rule. No smoking, see? Can't you read that sign?

Second Passenger (calmly): Sure enough, you have a sign. How droll. But tell me, my good man, you don't care for the rules, do you?

Motorman (triumphantly): Oh, don't I, though. I'll say I do.

Second Passenger (nonchalantly): Well, well. That's quaint. I'd never suspected it. As a matter of fact, since I have been standing here you've violated five of the company's rules.

Motorman (sputtering): I—I—wad d'ye mean, huh?

Second Passenger (taking a deep puff and exhaling slowly): Well, in the first place you were talking to that passenger. Motormen are forbidden to talk to passengers while on duty. As you would say, "Can't you read that sign?"

Motorman (flushes): I—I—

Second Passenger: Exactly. Also, as I stood here you spit on the floor. That is not only against the company's rule, but it is a violation of the city ordinance as well, punishable by a fine of $5 to $25.

Motorman (gasping): Why—why—

Second Passenger (lighting another cigarette): Also, you started your car back there about six blocks before you got the bell. Also, you started your car on the last corner before a passenger had alighted and your door was closed. Would you like to hear the other one?

Motorman: Say, who are you, anyway?

Second Passenger (exhaling reflectively): You needn't be alarmed. I'm not a spotter. But I would suggest that in the future you observe a few rules yourself before you impose them on the public and, what's more important still, that you learn to speak courteously instead of hollering like a Comanche at a passenger who may be, as I was, unaware that smoking on the front platform was no longer allowed. Next corner, please.

Motorman (as he lets second passenger off): Well, I'll be—

Predicts Electric and Steam Lines Will Handle Freight Traffic

J. L. O'Toole of the Public Service Railway, Newark, N. J., in speaking recently before the New Jersey Industrial Traffic League, said that day would undoubtedly arrive when electric lines will be used in a co-operative plan with the steam railroads and with motor lines for the movement of freight.

Mr. O'Toole told of a law passed years ago giving street railways the right to carry freight in municipalities where sanction was given by the governing body. It was later amended so that the permission of municipalities of less than 12,000 population was not necessary, and again at a later date permission was given electric railways to carry freight from 11 o'clock at night to 6 o'clock in the morning without approval of municipalities.

Mr. O'Toole stressed the fact that the investment of as much money as this plan would require was not warranted at this time.

Indiana Commission to Decide Paving Question

The Indiana Public Service Commission will be asked to decide whether the Indianapolis Street Railway will be required to pay paving costs between tracks in the future. This is in accordance with an agreement reached recently at a conference between representatives of the company and members of the board of public works. Mark H. Miller, chairman of the board of works, said that orders are being entered for the railway to pave between tracks on four streets now being paved for the first time. Dr. Henry Jameson, chairman of the board of directors of the company, who was accompanied at the conference by Robert I. Todd, president and general manager, said that the matter will be referred to the Public Service Commission as soon as notice is received by the company for paving.

Samuel Ashby, city corporation counsel, agreed that the points in dispute should be settled by the commission at once. The company was required to pay paving costs in the old franchise which was surrendered on June 4, when the company relinquished its franchise in order to operate under state control. Provisions of an ordinance just passed by the City Council continues in effect all terms of the old franchise except those inconsistent with powers of the State.

Under the public utilities law of 1913 the company takes the stand that orders for paving between tracks are unreasonable. A number of service questions were up for discussion at the conference for the first time since the franchise was surrendered early last summer. Among them was extension of the College Avenue line from Forty-sixth Street to the city limits, just south of Fifty-second Street. The board issued an order for the extension.

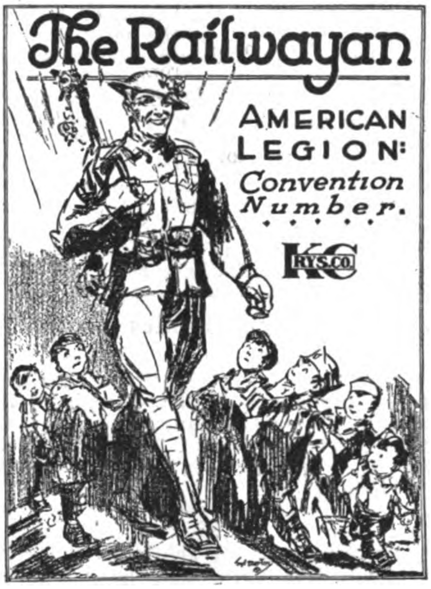
The Real Gist of It

At the hearing in Hartford before the Public Service Commission to which reference was made in the ELECTRIC RAILWAY JOURNAL for Oct. 29, page 798, the experience of the Connecticut Company in running autos was commented on. In alluding to the facts then brought out the New Haven *Register* said:

> It is the testimony of the Connecticut Company that motor omnibus lines cost more than trolley lines. Most of these lines it is running at a loss, it testifies. This is easily believable, nor is it surprising. The company can afford to run some of them at a loss, if necessary, as feeders for its electric lines. Some of these short lines are transfer lines only, taking in little or no cash. The company has established them in response to a demand and to save the expense of laying new lines of track.
>
> But the testimony of the Connecticut Company on its experience in running bus lines should furnish something for the two ardent jitney enthusiasts, who talk about substituting jitneys for trolleys altogether, to think about. It may be questioned whether the Connecticut Company has uniformly made a success of the transportation business, but at least it has had experience. If it cannot make short lines, where the jitney has everything to itself, pay, can others?
>
> The Connecticut Company does not talk of discontinuing these non-paying lines. It can afford to keep on losing money on them, providing it can get the business on its rail lines. But supposing it were an independent company or an individual concerned. Would not it be likely to discontinue forthwith lines that were losing money? That to do that would deprive persons in a certain locality of transportation altogether and without warning would not be a consideration. The brusque answer would be that the jitney owners were not running lines to amuse the public, but to make money. The trolley company has certain charter responsibilities which do not circumscribe the jitney operator. This essential difference is something for the serious consideration of those who think we should all be assured of unlimited happiness in the event of killing off the trolley with the jitney.

"Legion Number of The Railwayan"

Having some 1,500 ex-service men in its employ, the Kansas City (Mo.) Railways has published a special issue of the *Railwayan* devoted to them and in honor of the occasion of the third annual convention of the American Legion held in Kansas City last week. The issue contains eighty-six pages of pictures of the employees who served in the great war, various scenes taken during the struggle, numerous stories covering the incidents of service of various employees and stories of some of the outstanding engagements. The magazine forms a souvenir which will be of immense interest to the ex-soldiers now engaged in the street railway service, and it is a great credit to those who are responsible for its compilation and publication.


The Railwayan
AMERICAN LEGION:
Convention Number.
KC RYS.CO.

COVER OF CONTRIBUTION OF RAILWAY TO LEGION CONVENTION PUBLICITY

Approximately 100,000 visitors were expected to be in Kansas City during the convention, which, added to the regular business handled by the street railways, meant a considerable undertaking to provide adequate transportation. In addition, at the end of the Sunset Hill car line, there was one of the greatest flying machine contests ever held, which again multiplied the task of the company. More than seventy airplanes of different makes were entered and a crowd of sixty to seventy-five thousand people attended.

Curtailment Policy Under Way—Railway Still Reports Deficits

General business depression and a 25 per cent reduction in traffic have been the reasons for the monthly deficits reported by the Wilmington & Philadelphia Traction Company, Wilmington, Del. This opinion was recently expressed by T. W. Wilson, vice-president and general manager of the property, who appeared before the Board of Public Utility Commissioners in response to the board's request to explain the deficits.

Mr. Wilson said the company was doing everything it could to reduce the deficit, that every department was showing some curtailment; the month of September was a far better month than August and that he was hopeful for the future.

The commissioners with Mr. Wilson and company officials discussed the earnings of the various lines, type of equipment and the burdensome suburban routes. When the conference was terminated the commission thanked the traction officials for their co-operation.

News Notes

New Wage Scale Proposed.—Discussion of a new wage scale to go into effect Nov. 15 has been started between the Cincinnati (Ohio) Traction Company and the Electrical Workers' Union. The traction company proposes a 30 per cent wage reduction. Foremen now receive 97½ cents an hour and linemen 87½ cents. The union asks for a 10 per cent increase.

Oil Production Drops.—According to the United States Geological Survey oil production in September fell off considerably in comparison with output of August and September a year ago. The average daily barrels in September, 1921, was 1,215,633, against 1,321,484 just the month previous. The total production in September was 36,469,000, against 37,889,000 in September, 1920, and 40,966,000 in August, 1921.

Emergency Service Supplied.—When pressed for cars during the Harvard-Princeton football game at Princeton on Nov. 5 the New Jersey & Pensylvania Traction Company placed a monster freight car in service for the transportation of passengers. It was the first time that the company has had to resort to using a freight car for passengers and it worked very satisfactorily.

One-Man Cars to Be Operated.—The British Columbia Electric Railway, Vancouver, B. C., will soon put in operation about thirty new one-man cars, which have cost more than $150,000. Resort to this operation is the result of decreased revenue. The first cars of this type will be run in North Vancouver, Victoria, Westminster and outlying districts of Vancouver where traffic is not heavy.

Franchise Extensions Granted.—The City Commission of Dallas, Tex., has again granted extension of time on the franchises granted the Dallas Southwestern Traction Company and the Dallas Northwestern Traction Company. Original grant of these franchises, which contemplated the building of two interurban lines out of Dallas, one toward the southwest and the other toward the northwest, was made in 1906, and extensions of time have been granted yearly since the first expiration. E. P. Turner of Dallas is named as president of the two companies. Mr. Turner assigns tightness of the money market and the high cost of materials and labor as the reasons for the company not building the lines immediately.

Financial and Corporate

Readjustment Planned

Present Financial Structure of the Eastern Massachusetts Precludes Success, Say Trustees

The public trustees of the Eastern Massachusetts Street Railway in a statement issued to bondholders and stockholders said that they are convinced the company cannot become a financial success with its present capital structure. They have formulated a plan which has been approved by the largest holders of each class of securities.

Briefly the readjustment is made necessary by the fact that during the two years and more which it has taken the trustees to put the property in good physical condition, and in a position to earn the "cost of service," charges have been accumulating in the form of deferred bond interest and cumulative dividends. The trustees are strongly of the opinion that the credit of the company can be restored and maintained only by refunding the deferred interest on bonds, removing the accumulations from the various classes of stocks and placing the company in a situation where surplus earnings each year over the bond interest requirements may be used for payment of dividends.

The new plan provides that the $976,590 of extended coupons of refunding mortgage bonds, Series A, B, C and D, are to be canceled and the penalty waived in exchange for $732,442 in one to seven-year 6 per cent serial bonds with a State guarantee, payable February, 1923, through 1929. The $739,000 Series D; $500,000 Series E refunding bonds of 1925 and $972,000 Series D refunding bonds of 1927 are to be extended to 1948. The sinking fund stock is to be exchanged for first preferred stock eliminating sinking fund and to receive $518,240 in common stock for dividends to Feb. 1, 1922.

The first preferred stock is to receive $138,884 in common stock for dividends accrued to Feb. 15, 1922. In the case of the preferred B stock the dividends accumulated to Feb. 1, 1922, are to be canceled. The adjustment stock is to be made non-cumulative and dividends accumulated to Feb. 1, 1922 canceled. The plan provides for $657,123 of common stock either by a surrender of stock or reduction in par value. This would reduce shares held by common stock holders by about 10 per cent.

Under the trustee plan now in effect the company can have a net round income applicable to fixed charges and stock dividends of only $2,400,000. Any increased revenue must be applied toward a reduction of fares. Notwithstanding the fact that the company is now earning its cost of service it has not been able to pay interest on series A, B, C and D of its refunding mortgage bonds during 1920. This deferred interest amounts to $976,590 and matures Dec. 31, 1925.

On Jan. 1 of each year from 1922 to 1929 inclusive $300,000 of the serial refunding bonds, the principal of which is guaranteed by the state, becomes due. The first two maturities of $50,000 each due Jan. 1, 1920 and 1921, although paid by the State, must be repaid out of the first income otherwise applicable to dividends.

Including the $300,000 of serial bonds and the $100,000 already refunded by the State the company has obligations of $12,112,908 which will mature before 1930. The trustee plan does not provide for the refunding of the major portion of these obligations nor does the act permit it except in accordance with the general laws of the State, which do not allow bond issues in excess of the paid-in capital.

In the light of actual experience the 1919 reorganization plan was too hopeful of immediate results. The trustees believe that if the company is to be put in a position to meet or refund its obligations as they become due steps must be taken immediately to establish sound credit. In order to do this the preferred stocks must be put on a dividend-paying basis in the near future. So that as it becomes necessary to sell additional stock prior issues will have had a creditable dividend record.

Under existing conditions there is not the slightest prospect of any dividend being paid upon any class of stock for an indefinite period, and no payments can be made to the sinking fund for the redemption of sinking fund stock until all dividends on the first preferred and sinking fund stocks have been paid.

Government Denies Claim

The United States Government through the War Department has refused the claim of the Georgia Railway & Power Company, Atlanta, Ga., to recover the sum of $123,363, which has been the net loss to the company for building the Camp Gordon line.

In his claim, which was submitted last August President Arkwright of the power company said that the government was anxious to have electric railway service to the camp and it was supposed that the camp would be maintained a sufficient length of time to justify the expenditure. A portion of the line to Oglethorpe University will be retained. The application made by the railway for the reimbursement was along the same lines offered by the city of Atlanta in seeking a recovery of investment in the water mains to the camp.

October Operation Successful in Toledo

The operations of the Community Traction Company, Toledo, Ohio, for the month of October will show a surplus of nearly $20,000, which will take care of all deficits in various funds set up with the exception of the stabilizing fund. It is expected that a gain will be made in that fund during November.

The sinking fund, which represents cash ownership of the lines by the city, is now at $159,375.

The stabilizing fund is $53,333. It started in February at $400,000. There is not much chance of the car fares going higher since Commissioner W. E. Cann's preliminary figures for October operation have more than held good. A raise in fare was contingent upon the operation for that month.

Opposition on Abandonment Voiced

Opposition has developed in a number of quarters to the proposal of the Indiana, Columbus & Eastern Traction Company of Cincinnati, Ohio, to abandon three branch lines of its system. Application filed with the State Public Utilities Commission has elicited protest from Prosecuting Attorney John R. King of Franklin county, who promises to fight the application before the commission.

Contests are also predicted on the part of several concerns which are served with power by the company, who will be deprived of such service if the lines in question are abandoned.

The application was filed by J. H. McClure, receiver for the company. The commission has assigned the matter for hearing on Dec. 14.

The protest of Prosecutor King is directed toward abandonment of the line from Columbus to Orient, a distance of 12.1 miles. This single track line was built in 1900-1901 and obtained a franchise from the Columbus city council in July, 1909, expiring in 1934. The line was leased by the Ohio Electric Interurban Company Aug. 31, 1917 and operated by that company until Jan. 25, 1921, when it was taken over by B. J. Jones, receiver for the Ohio Electric and operated under his management until July 15. After that time Mr. McClure, appointed receiver for the I., C. & E., took charge of the branch line, the lease to the Ohio Electric having been cancelled by order of the Federal court for the Southern Ohio district Aug. 5. On Oct. 18 the court ordered the line to be abandoned and the application to the state commission followed.

The other lines which the company seeks to discontinue are; from Carlisle Junction to New Carlisle, a 4.22-mile single track, the franchise on which expires in 1924, and the single line from Lima to Defiance, covering a distance of 39.92 miles, originally chartered as a steam road, electrified and reconstructed in 1907. Its franchise expires in 1932. The matter was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 22.

Net Income Increases in September

An increase of more than $113,000 in net income is shown by the comparative statement of operations for September, 1921, compared with September, 1920, filed recently by the Public Service Railway, Newark, N. J., with the Board of Public Utility Commissioners. The net income for September of last year showed a deficit of $104,495. A favorable balance of $9,175 was reported for September, 1921, a gain of more than $113,000.

Revenue from transportation in September of this year amounted to $2,082,808, compared with $2,227,081 for September, 1920. The total operating revenue for September was $2,130,458, compared with $2,273,032 for the corresponding month of last year.

Cost of conducting transportation decreased from $820,112 for September of last year to $625,598 last month. The decrease was mainly due to a reduction in the amount paid for wages. In September of last year the wages of passenger conductors, motormen and trainmen amounted to $621,834, compared with $460,381 in September, 1921.

Large Loss Likely

$2,453,726 Deficit Probable in 1921 If Seattle Operates Municipal Railway at Five-Cent Fare

In a report to Mayor Hugh M. Caldwell and the City Council D. W. Henderson, Superintendent of Railways, stated recently that a 5-cent fare on the Seattle (Wash.) Municipal Railway would result in a deficit in the year 1922 of $2,453,726. This figure was based on an estimated increase of 3 per cent in the number of riders under the reduced fare and taking into consideration Councilman C. B. Fitzgerald's proposal of transfer privilege on 8⅓-cent tokens.

The estimated revenues, under the Fitzgerald plan, according to Mr. Henderson's figures, would be $4,452,033, while the estimated cost of operating the railway next year is $6,905,760. The report prepared by Mr. Henderson follows:

Estimated revenue, based on 5-cent fare and 3⅓ cents for transfers, and based on passengers carried in September, 1921, plus 3 per cent increase:

10-cent cash fares........... 382,483 plus 3 per cent	393,957	
8⅓-cent cash fares............5,484,630 plus 3 per cent	5,649,169	
	6,043,126 at 5 cents	$302,156
3-cent cash fares, no increase, 4,221		126
2½-cent cash fares, no increase, 177,303		4,432
S. & R. V. transfers, 67,549, plus 3 per cent, 69,575 at 5 cents		3,478
Transfers, 1,573,682, less 5 per cent, 1,494,998, at 3⅓ cents		49,783
		$359,977
Miscellaneous revenue		11,025
Total for one month		$371,002
Twelve months		$4,452,033
Operation—		
Estimated expense for 1922	$3,246,394	
Supplies and expense	1,499,616	
Betterments	9,000	
Interest	789,591	
Bond redemption	843,000	
Due general fund	318,157	
Depreciation	200,000	
Deficit		$2,453,726
	$6,905,760	$6,905,760

In a letter to the City Council, Mayor Caldwell called attention recently to the report of the municipal railway for September, showing that under the 8⅓-cent fare and with the $20,000 depreciation set aside by ordinance, the revenues were $11,111 below the amount necessary to meet all charges. He asked that this be considered by the Council in passing on transportation matters, particularly the proposed 5-cent fare ordinance.

MAYOR CALDWELL ANXIOUS

Mayor Caldwell has announced that he will ask the Corporation Counsel for an opinion as to whether the adoption of the 5-cent fare on the municipal lines would lead to any legal difficulties with Stone & Webster in case the revenues under the reduced fare are insufficient to meet the liability in the contract. In the contract, the city binds itself to "establish and maintain rates for transportation upon such municipal street railway system which shall provide sufficient revenues to permit such sums being paid into such special fund which the city has pledged to be set aside semi-annually for interest and annually for principal, to be applied to the payment of principal and interest of the bonds authorized, until such bonds have been paid in full, and in addition thereto all costs of operation and maintenance."

Mayor Caldwell calls attention to the fact that the September report shows that 6.119.191 pay passengers were carried during the month. This is a falling off of 4,807 pay passengers compared with June, notwithstanding that during the last half of September no jitneys were being operated.

Mr. Henderson, who recently returned from a trip through eastern cities, submitted to the Council data showing that the decrease in the number of car riders is not confined to Seattle.

SOME STARTLING STATISTICS

As a sidelight on the Seattle situation, Mr. Henderson compared the private automobile traffic of August, 1915, with August, 1921, by a check of the daily drawbridge traffic in the city. It showed that the street railway passengers over the bridges totaled 60,278 in August this year and passengers in private cars 8,642 in August, 1915. In 1921, the street railway passengers numbered 80,085, and passengers in private cars, 59,153. The increase in street railway traffic shown by the comparison is 32.86 per cent, and the increase in private car traffic, 584 per cent.

Passengers carried on jitneys are not included in these figures.

Effort Made to Fix Value for Properties at Kokomo

Representatives of the Indiana Public Service Commission, of the city of Kokomo, Ind., and of the Indiana Railways & Light Company met recently to place a valuation upon the property of the company. The company operates an electric interurban railroad between Frankfort and Kokomo, Ind., besides electric distribution systems in the Kokomo territory. The commission submitted figures of $3,529,965 on the basis of its reproduction cost in 1916. The properties were appraised at $4,299,533 on the basis of the average reproduction costs in the last ten years, which included war-period prices. Cecil F. Elmes, a representative of Sanderson & Porter, submitted a valuation of $4,226,387 for the ten-year period. Mr. Elmes also submitted a $5,541,669 valuation as of last February. The property of the company was figured in the proposed formation of the Indiana Electric Corporation in August at $4,480,000 by W. E. Vogelback. Mr. Garman, for the commission at that time, figured the company's property at $3,584,037. Engineers for the state board of tax commissioners appraised the property at $2,844,370 for tax purposes. Commissioner Glen Van Auken heard all interested persons. With other members of the commission he will work out an order in which the valuation will be fixed. Representatives of the Indiana Electric Corporation have said that the corporation again will petition the commission for authority for the proposed consolidation. The commission declined to authorize the consolidation on the basis proposed in August.

Berlin Railway Operates Successfully

Through a well-defined plan of reorganization and increased fares Berlin railway lines are now operating on a paying basis. According to an article in the Berlin *Vorwaerts* by Hugo Peotzsch the city of Berlin has turned the monthly deficit of 20,000,000 marks which was incurred in the operation of street railways when the consolidation of various lines of Berlin was brought about in October, 1920, into a surplus during the last few months.

Of course, an increase in fares materially helped the situation. This advance from 10 pfennigs before the war to 80 pfennigs (⅓ cent at present exchange rates) soon cut the deficit to 12,000,000 marks. It is reported that the fares will be advanced on Dec. 1 to 1 mark 30 pfennigs.

The work of reorganization included a reduction in the number of directors' offices, with a cut in the force, the hiring of experts to repair the rolling stock, extension of freight service and better exploitation of the advertising possibilities.

Financial News Notes

Mr. Borland Made a Director.—Bruce Borland has been elected a director of the Chicago (Ill.) Railways, succeeding the late Seymour Morris. Other directors have been re-elected.

$400,000 Net Income Realized.—Market Street Railway Income Statement for six months ended Sept. 30, 1921, shows a railway operating revenue of $4,679,962. After deducting operating expenses, the net revenue from railway operations is $1,092,807. Taxes amounted to $303,000 and non-operating income $19,363. This gives a gross income of $809,170, which after deducting $397,890 per bond interest, leaves a net income of $411,280 to cover Federal Income Tax and allowances for sinking funds or betterments.

Large Sums Spent in Relief.—H. H. Vreeland, director of the Welfare Department of the New York Railways, has submitted the annual report of his department for the year ended June 30, 1921. The various features of this work and the amount of money needed to carry on the activities involved are noted in the disbursement account of the New York Railways' Association. From July 1, 1920, to June 30, 1921, a total of $22,435 was spent. In this sum are included sick benefits amounting to $8,149; death claims, $7,500; medical fees, $4,200, and other items, including printing, stationery, etc.

Traffic and Transportation

Only Arguments Remain

Illinois Commission Will Take Chicago Lower Fare Plea Under Consideration on Nov. 14

Except for the presentation of arguments, the fare case of the Chicago Surface Lines is now in the hands of the Illinois Commerce Commission for decision. Adjournment was taken on Nov. 4 until Nov. 14, at which time the petition of the city for a restoration of the 5-cent fare will be taken under advisement.

The closing days of the hearing were marked by a sensation due to the fact that one of the newspapers announced that it was understood the commission had already come to the conclusion that the 5-cent fare would be restored on midnight of Nov. 5 so as to prevent the companies from seeking an injunction in the federal court. Shortly after that story appeared one of the commissioners suggested that arguments be presented immediately upon closing of evidence.

Attorney James M. Sheean for the Surface Lines stated before the commission that this suggestion of immediate closing gave color to the story which appeared in the newspaper and if the lawyers were not to be given sufficient time he would close without argument, taking it for granted that arguments would be superfluous. The commission took the matter under advisement and then allowed a ten-days' continuance.

Evidence presented by the companies in the last few days showed the rates of fare prevailing in 587 cities, including only three cities of more than 100,000 population where the 5-cent fare still prevailed. Some interesting exhibits also were presented to show that the Surface Lines were not extravagant in setting aside 20 per cent of their gross revenue for maintenance and renewals. Attention was also called to the costly working conditions under which the companies were operating, most of them fixed by arbitration.

A. L. Drum, consulting engineer, who previously had made a valuation of the companies' property, gave figures to show that the cost to reproduce new had increased 10 per cent since April 1919, largely due to higher labor costs in the Chicago district. He also stated that a better theory for allowance of maintenance and renewals would be to have this fixed as 2½ per cent of the capital investment rather than a percentage of gross earnings. E. H. Morgan, superintendent of schedules, showed that the companies were already giving a considerable amount of turn back service which had been suggested by engineers for the city.

John A. Beeler, consulting engineer, who has been studying the Surface Lines system for more than a year, explained a plan of re-routing which has been on file with the commission since last February. He said this would allow for an 11 per cent increase in track capacity in the downtown district. His assistant A. M. Buck, presented numerous exhibits to show the impracticability of the routing plan suggested by Engineer G. W. Jackson, who had appeared for the city.

H. H. Adams, superintendent of rolling stock, told what was being done to provide additional equipment, particularly trailers and one-man cars. President H. A. Blair, and his predecessor L. A. Busby, explained the steps which had been taken to provide improved service as ordered by the commission. Mr. Blair stated that the companies' credit had been hampered by the hostile attitude of the city.

On Nov. 5 the local transportation committee of the City Council, began public hearings with a view to starting on a series of subways for Chicago. Meetings are to be held every other day and if a plan can be agreed on the $30,000,000 in the city's traction fund will be used to cover part of the cost of construction. Several engineering societies in Chicago have offered to give their advice and assistance free to the city.

Files Application for Seven-Cent Fare in Federal Court

The St. Paul City Railway, St. Paul, Minn., on Nov. 3 filed in the federal court application for a flat fare of 7 cents per passenger and an injunction restraining St. Paul city officials from interfering with collection of this fare, whereupon Judge W. F. Booth issued an order to show cause returnable at 10 a. m. Nov. 8, when it is understood three federal judges will be present.

Hearing on a similar action is set for Nov. 15 before Judge F. M. Catlin. This action was brought in the Ramsey County District Court on appeal of the St. Paul City Railway from an order by Judge J. C. Michael restraining the company from collecting the 7-cent fare granted as an emergency rate by the Minnesota Railroad and Warehouse Commisson. The city will here contend that the federal court has no jurisdiction as the case is pending in the state court. The plea is also made that apparently the state commission made no effort to learn whether the costs and expenses mentioned in the application by the company were reasonable. The rate of fare is now 6 cents.

The company's application differs in that a flat rate of 7 cents is asked without the provision of four tickets for a quarter cited in former applications for the emergency rate, and the company says that a fare of 8 cents would bring the company a return of only 7.48 on the fair value of the property.

Vice-President T. Julian McGill of the Twin City Lines said:

> We do not dare to operate any longer at the present rate of fare or we will break our back. The revenues we now receive are insufficient to meet our obligations, and are $20,000 below the interest due on the company's bonded indebtedness. The 7-cent fare will give us relief we need until a permanent valuation and fair return on the property are determined by the State Railroad and Warehouse Commission.

It is understood the action brought in the federal court is based largely on the allegation of confiscation of the company's property and deprivation of its use without compensation and due process of law.

New Ticket Plan Suggested

Instead of selling six tickets for 45 cents under the seven and one-half cent rate, the Cincinnati (Ohio) Traction Company, has adopted a plan whereby two tickets will be sold at 15 cents. The new arrangement is the outcome of a conference between William Jerome Kuertz, Street Railway Commissioner and officials of the traction company. Mr. Kuertz was directed in a resolution adopted recently by the City Council to confer with the traction company officials, relative to the issuance of two tickets for 15 cents instead of compelling the car riders to buy six tickets or pay a cash fare of eight cents.

However, the traction company adopted the two ticket plan voluntarily, because under its operating ordinance whenever the rate of fare in force and effect shall produce a fraction of one cent, the cash fare shall be the next whole number of cents above the rate of fare producing the fraction. When the fare was eight and one-half cents the traction company sold two tickets for 17 cents, but after a trial it was found that the two ticket strips are in disfavor, because they serve to cause congestion at the downtown terminals.

W. Kesley Schoepf, president of the traction company, said that he hoped the company would have the co-operation of the public who should make up their minds before boarding cars whether they wish to purchase tickets and if so whether in strips of two or six and that they should also have the exact money ready.

Walter A. Draper, vice-president of the traction company, said that there had been little complaint about the old method of selling the tickets in strips of six and that he believed the plan whereby tickets are sold two for 15 cents will result in traffic tie-ups which the company is trying to avoid.

The resolution adopted by the City Council which brought about the two ticket plan recites that the sale of six-ticket-strips for 45 cents works a hardship on a "number of citizens" who can not afford to buy six tickets at one time and who therefore are compelled to pay 8 cents cash fare.

Commission Authorizes Seven-Cent Zones

The Public Service Commission recently held that all intrazone fares to be charged by the Erie County Traction Company, Buffalo, N. Y., shall be 7 cents for one year and thereafter until the further order of the commission, excepting between Carlyle Avenue and the Buffalo city line at Seneca Street, in which territory a five-cent fare is to be charged. The company is to provide metal tickets or tokens to be sold at the company's office and on cars at four for 25 cents.

The railroad now operates five zones with a 5-cent fare in some and a 7-cent fare in others. The company alleged that those rates were insufficient to yield reasonable compensation and asked that it be permitted to charge 7-cents in all zones.

The question of a franchise agreement was raised by the West Seneca township, but the commission has ruled against the town's claims because of the evidence which showed that the company could not do business on the present fare rates and revenues.

Supreme Court Will Consider Fare Stay

The application for a stay against the 8-cent fare recently granted by the special statutory court at Trenton to the Public Service Railway has been taken under advisement by the United States Supreme Court. The motion for the stay was advanced by Attorney General McCran for the New Jersey Public Utilities Commission.

In their argument Messrs. McCran and Herrman, counsel of the Utilities Board, said that the statutory court through its temporary injunction preventing interference with the 8-cent rate by the Utilities Board assumed to exercise legislative power. On this point the state brief continues:

> The establishment of a rate is the making of a rule for the future and is therefore an act legislative not judicial in kind. It assumed to prescribe rates for the future differing from those prescribed by the order of the board to authorize the exaction of the rates so prescribed in the future and to restrain the board from interfering with such exaction.
>
> In assuming so to exercise a legislative function, the statutory court placed an unjust and unreasonable burden upon a large number of the riders using the facilities of the railway company, and at the same time permitted a large number of riders to ride for less than the rate prescribed by the board.

California's Motor Transport Business

Regarding the report of the California Railroad Commission for the year ended June 30, 1920, 786 freight and passenger tariffs were then on file by motor transport companies, operating throughout the State. The number on file on June 30, 1919, totaled 643. Because many of its carriers file a combination passenger and freight report, it has not been possible to segregate them into classes. It is, however, estimated that of the total number of tariffs filed, 450 represent carriers serving exclusively as freight lines.

Move Launched for Lower Fare

A move for a lower fare has been made by Davenport businessmen through the Presidents Club, a civic organization composed of the heads of some 50 leading clubs and societies. The club asks the Tri-city Railway in a petition to reduce its fare to five cents or as near thereto as possible. It is suggested that if a 5-cent fare is impossible the ticket plan successful in many cities be adopted.

According to this plan the passenger buys a ticket every month, paying 50 cents for the ticket and then being allowed to ride for 5 cents.

President B. J. Denman of the company has not answered the petitioners but has stated that an arrangement along this line is not impossible.

While this may be due in part to the 8-cent fare the lack of employment is a contributing cause. Merchants believe that a lower fare will stimulate car riding, bring back the old volume of street car passengers, and act as a stimulating force on business.

When it appeared that the company and merchants were about to get together the socialist city administration, which was elected to office on a 5-cent plank, and which has bitterly opposed the utility company in all of its moves, came into court and demanded that the company either return to a 5 cent fare or surrender its franchise.

The city administration charges that the dismantling of the Fourth Street line has lowered the overhead expense and the installation of one-man cars has cut labor expense to a sufficient degree that the fare may now be lowered and the revenues of the company remain sufficient for all needs.

Five-Cent Fare or Buses

Additional Routes Will be Granted to Jitneys Unless Relief Is Afforded in Bridgeport

The Public Utilities Commission of Connecticut will hold a hearing on Nov. 10 on a petition of the city of Bridgeport asking for a reduced fare rate on the lines of the company in that city. The Commission had previously urged the Connecticut Company to try a 5-cent fare in Bridgeport. Some of the salient features of the correspondence between Chairman R. T. Higgins of the Public Utilities Commission to W. C. Noyes, chairman of the board of trustees, on the matter of reduced fares were outlined in the ELECTRIC RAILWAY JOURNAL for Nov. 5, page 837.

Mr. Higgins stressed the fact that New Britain, Bridgeport and Norwalk were examples of cities charging a 10-cent fare which resulted in loss of business and revenues to the company and failure of acceptable transportation service to the public.

In asking for a trial of the 5-cent fare in Bridgeport, Mr. Higgins said that the time had arrived when certain lines could be treated independently of the whole system, and that fare adjustments should be made on certain lines without affecting the entire schedule of rates. His letter reviewed the demand of the general public and the city officials for a 5-cent rate in Bridgeport and recommended such an experiment without transfer on all city lines radiating from the center of the city. On this point the letter read:

> Such an experiment would not put the company in much worse condition than now exists, and in the absence of some prompt action or relief in Bridgeport the commission will feel obliged in the interests of the public to authorize additional jitney routes and grant additional certificates.

In Norwalk a 5-cent service was recommended on the short local line between Norwalk and South Norwalk. If it was found that such a service would not be sufficiently profitable to maintain all the lines in the Norwalk division, the commission suggested increasing the rate or abandoning certain of the non-paying lines.

For New Britain no concrete plan was offered, but as a measure of relief for other sections the retention of the 10-cent fare with the sale of tokens or tickets for city riders at a materially reduced price was suggested.

In concluding its suggestions on the transportation problem facing the cities served by the Connecticut Company Mr. Higgins says:

> In President Storrs' recent memorandum to you relative to financial conditions he points to the large number of passengers and sustaining revenues taken from the company by the very limited number of licensed jitneys operating in part of Connecticut Company territory. This statement presents an economic condition worthy of careful consideration. If an agency with a few thousand invested can transport the public and successfully compete with an agency having hundreds of thousands of dollars invested it is a demonstration that methods of transportation must conform to economic conditions. Your company has the right to operate both forms of transportation.

Early Hearing of Fare Case Urged

The city of Louisville, Ky., has made a motion for an early hearing of the fare case before the United States Supreme Court, on the ground that with an election on Nov. 8 the present City Attorney and other legal lights may be out of office on Dec. 15 and that the case should be tried before that date. Churchill Humphrey, attorney for the company, earnestly insists that the case be not tried until February or March, in order to give him time to prepare his argument.

The railway has filed a bond of $100,000 additional, making $300,000 that has been put up to cover receipts issued for the 2-cent increase in fares. In the event the United States Supreme Court rules against the company's right to an increase from 5 to 7 cents under franchise agreements, passengers holding receipts will receive a cash refund for each receipt held. It is estimated that excess fare receipts totaling about $250,000 are outstanding.

Monthly Ticket Plan Installed

The monthly commutaton fare plan which went into effect in Muscatine, Iowa, on Nov. 1 has met with general public approval. The Clinton, Davenport & Muscatine Railway, the local property, in giving the monthly ticket plan a trial announced that "The more you ride, the less you pay."

By this plan the passanger pays 50 cents a month for a ticket and the ticket allows him to ride as many times as he wishes for 5 cents a ride. The system was explained in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 22, page 758.

Only Specially Designed Cars

An ordinance was recently approved by the City Council of Richmond, Va., which specifies that all streets cars in the city must be operated by two persons unless they are especially constructed and designed for one-man operation. Violation of this ordinance is punishable by a fine of not more than $1,000 and not less than $250. Paragraph 2 of the ordinance states:

Nothing in this ordinance shall be construed as intended to affect or diminish in any way the rights of the city of Richmond under any existing franchise to forbid or regulate the operation on the streets of the city of the one-man cars. The operating company in Richmond is the Virginia Railway & Power Company.

Bus Line in Operation.—Service on the Flushing-Jamaica, N. Y., bus line was started on Nov. 3, when the first four buses which will be operated on the line left the bus terminal at the Flushing Bridge. The line has been opened under the supervision of the Department of Plant and Structures. For the present four buses will be in operation, running on a fifteen-minute headway. The trip from Flushing to the Jamaica terminus at the Long Island Railroad depot consumes about twenty minutes, which is fifteen minutes less than the same trip by trolley car. The fare is 5 cents and the route from Flushing is along Broadway to Main Street, to Jamaica Avenue, across Hillside Avenue to Fulton Street and west on Fulton Street to the Long Island Railroad depot..

Railway Will Run Buses

City Council Decides on the Organized Operation of Autos as Against Independent Service

The Rockford & Interurban Railway, Rockford, Ill., has entered the bus transportation field. Purchase of six motor buses for use on the streets of Rockford will be made shortly. The buses will be operated on four routes as "feeder" lines which will connect outlying sections of the city now lacking transportation facilities with existing electric railway lines. As yet no announcement has been made as to how fares on the buses will be fixed.

DISPUTE OF LONG STANDING

Through the authorization of the City Council as a result of the controversy between the traction company and the Fay Motor Bus Company the new buses are being obtained. On Oct. 3 the City Council finally disposed of and tabled the Fay ordinance which provided for bus operation in the outlying districts not paralleling the traction lines.

The dispute between the Rockford & Interurban Railway and the Fay Motor Bus Company for supremacy in the city dates back several weeks when the United States Government in a retrenchment drive ordered six army cantonments to be closed on Oct. 1. Among them was included Camp Grant at Rockford.

Up to that time the Fay Motor Bus Company operated exclusively between Rockford and Camp Grant. The run is 5 miles and the fare was 20 cents. On Aug. 18 Mr. Fay announced a city-wide transportation plan in direct competition with the railway lines operating over the same street, running on the same headway, and charging 5 cents with a 2-cent transfer charge. The railway charges 8 cents with two tickets for 15 cents.

On Aug. 19 the railway company secured an injunction restraining the bus company from operating as proposed. On Aug. 22 through one of the Aldermen a resolution was presented to the City Council asking approval of the plan. The resolution was referred to a Joint Committee and this committee met on Aug. 26, voting favorably on the plan and authorizing Mr. Fay to operate.

CHAMBER OF COMMERCE INTERVENES

Meanwhile the Chamber of Commerce announced a public forum for the discussion of this situation. The motor bus company had a hearing on Sept. 1 and on Sept. 6 the attorney for the railway presented the case. On this day the Rockford City Traction presented an ordinance to the City Council for consideration authorizing it to operate buses as "feeders" in districts not now served by railway until such time as a new franchise is granted and the railway can be extended. The ordinance of Fay Motor Bus Company authorizing it to operate on the streets paralleling those upon which the street railway cars operate was referred to the railway committee of the City Council.

The railway committee met on Sept. 9 and the majority reported in favor of the street railway franchise against the ordinance authorizing the operation of the Fay Motor Bus Company on streets paralleling the railway streets. The report was read to the Council on Sept. 12, and on Sept. 19 the Fay ordinance was tabled.

36,283,839 Bus Passengers in Newark in Nine Months

Jitneys carried within 5,000,000 as many passengers in Newark, N. J. during the first nine months of this year as they did the whole of 1920. Figures to this effect are contained in a report made recently to Director Breidenbach of the Department of Revenue and Finance by Joseph Kroehl of the City Treasurer's office. The number of passengers carried last year was 41,501,854. The total for this year up to Sept. 30 was 36,283,839.

The bus business during September was shown as follows in the report: Passengers carried, 4,345,934; gross receipts, $217,296; tax paid to the city, $8,625. The report for September, 1920, was: Passengers carried, 3,357,718; gross receipts, $167,885; tax paid, $6,398.

With the exception of March of this year the record for September showed the heaviest travel on buses for any one month. Last March the number of passengers was 4,390,000. Mr. Kroehl pointed out that March has one more day than September, so that the average daily travel last month would indicate that the March record would have been broken with another day of such travel as was recorded during September.

The report also shows that there were 404 buses in operation last month. In September, 1920, there were 385.

Forty-nine Bus Applications

According to the fourteenth annual report of the Public Service Commission, Second District, New York, for the year 1920, the use of motor buses in all parts of the State has shown recently a great tendency to increase. The result has been that the commission is constantly engaged in passing upon the propriety of the issuance of new certificates for public convenience and necessity. In such cases it is found, however, that the statute law governing such operations is confusing, and the commission recommends that its powers and functions with reference to this class of utility be more clearly stated and defined.

The number of motor bus applications for certificates of convenience and necessity received during the year was forty-nine. These were disposed of as follows: Thirty-six were granted, seven denied, three are pending and three petitions were withdrawn.

During the year the commission, under section 55 of the public service commissions law, granted permission to the autobus corporations listed in the accompanying table to issue stocks, bonds or other evidences of indebtedness.

BUS COMPANIES AUTHORIZED BY NEW YORK COMMISSION TO ISSUE SECURITIES

Name of Corporation	Nature of Security	Amount Allowed	Date of Order 1920
Woodlawn Improvement Auto Transportation Corporation.....	Bonds	$21,000	April 22
	Ammendatory Bonds	$9,000	April 27 July 20
Alexandria Bay-Redwood Transportation Company............	Stock	$15,000	June 29
Total, two companies....................................	Bonds (2 issues) Stock (1 issue)	$100,000 $15,000	

Insist City Should Regulate "Interurban" Buses

Officers of the interurban electric railways which center at Grand Rapids, Mich., are insisting that the Council shall regulate the operation of "interurban" buses within the city in order that the railways may be preserved to the communities through which they operate. At a recent special meeting of the City Commission Richard Schaddelee, vice-president of the Grand Rapids, Grand Haven & Muskegon Railway; F. K. George, statistician of the company, and Leonard A. Verdier, attorney appeared before the commission to petition for passage of regulatory ordinances controlling the interurban bus lines after they enter the city limits.

Mr. Schaddelee is reported to have said:

> The situation is not so exaggerated as yet, but it is growing constantly worse. If competition continues the electric roads will be killed off by a vastly inferior type of service. No one notices if a bus doesn't operate on a rainy day, but it would be a great inconvenience if the interurbans failed to operate.

Mr. Verder is quoted as follows:

> You can't have both types of service. One or the other must go or else both must be placed under the same restrictions. At present you have buses operating on highways which they did not pay a cent to build or maintain. Their only expense has been that of an automobile license, while the electric roads are under strict regulation by the state.

Mr. George asked that in considering the proposition the City Commission remember that the interurban company contributes about $31,000 annually toward the net earnings of the Grand Rapids Railway in charges which are made for use of that company's tracks in the city.

He stated that during the first nine months of the current year the Muskegon interurban carried 38,322 fewer passengers than during the same period last year. In spite of this he stated increased fares have boosted the company's earnings during the same period $18,166 over 1920.

Municipal Bus System Behind

The West Orange Municipal Bus Service had a deficit of $43,018 from the time it was started in July, 1919, to Oct. 1, 1921, according to a report submitted to the Town Council. The report shows $56,192 had been expended and $29,208 returned through receipts, leaving $26.983 deficit, not including $16,035 paid for the buses, which brings the total to $43,018. The company lost $6,000 the first three months of operation because the machines used were hired. The fate of the municipal line will be voted on at the November election. Residents of West Orange want the line continued for another year under changed conditions. Adherents of the bus contend that the fares on the autos have been too low.

Bus Company Starts Operation

The Columbia Auto Bus Company which was recently organized, announces the commencement of service between Franklin and Columbia, Tenn., a distance of about 25 miles, starting on Oct. 31. The schedule calls for three trips each day between the two towns and connects with the Nashville-Franklin Interurban. A new state and federal aid highway has been completed recently for 12 miles of the distance between towns, which affords a good roadway for travel.

The new line will afford a better and more frequent service between that territory and Nashville than that now given by the railroad.

The buses are of the latest type for such service, seating twenty-one persons, are equipped with electric lights and heated by engine exhaust.

The corporation has a capital stock of $50,000. The incorporators are J. H. Carpenter, Jr., R. G. Sparrow, R. C. Sparrow, Jr., J. E. Napiers and Meade Frierson. The last mentioned incorporator is identified with the Nashville Interurban Railway, thought it is stated that the companies will in no way be financially connected.

Head of City Utility Department Favors Non-Competitive Buses

Major Carl H. Reeves, superintendent of the Utilities Department at Seattle, Wash., has recommended the issuance of fifteen permits to operate jitney buses into the Cowen Park district from downtown, to F. M. Peterson, representing the Auto Drivers' Union. The recommendation was made on the basis of an offer by Mr. Peterson to pay the city 3 per cent of the gross earnings of each car as a fee.

While passing favorably on the issuance of permits, Major Reeves says the percentage payment would not be satisfactory, and proposed a flat rate of $10 a month a car for the first six months, at the end of which time a check would be made to determine whether that rate is sufficient. The jitney service proposed would be limited to serve the Cowen Park district, without loading or unloading passengers along the Municipal Railway, or in sections served thereby.

The ordinance to appropriate $50,000 for the purchase of buses for the Cowen Park service, to be operated by the city, which was recently vetoed by Mayor Hugh M. Caldwell, failed to pass over his veto.

Governor Favors Try-Out of Lower Fare

Governor Everett J. Lake of Connecticut was called upon to answer a number of questions pertaining to the Bridgeport jitney situation at a meeting in that city during the week ended Nov. 5. In speaking of the railway situation the Governor said:

> The Public Utilities Commission has told me on broad lines that the fares must come down and that they were going to get them down at the earliest possible moment. I believe the 5-cent fare worth a tryout, and I think the Public Utilities Commission has shown the same attitude in its recent ruling.

At the same meeting, President W. F. D. Kilpatrick of the Bridgeport Business Men's Association, said if the Public Utilities Commission grants a 5-cent fare in Bridgeport, the commission will be asked to revoke the licenses under which about seventy-five jitneys operate in the city. He claims that this is taken from a statement made by Judge Walter C. Noyes, chairman of the Federal Board of Trustees of the Connecticut Company. In answer to the commission Mr. Kilpatrick said:

> I believe that the Connecticut Company will not grant a 5-cent fare for Bridgeport. The Connecticut Company has pointed out that if it is going to give a fare at that price, it would rather be in Hartford and New Haven where the people have not been bucking the company.

Norwalk had the privilege of a 5-cent fare beginning Nov. 6. According to the ruling of the Public Utilities Commission, it ordered the 5-cent rate for a ninety-day test period, weekly reports to be made by the company to the commission. These will be available later.

Bus Company Formed

The Toledo Bus Transportation Company, Toledo, Ohio, was recently incorporated with a capital stock of $100,000. The incorporators, among them F. J. Westhoven and H. W. Tassell, are owners of buses now operating in Toledo

In outlining his plans Mr. Westhoven said that the company did not contemplate a war with the Community Traction Company, but that it wanted to co-operate with it in providing transportation service to residents of Toledo.

Governor Suggests Rate Review

Formal review of all railroad and public utility rates by the Wisconsin Railroad Commission, with a view to material reductions on coal rates and on all necessities of life, was ordered on Oct. 28, 1921, by Gov. John H. Blaine of Wisconsin.

The Governor stated he believed the time had come when all rates should be re-examined and that the Railroad Commission must protect the people in cases where poor service and excessive charges were found. The Governor's formal demand on the commission follows in part:

> During and following the war, railroad and public utility rates were largely increased. Since these increases there has been a constantly falling market, including reduction in wages. Not only were rates increased, but in some cases—as, for instance, in gas—the standard of quality was materially lowered, and in other cases the service was cheapened, as in the case of street car companies installing one-man cars.
>
> I believe the time has come when the railroad commission should, on its own initiative, re-examine the rates and services of public utilities and railroad companies, with a view of making reductions in rates and of making improvements in service wherever possible.
>
> Of course, you will approach this subject free from any bias or prejudice, and with the single purpose of doing equity to all parties concerned. However, the pinch of hard times is upon us, and the utilities must expect in some measure to share in the hardship of the people generally, in order to equalize the burdens and to bring about general prosperity.
>
> Notwithstanding this situation, I feel that the state should continue to assert its right to fix these rates, and I therefore suggest that your commission will undertake the work promptly. If you will advise me that you will initiate proceedings on your own motion, I will immediately thereupon communicate with the mayors of the several cities and ask them to co-operate with you in connection with utility matters, and will give you every assistance available with respect to both utility and railroad rates and services.

Transportation News Notes

Wants Half Fare for Pupils.—The city of Knoxville will appeal to the Public Utilities Commission in an effort to secure reduced fares for school children. When the 6-cent fare was authorized recently the company refused to sell the half-rate tickets on the ground that it was operating at a loss.

May Operate Buses.—H. W. Patten, general manager of the Wichita Railroad & Light Company, Wichita, Kan., recently announced that his company contemplated the use of motor buses as feeders for the railway lines. They will be used on off streets with a universal or transfer system to the railway.

Wants Bus Permit Deferred.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has asked the Hamilton Township committee to defer action on the granting of a license line to be operated between Trenton and Hightstown, a distance of sixteen miles. The company says that the proposed bus line would affect the receipts on the Mercerville division.

Rural Districts to Have Trackless Trolleys—In commenting recently on the trackless trolley system which is in prospect for Baltimore, H. B. Flowers, vice-president and general manager of the United Railways, said that the rural districts are the best places for the new trolleys and that the United management will install them there. He said further that though no routes could be definitely slated now, two lines have been decided on for operation early next year.

Ticket Charge Extended.—As a result of a complaint filed with the city and a petition submitted to the Public Utilities Commission 6-cent tickets will be accepted to South Danville and Vermilion Heights, Ill. Heretofore, the Danville Street Railway & Light Company charged 7 cents to these sections, the 6-cent ticket charge being good on city lines. The announcement to this effect was made recently by the corporation counsel for the city.

City Opposes Ten-Cent Fare.—The Peekskill Lighting & Railroad Company, Peekskill, N. Y., which has obtained increases in fare from 5 to 6 cents and then to 7 cents with the consent of the village now wants to charge a 10-cent fare and the village objects. Former Public Service Commissioner Decker, who represented the railroad company, contended that the commission was the only legally constituted body which had jurisdiction over fares and that the village could not participate in the proceedings. In an opinion sustaining the right of the village to oppose the application, Mr. Semple said in part: "My theory is that if the facts show that your service cannot be adequate or safe for the public interest under a 7-cent fare the commission has the power to suspend the provisions of the contract rate until that condition changes, but the contract is not abrogated and may be restored." The contract rate of fare is 5 cents and under the ruling this rate may be restored if the service, at a higher rate, is not adequate.

Personal Mention

C. E. Morgan Advanced

Elected General Manager of Brooklyn City Railroad, Which Operates All Surface Lines

The election of Clinton E. Morgan as general manager of the Brooklyn (N. Y.) City Railroad has been announced by the board of directors. H. Hobart Porter, who has been both vice-president and general manager, remains as vice-president in charge of operation. Henry F. Noyes has resigned as vice-president of the Brooklyn City, but continues as a director. Mr. Porter is now the only vice-president of the lines. The personnel of the board is unchanged.

As general manager Mr. Morgan will be in direct control of the operation of all the surface lines of Brooklyn, now being operated as a unified system through arrangement between the Brooklyn City management and Receiver Lindley M. Garrison of the Brooklyn Rapid Transit Company. The Brooklyn Rapid Transit surface lines, which Mr. Morgan operates in connection with the Brooklyn City system, are the Nassau Electric Railroad, the Queens County & Suburban Railroad and the Coney Island & Brooklyn Railroad. Under Mr. Morgan's immediate operating direction will be 525 miles of track owned and operated by seven companies. Of these companies, all except the Brooklyn City Railroad are controlled by the Brooklyn Rapid Transit Company's system. The Brooklyn City has been operated as an independent since Oct. 19, 1919, when the property, which had been leased by the Brooklyn Heights Railroad Company, reverted to its owners following the failure of the Brooklyn Heights Company to meet the obligations imposed by the terms of the lease to which these companies became parties in 1893. Under independent control, the Brooklyn City lines have been directed by a separate executive organization built up by H. Hobart Porter, who assumed the management when separation from the Brooklyn Rapid Transit system was decreed by the United States District Court.

C. E. MORGAN

Mr. Morgan, who has been assistant general manager since Mr. Porter took charge, is one of a group of street railway experts chosen by Mr. Porter to work out a solution of Brooklyn's surface line problems. Associated with Mr. Morgan in this group are Edwin H. Reed, who came from the American Public Utilities Company, Grand Rapids, Mich., to be auditor of the Brooklyn City; L. J. Davis, who left the Westinghouse Electric & Manufacturing Company, Detroit, to become engineering assistant to Mr. Morgan; George W. Jones of Sanderson & Porter, New York, who was made treasurer, and A. LeRoy Hodges, formerly with the Michigan Railway, who has been appointed assistant secretary and treasurer.

Before coming to Brooklyn Mr. Morgan had been prominently identified with traction properties in the Middle West, where most of his career has been spent. Mr. Morgan entered electric railway work in 1899, progressing through the construction and the operating departments of the Indianapolis and Greenfield Rapid Transit Companies, centralizing in Indianapolis. In 1902 he became purchasing agent and later was appointed auditor. Then he became assistant general manager of the Indianapolis & Eastern Traction Company, and in 1905 he was named superintendent of the Indianapolis & Martinsville Rapid Transit Company, the Indianapolis Coal Traction Company and the Indianapolis & Western Traction Company. Subsequently he was chosen superintendent of the Terre Haute, Indianapolis & Eastern Traction Company.

Mr. Morgan resigned from the Terre Haute, Indianapolis & Eastern on Feb. 1, 1909, to accept the position of general manager of the Indianapolis, Crawfordsville & Danville Electric Railway, Crawfordsville, Ind. He continued in this capacity until April 1, 1912, when he resigned to assume the general superintendency of the Michigan United Traction Company, the Michigan Railway and Michigan Railroad. These companies were subsidiaries of the Commonwealth Power, Railway & Light Company, operating extensive city and interurban properties in the Central States. Mr. Morgan was in full charge of the company's mechanical, electrical, engineering, traffic and transportation departments. On Oct. 1, 1919, he terminated his connection with these Michigan enterprises to join, at the invitation of Mr. Porter, the organization of the Brooklyn City Railroad as assistant general manager.

Mr. Morgan has been active in association work. He is a charter member of the Central Electric Railway Association and is active in the American Electric Railway Association. He has been a member of the standardization committee on equipment in both the Central Electric and American Electric Railway Associations. Also he has been a member, and later chairman, of both the schedules and timetables and the rules committees of the American Electric Railway Transportation & Traffic Association. He also served on the block signal committee.

When the Brooklyn City Railroad resumed independent operation it became necessary to break up several routes, with the result that new riding habits were formed by the public. These changed conditions led to a thorough traffic survey of all the surface lines.

The fundamentals of the methods followed in this survey were described by Mr. Morgan in an article in the issue of this paper for Sept. 24, 1921. The policy there outlined will be continued under the general management of Mr. Morgan, whose promotion, it was explained by the Brooklyn City Railroad, was the natural result of the success that has attended his effort in operation and administration.

Mr. Wilson with B. R. T.

Former Connecticut Company Roadmaster Appointed Superintendent of Surface Roadway

P. Ney Wilson recently assumed his duties as superintendent of surface roadways of the Brooklyn (N. Y.) Rapid Transit Company. He succeeds to the position vacated by E. L. Matthews, who resigned in April of this year to accept a similar position with the Third Avenue Railway, New York. Mr. Wilson was formerly roadmaster of the New Haven division of the Connecticut Company.

For the company Mr. Wilson's appointment is a particularly valuable accession. Since his initial electric railway connection with the Camden Railway in 1899 Mr. Wilson has devoted his attention and energy not only with the actual construction and maintenance of way methods of the various properties with which he has been identified, but also in the study of foreign track construction methods. It was in 1906 after he had been made supervisor of track and roadway of the Camden Railway following several years of field work that Mr. Wilson made an extended trip to England and South America to acquaint himself with track construction practice there.

P. NEY WILSON

Returning in 1907 Mr. Wilson was appointed roadmaster of the Rochester Street Railway. He remained there two years when he received the appointment as roadmaster of the New Haven Division of the Connecticut Company. In terminating his connection with the Connecticut Company to enter larger fields Mr. Wilson ends a twelve year period of enviable service as roadmaster. During that time he was able because of his combined knowledge of foreign and domestic track work practice to institute many valuable and practical money saving schemes along these lines.

Mr. Wilson was educated in Philadelphia and Camden, N. J., at both of which places he studied civil engineering following his graduation from High School. Mr. Wilson is a member of the Connecticut Society of Civil Engineers.

Mr. Cadby Executive Manager of Wisconsin Association

John N. Cadby, consulting engineer of Madison, Wis., was selected to be executive manager of the Wisconsin Electrical Association at a recent meeting of the executive board. This office is a newly created one, the duties of which he will assume next March.

"The establishment of this new department means that our association intends to be of greater service to the public making it more useful to our members," said J. P. Pulliam, president of the Association. "Mr. Cadby will be able to bring his wide experience to bear on public utility problems anywhere in the state."

Mr. Cadby is a graduate of the electrical engineering course of the University of Wisconsin, class of 1903. For a time he was with the Milwaukee Electric Railway & Light Company. In 1908 he became a member of the engineering staff of the Wisconsin Railroad Commission.

A. Telford Smith has become associated with the São Paulo (Brazil) Electric Company, Ltd. Mr. Smith was formerly with the Winnipeg (Man.) Electric Railway.

Floyd W. Parsons, formerly editor of *Coal Age*, one of the McGraw-Hill publications, and for the past two years in charge of the department entitled "Everybody's Business" in the *Saturday Evening Post*, has become editorial director of the *Gas Age-Record*.

Matthew C. Brush, formerly president of the Boston (Mass.) Elevated Railway and who is now the senior vice-president of the American International Corporation, New York City, was elected president of G. Amsinck & Company. Mr. Brush, who is in general charge of the American International Corporation's commercial interests, says that the Amsinck organization, which is engaged in the import and export business, expects to enlarge its functions between the United States and Central and South America.

M. H. Gerry, formerly engineer and power superintendent of the Metropolitan West Side Elevated Railway, Chicago, has been made secretary, agent and engineer for the St. Anthony Falls Water Power Company and the Minneapolis Mill Company. He succeeds William de la Barre, who was elected president. Mr. Gerry, while with the Metropolitan West Side Elevated, superintended the electrification of the company's elevated tracks. Mr. Gerry graduated in 1890 from the College of Mechanical Engineering of the University of Minnesota and was employed several years by the General Electric Company. For twenty-two years he has been in Montana. He built the first dam in the Missouri River for commercial development of power and built the original transmission lines to Butte, Anaconda and Helena. During the war he was fuel administrator for Montana.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

European Business Poor

Gear Manufacturer Comments on Situation Abroad—Observed Many Buses Used as Feeders

According to E. S. Sawtelle, assistant general manager Tool Steel Gear & Pinion Company, Cincinnati, Ohio, the prospects for the immediate present of American manufacturers doing a considerable business in Europe, except those who have a specialty, is slight. Even in specialities a very strong effort is being made by European manufacturers to reproduce or imitate devices that have hitherto been bought in America. Mr. Sawtelle has recently returned from a six weeks' trip through England, France, Holland and Switzerland. In commenting on the business situation in Europe, he said in part:

"Before and during the war our company was selling tool steel gears to about eighty companies in England, eighteen in France and practically all of the large roads in Holland and Spain. Some of these represented trial orders, but with most of the larger companies the business was thoroughly established and competing very successfully with European manufacturers. This situation, I believe, was duplicated by a large number of American manufacturers who had been able very successfully to introduce their products in Europe, due either to unusual quality or to low costs through quantity production. Business of this sort was necessarily expensive to start, as it involved many changes in standard practice to take care of European desires, great difficulty in selling due to language barriers, and, of course, the continual problems of long deliveries and high transportation costs due to our geographical location.

"The reasons for the extensive discontinuance of purchases in America does not seem to be a matter of quality or of service, but purely a question of policy. I was told by the head of one of the largest British tramway lines that he now was unable to buy out of Britain any quantity larger than $100 without submitting the bid to his board. European manufacturers are driving desperately to duplicate American products and the tramway lines, largely municipal, find great pressure brought to bear upon them to buy home products if the makers can even approximately match the American goods, or even claim that they can duplicate.

"The exchange situation is a further almost insurmountable barrier for American goods in such countries as Italy and France, and even in England the high exchange rate, coupled with ocean freight and similar charges, makes our competition exceedingly difficult. Swiss exchange is as high as ours, and it seems as though every topic you discuss with the Swiss business man, sooner or later, mostly sooner, leads to exchange. They claim that their business has been practically killed by this situation.

"German competition is the most serious factor that confronts the American exporter. The skilled mechanic in Germany is being paid from 70 cents to $1 a day, and net living costs are such that he is probably better fixed on this pay than he was before the war. This is due to the fact that rents have increased but slightly. This situation, however, enables Germany to sell for export at prices that are absolutely unthinkable in any other land. Before the war we were laying down tool steel gears in Holland at a price about twice the cost of the soft gear made in Europe. Today, in some cases, our price will be as much as five times as high. The prospective purchaser does not dispute the question that the gear may be worth more than five times as much in terms of life, but the primary question is the ability to pay.

"Many of these conditions will eventually right themselves, but it seems to me that America must for several years to come import in excess of its exports before conditions will work around to give us a fair chance for export business."

Speaking of general impressions gathered during his trip, Mr. Sawtelle said:

"In London and Paris (and in many other of the English cities, one sees a very large number of motor buses, and these seem to be operating under very satisfactory conditions despite a heavy horsepower tax that they pay and a gasoline cost that is several times the American price. I found several cases where the trackless trolley was also being seriously considered or plans were being made to try it out, primarily to avoid excessive paving charges and to help act as a feeder for their main system. Nevertheless, all the tramway people with whom I talked feel that the bus is but a feeder or a substitute necessary in special conditions only, such as with crooked streets, etc. They seem universally of the opinion that the street railway company must continue to exist in practically its present shape as the solution for the transportation problem.

"Practically all of the European city street cars are very light as compared with American standards, though not light as compared with the safety car. It would look to me as though Europe has avoided the cars of excessive weight with very heavy equipment, and by going very extensively to light double-deck cars has been gaining the economies that we are now finding in lighter equipment. Wherever the safety car was discussed I was invariably told that their equipment was now so light that they did not need to take this step for additional saving. On most of these light cars, they are using old standard light motors, such as GE-67, GE-54, etc."

Electric Locomotive Exports

In the preliminary figures given by the United States Department of Commerce showing the exports of electrical goods for September indicate that the export trade of this class of manufactured products is still declining.

Particularly was this true of electric locomotives, of which $242,362 worth were exported during August while the value of those shipped out of the country during September was only $59,817.

The nine-month total for 1921, however, shows that the amount paid by foreign purchasers for electric locomotives ordered in this country was $1,506,877, which is nearly double the amount for the corresponding period of 1920. This large increase is undoubtedly the result of the electrification that is at present in progress in Brazil for which practically all of the equipment was manufactured in the United States.

General Electric Employees' Pay Cut 10 per Cent

Another reduction of 10 per cent in wages and salaries affecting all employees has been announced by the General Electric Company, which took effect on Oct. 31. The announcement by E. W. Rice, Jr., president of the company, follows:

"In accordance with an order of the board of directors, a reduction of 10 per cent will be made as of Oct. 31, 1921, in the salaries of all officers and employees of the company. Heads of departments are requested to notify all those affected."

The General Electric Company has made several reductions since last January. The first reduction became effective Feb. 1, when the wages of day workers at the Schenectady plant were reduced 10 per cent and the pay of piece workers 10 per cent. The bonus system was also dropped.

In July another reduction of 10 to 30 per cent was announced. The working forces have been reduced in line with the company's plan of gradual retrenchment.

German Interest in Spanish Electrical Company

At a recent meeting of the Compania Hispano - Americana de Electridad, Madrid, Spain, says the *Electrical Review*, London, they have elected to the board of directors four Germans who are prominent in banking and electrical manufacturing companies. This action is interesting in view of the fact that last summer the South American operation of the German Transmarine Electricity Company, Berlin, was transferred to the Compania Hispano-Americana de Electricidad. It would seem from this that a continuation of German influence in central station and traction operations in South America was being effected.

Some Improvement in Porcelain Insulator Market

A survey of the market for porcelain insulators shows that some improvement has been experienced since last summer, but that something in the nature of a dead level may be expected until around the first of the year. Demand for the small distribution sizes of porcelain insulators is fairly good in the East and South, and indications are that a number of jobbers have let their stocks run low. Rush orders have been received by manufacturers from jobbers in Boston and in various parts of Pennsylvania, though none of these orders has been particularly large. A number of fair orders have been received from the Southeast and the South. Jobbers in other parts of the country seem fairly well stocked.

Reports from the Middle West say that jobbers are well stocked and can make immediate shipments for all ordinary demands. There are numerous inquiries and a fair number of orders, most of them for small lots. Utilities there are not buying as heavily as was the case several months ago. This condition may be accounted for by the fact that the number of small extensions under construction has dropped off considerably.

Prices remain unchanged since the drop which was made around the beginning of September. Manufacturers say that labor costs are still high and that there is not apt to be another decrease for some time.

Petition for Foreclosure on Car Company Sought

A petition for foreclosure of the $2,000,000 mortgage which it holds on the plant of the Barney & Smith Car Company, Dayton, Ohio, was instituted in Cincinnati by the Guaranty Trust Company of New York. Thus the sale of the assets and property of the company is assured within a short time.

The company was established in 1849 and has a paid in capital of $4,500,000. It is being operated at present by Valentine Winters, president of the Winters National Bank and receiver for the car company. In a recent report Mr. Winters indicated that the sale of the plant would be necessary for the conservation of the interests of all. A number of people living in Cincinnati are stockholders and officers of the company. Attorneys for the trust company filed a motion for the consolidation of the foreclosure case with the receivership suit instituted by Irwin Ballman & Company, Cincinnati, Ohio. Judge Edward T. Snediker indicated that he would grant the request, and he stated that the plant probably would be sold at public auction within a few weeks and an entry to that effect is expected soon.

Rolling Stock

Morris County Traction Company, Morristown, N. J., contemplates purchasing within the next four weeks power recording meters and headlights with which to equip twelve cars.

Boston (Mass.) Elevated Railway, which recently bought sixty-five elevated steel cars from the Pressed Steel Car Company at a cost of about $1,250,000, is beginning to receive the equipment. Half a dozen of the cars have already been delivered and three or four will be delivered every week until the contract is completed next March. The new cars are to replace wooden cars that are about twenty-two years old.

Track and Roadway

Pekin (China) Tramways have submitted plans to the municipality for the construction of a modern tramway system.

New York State Railways, Syracuse, N. Y., has been ordered by the court to relay its tracks in Willow Street to conform to the repaired street grade. The cost is set at $5,000.

Pacific Electric Railway, Los Angeles, Cal., will lay two additional tracks on American Avenue, Long Beach. This will expedite traffic as local cars will operate on one set of tracks and interurban cars on another set.

Pittsburgh (Pa.) Railways, through its receivers, is seeking permission of the court to construct a single track on Brownsville Avenue from Carson Street to Warrington Avenue. It is estimated that the track and paving costs would amount to $10,000.

New York State Railways, Rochester, N. Y., has progressed in its Clinton Avenue extension to the extent that about 1,000 feet of track have already been laid in Clinton Avenue, north of Norton Street. The Clinton Avenue line is being extended from Norton Street to Ridge Road, at a cost of $100,000. The distance is approximately 2,500 feet. Charles R. Barnes, commissioner of railways, said that the work will be continued as long as the weather permits. Double tracks are being constructed and they are being placed in the center of the roadway.

Power Houses, Shops and Buildings

Pekin (Ill.) Municipal Railway will erect a new carhouse which will cost $5,000.

Morris County Traction Company, Morristown, N. J., expects to build within the next month a dispatcher's office. The contract for this building has been let.

Los Angeles (Cal.) Railway Corporation expects to build one substation in which will be installed two 1,000-kw. automatic substation equipments.

Mesaba Railway, Virginia, Minn., has let the contract for the erection of the waiting station, carhouse and substation at Hibbing, Minn., to A. Guthrie & Company of St. Paul.

United Traction Company, Albany, N. Y., had its service seriously interrupted recently as the result of a fire which damaged its Watervliet substation. The extent of the fire was such that men were required to work continuously for several days to get the substation back in service.

Trade Notes

C. V. Allen has been appointed Mexican manager of the Westinghouse Electric International Company, with headquarters at Mexico City.

C. I. Earll, York, Pa., recently received an order from the Toronto (Ont.) Transportation Commission for 140 sets of No. 10 trolley catchers.

International General Electric Company has made a contract with C. I. Earll, York, Pa., to handle all foreign business pertaining to trolley retrievers and trolley catchers.

Johnson Fare Box Company, Chicago, by a vote of its stockholders, has increased the capital stock of the company from 2,000 shares, par value $100, to 4,000 shares of the same par value.

Harry W. Eastwood, who for the last four years has had charge of the steel mill and crane division of the Cutler-Hammer Manufacturing Company, has been appointed manager of the Cleveland branch office, taking the place of Lynn B. Timmerman, former assistant manager of the central district, who leaves to enter the automobile business in Lima, Ohio, after having been associated with the Cutler-Hammer Company at Cleveland since 1914. Mr. Eastwood has had considerable experience in the electrical industry, particularly in the controller field.

New Advertising Literature

Atlas Valve Company, Newark, N. J., has recently published Junior Catalogue No. 21, describing its line of reducing valves, pump governors, pressure regulators, etc.

Westinghouse Electric & Manufacturing Company announces that it is distributing a publication, the title of which is "Lead-Base Babbitt Metal." It announces the placing on the market of lead base babbitt metal, which is the result of many years' use of this material by Westinghouse. Approximately 1,000,000 lb. of Westinghouse lead-base babbitt metal was made and used during 1920. The subjects discussed in this publication are overheating, bearing design, preliminary machining of shells, cleaning of shells, care of tinning alloy, tinning of bronze shells, tinning of pipe and malleable iron bearing shells, anchor holes in case iron bearing shells, care of the babbitted metal, cleaning solutions and materials. This is known as Folder 4,474.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor C. W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

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Applying Dispatching Principles in One's Work and Play

AMONG the ills from which the electric railways, like other industries, are suffering is the lack of effectiveness on the part of individual employees in all ranks and departments. Few make the most of their opportunities, the majority failing to realize that what benefits the service reacts to their own profit. If this statement is accepted, it follows that the biggest job on the manager's hands is an educational one. It consists in arousing the employee's self-interest and assisting him to apply it so as to produce results for himself and his employer. The following homely philosophy applies to the present situation.

In this democratic country the success of every individual is largely up to himself. This success is due in great measure to the way in which he employs his time, both that which he sells to his employer and that which he reserves for himself. The man who appreciates this fact and acts upon his knowledge has an enormous advantage over his fellows, because most of them are prodigal in their wastage of this unreplaceable resource. The thrifty one prospers not only because he is wise but also because so many are fools. The railway man ought to be more careful in this matter than many, because he sees constantly illustrated the importance of careful dispatching. He should find it easy to apply the same principle in the use of his own work and play time.

Arnold Bennett has put the thing in a nutshell in his little book, "How to Live on Twenty-four Hours a Day." The underlying idea therein is that the average man's time is not well utilized, that he needs a program in order to make the most of his twenty-four hours a day. The fact is that he needs a schedule. His duties require dispatching. It's up to him, not his employer, to do this dispatching. The chap who knows how to employ his time well is the "boss's" joy. He'll be boss himself some day.

Sitting recently in a railway office, waiting to see the "big chief," the writer had opportunity to study the clerks at close range for some time. He felt depressed at the apparent lack of plan and purpose in their work. "These fellows," he thought, "need a dispatcher." The opposite condition was illustrated in the case of Frank A. Vanderlip, the famous contemporary banker. When engaged as a vice-president of the National City Bank, he had no duties assigned to him. He was in fact apparently left upon his own resources. Somewhat nonplused at first, as soon as he realized that it was incumbent upon him to make his own work he lost little time in doing so. He was a good self-dispatcher. His promotion in due course to the presidency of the bank was a logical outcome. He just couldn't help it.

The way in which some people can turn out work is a marvel. Theodore Roosevelt was a conspicuous example. His career almost makes one dizzy to contemplate. He was able, among innumerable duties, to write more than 150,000 letters, many of them lengthy. He could do all of this because he early acquired the practice of dispatching his work. And he knew how to play, too. What he did on a large scale, all railway men can do on some scale. But unfortunately, most of them won't. If many did the railway millennium would be here.

Efficient Lubrication Is a Vital Maintenance Problem

ELECTRIC railway men responsible for the maintenance of car equipment have long recognized that the period that a car can safely run between oilings determines the maximum inspection period for the entire equipment. Efforts of designers have therefore been devoted largely to arrangements that will insure proper lubrication over as long a period as possible. Oil wells have been provided in the motor housings to carry an additional supply of oil over that contained in the waste packing, and openings for inspection and refilling have been made as accessible as possible to insure proper attention.

Careful design is but one link in the chain of efficient lubrication. Others of equal importance are the use of proper materials for packing, lubrication and bearings as well as the application and maintenance of these materials when used.

Manufacturers now consider the furnishing of service and advice relating to their product just as essential to their success as the sale of their material. Oil companies have experts who visit the various railway properties and advise those responsible for the application of their product as to the most efficient use and the proper grades of oil that will give the most satisfactory service under the conditions of operation. Railways follow the advice given with confidence as experience has shown that these experts know their particular branches thoroughly and suggest many helpful policies. The choice of materials is thus taken care of in a satisfactory manner.

The problem of lubrication and bearing maintenance is a very vital and difficult one. The work of an oiler is not particularly attractive, and it is hard to keep men on this work for a sufficient length of time to train them thoroughly. Trained men are very necessary, however, if the best results are to be obtained. One way of making the work attractive is by increasing the rate of pay. It is not economical to use cheap men for this work, as much depends on the thoroughness with which the work is carried out. A careless inspection may result in damage to an armature necessitating its rewinding and thus cost more than a month's pay of a good man. Definite limits of wear for bearings should be adopted for each shop. They assist the workman, and the best of lubricants and the most efficient method of applying them will not lubricate a bearing worn so that improper alignment results.

An efficient oiler should also have a knowledge of the different classes of babbitt and of waste packing. He should know how to babbitt bearings and pack boxes as well as have a knowledge of the grade of lubricants and methods of applying them. The quality of the lubricants used is very important, but the type of man who applies them and inspects the bearings is more important.

A Good Product Is Necessary Before Advertising Is Valuable

ADVERTISING, as a proper and necessary activity on the part of railways, has been constantly urged by the ELECTRIC RAILWAY JOURNAL and by other agencies devoted to the best interests of the electric railway industry. But it will not pay to advertise anything, unless the advertiser is prepared to "deliver the goods."

There has been a good deal of talk in railway circles about selling transportation, but sight must not be lost of the fact that the transportation should be "salable" if it is to be sold. Once in a while a good salesman can sell a poor product, even in the transportation business, but in the long run it is risky business to advertise poor wares.

The letter of J. A. Emery in the Nov. 5 issue of this paper is typical of remarks both within and without the industry. There is no lack of appreciation of the financial difficulties attendant upon providing more salable transportation, but what enterprising merchant who had suffered reverses would attempt to build up his business with a mediocre product expecting the public to appreciate his plight and buy more of his mediocre foods at higher prices to put him on his feet? The lack of complete parallel is fully appreciated, but there is enough in the comparison to think about.

Selling Raisins and Selling Rides

WHO has not seen the breaking out like a rash lately of little red cartons of raisins at 5 cents the package? A few months ago the only way to buy raisins was by the pound. While many people have always loved to eat them "in the raw," they were not willing to buy more than they could eat comfortably *en passant*. What was it that prompted the raisin growers to make so sensational a departure in their selling methods? The answer is: An overproduction of raisins that could not be disposed of through the traditional channels of merchandising. Something nontraditional had to be done, and done quickly and in a big way. What happened was that the raisin interests got together and agreed upon an advertising campaign running into hundreds of thousands of dollars, for as merchants they understood very well that good wine does need a bush, notwithstanding the old proverb. Within a few months, the slogan: "Have you had your daily iron?" was known from coast to coast. It was not long before it actually became difficult to supply the demand. It is reported that in one case several carloads of raisins on the way to a candy manufacturer were practically torn from his hands at a price far beyond his own outlay.

Is there no tip for electric railways in this wonderful coup? Why cannot we devise selling schemes that will give the street railway ride a new and more attractive flavor? Must we forever continue to sell our product at the same price regardless of quantity, of quality, of time of day, or can we devise various means of giving the public what it wants in the right size package at the right price? The economic conditions, tastes and transportation standards of pre-war and pre-auto times have gone, never to return, and with them must go the idea that people ride street cars only because they have to and not because they want to save time and its equivalent in money.

As a corollary or proof of the truthfulness of this argument, the actual selling of rides in Youngstown, Ohio, as described elsewhere in this issue, is offered in evidence. The records from the first few weeks use of the new pass surely indicate that rides which would never have been taken otherwise have added materially to the company's revenue.

Reduce Unnecessary Handling of Equipment

THE two great things needed in our shops today are the ability to do work cheaply and to do work well. Both require proper shop equipment efficiently arranged. This means that in laying out a new shop or reconstructing an old one the equipment engineer should proportion the amount of space in the various departments to a large extent according to the equipment used and its arrangement.

While, no doubt, there is an urgent need for new machine tools in most of the present railway shops, few officials feel that such an expenditure can be undertaken at present. The rearrangement of present equipment, however, is an important problem that can be undertaken and should be considered in any plans looking toward increased production, better workmanship and reduced cost for performing the work. The expense is small for regrouping machines and relocating departments, but important results can be accomplished by doing away with unnecessary movements of operation and the handling of the parts to be repaired. The efficient arrangement of buildings and machinery always receives very careful consideration in manufacturing plants, and while few railway shops do very much manufacturing, the principle can be applied to equipment repairs with beneficial results. There are too many railway shops where the most frequent and important jobs require the transporting of equipment from one department to another and back again before the repairs are finished.

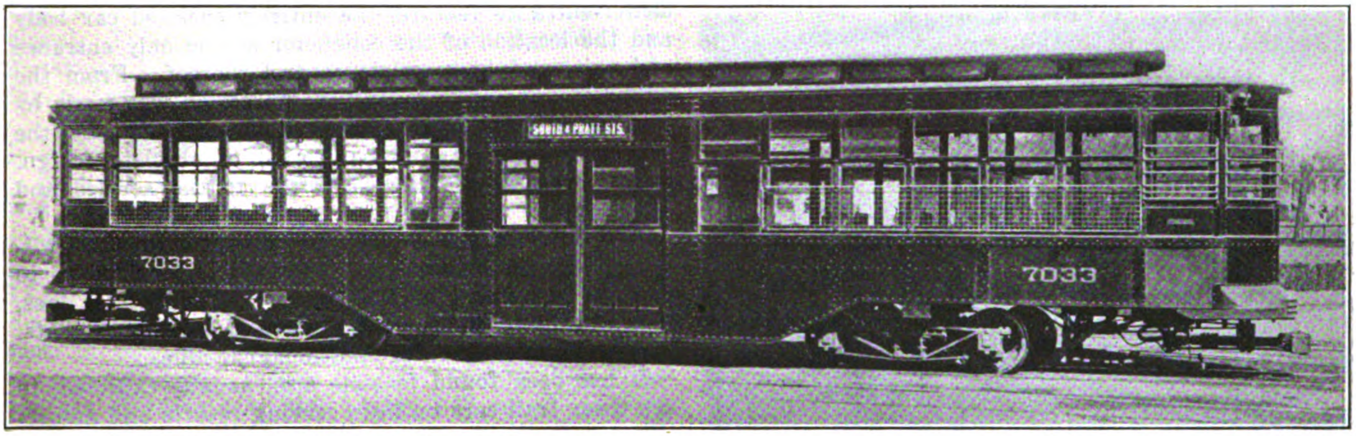
Electric welding equipment is now considered quite essential for railway maintenance work. Where this work is done as a separate department its location convenient to the truck and overhauling shops will save much unnecessary labor. The Washington Railway & Electric Company has provided permanent lines from the welding room with plug-in sockets located in the truck and carpenter shops so as to take care of repairs to parts which cannot be easily transported to the welding shop. A convenient arrangement and location for the wheel and axle work is most essential, and cranes located so that wheels can be handled from the trucks to the wheel lathe in one operation will increase the production of the overhauling department.

The mere provision of machine tools for doing the work is not enough. Careful consideration of the handling problem is equally important. A study of conditions as they exist in connection with routing diagrams will usually disclose many improvements that can be put into effect without excessive cost.

Baltimore's New Trail Cars

By Changing Gear Ratio, Strengthening Brake Rigging and Installing New Control Equipment and Couplers, Motor Cars Already in Service Were Provided for Hauling the New Trailers

BY L. H. PALMER
Assistant to President, United Railways & Electric Company,
Baltimore, Maryland.



CENTER-ENTRANCE TRAILER IN OPERATION

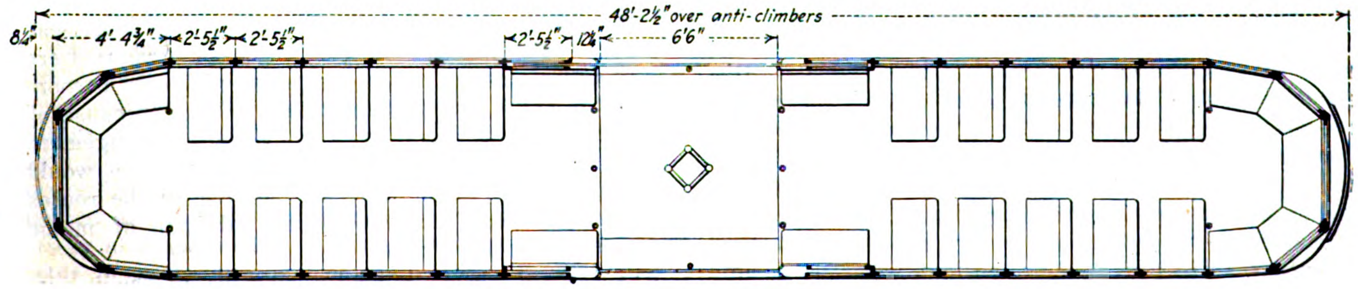
THE United Railways & Electric Company of Baltimore has made it a practice to purchase a substantial number of new passenger cars almost every year. For about fifteen years these purchases have all been semi-convertible, four motor, prepayment cars with four passenger longitudinal seats at each end, and seven pairs of cross seats in the center of the car, which provided a standard seating capacity of forty-four. Later purchases of cars have had inclosed vestibules with three additional platform seats, making a total of forty-seven. The cars of the open-platform type are being converted into closed platform cars, so that at the present time out of a total of 560 open-platform, semi-convertible cars, all but fifty-four have been changed over to the inclosed platform prepayment design. During the war eighty cars of the same general type, seating fifty-five people, were purchased. Altogether the company owns 884 cars of this pattern. The maximum peak requirement for normal service had reached 1,175 before the present business depression.

In 1919 and the early part of 1920 careful investigation was made to determine the type of new equipment that should be purchased to replace worn-out cars and also to provide additional passenger capacity, and as a result of these studies 100 center-entrance trail cars seating sixty passengers each were purchased.

These trail cars, complete, cost just about one-half as much as a motor car, and their capacity was 14.4 per cent greater than our latest standard four-motor, fifty-five-seat cars, and 40.9 per cent greater than the standard forty-seven-seat cars, these percentages being based on the average fifteen-minute maximum load allowed under the rules of the Public Service Commission of Maryland.

A survey of the equipment in service indicated that three of the series of cars already in use on the property had sufficient motor capacity to haul these trailers for two or three hours during the morning and evening peak periods, without unduly burdening the motors. Eighty of these cars were used on the Bay Shore line and provided with high-speed equipment operated over a suburban route to a park some 16 miles from the center of the city.

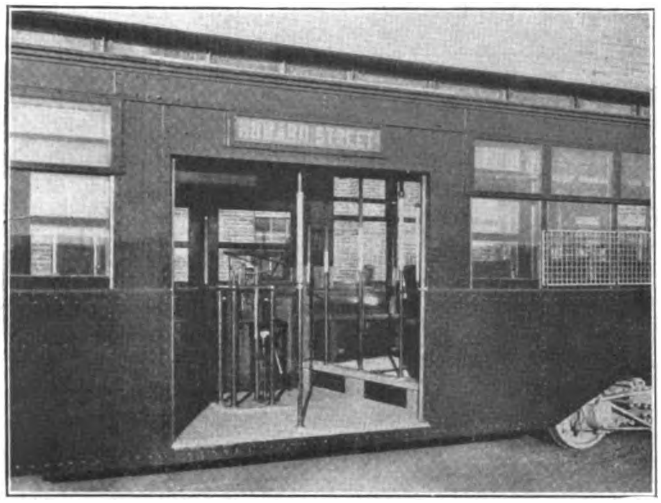
By changing the gear ratio, installing Tomlinson couplers, strengthening the brake rigging and installing new control, we were able to provide a motor car that could haul these trailers over any of the grades and road conditions met with in Baltimore. These cars had been in service since 1905, and were in good physical shape, although the control equipment, which was of the old AB type and had seen very severe service, had reached such a point that its maintenance cost was extremely high and it had either to be entirely rebuilt or replaced. Furthermore, the high gear ratio had given much trouble, particularly when running at low speed through the congested city streets. Here was an opportunity,



FLOOR PLAN OF CENTER-ENTRANCE TRAILERS

therefore, to rehabilitate these cars as far as the control equipment was concerned, putting on new gears, vestibules and new couplers, and thus get much more efficient service out of them, and reduce motor trouble and power consumption by installing a 14:70 pinion and gear combination instead of an 18:66. Into this program the trail car fitted remarkably well.

In addition to the high-speed suburban cars referred to, a number of four-motor cars from other lines were equipped with necessary couplers, air-brake and control apparatus to operate trailers. These latter cars did not have as large motor capacity as the ones previously referred to, but had sufficient to handle the trailers over some of the more level lines of the city.



A LOW STEP TO THE ENTRANCE WELL

Altogether 130 cars were equipped to handle 100 trailers, the additional thirty cars being intended to provide for disabled cars, accidents, contingencies and to give sufficient flexibility.

WEIGHT PER SEATED PASSENGER VERY LOW

The cars purchased, as shown by the floor plan and the pictures of the exterior and interior, were of steel. The car complete weighs 29,000 lb. and with its seating capacity of sixty gives an average weight per seated passenger of approximately 484 lb., which was practically one-half the average weight per seated passenger of our latest four-motor equipment, and about one-third that of our heaviest four-motor equipment.

It is obvious that the rush hour carrying capacity of the cars pulling these trailers was more than doubled with the use of one more platform employee. The congestion on the streets was reduced somewhat, due to the operation in two-car trains instead of as single cars. This increase in capacity was estimated at from 15 per cent to 25 per cent, depending upon the degree of congestion and the amount of vehicular traffic. The use of these trains has meant quicker loading of passengers, together with faster operation over intersections.

It was also concluded that there would be some decrease in maintenance expenses of track, due to the lighter weight of the cars, and of course there was lessened consumption of current for the same reason. A saving of approximately $50,000 annually was estimated in maintenance of equipment, through the use of trailers, a large part of this accruing because we would be enabled to retire approximately 100 old-type cars, equipped with inefficient motors which were practically worn out and whose maintenance was most expensive.

Mention has been made of the fact that these trail cars cost about one-half of what motor cars would cost. Due to the high cost of new money, the capital saving effected by postponing the purchase of further motor cars was material. It might be added that during our studies serious consideration was given to the use of the Peter Witt design of motor cars, and we are favorably inclined toward the use of this car when it becomes necessary to purchase additional motor equipment.

Some decrease in accidents was expected, due to the center-entrance feature, the entirely inclosed car body and the location of the conductor at the only entrance and exit, and in complete control thereof. From the public standpoint, a favorable impression was made by furnishing new, large, commodious cars and by the elimination of worn-out equipment of obsolete design, whose break-downs caused delays to the service and criticism.

The motor cars released by the operation of the trailers, except the obsolete cars referred to, enabled us to displace equipment of smaller capacity on other lines, thus providing improved service and additional seats, without the operation of additional car-miles.

It has been found feasible also, as was expected, to use these trail cars on lines serving resorts and amusement parks on Saturdays, Sundays and evenings during heavy riding in the summer season.

Some revision of terminal facilities became imperative, particularly if trailers were to be operated. Loops had to be provided at the ends of the lines, and special work at some carhouses had to be rearranged. It has been necessary to watch carefully the handling of these cars at terminals, because we realize the time necessary to couple them and put the cars into service would affect the headways. Proper track layouts and the education of crews have practically eliminated this difficulty.

There is some lack of flexibility, because these cars must always be handled as trailers and even in an emergency cannot be used as a front end of any train, as they are not provided with control equipment. However, this has not proved a serious disadvantage, nor have the sizes of the operated units been a serious detriment in moving through the crowded and narrow streets.

During the past summer the performance of the motors on the cars pulling trailers has been carefully watched, and our judgment is that, generally speaking, the motors have not been seriously overloaded, although it has been found that the all-day duty could not be obtained without a substantial increase in motor capacity.

Aside from the financial question involved in the purchase of trailers versus motor cars, the four controlling factors from the operating standpoint were: (1) Loops and carhouses, (2) grades and clearances, (3) substation and distribution capacity, (4) motor-car capacity. No changes in clearances or grades were necessary, except at a few places, particularly corners where the curbs had to be set back a little, because of the center well of the trail cars. Some rearrangement of distribution lines was necessary, a provision would have been required anyway, had service on the routes in question been increased by the addition of motor cars instead of trail cars.

The 100 cars were divided among six of the important trunk lines of the system, releasing thirty motor cars for other service, besides eliminating 100 obsolete cars previously mentioned. An estimated saving of 11 cents per car-mile was calculated from the operation of trailers, and in actual practice the figures to date indicate that this saving has been made.

One of the operating difficulties encountered, and which we are overcoming through careful instruction and supervision, is occasioned by the use of semi-automatic air brakes. If a motorman is not careful to release most of his air while the car is standing awaiting the loading and unloading of passengers, he will lose two or three seconds per stop after getting the proceed signal. This delay can practically be eliminated if the motorman is alert and handles his air brakes according to instructions.

ADDITIONAL LOOPS WERE NECESSARY

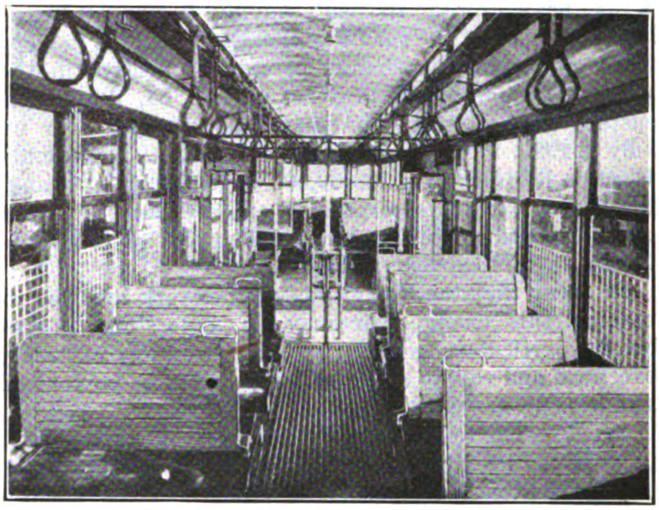
In operating these cars on the six lines selected, it was necessary to purchase property at two points and to install loops or loop connections at five additional points, making seven in all. An estimated saving of 18 per cent on the total expenditures for cars, track and distribution was calculated, and while the cars have not been in service for a long enough time to check this on a yearly basis, results to date indicate that, from the use of these cars, this saving will result. As increasing traffic demands the operation of greater trail-car mileage, the savings made will increase, because of the lesser expense per mile for trail-car operation. The trailers are equipped with standard HB lifeguards, which was decided upon after consultation with the Public Service Commission, in place of putting on a wood housing around the trucks.

The cars are 48 ft. 2½ in. long over anti-climbers, 8 ft. 4¾ in. wide over water table, side posts are on 2 ft. 5½ in. centers, and the height from rail to top of roof measures 10 ft. 11¾ in. The cars are equipped with 26 in. steel wheels and arch-bar trucks with inside-hung brakes and Gould type slack adjusters. The height of the first step into the well of the car is 15½ in. with a ramp of 1¾ in. From this well the height of the second step is 9⅝ in., and from this step there is a ramp rising 4 in. from that level which brings the passenger to the general floor level of the car body. Two double sliding doors are located on each side of the center of the car and are operated manually pneumatic. The door entrances are provided with interlocking safety door control and motorman's signal light equipment, so that the cars cannot start until the doors are closed. These same connections were installed on the doors of the motor cars that were altered to haul the trailers. Hunter illuminated signs are installed over each center-entrance door, each sign with space for twenty-five destinations; signs are 48 in. wide.

CARS HAVE MONITOR DECKS

The cars are of the monitor-deck type with a white enameled finish for the ceiling. No headlining is used in the upper deck. Ten 36-watt Mazda lamps, spaced down the center of the car with special white opalescent globes, furnish night illumination, and with the white ceilings present a very agreeable appearance during the hours when artificial light is necessary. The push buttons and other signal lights are connected through the drawbar and operated by an Edison Bl-H battery. This battery also operates the push button used by the conductor in signaling the motorman and the signal bell located on the motor car for the conductor's use.

As shown in the plan of the car, a four-sided stand is located in the center of the well and carries the fare box, with ample space for the conductor's signal bells and for door-operating handles. Upright stanchions are located in the middle of each of the door openings and three additional stanchions are located at each of the transverse sides of the well at the step leading into the body of the car. The control of the movement of passengers around the conductor's stand and in and out of the car is had by means of chains and ropes attached to these stanchions, which can be adjusted as necessary to handle the traffic. Two stanchions are also located at each end of the car at the ends of the circular seats. The hand straps on the cars are fitted with Bakelite hand holds.



INTERIOR OF CENTER-ENTRANCE TRAILER

On each coupler is attached a box carrying five wires, one for lights and electric heaters, two for the signal system, one for the door interlock and one extra. An automatic device for preventing the coupler on the rear end of the trailer from becoming alive is provided, so that there is no current on the rear end of the trailer back of the entrance well.

The ratchet handbrake shaft is located in the well at the conductor's stand, out of the way of the passengers, but where it is of ready access in case of emergency. This is fitted with an Ackley adjustable brake. In addition to Johnson fare boxes, each trailer is equipped with an International R-7 register.

Give Careful Attention to Field Jumpers

ONE of the most common types of motor failures is caused by loose field jumpers. The cost of removing the armatures for repair of the jumpers is a big item of expense in addition to the damage caused by the loose field jumper itself. A very satisfactory method of treating the ends of the jumpers is to tin the various strands together and then to wrap them with a fine wire, then thoroughly tin again. A better method is to tin the strands together and then place a copper ferrule over them which should be very carefully soldered to the jumper. If this method is used the screw in the field terminal, which essentially should have a tight thread, will not come loose as readily as when the ferrule is not used since the strands of wire are apt to break apart and cause a loose lead and excessive heating, then burning of the motor lead or terminal and sometimes both, which results in a complete motor failure.

Changing from Left to Right Hand Operation

The Change of the Rule of the Road in British Columbia Introduced a Large Variety of Problems to the British Columbia Electric Railway, Ltd.

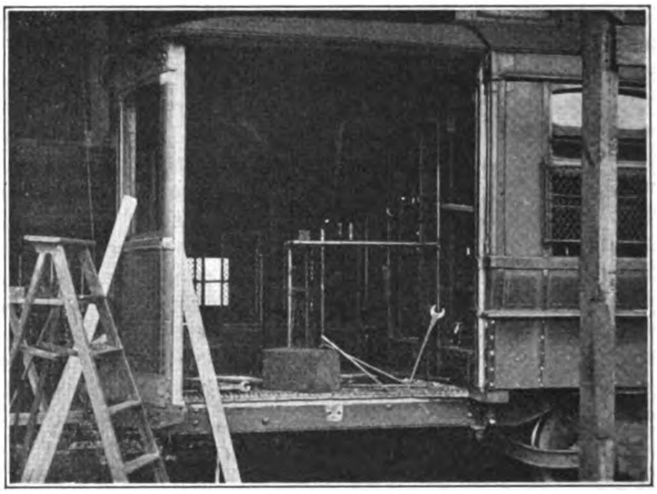
By W. G. MURRIN
Assistant General Manager, British Columbia Electric Railway, Vancouver, B. C.

IN ACCORDANCE with the highway amendment act of 1920 passed by the British Columbia Provincial Legislature the rule of the road was changed from left to right hand operation, the change becoming effective in the western portion of the province on Dec. 31, 1921. The eastern portion of the province was changed over on July 1, 1920. This change involves the British Columbia Electric Railway in a $1,000,000 expenditure in changing over its rolling stock, tracks and overhead to permit of right-hand operation on its 368 miles of city, suburban and interurban tracks.

In order that the magnitude of the work involved in making this change-over may be understood I give briefly particulars, under the three headings of track, overhead and rolling stock, of what has to be performed and how we are doing it.

Track.—The following work will have to be performed in order to permit of cars and trains to operate right hand with the same efficiency, safety and convenience as they are at present being operated:

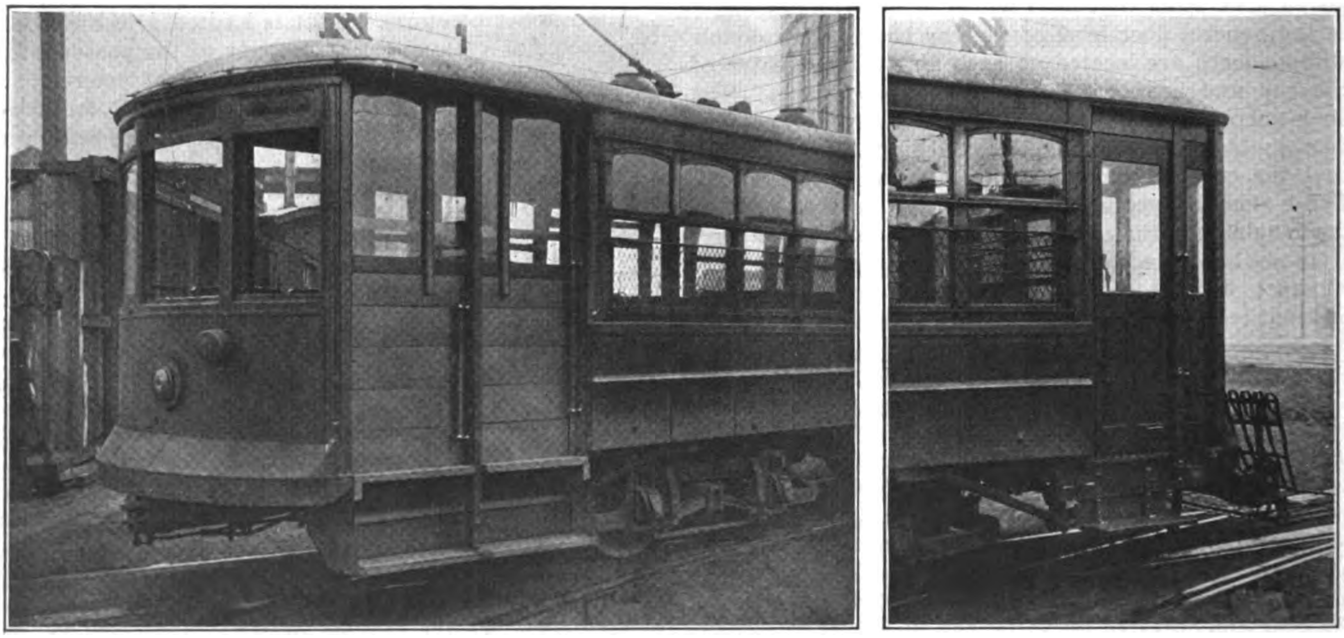
1. Take up and lay with new material forty-four permanent and twelve temporary cross-overs.
2. Take up and lay with new material seven permanent and one temporary Y layouts.
3. Change electric switches to adjoining tracks at nineteen different points.
4. Change position of eight derails.
5. Change spring switches.
6. Change elevation of certain portions of interurban tracks to permit of safe operation.
7. Change location of stations, shelters and platforms at thirteen points on double-tracked interurban lines.



CAR IN THE PROCESS OF CONVERSION. PLATFORM MUST BE CUT AWAY AND SUPPORT BENT TO ALLOW FOR STEPS. CHANGES ARE ALSO NECESSARY IN BULKHEAD DOORS

The permanent installations referred to above are in tracks constructed on paved streets, necessitating the pulling up of pavement, etc., and the relaying of this again following the track changes. The temporary installations mentioned are in tracks constructed on non-paved streets. The new track material and special work necessary to carry out the changes is now on order for delivery in December next. The installation, however, cannot be commenced until after the first of the year, when it will be proceeded with as speedily as possible. The estimated cost of track alterations that are necessary is $416,902.67.

Overhead.—The overhead changes in connection with this problem are by far the lightest part of the work and are estimated to cost $17,722. This covers cost of making all necessary changes to crossovers, electric switches, Ys, frogs, insulators, curves, &c., to permit of the efficient operation of the system with right-hand movement of traffic. Like the track changes, very little under this heading can be accomplished until after the change-over becomes effective.



ENTRANCE AND EXIT VIEWS OF THE BRITISH COLUMBIA CAR BEING RECONSTRUCTED

The view at the left shows the car fitted with right-hand doors. The boards shown are fastened so as to be easily removable when the change is made.

At the right, views of front end of car showing the good work of the master mechanic's department. Present left-hand door is still on the other side and will be taken off after change is made.

Rolling Stock.—Rolling stock changes constitute the major work and expense involved in this change-over and I know of no precedent by which we might be guided in carrying them out. There are 269 units to be changed over and made suitable for right-hand operation. These include 189 single-end cars, 73 double-end cars, 6 sweepers and 1 plow.

The above equipment comprises twenty different types of cars and each type requires special alterations suitable only to that particular class of car. The difficulties we have to meet in making the rolling stock changes will therefore readily be appreciated. Work has already commenced in making temporary alterations to Vancouver city cars and we expect by the end of the year to have practically all rolling stock units changed over in a temporary fashion ready for right-hand operation. These changes are being carried out with the least possible inconvenience to the traveling public and work is proceeding along the following lines:

Eight to ten cars at a time of a certain type are being brought into our Prior Street shops, located in Vancouver, where temporary alterations to front and rear vestibule are made as well as the installation of temporary steps on the right hand side of cars. The right hand side openings are then boarded up and the cars are put back into service. When the change-over is actually about to take place the services on all lines will be considerably reduced for a period of from one to four days, during which time the cars so released will be made suitable for right-hand use by removing the boards from the right hand side openings, above referred to, and tying up securely the gates or doors, of which all our cars are equipped, on the left-hand side. With this completed the cars will then be ready for service. When all units have been so changed it will be necessary systematically again to put all the cars through the shops, two or three at a time, when permanent alterations will be made, such as the installation of steps and gates or doors (to conform with government regulations), the installation of mechanism to operate same, as well as many other details too numerous to mention, but which can only be cared for after the change-over takes effect.

I estimate it will take approximately eighteen months or two years to put all the units through the shops and equip them permanently for right-hand operation in the same manner as they are at present equipped for left-hand operation.

The estimated cost of changing over our rolling stock units to conform with the change of the rule of the road is $498,773.

The above expenditures for the three items of track, overhead and rolling stock when summarized are as follows:

Track alterations	$416,902.67
Overhead work	17,722.00
Rolling stock	498,773.00
Total	$933,397.67

The above figures do not include indirect losses in revenue which the company is bound to suffer from one cause or another for months following the change becoming effective, nor does it take care of increased accident costs, which will undoubtedly be high and which it is impossible to estimate.

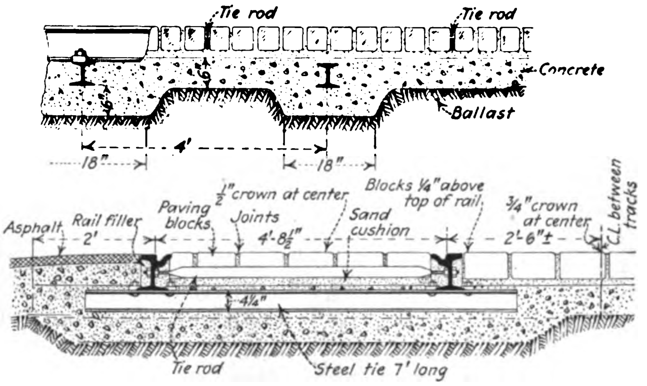
Of the total figure quoted above the provincial government has agreed to contribute $350,000.

Unusual Method of Raising Track

Expediency Is the Keynote of the Method Which Was Used in a Track Grade Change on Lafayette Avenue in the Borough of Brooklyn

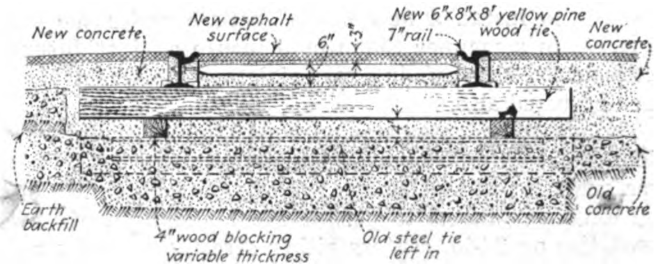
By R. C. Cram
Engineer of Surface Roadway Brooklyn (N. Y.) Rapid Transit Company

The city of New York recently decided to widen Lafayette Avenue in the Borough of Brooklyn for the purpose of providing better facilities for automobile traffic. The avenue is very popular for through traffic and is occupied by two street railway tracks for a distance of about 800 ft. between Fulton Street and Flatbush Avenue. The roadway of the street was widened about 10 ft. on each side by setting back the curbs and removing all sidewalk encroachments. Incidentally, a stairway leading to the elevated railroad structure on Fulton Street and two columns supporting the structure have been left as obstructions in the roadway outside the new curbs. A difference of opinion exists as to whether the railroad or the city should pay the cost of removing and relocating them.



SECTIONS OF TRACK IN LAFAYETTE AVENUE, BROOKLYN, BEFORE ADJUSTMENT TO NEW GRADE

The surface tracks in the street were built in 1907 and have been used principally as a relief line in rush hours and during blockades. As originally constructed the tracks were laid with 7-in. 114-lb. girder groove rail with Lorain electric bar-weld joints on Carnegie steel ties set in concrete and spaced 4 ft. on centers. Tie rods were spaced 4 ft. on centers between ties. The pavement between outer rails consisted of 6-in. granite blocks with cement grouted joints on a 1-in. sand cushion. The concrete track base or foundation was about 6 in. thick between ties and 12 in. thick at ties. The roadways were paved with sheet asphalt on a 6-in. concrete base in immediate contact with the outer rails.



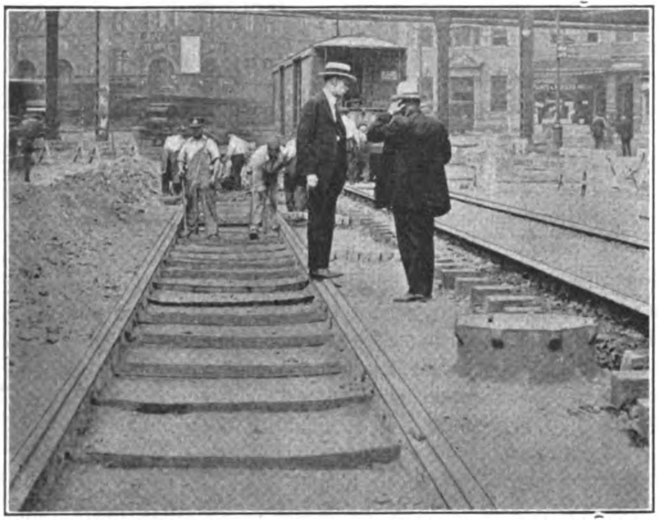
RAISED SURFACE TRACK CONSTRUCTION

The new width of the street called for a raise in the grade of the tracks ranging from 6 to 10 in. and running out to meet existing grades at each end of the work where connections are made with tracks in Fulton Street and in Flatbush Avenue. The railroad was confronted with the problem of how to raise the tracks in a minimum of time and expense as the contractor for the city was proceeding with his work and the railroad was very short of funds.

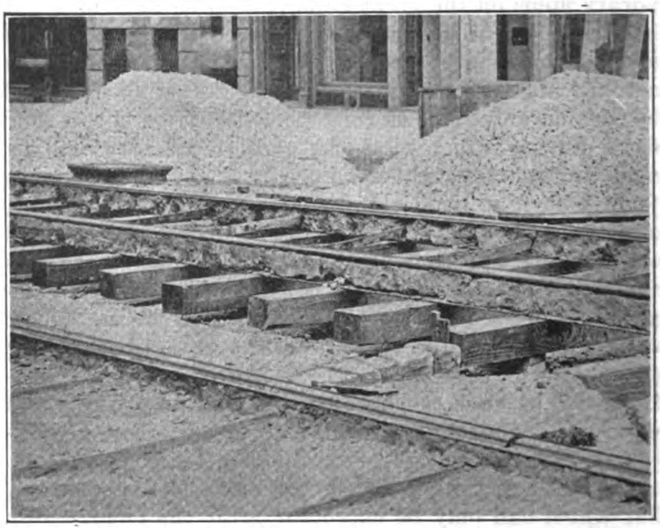
ADJUSTMENT AND REPLACEMENT OF ORIGINAL CONSTRUCTION TOO COSTLY

It appeared at first as though it would be necessary to break out the concrete track base, raise the steel ties and resurface the tracks to the new grades on new concrete, as in the original construction. Estimates indicated that this would not only be a costly procedure but also would require a great amount of time in order to permit a new concrete track base to set properly. This in turn would have put the tracks out of service too long and would have caused considerable delay to the city's part of the work.

It was also suggested that the entire old construction, concrete, ties, rails and pavement, might be raised bodily by jacking it up in convenient sections. This would have been a slow and expensive procedure, as it would have required extensive cutting of old concrete, and considerable doubt was felt as to whether it would have been possible to install a new bed of ballast under the old concrete in a manner that would insure against future settlement. Extra filling material for this would have been required also.



WORKING ON SECOND TRACK PRELIMINARY TO RAISING



ONE TRACK RAISED INTO POSITION ON WOODEN TIES

The method adopted was pursued after a careful consideration of the amount of grade change or lift. This was sufficient, except at the run-offs on each end meeting existing grades, to permit the installation of new wood ties on 30-in. centers either directly upon the old concrete track base or by blocking under the ties resting on the old base.

The original concrete which was under the old asphalt pavement in the 2-ft. strips outside of the outer rails was broken out by air drills operated from an air compressor car normally used for sand blast work in connection with cast welding operations. This was the only concrete which had to be removed as the city contractor had left it in place because it was below the subgrade of the new roadway pavement. Its removal was necessary because it prevented the installation of the new wood ties. The existing track pavement was removed by the city contractor.

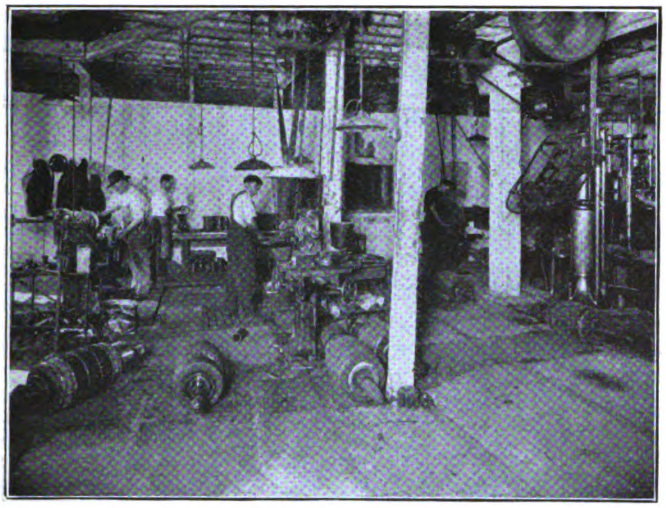
The removal of the pavement practically exposed the tie-clips and these were removed by cutting the hold-down nuts. The rails were jacked up and new wood ties installed, the old concrete base and steel ties being left in place.

After a fair stretch of track had been raised it was blocked to grade ready for installation of a new concrete base. The latter was then tamped under the new ties so as to transfer the bearing directly to the old track base. In the short stretches where full ties could not be installed near the run-off points, the top surfaces of the ties were adzed sufficiently to allow the rails to set down to grade and special shortened spikes were used to fasten the rails. At the run-off points in the grades the rails were simply blocked on the old wood ties, which fortunately were found here due to their use under the special trackwork at the ends of the job. It was unnecessary to disturb any original ties whatever, either wood or steel. The original tie rods were left in place.

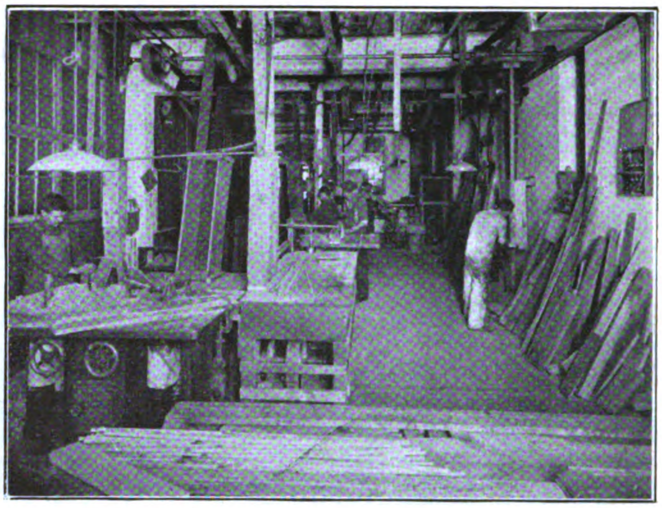
The city replaced the original granite pavement with sheet asphalt on concrete between the outer rails. Consequently the new concrete was brought up to within 3 in. of the tops of the rail heads. This in turn provides a new concrete base about 16 in. thick under the asphalt pavement surface between ties with the addition of another 6 in. in the old concrete track base, so there is a total of 21 in. of concrete. Wood blocking of variable thickness was used between the old and new ties and the intervening space was filled in with new concrete, the average thickness of the concrete being 4 in. All of the concrete work was done by the city contractor.

The bar-weld rail joints were found to be in perfect condition and bid fair to last during the remaining life of the track. Such of the steel ties as were exposed for examination were found to be in very good condition.

The accompanying views show the general features of the work. It is thought that this is the first time the procedure outlined has ever been undertaken. Only the work of raising the tracks and tamping concrete under the ties was done by the railroad company. This took a gang of sixteen men about ten days to complete at a cost of $0.52 per foot of single track for labor only. About 454 cu.yd. of new concrete was installed in the railroad area by the city contractor.



A CORNER OF THE MACHINE SHOP



THE WOODWORKING SHOP IS FULLY EQUIPPED

Providing a Repair Shop with Little Money

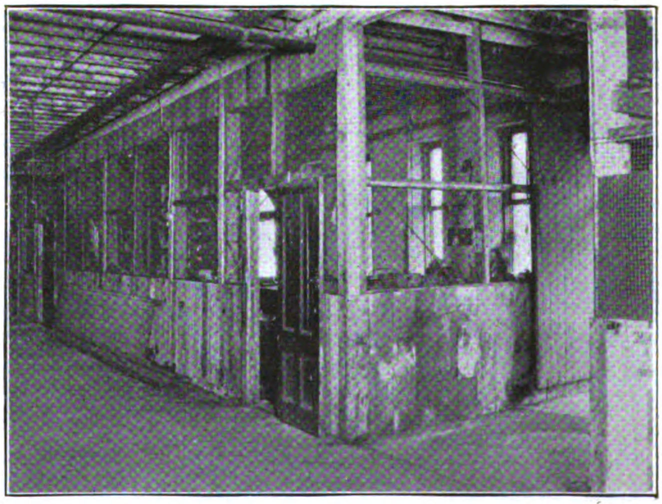
The Eighth Avenue Railroad of New York City Has Rearranged and Reconstructed Its Carhouse to Make a Repair Shop and to Give Better Facilities for Carrying on the Work

BY C. P. WESTLAKE
Supervisor of Equipment, Eighth Avenue Railroad, New York, N. Y.

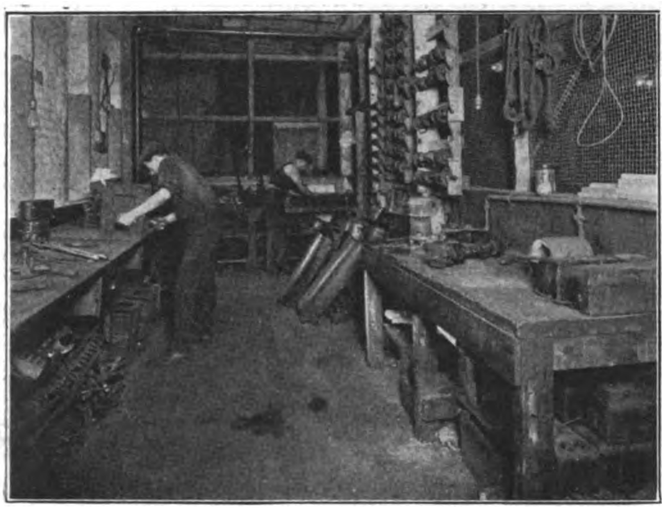
THE difficult problem of reconstructing an old carhouse to provide facilities for equipment maintenance and the adding of desirable improvements has received much attention for some time past by those in charge of this work for the Eighth Avenue Railroad, New York. The accompanying illustrations show some of the departments as arranged. The building at the corner of Eighth Avenue and Fiftieth Street, which is now being used for overhauling and maintenance repair work, was a combined carhouse and stable during horse-car days. The small openings originally at the head of stalls were entirely inadequate to give the necessary light for railway repair work, so these were enlarged and sash and glass were installed. Walls and partitions were added and changed and the various departments were located to provide an efficient routing of the work through the shop. Realizing that shop capacity is materially increased by an efficient grouping of departments and by the efficient arrangement of the equipment in each department, a special effort has been made to place departments and machines in the logical order that a piece of equipment will take when repaired. Thus the blacksmith shop, the welding room and the babbitting room follow each other in the order named. The armature repair department is adjacent to the machine shop and lathes in the machine shop used for turning commutators, and finishing shafts, bearings and banding armatures are placed nearest the armature room. A portable shop crane is used to handle the armatures from the armature room to the lathes. Passageways and aisles have been kept as wide as possible to give free movement and prevent blocking and delaying of material handling.

Believing that better work and more of it can be produced by eliminating interference and the distraction caused by doing too many kinds of work in one room, each department has been partitioned off and localized as much as possible. These partitions are closed from the floor to a height of about 3 ft. and above this wire netting is used. This arrangement gives efficient light-

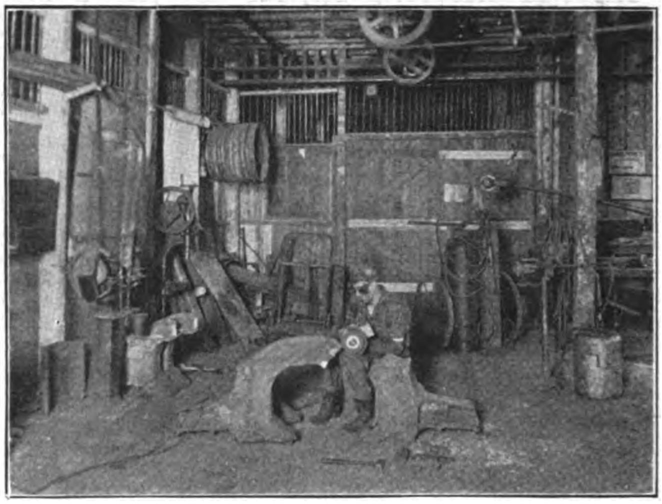
RACKS AND BINS ASSIST THE STOREKEEPER



PARTITION CONSTRUCTION USED FOR SEGREGATING DEPARTMENTS



THE CONTROLLER OVERHAULING DEPARTMENT



GRINDING A LARGE CASTING PRELIMINARY TO WELDING

ing and ventilation and permits ready inspection from the outside of the work being done. The various workmen like the privacy given by this arrangement and as each department can be locked it is unnecessary for the men to clean up and put away their tools at lunchtime or quitting time. They can continue their work right up to the moment of leaving and by locking the door to their department they are assured that there will be no interference during their absence.

Accompanying illustrations show the construction used and the interior arrangement of the controller repair department and the welding department. Benches are constructed along the walls in the controller department for carrying on the work. The bench in front of the windows is used for dismantling, repairing and reassembling of grid resistors and the various controller parts. A bench along the outside partition is provided with gas connections for heating solder and the soldering irons. A rack is also provided for the storage of controller drums. The bench at the end of the room is used for wiring and connection board repairs.

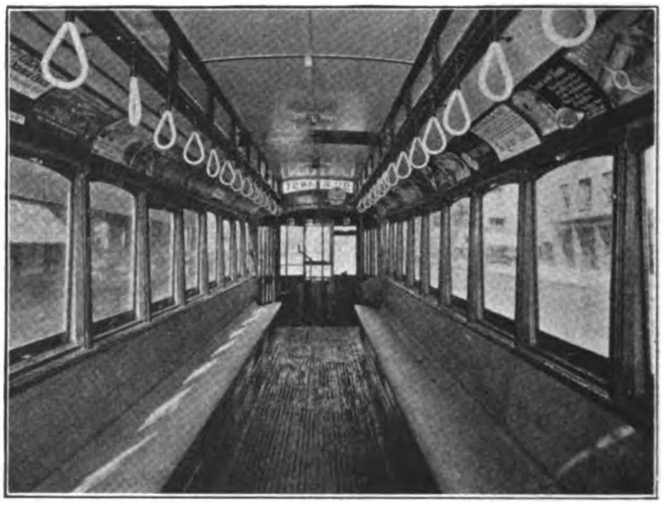
The equipment of the welding room includes machinery for assisting in welding repairs such as grinders and a small drill press, in addition to the oxyacetylene and electric welding equipment and preheating torches. The illustration of this department shows a workman grinding the broken edge of a box yoke for the underground conduit system preparatory to welding. A portable electric grinder has been found of great assistance for this class of repairs. This department has an outside door so that heavy castings can be handled directly from the street to the welding room.

Other departments which are provided with separate rooms include those for curtain and seat repairs, compressor overhauling, register and fare-box maintenance and the contact plow work.

HIGH CLASS WORK IS TURNED OUT

As an example of the type of repairs being made accompanying illustrations show one of the Ninth Avenue cars just after being remodeled and repainted. The seating arrangement of this car consists of longitudinal seats. These originally had carpet covering and this was changed to rattan. Before remodeling, the windows had shutters. These have been removed and curtains installed in their place. In order to give better illumination the ceiling has been white enameled and lights previously located on the platforms have been brought inside the car. A full equipment of sanitary hand straps has also been added. Originally a block destination and routing sign was used on top of the end hood. This has been removed and the end clearstory glass is lettered. This arrangement gives a brighter and more pronounced appearance for the car at night and is of assistance in decreasing the number of accidents. The car body, trucks and various equipment parts were given a thorough overhauling. Rotted posts and damaged panels were replaced and all parts put in serviceable condition.

EXTERIOR OF CAR FRESH FROM THE SHOP

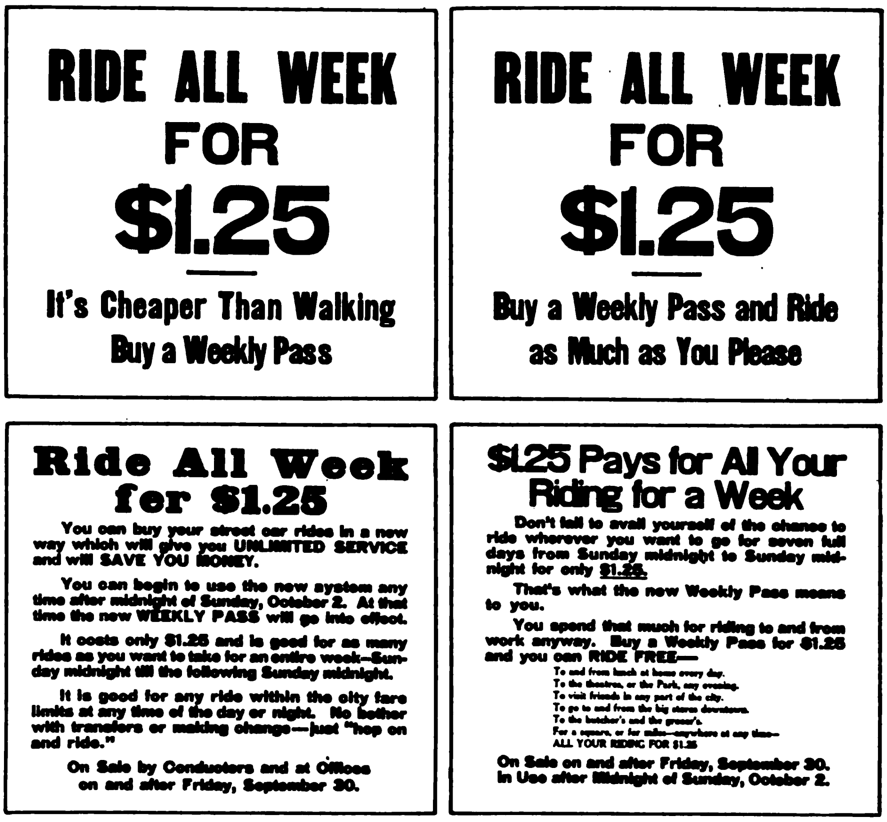


A BRIGHT, CLEAN INTERIOR ATTRACTS PASSENGERS

Selling the Ride at Youngstown

How the Youngstown Municipal Railway Used the Inauguration of a Weekly Pass to Cultivate the Good Will of the Public Through Greater Usefulness—An Account of the Publicity Campaign Is Presented

A GREAT deal is being said and written nowadays on the subject of "Selling the Ride." A street car ride in itself generally is not a novelty. Hence the best opportunity for a sales campaign must lie either in the introduction of new rolling stock or some novel departure in the rate of fare. In the case of the Youngstown Municipal Railway, the sales campaign hereinafter described was based upon the trying out by the company of the unlimited-ride, transferable weekly pass first used at Racine, Wis. (See ELECTRIC RAILWAY JOURNAL, Jan. 3, 1920, and Aug. 6, 1921.) The present article will deal only with the selling arguments used at Youngstown and not with the technical aspects of the pass. The intention is simply to show what opportunities lie open to an electric railway when it pushes any plan of securing more revenue from a larger rather than a smaller number of riders.



RIDE ALL WEEK
FOR
$1.25

It's Cheaper Than Walking
Buy a Weekly Pass

RIDE ALL WEEK
FOR
$1.25

Buy a Weekly Pass and Ride
as Much as You Please

Ride All Week for $1.25

You can buy your street car rides in a new way which will give you UNLIMITED SERVICE and will SAVE YOU MONEY.

You can begin to use the new system any time after midnight of Sunday, October 2. At that time the new WEEKLY PASS will go into effect.

It costs only $1.25 and is good for as many rides as you want to take for an entire week—Sunday midnight till the following Sunday midnight.

It is good for any ride within the city fare limits at any time of the day or night. No bother with transfers or making change—just "hop on and ride."

On Sale by Conductors and at Offices
on and after Friday, September 30.

$1.25 Pays for Al Your Riding for a Week

Don't fail to avail yourself of the chance to ride wherever you want to go for seven full days from Sunday midnight to Sunday midnight for only $1.25.

That's what the new Weekly Pass means to you.

You spend that much for riding to and from work anyway. Buy a Weekly Pass for $1.25 and you can RIDE FREE—

To and from lunch at home every day.
To the theatres, or the Park, any evening.
To visit friends in any part of the city.
To go to and from the big stores downtown.
To the butcher's and the grocer's.
For a square, or for miles—anywhere at any time—
ALL YOUR RIDING FOR $1.25

On Sale on and after Friday, September 30.
In Use after Midnight of Sunday, October 2.

FRONT AND BACK OF WINDOW CARDS ADVERTISING UNLIMITED RIDE—WEEKLY PASS. THE LARGER TYPE FACES THE STREET, WHERE IT CAN BE READ BY WALKER AND AUTOMOBILE RIDER

TWO-FACED CAR WINDOW CARDS EXCEPTIONALLY EFFECTIVE

The Youngstown Municipal Railway, while forming a part of the Pennsylvania-Ohio Electric Company, of which G. T. Seely is general manager, is segregated from the rest of the system by a service-at-cost agreement with the city of Youngstown. It was therefore necessary first to sell the City Council on the idea. During September the Council passed a resolution granting the Youngstown Municipal Railway the right to put on such a pass at $1.25 each for a period of eight weeks with the option of continuing it thereafter if found satisfactory.

The pass was to become effective Monday, Oct. 3, but the advertising campaign began two weeks ahead. During the first week of the pre-pass period the company's publicity, aside from some news items, was confined to double-faced window cards, one on each side of the center window of every car. The side of the poster facing the walker, the jitney customer and the automobilist carried in circus-size type the continued slogan "Ride All Week for $1.25," followed by these two lines in somewhat smaller type: "It's Cheaper Than Walking—Buy a Weekly Pass." This may seem as plain as the proverbial pikestaff, yet it is a fact that some people read the slogan in the light of their regular traveling habits and had the notion that the pass covered only two rides a day six days in the week.

This fact is mentioned to stress the fact that repetition of explanations is a large factor in advertising to a miscellaneous public.

The inner side of the first window card, being readable by most of the passengers in the car, carried a more elaborate message, headed: "$1.25 Pays for All Your Riding for a Week," as reproduced on this page. This told the rider the exact time limits within which the pass is good, although there is actually some grace on Sunday night late runs ending Monday morning, and it suggested a number of ways for which the extra non-rush riding could be taken, such as luncheon, theaters, parks, tradesmen, social visits, short or long ride, etc.

It is a fact that these two-faced cards created a lot of comment and had many people "guessing" in the most approved manner of the advertising expert. Later window cards followed the same scheme of a short, poster-type message to the outsider and a more extended story to the insider. Thus, the second poster read: "Ride All Week for $1.25; Buy a Weekly Pass and Ride as Much as You Please," while the new note on the inner face was to the effect that a pass rider had: "No bother with transfers or making change; just 'hop' on and ride," the remainder of the text being as reproduced.

A third poster carried the outside message: "Ride All Week for $1.25—Passes Now on Sale—In Use from Monday, Oct. 3," the inside story detailing some of the ways in which the pass could be used to add to the patron's pleasure or to save his or her time. Once the pass was actually on sale three days before Oct. 3, a new window card announced: "Buy Your Pass Today —Ride All Week for $1.25—Use Starts Monday, Oct. 3," with the usual elaboration for passengers within the car.

These window cards were varied not only in text but in color. Thus three different shades were used for the first four, so that the public could see out of the corner of its eye that there was a new message to read.

While the car cards were both effective and economical, they did not reach with any detailed explanation those people who were not riding the cars or the many Youngstowners to whom English is still a puzzle. For these classes a series of newspaper advertisements was prepared, each carrying the slogan "Ride All Week for $1.25," but with different text for each day of the week immediately preceding the pass and for the Monday on which the pass was inaugurated. The display type and make-up of each advertisement were also varied, including box heads to summarize the principal features of the pass and reproductions of the face of the pass. As some of these are reproduced, it will be unnecessary to quote the text at length. The one for Thursday, Sept. 29, is presented, however, as showing that the principal department stores of the city had agreed to put the pass on sale during the inaugural period and also as detailing how different classes of the community could use this form of transportation to advantage.

Quarter-page (approximately) announcements were used the first few days, the space being cut down as the message was driven home. On Sunday, Oct. 2, people were asked to "Buy yours today as you go to church," although this pass would not be available until the following Sunday. It may be remarked, parenthetically, that the use of the pass for this purpose is reported by local divines to have had a stimulating effect on their attendance figures! The final newspaper advertisement in English, appropriately headed, "It's Not Too Late," appeared on Monday, Oct. 3, the day the pass began working. It contained an acrostic as follows:

to and from work,
R home to lunch every day,
to the stores to shop as often as you wish,
I to the theaters and moving pictures,
to the night school or the "gym,"
D to visit friends in any part of the city,
to market, to the grocer's, to the baker's.
E back to the office for a bit of night work,
where you please, when you please.

In addition to the newspaper advertisements, there were several articles about the pass and its value from the standpoint of giving to the public the fullest possible use of the electric railway's facilities. It was declared in these articles that the company's ideal was the full seat and the empty sidewalk, and emphasis was placed upon the fact that while the railway is overloaded for a couple of hours a day it has more than enough service for the rest of the service periods. The articles made clear that while it was out of the question to cut rush-hour fares, something could be done for those who were willing to patronize the road for short rides or during the many light hours.

A like line of advertising and reading copy was prepared for the foreign language weeklies and labor papers. The foreign matter was printed in Italian, Rumanian, Hungarian and Slovenian and undoubtedly helped to increase good will among classes which had been prone to patronize the jitney. This copy was run but once or twice to the extent of quarter pages.

It is a rather interesting fact that the revenue of the Youngstown Municipal Railway showed a pleasing increase during the week that advertising was most exten-

Move to the Movies

No Carfare to Pay

WITH THAT

$1.25 Weekly Pass

Any Car
Is Your Car
With That
Weekly Pass
$1.25

SHOP
When You Want
Where You Want
ON THAT WEEKLY
PASS-$1.25

Passes Save Many Steps

They are proving a great convenience to many car riders, who can ride where they want and when they want, with no additional fare to pay.

"Formerly I never want home to lunch", said one man. "Now I use a pass and go home to lunch nearly every day. It costs me nothing for the extra rides."

"I forgot my magazines and papers the other evening", said another, "and I wanted to read. I used my pass to go down town and soon was back with reading matter to spend a pleasant evening."

If you have not joined the Unlimited Ride Club, buy a Weekly Pass for $1.25 and "hop on" a car whenever you like.

Face to Face Shopping Whether for Silks or Cabbages, Is Best

Use your Weekly Street Railway Pass to go frequently to the stores—to the markets—to the butcher's, the grocer's, the baker's. See for yourself what you want to buy. Help out down costs by carrying home your purchases.

Shop when you want, where you want, without walking or telephoning by using your Weekly Pass.

Board any car, at any time, at any stop for any ride without paying fare by simply showing the conductor your Weekly Pass.

NO BOTHER ABOUT A PASS

WHEN you use a $1.25 Weekly Street Railway Pass you save yourself all the bother of making change, of handling transfers and the like every time you ride. Just show the pass to the conductor—that's all there is to it.

Use it as often as you like in the week. Send that boy or girl on an errand with it. Go where you like in the afternoon or evening. Ride to the football game on Saturday afternoon.

Then as the week for the pass draws to a close, use it for the best purpose of all—to ride to church and Sunday school. It is good for you to go to church and the Weekly Pass is good to take you there.

Ride All Week For $1.25

ON THIS AND THE OPPOSITE PAGE ARE GIVEN SEVERAL EXAMPLES OF THE WINDOW CARDS, BOTH OF WHOSE SIDES WERE USED TO SELL THE IDEA OF THE WEEKLY PASS sive and before the actual use of the pass, which suggests that this publicity may have played a part in promoting riding.

TALKING TO THE BUSINESS MEN INDIVIDUALLY AND EN MASSE

Publicity for the pass was by no means limited to the printed word. The co-operation of influential elements of the community having a direct interest in more riding was also sought and obtained. Calls were made on the proprietors or managers of the larger department stores. It was explained to them that the new form of transportation was based upon inducing people to do more riding during the non-rush hours. Anything that brought the women out of their homes down to their stores deserved their encouragement. They were keen to see the point and were ready to listen further and help. As a result, all the stores called upon placed the passes on sale at a prominent desk during the initial period and some went so far as to give part of their advertising space to selling notices in the style of the Liberty Loan days.

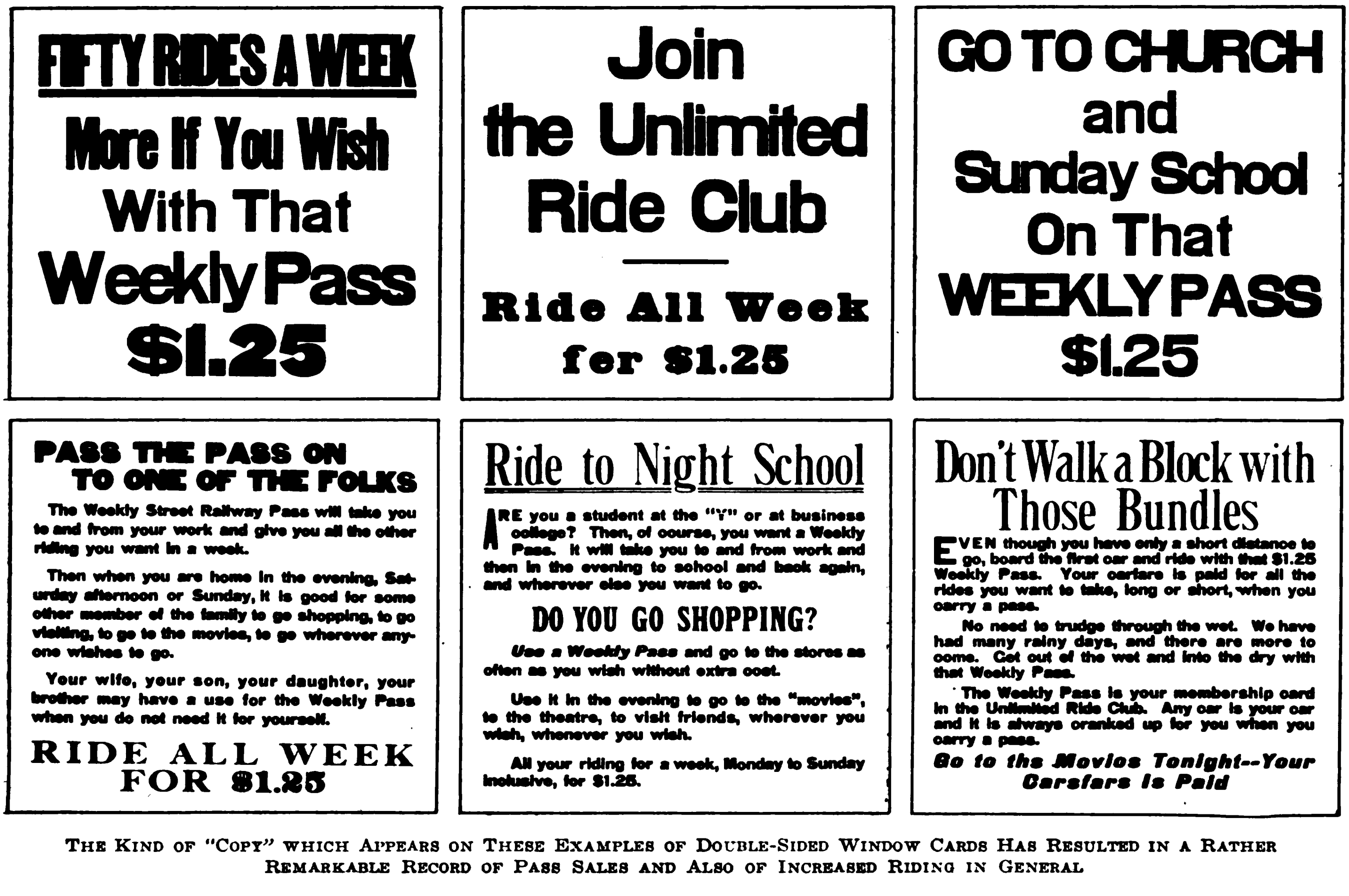
Late in the afternoons and evenings most of the moving picture houses and theaters were visited. Some of these had recently been obliged to cut the cost of their entertainments to as low as 10 cents, and even better-grade houses were on a 22-cent and 33-cent basis. It can readily be seen, therefore, that a 9-cent cash or 8⅓-cent ticket fare on the cars would appear out of proportion to the average person. With a pass, the cost of seeing the shows would be reduced to nothing, or, at any rate, the pass-holder with a companion would have to pay but one round-trip fare instead of two.

Several of the theatrical men interviewed offered to place passes on sale, but this was not considered desirable as there were no facilities for carrying on a large sale through outside agencies. It was explained that, except for the introductory sales by the larger stores, passes would be sold only by conductors and at the company's main downtown waiting room. All that was asked of the moving picture men was the display of a slide with a few catchwords to the effect that the holder of an unlimited-ride weekly pass could see the next show without paying fare or send one of the family down on the pass if he did not come again himself.

Calls were also made upon the directors of the Y. M. C. A. and the Y. W. C. A. The night schools of these organizations are attended by several hundred young people who can ill afford to pay an extra set of fares in the evening. It follows that many walk, so tiring themselves or losing time at best. As possessors of a pass they would save time coming and going, and they can, as the Y. M. C. A. director suggested for a poster slogan, "Take their exercise in the 'gym.'" At both buildings passes were sold during the introductory period.

Finally, permission was granted to address the Kiwanis Club on this subject. The relationship which increased riding bears to greater local prosperity was emphasized. The point was made that the local management was willing to try a plan for getting more revenue from a larger number of satisfied instead of from a smaller number of dissatisfied customers, and that this was after all an endeavor to apply correct selling principles in offering a reduction to the customer who paid in advance, purchased in wholesale quantities and used the product largely at a time when it would otherwise go to waste.

It was, of course, essential that the men who sell the ride directly—conductor and motorman—should understand the company's purpose in trying the pass. Knowledge of human nature also made it desirable to show in how many ways the conductor's work would be simplified



FIFTY RIDES A WEEK
More If You Wish
With That
Weekly Pass
$1.25

Join
the Unlimited
Ride Club
Ride All Week
for $1.25

GO TO CHURCH
and
Sunday School
On That
WEEKLY PASS
$1.25

PASS THE PASS ON
TO ONE OF THE FOLKS

The Weekly Street Railway Pass will take you to and from your work and give you all the other riding you want in a week.

Then when you are home in the evening, Saturday afternoon or Sunday, it is good for some other member of the family to go shopping, to go visiting, to go to the movies, to go wherever anyone wishes to go.

Your wife, your son, your daughter, your brother may have a use for the Weekly Pass when you do not need it for yourself.

RIDE ALL WEEK
FOR $1.25

Ride to Night School

ARE you a student at the "Y" or at business college? Then, of course, you want a Weekly Pass. It will take you to and from work and then in the evening to school and back again, and wherever else you want to go.

DO YOU GO SHOPPING?

Use a Weekly Pass and go to the stores as often as you wish without extra cost.

Use it in the evening to go to the "movies", to the theatre, to visit friends, wherever you wish, whenever you wish.

All your riding for a week, Monday to Sunday inclusive, for $1.25.

Don't Walk a Block with
Those Bundles

EVEN though you have only a short distance to go, board the first car and ride with that $1.25 Weekly Pass. Your carfare is paid for all the rides you want to take, long or short, when you carry a pass.

No need to trudge through the wet. We have had many rainy days, and there are more to come. Get out of the wet and into the dry with that Weekly Pass.

The Weekly Pass is your membership card in the Unlimited Ride Club. Any car is your car and it is always cranked up for you when you carry a pass.

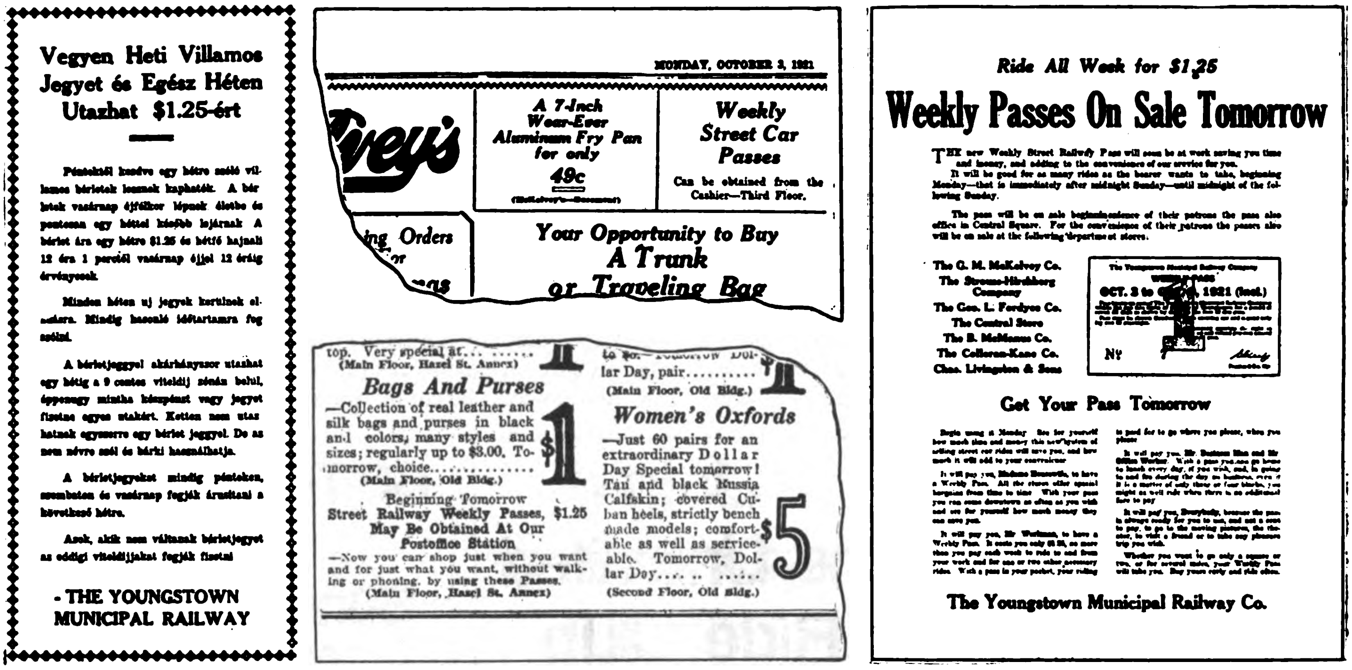
Go to the Movies Tonight--Your Carfare Is Paid

THE KIND OF "COPY" WHICH APPEARS ON THESE EXAMPLES OF DOUBLE-SIDED WINDOW CARDS HAS RESULTED IN A RATHER REMARKABLE RECORD OF PASS SALES AND ALSO OF INCREASED RIDING IN GENERAL and schedules improved by a plan that eliminated so much making of change and issuing of transfers. The company might have tried several other ways, it was explained at the meetings, but this had been favored because it had so many elements that should also appeal to the platform man. Much interest was shown at these sessions, a number of the men asking searching questions or offering valuable suggestions with regard to identification of the pass from week to week, etc. There was evident appreciation of the fact that they had been taken into the management's confidence on the matter instead of being left to guess for themselves what the innovation meant to them and to their patrons.

In the preparation of articles and advertisements featuring the pass Walter Jackson co-operated with Frank Wert, the company's director of public relations, and gave talks to the townspeople and platform men.

As with the merchant, who finds new arguments for the same goods year in and year out, so the electric railway can vary its appeal, too. In connection with the pass there have been prepared a variety of slogans suitable to the different seasons of the year and carrying no more words than enough to make an effective window card, dasher poster, newspaper box head or the like. The Youngstown Municipal Railway has already made use of several in connection with earlier copy and expects to run others from time to time. Of course, many opportunities will arise for making up a slogan on the spur of the moment, as in suggesting: "Go to the Circus on Your Pass."

So far as practical results from the pass are concerned, it is held to be too soon to quote detail figures. However, it is encouraging to learn that comparing the first three weeks of the pass with the three weeks preceding, the rate of increase in revenue on the lines within Youngstown was more than twice as great as on the city lines outside Youngstown, on which no passes are sold, although industrial conditions on these outside lines were at least as good as within the city.



Vegyen Heti Villamos Jegyet és Egész Héten Utazhat $1.25-ért

- THE YOUNGSTOWN MUNICIPAL RAILWAY

MONDAY, OCTOBER 3, 1921

A 7-Inch Wear-Ever Aluminum Fry Pan for only 49c

Weekly Street Car Passes

Can be obtained from the Cashier—Third Floor.

Your Opportunity to Buy A Trunk or Traveling Bag

top. Very special at............ $1
(Main Floor, Hazel St. Annex)

Bags And Purses

—Collection of real leather and silk bags and purses in black and colors; many styles and sizes; regularly up to $3.00. Tomorrow, choice.................. $1
(Main Floor, Old Bldg.)

Beginning Tomorrow
Street Railway Weekly Passes, $1.25
May Be Obtained At Our
Postoffice Station

—Now you can shop just when you want and for just what you want, without walking or phoning, by using these Passes.
(Main Floor, Hazel St. Annex)

lar Day, pair.......... $1
(Main Floor, Old Bldg.)

Women's Oxfords

—Just 60 pairs for an extraordinary Dollar Day Special tomorrow! Tan and black Russia Calfskin; covered Cuban heels, strictly bench made models; comfortable as well as serviceable. Tomorrow, Dollar Day.......... $5
(Second Floor, Old Bldg.)

Ride All Week for $1.25

Weekly Passes On Sale Tomorrow

The G. M. McKelvey Co.
The Strouss-Hirshberg Company
The Geo. L. Fordyce Co.
The Central Store
The B. McManus Co.
The Colleran-Kane Co.
Chas. Livingston & Sons

OCT. 3 to 1921 (Incl.)

Get Your Pass Tomorrow

The Youngstown Municipal Railway Co.

VARIOUS FORMS OF PUBLICITY ADVERTISING THE PASS

In center, portions clipped from advertisements of dry goods houses, used in Youngstown showing free space given to the pass. At left, newspaper advertisement of the railway company, which was published the Thursday preceding the first week in which the pass was sold. It includes a reproduction of the ticket and the names of the principal stores in the city at which it was being sold. At right, one of the persuasive advertisements prepared by Frank Wert, director of public relations.

New Station on Chicago Elevated

TO PROVIDE for a new station at Grand Avenue on the Franklin Street line of the Northwestern Elevated Railroad, Chicago, it was necessary, says *Engineering News-Record,* to raise the rail level 5 ft. and to replace the original deck span across Grand Avenue by a through span with shallow floor in order to obtain headroom for placing the station under the structure and with a clearance of 14 ft. above the street. This change in elevation involved changing the profile for a distance of about 1,100 ft., so that instead of being level it has grades of 1.2 per cent, with the track level through the station.

All the work of raising the structure was done during the daytime and without interference to traffic of the elevated lines or in the street, except that the timber bents blocked the sides of the roadway. The work of jacking began at both ends and was carried out on one bent at a time, with an average lift of 2 in. at each operation. The total lifts for each cross girder was chalked upon the column and no girder was raised more than 2 in. at a time.

As fast as the jacking proceeded the cribbing was built up and wedged tightly under the column base and the timber bent, thus keeping the structure in proper alignment and in stable condition. For additional lateral support to the structure heavy timber inclined braces were set near the cross girder in alternate spans, with their lower ends butted against blocking made along the face of the curb and their heads to fit the bottom cords of the longitudinal girders. In lifting about thirty men were employed to work on the jacks and to build up the cribs and wedging. A day's work averaged an aggregate lift of 6 ft. and the lifting occupied about twelve working days. Lengthening of the columns was effected in most places by removing the old column footing or shoe and splicing on a new bottom section which fitted into the old shoe.

Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Auger Attached to Motor Truck

Earth Boring Machine on Motor Truck Speeds Up Line Construction—Driver Operates Mechanism From His Seat on the Truck

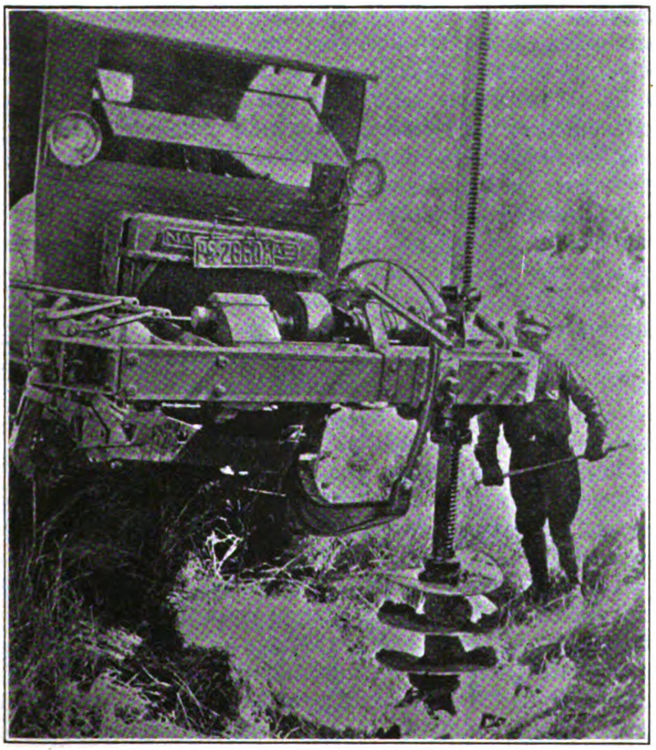
AN AUGER suitable for boring in earth, attached to a motor truck and driven by the truck engine, has been used with good results in California, according to the Pacific Telephone & Telegraph Company, which has four of them in service. The device weighs about 1,800 lb. and can be dismounted in a few hours so the truck can be released for other uses. It makes holes 22 in. in diameter and under average soil conditions can bore a 6-ft. hole in seven minutes.

The device is mounted on the front end of the chassis, preferably on a truck having four-wheel drive, as it is sometimes desirable to traverse plowed fields, irrigation ditches, etc. The auger consists of two replaceable cutting edges, placed at about the same angle used in standard drills, and is driven by a shaft from the power take-off in the truck transmission. In a truck having four speeds and a reverse this arrangement makes it possible to adapt the speed of the auger to soils of different nature, such as adobe, clay, sand, hardpan, etc. A wide range of auger speeds has been found highly desirable. In hardpan, for example, the auger must be turned slowly to prevent the edges from being burned.

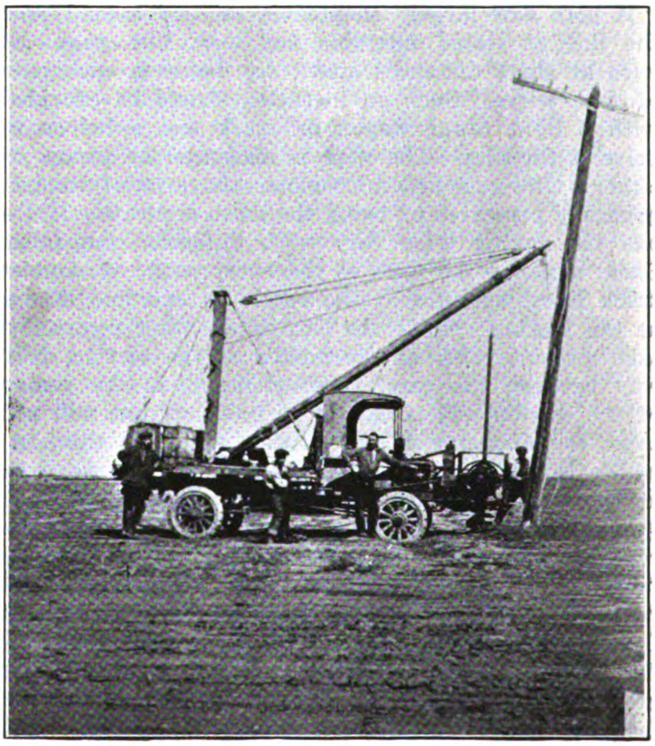
The mounting of the boring machine is such that it is possible to bore a vertical hole with the truck standing on any grade it can climb; it is also possible to bore holes at any angle up to 45 deg. when the truck is on the level. The auger is located on the left-hand side of the truck where it is in plain view of the driver. The controls are within easy reach of the driver's seat so he can operate them without changing his position.

When ready for operation the point of the auger is spotted on the surveyor's stake, the truck brakes are set, the compound gear of the truck is shifted into neutral and then the clutch on the earth boring machine is let in gently. The auger feed is either by hand or by gravity. The former, which is used chiefly on inclined holes, is effected by means of a rack on the auger shaft and pinion operated by hand lever. When the auger has buried itself a second clutch lifts it until the lower side of the auger is clear of the ground, when it is turned at a high rate of speed to discharge its load and throw the soil clear of the hole by centrifugal force.

A feature of the auger gearing is that in case of any sudden resistance, such as would be caused by striking a hidden obstruction under the soil, the auger feed is automatically reversed, thus raising the auger and avoiding injury to the mechanism. An improvement added after considerable experiment is an earth-retain-



AUGER BORING POST HOLE



DROPPING POLE INTO POSITION

ing gate which prevents earth from falling off the auger into the hole while it is being raised.

To further carry out the idea of keeping the manual labor of pole setting down to a minimum, a swinging boom derrick was mounted on the truck body with the hoisting line operated by a small power-driven winch. This power is likewise supplied by the truck engine and is controlled by levers within reach of the driver's seat.

Both the boring device and the derrick equipment have been adapted to this service by J. B. Spowart of the telephone company.

Gaging Trolley Wire for Renewal

The Percentage of Original Area that Can Be Considered Safe for Further Service Can Best Be Determined by Accurate Measurements with Either a Wire Gage or a Micrometer at Frequent Intervals

By G. H. McKelway

Engineer Distribution Brooklyn (N. Y.) Rapid Transit Company

UNTIL recently the time for trolley wire renewal was determined by the number of breaks occurring. Old wire was taken down and new wire run in whenever the number of breaks in any portion appeared to be excessive, and as often no records were kept of the number of breaks that had occurred in any particular section, it was the custom to send a man over the line to count the number of splices between the designated points. Such an inspector would observe, from the street, the apparent diameter of the trolley wire and report places where it seemed to be thin enough to warrant renewal, even if a sufficient number of breaks had not already occurred in it. Other reasons for renewing the wire were obtained from the reports of the crews maintaining it, while occasionally a renewal would be made principally because the superintendent, manager, or engineer believed that the wire had been in the air long enough and must therefore be badly worn.

A plan now largely adopted is to send a man over the line at stated intervals and have him gage the wire at short distances apart, say between each pair of span wires. Such an inspector should be provided with a light tower wagon or truck and a helper to drive it for him. The wire is measured by means of either a wire gage or a micrometer, the latter of which is generally preferred as being the more accurate. Methods for gaging wire vary with different companies. Some measure the wire at the ears, some, on double-track lines, measure at the receiving end and others at the leaving end of the ear, while other companies take measurements at the middle of the section, half way between the ears. Measurements in the center of the section will be the more uniform, but will not show the diameter of the wire where it is thinnest, which is really the information wanted, as the area at the bad spots and not the average area is what should decide as to whether or not the wire should be renewed. On lines where the suspension of the wire is "soft" or springy and where there are no very hard spots, as with catenary construction, especially where the hangers have long loops, and under slack spans on the ordinary trolley construction, there will not be a great deal of difference in the measurements taken at the ears or out in the center of the section. But where the support is rigid, such as is found under tight spans, bracket arms, or, worst of all, trough work, the difference in dimensions will be very noticeable, and especially so where short heavy ears are used. In such cases it is well not only to make the measurements at the ears but also to take off an ear occasionally and measure the wire directly under it, as it is there that the worst pounding occurs.

Another point on which there is as yet no unanimity of opinion is the amount of wear that a wire can undergo and yet be left up with safety. Some companies renew the wire when it has become worn down below a certain percentage of its original diameter, while other companies renew when the wire has been reduced to certain diameters, which may not have any relation to the percentage of the original size, although, of course, percentage and diameter can easily be made to be equivalent to each other. The matter is still further complicated as not only all companies do not agree upon a certain percentage of wear or limiting diameter of wire but the same company often has different diameters or percentages for different sizes of wire or for different lines having the same size of wire but on which there is a difference in the number or size of the cars operated. On an important line the operating department will be much less patient with delays caused by broken trolley wires than on some little-used line, and, because of the greater number of cars on the important line, such delays occur there with much greater frequency.

RELATION OF AREA AND DIAMETER FOR WORN TROLLEY WIRE

Area Sq.In.	Diameter	Per Cent Diameter	Per Cent Area
No. 0 Wire			
0.830	0.325	100	100
0.792	0.309	95	95.5
0.748	0.292	90	90.1
0.682	0.276	85	83.2
0.640	0.260	80	77.2
0.588	0.244	75	70.8
0.538	0.227	70	64.8
0.487	0.211	65	58.7
0.437	0.195	60	52.7
0.385	0.179	55	46.4
No. 00 Wire			
1.046	0.365	100	100
1.013	0.347	95	96.8
0.951	0.329	90	90.9
0.887	0.310	85	84.8
0.824	0.292	80	78.8
0.752	0.274	75	71.9
0.685	0.256	70	65.5
0.625	0.237	65	59.8
0.562	0.219	60	53.7
0.500	0.201	55	47.6
No. 000 Wire			
1.320	0.410	100	100
1.270	0.389	95	96.2
1.195	0.369	90	90.5
1.110	0.348	85	84.1
1.026	0.328	80	77.8
0.945	0.307	75	71.6
0.860	0.287	70	65.1
0.787	0.267	65	59.6
0.704	0.246	60	53.3
0.619	0.226	55	46.9
No. 0000 Wire (Grooved)			
1.662	0.482	100	100
1.571	0.458	95	94.5
1.463	0.434	90	88.0
1.355	0.410	85	81.5
1.238	0.384	80	74.5
1.138	0.362	75	68.5
1.022	0.337	70	61.5
0.904	0.313	65	54.4
0.808	0.289	60	48.6

As a rule the size of the wire will vary with the importance of the line, so that probably the percentage of area, rather than the percentage of diameter, would be the safest way of determining when the wire should be renewed. The percentage of area that it will be found safe to use will not always be the same, but will depend upon the composition of the wire. Hard drawn copper wire is much softer and weaker at its center than at the outside, and will therefore weaken much more, when the outer skin has been worn off, than will a wire having the copper alloyed with some other metal to increase its strength and toughness. Again, hard drawn copper will become annealed by being heated by the current passing through it, something that will not affect an alloyed wire.

The area of the wire does not vary directly with the diameter, although very often statements will be found where it would appear that some one has based his figures on the length of life of a wire on the decrease per year in its diameter and not its section, and upon the supposition that the diameter will lessen by an equal amount each year until the wire becomes so badly worn as to require renewal. However, the diameter and the area of round, not grooved, wire will remain much more nearly in proportion than would be expected by any one approaching the subject in a purely mathematical manner, because the bottom of the wire will not be worn away to a flat surface as might be supposed, but instead this surface will be curved, being influenced by the shape of the groove of the trolley wheel but not, by any means, conforming to it.

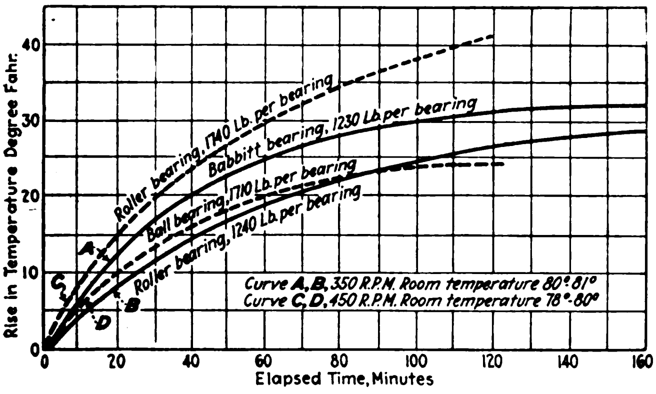
In order to arrive at the true section of trolley wire tests were made by taking sections through a large number of pieces of worn wire, these sections were plotted out to a larger scale and the actual areas found by going over the enlarged drawings with a planimeter. The results as found are given in the accompanying table, and as the writer has never seen similar figures given anywhere they may be of some assistance to others in working out the problem of when to renew wire.

Some Service Results of Ball Bearings

An Outline of Results Which Have Been Obtained With Ball Bearings for Motors of Safety Cars Operated by the Staten Island Midland Railway

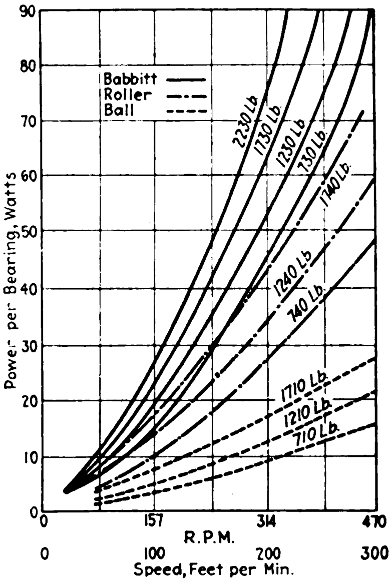
By Charles T. Perry
Electrical Engineer Department of Plant and Structures, City of New York

THE Department of Plant and Structures, city of New York, which operates the Staten Island Midland Railway, has 152 sets of ball bearings on G.E. Type 258 motors operating over exceptionally bad track and very severe conditions. This equipment has been in service twenty-four hours per day for the past ten months. During this time there has been but one ball bearing failure. This failure was due to poor lubrication, caused by a crushed grease pipe connection. Out of 320 sleeve bearings that are operating under the same conditions, there have been no less than fourteen bearing failures; four of these caused extensive damage to armatures and fields.



RISE IN TEMPERATURE FOR BABBITT, ROLLER AND BALL BEARINGS

The lubrication of the sleeve bearings is not only more expensive but also less efficient than that of the ball bearings. The cause of failures in nearly all ball bearings is due to improper lubrication and care; this, of course, is assuming that the original design and construction was what it should be. Lubricants for ball bearings must be selected with care and should be free from any acids which might etch and roughen the surfaces of balls and journals. A good grease forced into the ball casing with a powerful grease gun is the best method of lubrication for railway motor ball bearings.



COMPARISON OF POWER CONSUMED BY FRICTION IN BABBITT, ROLLER AND BALL BEARINGS

The use of ball bearing for motors has many other advantages aside from a reduced lubricating and repair cost. Some of these advantages are: (1) Less power is required on account of the reduced coefficient of friction; (2) the friction of a ball bearing is independent of the viscosity of a lubricant or its temperature; (3) labor necessary to scrape and fit bearings is eliminated; (4) there is less danger of heating and seizing; (5) they are self-adjusting to shaft deflections within reasonable limits; (6) there is a reduction in armature and field repairs; (7) the starting friction of ball bearings is very low, hence there is a gain in power when most needed during the acceleration period; (8) ball bearings are well adapted to both thrust and radial load.

Tests for efficiency which have been made show a saving of from 35 per cent to 70 per cent of the total bearing friction gained by the use of ball bearings instead of the sleeve type. The carrying capacity of a ball bearing is directly proportional to the number of balls in the bearing and to the square of the diameter of the balls.

The balls should be very carefully inspected and selected to be sure that they are true to form and uniform in size in an entire bearing unit. The ball diameter should not vary over 0.0001 in. Balls that are over this limit will not only be overloaded themselves but will also overload and injure the ball races. The material of which they are manufactured should be of the best quality and properly treated so as to have a high elastic limit and so that no scaling or flaking may take place under heavy impact or severe operating conditions.

In connection with the ball bearing problem it is interesting to note certain experiments and exhaustive bearing tests that were recently made at the University of Wisconsin. These tests were made on sleeve, roller and ball bearings. The data accumulated were very practical and definite as the tests extended over a period of four years, during which time careful comparisons were made and recorded. Tests were made with a speed variation of from 100 r.p.m. to 500 r.p.m. and loads on bearings from 500 lb. to 2,300 lb. per bearing or from 25 lb. to 110 lb. per square inch. During these tests Atlantic Red Engine oil was used on the babbitt, sleeve and roller bearings and Keystone grease No. 2 on the ball bearings. The coefficient for friction-temperature curves was determined by the following formula.

$$f = \frac{\text{(Watts per bearing) } 531}{3.1416\, dn \text{ (load per bearing)}}$$

Where

f = coefficient

d = shaft diameter in inches

n = r.p.m.

Bearings were loaded to destruction in the final test, the failure points being noted as follows:

Sleeve bearings failed at load of 4,250 lb.

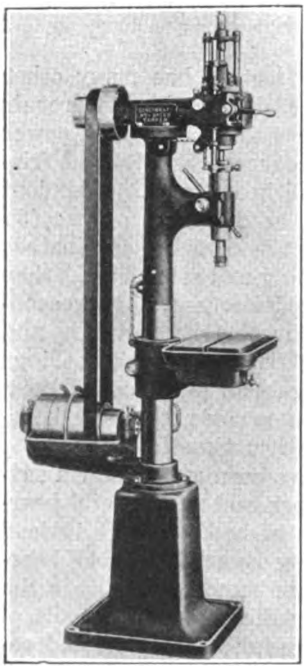
Roller bearings failed at load of 5,100 lb.

Ball bearings failed at load of 4,650 lb.

The accompanying graphs were made from the above test data and are self-explanatory.

Automatic Tapping Machine

THE Cincinnati Hy-Speed Machine Company, Cincinnati, Ohio, has recently placed on the market a line of automatic tapping machines. Among the features claimed for the machines are the patented spindle lead and automatic reversing mechanism by which the tap is brought forward and returned in a positive way entirely free of the operator, tapping holes accurately without danger of stripping threads or breaking taps.



AUTOMATIC TAPPING MACHINE

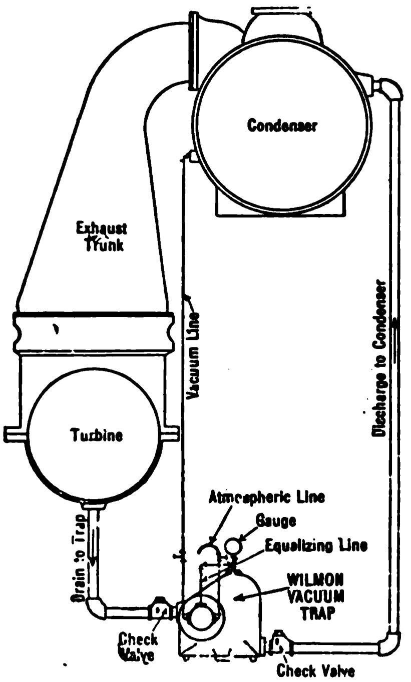
One-half turn of the stop plunger at the side of the control handle changes the machine from semi to full automatic. When set as semi-automatic, the spindle travels forward, reverses automatically and stops at the end of the return stroke. To start forward again the operator pulls down on the control lever. When set as full automatic, the stop plunger is withdrawn and the spindle automatically reverses at each end of its travel. The spindle can be stopped at any point, reversed and again brought forward by use of the control lever.

Adjustable trip dogs with limit stops on the trip rod regulate the depth to be tapped. The chuck is driven by the clutched end on the spindle and locked in position. S.K.F. bearings are used throughout the machine. Machines are regularly furnished for right-hand tapping but attachment is furnished for left-hand tapping, the left-hand device being quickly attached to the end of the rack sleeve. Machines are built with from one to three spindles in two sizes. The maximum capacity is ½ and ⅞ in. steel. These machines are built in bench and belted motor-drive types.

New Vacuum Trap

This Type of Trap Is Used in Place of a Float-Controlled Condensate Pump for Systems Using Steam Under Vacuum

THE Wilmon vacuum trap, perfected during the war and applied to marine service, is being introduced by P. H. Gill & Sons Forge & Machine Works, Brooklyn, N. Y., for draining turbines in stationary plants. The receiving chamber of the trap is under vacuum while the water is collecting in the trap and under atmospheric pressure during discharge. Back flow is prevented by check valves on the inlet and outlet lines. The change of pressure in the receiving chamber from vacuum to atmospheric and vice versa is accomplished by an oscillating disk covering three ports, which makes a quick shift from one operating position to the other. One of these positions connects the receiving chamber with the vacuum system, and the other connects with the atmospheric line. Communication in both instances is effected through the equalizing line connecting the middle port to a top opening in the receiving chamber.



METHOD OF DRAINING TURBINE THROUGH TRAP INTO A CONDENSER ABOVE TURBINE

The disk and thrust bearing, and the spring which holds these parts in place, are in a separate outer chamber. The disk is operated by a lever float, hammer weight and rocker arm, all on the same shaft and located within the receiving chamber. Water entering the receiving chamber carries the float upward as the level rises, and a contact point on the float stem, between the float and its fulcrum, rotates the weight until, as the latter passes dead center, it drops onto the contact point on the rocker arm and partially rotates the oscillating disk to the opposite position. This shuts off the vacuum line and opens the receiving chamber to atmospheric pressure through the atmospheric and equalizing lines. Water is then forced through the trap outlet, if the latter is connected to a vacuum, or drains by gravity if connected to atmosphere. As the float falls with the water level, the contact point beyond the fulcrum on the float stem lifts the weight past dead center and lets it drop in the opposite direction, when it hits the opposite end of the rocker arm and shifts the disk. This cuts off the atmospheric lines, connects the vacuum and equalizing lines and brings the receiving chamber under vacuum again.

The cycle repeats at a rate determined by the amount of water accumulating. More than three discharges per minute have been obtained with perfect action. The disk requires no adjustment either before trap installation or during service, but may be seen and reached while the trap is in operation. The trap has a very high capacity, due to the fact that the liquid passes through no restricted passages. It is claimed that a 2-in. trap can handle from 1,800 to 2,100 gal. of water per hour.

A Single-Phase Veteran

Two 2,200-Volt Single-Phase Railways in Operation for the Past Seventeen Years Are Giving Satisfactory Service in Glen Cove and Sea Cliff, Long Island

BY C. R. JONES
Railway Department, Westinghouse Electric & Manufacturing Company, New York, N. Y.

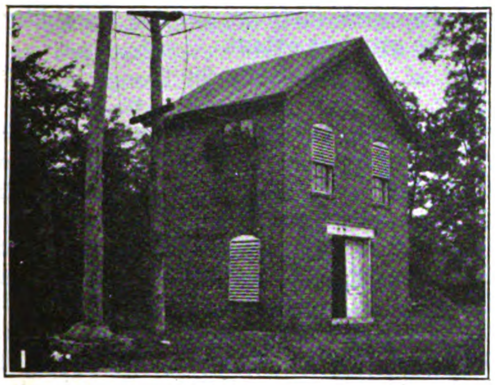
PROBABLY the oldest street traction systems using single-phase power are the Glen Cove and the Nassau County Railways which have been in operation since 1905. These two roads, which are practically one, are owned and operated by the Long Island Railroad and serve the villages of Glen Cove and Sea Cliff on Long Island. They also provide a connecting link between the stations of the Long Island Railroad and the villages which are on the Sound, as well as between the towns themselves.

Located 30 miles from New York, these lines were far beyond the electrified zone, and the railroad adopted the simple expedient of carrying a single-phase feeder as far as Sea Cliff, where two 200-kw. transformers were installed, stepping down 11,000-volt, 25-cycle current to 2,200 volts, which is fed directly to the trolley at that point, no feeders being necessary. This transformer station is without attendants.

Some of the details of the catenary construction are shown by the accompanying illustrations. Seven cars are operated, of which five are single truck, equipped with two Westinghouse No. 108 single-phase railway motors and type 224 drum control. Two are double truck, equipped with three Westinghouse No. 108 single-phase motors, and type 451 drum control. A single-phase sweeper is operated when necessary in the winter. The car equipment includes an oil-cooled transformer for stepping down the trolley voltage to 350 volts.

Maintenance on these lines is cared for by a foreman and one mechanic and the cost of this has been reported to be less than for direct-current equipment in equivalent service on other Long Island trolley roads.

The road has suffered from "jitney" and private automobile competition as have other roads throughout the country. The fare now charged is 5 cents on the Nassau County Railway and 7 cents on the Glen Cove Railway, the length of these being 1.8 miles and 3.5 miles respectively.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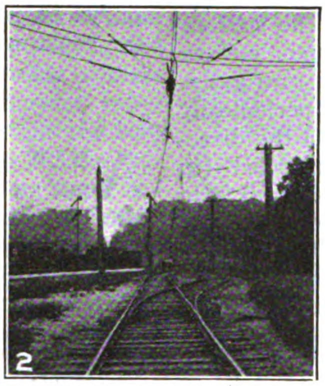
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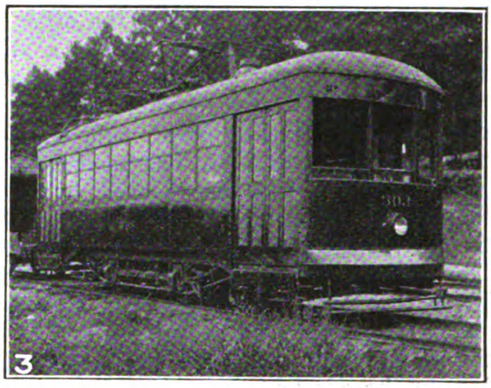
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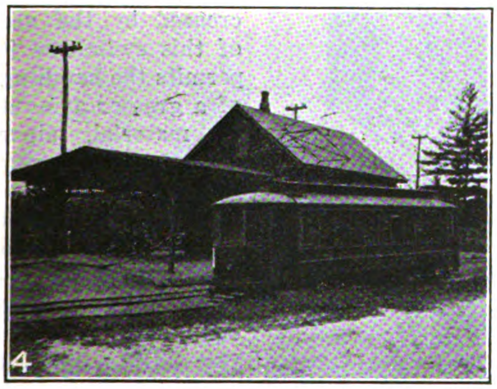
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No. 1—Transformer station on the Nassau County Railway.
No. 2—Typical overhead construction on oldest single-phase line.
No. 3—Latest type of single-truck car for single-phase service.
No. 4—Closed double-truck car of Glen Cove Railway.
No. 5—Open double-truck car for single-phase operation.
No. 6—Repair shop of oldest single-phase road.

Small Motor Starter with Safety Features

A NEW type of motor starter, type WK-30, which provides protection to both the operator and the motor, has been developed by the Westinghouse Electric & Manufacturing Company for starting small a.c. motors by connecting them directly to the line.

This starter consists essentially of an inclosed quick-make-and-break knife switch, operated by an exterior handle. It protects the motor from overloads both when starting and when running because it is equipped with thermal cut-outs which open the circuit on dangerous sustained overloads but do not operate under momentary overloads. The cut-outs resemble cartridge fuses but are not interchangeable with fuses so that the latter cannot be substituted for them. They operate by fusing a special washer, which can be replaced in a few seconds time at negligible costs. All parts are inclosed so that the operator cannot touch live contacts.

These starters are made in sizes for alternating-current motors up to 3 hp., 110 volts; 10 hp., 250 volts, and 10 hp., 600 volts.

Rough Machining Cause of Axle Failures

Corrugations in Steel Make It Fail When Subjected to Service Jars—Remedy for This Is to Grind Steel Parts to a Smooth Finish

THE many failures of railway car axles cannot be accounted for only by overloads or jars, since the designers of the axles use sufficient factors of safety to care for these conditions, nor can failures be attributed to faulty materials. Arthur Norton in an article in the *Electric Railway and Tramway Journal* attributes many of these failures to the secondary effect of cracks caused by rough machining. All axles are turned, but they then should be smoothly ground over the whole portion. A rough turned axle is really a kind of threaded bolt, the length and thickness of the thread being dependent on the cut and feed used in the lathe operation. The lathe tool also does not cut in the sense that a razor cuts, but the turning consists of small pieces sheared one up against the other. The surface of the turned axle then is simply a sheared surface from which small particles of steel have been torn away.

Along the axle after turning there occur periodically small cracks or gaps lying at right angles to the direction in which the work has moved when tooled (in lathes) or the tool has moved over the work (in shapers). These small gaps are caused by the edges of the tool pushing the layer of steel before it until such time as the steel can move no further without breaking. When the steel, distorted by the moving tool, breaks, one of the small gaps is formed and this accounts for the gaps being periodic; the size and spacing depending on the cut and the feed. On a turned axle these gaps lie along the axle and in general across the direction in which the axle will be bent in service and cannot therefore do much harm unless they lie in such a position as to facilitate fractures under working stresses. The grooves lie in the direct line in which fracture is most likely to occur under working stresses.

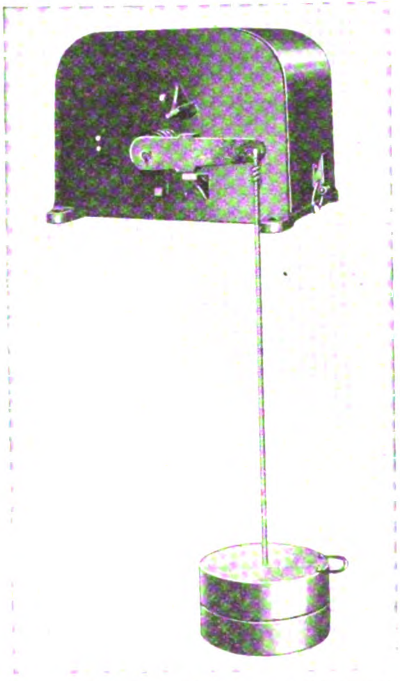
These gaps and grooves in steel facilitate fractures very greatly and also, as on an axle where the load is supplied at periodic times, these rough machine marks, being closely adjacent to each other, affect one another and the consequent failure of an axle under a comparatively small stress may be accounted for by such a surface condition. It would appear from this analysis that railway car axles, having smoothly ground surfaces and free from sharp angles and accidental notches or dents, might be durable even when the steel used and its condition were nothing exceptional. But in addition to having a smooth outer surface the axle should also be subjected to other tests which will insure against accidents. A steel that would resist fracture in spite of a grooved and distorted surface would be advantageous and an important object in selecting material is to minimize the evil effect of grooves and notches by subjecting a notched bar of the material to some sort of test. An easily made test and one that is very efficient is to take a small piece of the actual material, notch it, place it in a vise and then bend it by means of a hammer. Those materials that are brittle break off short soon after the load is great enough to deform them, others that are tough flow under the load.

The objection to this notched bar test alone is the fact that ordinary carbon steels would be ruled out as they have a very low notch bar test value. Alloy steels, on the other hand, can be depended on to give high notch bar test values. Nickel steels, chromium steels or nickel chromium steels are suitable for railway axles because of their increased test value, but either nickel or chromium or both when added to steel increase its hardness, particularly after oil quenching, and this steel gives axles that are harder than needed in the service. Ordinary carbon axle steel, as forged or normalized, has a tensile strength of about 36 tons and a notched bar test value of 25 ft. lb.; 3 per cent nickel steel, as forged or normalized, has a tensile strength of 47 tons and a notched bar test value of 35 ft. lb. If, however, the nickel steel is hardened and tempered the tensile strength is about 50 tons and the notched bar test value rises to 60 or 80 ft. lb.

The conclusions suggest that the physical properties of greatest value in axle steel are its tensile strength and its notched bar value and the heat treatment processes which confer these properties are those which confer also high elastic limits, yield points and fatigue ranges. If such steels are machined to minimize sharp angles or rough, distorted surfaces, service reliability can be assured to the greatest extent.

New Crane Limit Switch

A NEW crane safety limit switch, type LC, has been put on the market by the Westinghouse Electric & Manufacturing Company. This switch is designed to eliminate the undesirable features connected with the operation of a crane or hoist installation, when the hoist brake overtravels. The normal operating range of the hoist is increased by the use of this switch as it permits the handling of a greater amount of material, since there is no necessity of losing time by approaching the limit of travel slowly and cautiously. The safety limit guards the equipment irrespective of the kind of control or the position of the controller handle or brakes.


LIMIT SWITCH HELD IN OPERATING POSITION BY MEANS OF COUNTERWEIGHT

Under normal operating conditions the limit switch is held in the operating position by the counterweight, as shown, which overpowers the torsion operating springs. In case of overtravel, the counterweight is raised by the hoisting hook or other moving part, which permits a strong torsion spring to operate the switch. This disconnects the motor from the line and establishes a closed dynamic braking circuit. The operation of the switch also releases the series magnetic brake which holds the load until the controller handle is moved to the lowering position. As soon as the hook has been lowered beyond the limit, the switch is again ready to function as before, as it resets itself automatically.

New Light on Quenching Cracks

QUENCHING cracks are very prolific sources of trouble to tool hardeners, especially if the tools are made from high carbon steel. Usually these cracks have been thought to be due to high quenching temperature and non-uniform distribution of the temperature in the part. An investigation at the Imperial University of Japan by Honda brings out some other causes which tend to form quenching cracks.

In all quenched steels a certain amount of austenite is generally present mingled with some martensite, the amount increasing as the quenching temperature increases, and in small pieces of steel the periphery is harder than the central portion only when the quenching is very slow. In a moderate quenching the hardness is everywhere about equal and in hard quenching the periphery is always softer than the interior. This phenomenon is explained by the presence of the arrested austenite in martensite.

The quenching cracks in small pieces of steel occur when the hardness of the central portion is greater than in the periphery, and the cause is attributed to the stress caused by the difference in the specific volume of austenite and martensite, that of the former being much smaller than that of the latter, so that the central portion exerts a tangential tension on the periphery causing cracking of the specimen. Since the difference in specific volume increases as the temperature decreases, the cracking usually takes place at room temperature. In hard quenching the hardness increases with lapsed time, owing to the gradual transformation of the arrested austenite into martensite. In the case of a very large piece of material, the cracking may take place in an upper range and also in the vicinity of room temperature. The cracking at the high temperature is caused by the stress in the structural difference between the inner and outer portions—pearlite and austenite—just below the high temperature critical point, while that at room temperature is due to similar stress occurring, as previously outlined, because of the difference in specific volumes of austenite and martensite.

Tests on Soil Corrosion

THE Bureau of Standards has recently undertaken an extensive investigation of the corrosive action of soil on pipes used for gas and water mains and services. In this investigation the Bureau of Standards has the co-operation of the Bureau of Soils of the Department of Agriculture, the pipe manufacturers and the public utilities through the research sub-committee of the American Committee on Electrolysis. Forty locations have been selected as representative of the principal families of soils to be found throughout the United States, and in them will be buried a number of samples of every kind of iron and steel pipe in commercial use. Some of the samples will be uncovered and examined from time to time to determine the rate of corrosion.

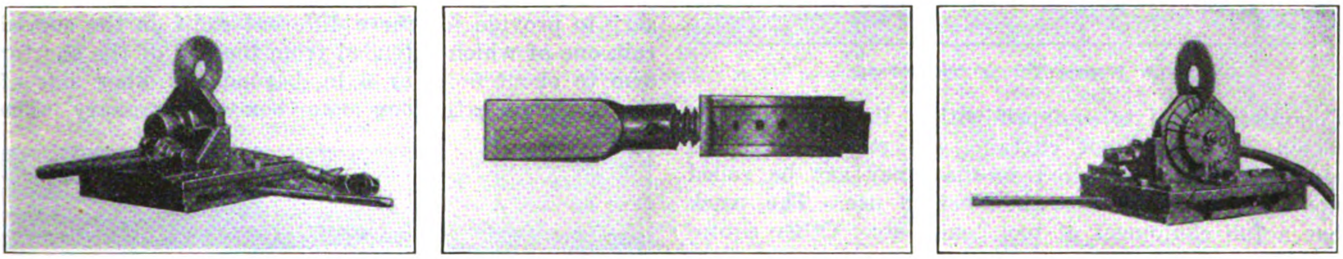
Complete data on the physical and chemical properties of the soil will be obtained and the chemical analyses of the pipe, their microstructure and complete metallurgical history will be determined. Extensive laboratory experiments will be conducted to determine the effects of variations in individual characteristics of both soils and pipe materials. Some tests of representative pipe coatings will also be undertaken.

It is expected that a great many data as to the relative rates of corrosion of different kinds of pipes in the soils under observation will be obtained within two or three years, but the experiment will probably continue over a period of eight or ten years. Progress reports will be published from time to time as developments warrant.

Reclaiming Controller Segments

Cutting of Segments to Proper Length Facilitated by Use of a Cutting-Off Attachment to a Circular Saw Carriage and a Machine for Punching the Segments

THE Portland Railway, Light & Power Company has reduced the price of making controller segments from an average of 4 cents each to 1.8 cents by the use of two shop constructed machines. The first of these is a cutting-off machine which forms a part of the carriage for a circular saw and the second is a machine for punching the segments which is made to attach to a small power punch. The cutting-off machine has a revolving head and clamp and is laid off with slots for the various lengths of segments used. The segment to be cut is held in the revolving head by a clamp provided with pressure from a spring. The other essential parts of the machine consist of a small air cylinder which is attached to the back of the head and a controlling valve on the carriage which has an eccentric on the stem so as to control the air admitted to and released from the cylinder as the carriage is moved.



AT LEFT AND RIGHT, CUTTING-OFF MACHINE FOR RECLAIMING CONTROLLER SEGMENTS. IN CENTER, ATTACHMENT FOR PUNCHING SEGMENTS

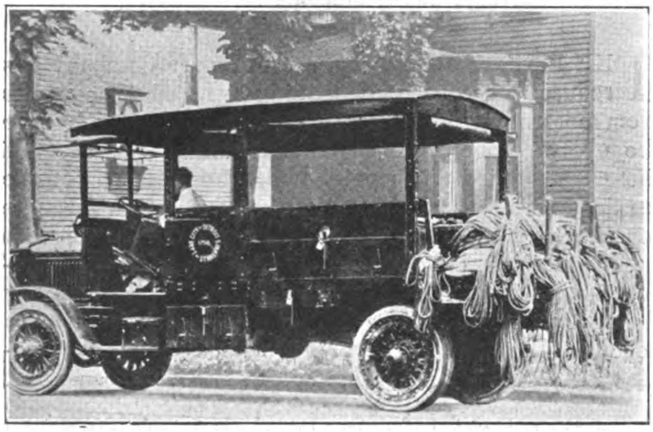
In the cutting operation the carriage is thrown all the way back by the lever on the side. This opens the control valve and allows air to enter the back of the cylinder, thus opening the clamp. The segments are then put in position, and as the head is marked for the various lengths of segment used it is readily seen just how they can be cut to the best advantage. The carriage is then moved forward and this automatically lets the air out of the back of the cylinder and the spring clamps the segment so as to hold it in position in the head. This allows the head to be swung around to the position necessary for cutting off the segments. A small latch at the bottom holds the head in place, and as the head is moved forward the air valve opens, which allows air to enter the back of the cylinder, thus clamping the head tight to the frame before the saw strikes the segment.

For the remainder of the cutting operation the carriage is moved but a part of the way back, which releases the head only, so that it can be turned to make the rest of the cut. All the cuts necessary are made before taking the segment out of the machine, and the carriage is then moved all the way back, which releases the segments.

Another illustration shows a machine which was constructed for punching the segments. This was made for attachment to a small power punch. The circle guide has pin holes for stops of the various segments. The spring keeps the operator from getting his fingers under the punch.

New Winch Truck for Detroit

THE accompanying illustration shows a new 4-ton truck purchased by the Department of Street Railways for the city of Detroit. The cab construction is similar to that used by the Public Lighting Commission and is equipped with a Bay City type C winch. Weatherproof curtains are provided on the sides and rear, arranged so that they can be rolled up and held by straps when not in use. The truck has a full equipment of tool boxes, etc. Other equipment provided includes an odometer, generator, storage battery, electric tail lamp, two electric headlights, mechanical horn, radiator guard, trailer attachment, tow hooks and skid chain hooks.


NEW WINCH TRUCK FOR DETROIT

Properties of Molybdenum Steel

THE scope and application of molybdenum steel appear to be wider than that of other types of alloy steel. The early uses of this steel were for tool and magnet steel. At that time the ores of molybdenum were considered to be much scarcer than now.

It has been found that the chief value of the element is its indirect or intensifying effect in the more complex steels. Its action in fractional percentages intensifies the excellent qualities of other important alloy steels, supplying in these certain qualities without which they are limited in their application. Special steels in which chromium, nickel and vanadium play an important part are handicapped by the narrow limits of temperature within which heat treatment is effective. Outside of this small range their high-grade qualities are seriously impaired. For these shortcomings molybdenum acts as a corrective and greatly extends the range within which heat treatment is beneficial. It considerably increases the tensile strength of carbon and nickel steel. In chromium-nickel steel, probably through the formation of double carbide, additional tensile strength, hardness and other beneficial qualities are imparted.

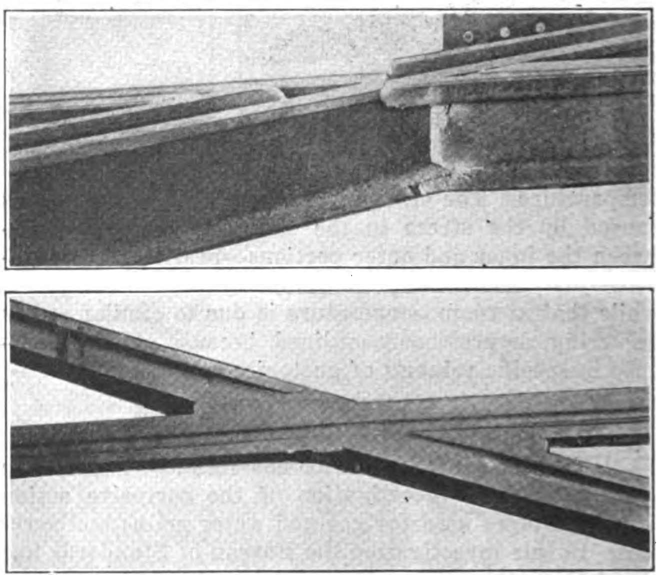
Twenty-five thousand tons of this class of steel have been produced by one company in the United States since 1918 and no serious difficulties have been encountered in any stage of manufacture or in melting, casting, rolling or cold drawing operations.

The outstanding features relative to the heat treatment of molybdenum steel are the extremely wide quenching temperatures available for practical heat treatment, the excellent penetrative effect of such treatment on large sizes, and the broad drawing range causing but slight modifications of physical properties. It is claimed that molybdenum steel can be machined more easily than other alloy steels, of equal physical properties.

Constructing Acute Angle Frogs by Welding

THE accompanying illustrations show a frog constructed by means of Thermit welding, which is of more than ordinary interest because of its unusual acute angle, about 18 deg. This angle required an exceptionally long weld, using approximately 200 lb. of Thermit or around three times as much metal for the weld as for a square frog of the same rail section. In making this frog, two arms of a curved 9-in. guard rail were welded to another straight 9-in. guard rail. As shown in the illustration of the completed job, the frog was an unbroken main-line frog, and there was to be no flangeway cut through the surface of the straight main-line rail.

In aligning the component pieces of rail, it was necessary to provide for three different radii on the curved rail, one of which extended from the end of the shorter arm to about 5 in. or 6 in. beyond the other side of the frog. An extra long motor box was necessary. The weld was poured at the acute angle apex, a separate crucible being used at each end. When the job was installed in the street (of a large Eastern city), the frog slipped into perfect alignment with the other rails.


UPPER VIEW SHOWS ACUTE ANGLE FROG WITH RAIL ARMS LINED UP IN POSITION PREPARATORY TO WELDING. LOWER VIEW SHOWS TOP OF COMPLETED FROG

Self-Corrosion of Cast Iron and Other Metals in Alkaline Soils*

The Authors Give Interesting Results of Extensive Experiments Made With a View to Obtaining More Definite Information on the Cause of the Destruction of Cast Iron Water Mains in Towns of the Prairie Provinces

By W. Nelson Smith† and Dr. J. W. Shipley‡

THIS information is the result of our investigation undertaken in the interest of a large public utility to derive proof that a great deal of the destruction of city water mains by external corrosion could not be due to electrolysis from stray electric railway currents in the earth. In order to corrode a pipe a stray current must be flowing out of it into the surrounding earth, and that can only happen adjacent to a power station or in close proximity to some other path of lower resistance, such as a railway track or an underground cable, which may be connected to the power station. A large proportion of the corroded water pipes were either remote from railway tracks or in localities where current would be flowing into them and not out of them, and it was believed that some cause other than stray current was operating in such localities.

Cast iron pipe has been generally thought to be immune from corrosion except in strongly acid soils, but our field observations and chemical researches have convinced us that the self-corrosion of cast iron pipe in the moist clay and lime silt non-acid soils of the Red River valley is an indisputable fact and is bound to happen anyway, whether stray current is absent or present.

Electrochemical Principles

Every metal in contact with water tends to dissolve in the water, independently of any emf. impressed from outside. This tendency to go into solution is termed solution pressure. Such metals as sodium, potassium and magnesium, the alkalline metals, very readily go into solution and are conceived to have a high solution pressure, while gold, mercury and platinum are metals with very low solution pressures. These solution pressures in fact correspond to the positions of the various metals in the so-called electrochemical series of elements, tabulated in the text books.

Iron occupies an intermediate position in the electrochemical series, but is considerably above hydrogen, which is considered as a metal in the series on account of its electrochemical behavior. Iron has a higher solution pressure than hydrogen and can, therefore, displace it. Consequently the iron ions entering a solution are able to drive out of solution any metallic ions occurring below it in the electrochemical series or any hydrogen ions. A perfectly dry surface of iron will not corrode even when exposed to air or pure oxygen. It will only corrode if moisture be present where there is a hydrogen ion to be displaced. Rusting should therefore be conceived, fundamentally, not as an attack of oxygen, but as a retreat of hydrogen.

According to the electrochemical conception, when an atom of metal passes into solution it assumes a positive charge of electricity and leaves the metallic mass from which it is separated negatively charged. Metallic ions and hydrogen are therefore conceived of as having positive charges and traveling in the same direction as the electric current. The OH ions and the acid radical ions have negative charges and travel against the current. This is true whether the act of going into solution generates the electric current as in a primary battery or whether the liquid solution is decomposed and its elements driven out of solution by an impressed electric current. The electrochemical mechanism is, therefore, somewhat analagous to the reversible property of an electric current on a wire in a magnetic field, in which the current produces motion, or the motion can produce current.

The Soils of the Winnipeg District

The soils of the Winnipeg district are lacustrine and alluvial silt and clay overlying glacial till. They are very rich in lime and are the result of glacial pulverizing action, which was very efficient, causing the soil particles to be very finely divided. This fine division exposes the maximum of surface to the solvent action of the ground waters, and consequently the soluble and commonly called "alkaline salts" present in the original limestone have been leached out and concentrated in local areas, giving rise to the alkaline nature of our surface soils. The redistribution of these soluble salts is little understood, but the prairie areas adjacent to Winnipeg have a very high concentration of these salts in the surface layers of the soil, so great, in fact, that they everywhere approximate the toxicity limit for plant growth. In the presence of water, the soils are of very low electrical resistance.

The salt content of the ground waters is very largely sulphates and chlorides of calcium and magnesium, the sulphates predominating. Aggregations of crystals of calcium sulphate and magnesium sulphate frequently occur in a layer about 4 ft. beneath the surface. This layer is several inches thick and is highly calcareous. It has been observed at many widely separated excavations where water mains had failed and studied in detail at the large excavation made for Eton's recently built warehouse on Donald Street. When this layer is dug through in placing a pipe line the earth used in backfilling the trench naturally contains these salts and they come in contact with the pipe, creating the possibility for galvanic action. These salts are even more frequently met with at lower levels, 10 ft. or 12 ft. below the surface, in the clays immediately under the pulverized limestone layers. They have crystallized out along the bedding planes and in the irregular vertical breaks in the horizontal layers of clay. Very frequently they occupy, as aggregations of crystals, the spaces at one time filled by the roots of a tree.

The significance of these saline deposits lies in their location respecting the water mains. In the Winnipeg region they occur at levels of from 4 ft. to 12 ft. below the surface and have been frequently observed in contact or within a few inches of the pipe as it lay in place, where the water mains had failed from corrosion.

These deposits of salts form the reservoir from which the ground waters receive their saline load. The more soluble chlorides have not been found in crystal aggregates, nor are the chlorides so widely distributed as the sulphates.

Preliminary Examinations of Soils

One of the first things done was to examine about eighteen samples of soil from various parts of the city, mostly from excavations around water pipes. Some were taken from the middle of the business district and some on the outskirts of the city. Of the eighteen samples nine were from places where pipes had been corroded to destruction, and of these nine two were from areas where pipes were thought to have been generally electrically positive to the earth, three from where they must always have been negative to the earth and four from areas where the polarity was as likely to have been negative as positive. Of the remaining nine samples seven were from places where pipes had been visibly corroded but not seriously, two from positive and five from negative areas or regions outside the electric railway zone, while two more were taken from excavations where pipes had never been laid. Some were from positive and some from negative areas.

These first proximate analyses were made by leaching a little of the soil sample with distilled water, filtering and testing the clear filtrate for the dissolved chlorides and sulphates. The sulphate radical was found in every single sample, indicating its universal distribution throughout the soil of the city.

It is very significant, indeed, that wherever a cast iron pipe had been corroded to destruction, whether near an electric railway power station or a mile or two distant from it, the soluble sulphates of both calcium and magnesium were invariably found in the soil close to the pipe.

Sometimes these salts were so observed in crystal form, actually in contact with the pipe. The presence of salt crystals in contact with the pipe can only mean that the ground water in contact with the pipe was actually a concentrated salt solution.

The experiments made afford sufficient proof that the soils in the city of Winnipeg will corrode cast iron pipe on their own account, if given water enough and time enough.

From the foregoing experimental study the following conclusions were drawn:

1. The corrosion of cast iron by soil salts individually and collectively is readily accomplished under natural conditions without access of stray current and is of the graphitic pitting nature by which is meant the commonly observed condition of the material remaining in place, which is invariably of a soft spongy texture, with part of

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*Abstract of a paper presented at the Western professional meeting of the Engineering Institute of Canada, Saskatoon, Aug. 10, 1921. A full report of this paper was published in the *Western Canadian Contractor and Builder* for October, 1921.

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the iron dissolved out, the remainder resembling graphite in texture and softness, hence the term "graphitic."

2. Magnesium salts are the most corrosive of the soil salts, and magnesium sulphate, which was found wherever a cast iron pipe had been destroyed, is apparently the most effective of the salts experimented with.

3. Local action induced by naturally occurring concentration cells may easily be a factor in the pitting of cast iron exposed to salts of varying concentration.

4. Slight pitting corrosion was found in pieces of cast iron exposed to the action of small samples of wet soil and intermittently heated, even in the short period of forty days, and with only a limited supply of water as compared with conditions in the ground, without any impressed emf. being present.

PHOSPHATE AND SULPHIDE IN CORROSION PRODUCTS

Although it seems a comparatively simple matter to account for the fundamental chemical reactions that result in the formation first of the ferrous and then of the ferric hydroxides, we have found other corrosion products of such a strange character as to make it evident that the corrosion process in the soils considered may be quite complex.

In some of the graphitic spongy residue in the pits of corroded pipes we have found ferrous phosphate incorporated with the other material, being noticeable by reason of its light bluish green color. Sometimes small lumps of it could be lifted out of the pipe pits as a filling can be lifted out of the cavity of a tooth. A partial analysis of one sample showed 18 per cent of ferrous phosphate, 20 per cent of metallic iron and 42 per cent of carbon and silica. Evidently it did not occur in the original iron, but was formed in the corrosion products along with the hydroxides. It has sometimes been reported as a deposit in buried bones, but not as a product of stray current electrolysis. Why ferrous phosphate should occur in a corroded cast iron water main is a riddle that has yet to be solved.

Along with other corrosion products, iron sulphide was found to be nearly always present both in the pit and in the scale, from pipes not only within the city but several miles outside the electric railway area. A number of experiments were made with cast iron and soil samples in glass bottles to try to determine whether the sulphide was the result of self-corrosion or of stray current corrosion. Sulphide was found to be present in both cases, showing that it is not peculiarly a product of stray current electrolysis. The sulphur required for its formation seems to come chiefly from the free sulphur mixed in with the original cast iron, but it is also possible that the electrochemical reactions cause the reduction of the sulphates in the soil to sulphides. If it is an eletrochemical process it can happen as easily with galvanic as with stray currents. Sulphides are found in pipe pits and scale on the inside of water pipes as well as outside. We have found sulphides in chips of wood and clay taken from the butts of electric light poles recently taken out of the ground, and it is suspected that the presence of sulphur forming bacteria may have something to do with the formation of sulphides, wherever found. We are not aware that either the phosphate or the sulphide of iron have been previously reported by other investigators of the corrosion of cast iron pipe.

THE MOISTURE CONTENT AND THE ELECTRICAL RESISTANCE OF SOIL

The moisture content of the samples of soil collected in this investigation varied considerably. The electrical conductivity of the soils is a function of the moisture content as well as of the salt content, and it was deemed desirable to measure the electrical resistance and determine the moisture content of about fifty samples taken from various places.

Eighteen of the samples were taken directly from off water pipes and the average moisture content was 28.75 per cent, the range being from about 20 per cent to 35 per cent. The resistance of these same eighteen samples averaged 570 ohms per cu.cm., which is a very low average rating of soil resistance. One was as low as 206 ohms, while another was 1,085 ohms, the difference in these two instances being probably due more to difference in the salt content than the moisture content of the samples.

The moisture content varies indeterminately with depth. Sometimes the dried soil is above, sometimes below, and there is no way of foretelling what the order will be at any one spot. The character of the soil varies at different levels and the capacity for holding moisture varies with the character of the soil. Clay soils are well known to be most tenacious of water.

One sample of soil was taken from around a gas pipe in a limy silt soil at Edmonton and St. Mary's Street, Winnipeg. This pipe was about 4 ft. down. The moisture content was only 4.5 per cent and the resistance was 1,965 ohms per cu.cm., or about three and one-half times the average resistance of the eighteen samples taken from the water pipes. This fact is of particular interest also, because the soil around this gas pipe was comparatively dry, while in samples taken 2 or 3 ft. directly above and below, the moisture content was three or four times as great and the electrical resistance less than one-half that of the soil directly around the pipe.

SOIL ACTION ON LEAD AND COPPER

Lead and copper are also affected by self-corrosion in these same soils, but our researches have not continued long enough to submit much information. A lead water service pipe in the Selkirk Mental Hospital grounds was found to be corroded and the evidence of decayed manure in the original backfilling of the pipe trench led us to suspect that nitrates may have hastened corrosion, the other soil salts being much the same as in the case of the corroded cast iron pipe.

To briefly review one experiment, a small new lead plate was buried in contact with a clay soil and some black surface soil in a sealed glass container, with plenty of moisture present, and when removed at the end of four and one-half months was found to be pitted with little cavities about as big as pin heads, which were filled with white pellets of crystallized lead sulphate. No heat was applied during the experiment.

A copper ground plate buried below the basement floor of the Manitoba Government Telephone Exchange in St. Boniface corroded in eighteen months or less after installation. We were given to understand by the telephone people that it would not be possible for any stray current to be leaking out into the earth from the telephone system through this ground plate. We subsequently immersed some thin sheets of copper in neutral solutions of the alkaline salts above mentioned and observed evidence of chemical attack within twenty-four hours, by the formation in the solution of insoluble greenish compounds of copper.

Workmen's Compensation

Procedure Adopted in New York on July 1 Is Described by the Director of the Bureau

IN AN address delivered before the annual meeting of the International Association of Industrial Accident Boards and Commissions at Chicago, Sept. 19-23, Stanley L. Otis, director of the Bureau of Workmen's Compensation, New York State Department of Labor, described the present procedure of the bureau. This method was adopted on July 1 of this year. The work of the bureau is divided into five districts, the offices being located in New York, Albany, Syracuse, Rochester and Buffalo. The claim procedure, which is practically the same in each district, is as follows:

The injured employee is required to file with the industrial commissioner an employee's first report of injury, and employers are required to keep copies of these reports on hand for the use of their employees. Employers must file promptly and within ten days an employer's first report of injury covering all accidents causing loss of time or necessitating medical attention with the industrial commissioner and, if filed through the insurance carrier, the original is to be forwarded to the bureau. Immediately upon the filing of the employer's first report the injured employee is sent a copy of form C-3, which is the employee's claim for compensation, together with instructions for the preservation of his rights. An employer's supplementary report of injury is to be filed before or not later than fourteen days if the employer's first report does not show the time the injured employee returned to work. Where the disability resulting from an accident terminates and the injured workman returns to work and subsequently is disabled as the result of the original injury an employer's supplementary report of subsequent disability is to be filed.

The first payment of compensation becomes due on the twenty-first day of disability, and on that date or within four days thereafter the compensation due is to be paid. This payment acts as a waiver of the reporting of the accident by the employee and his filing of a claim for compensation. When the employer or insurance carrier suspends the payment of compensation notice must be sent in duplicate to the industrial commissioner. If the employer or insurance carrier intends to controvert the right to compensation he shall either on or before the twenty-fifth day of disability file a notice in duplicate with the industrial commissioner that compensation is not being paid and indicating in such notice the reason for such non-payment.

After the claims have been prepared by the claims division and its examiners the notices of hearings are sent to all interested parties. The notice states that "if no objection is made either in writing or by person on or before the date mentioned claim will be closed," and this action is taken without prejudice if the claimant does not appear on the day of the hearing or if he has not written the bureau in the meantime. In case there is some question in dispute it is expected that the claimant and the employer will be present, together with the examiner, so that the differences can be adjusted and the case closed.

As the new system only went into effect on July 1 it is too early to have figures at all reliable as to results. However, it is expected that at least 70 per cent of the cases can be closed without a hearing and that the differences arising in 20 per cent of the cases can be satisfactorily adjusted, leaving only 10 per cent of the cases to revert to the referee's testimony calendar.

American Committee on Electrolysis Reports

Complete Compendium of Present-Day Knowledge and Best Practice Is Principal Characteristic of 1921 Report of This Committee

THE American Committee on Electrolysis has just issued its 1921 report, superseding its preliminary report of 1916, in book form. It is primarily a marshaling of the general and specific knowledge regarding the causes of electrolysis and methods of electrolysis mitigation, and in no way attempts to lay down specific recommendations as to best methods of preventing or mitigating electrolysis troubles.

The following statement, taken from the preface of the report, is important as indicating the opinion of the committee regarding its report: "A report is herewith submitted which embodies such statements of facts and descriptions and discussions of methods of electrolysis testing and of electrolysis mitigation as the members of the committee have unanimously agreed upon.

"While this report supersedes the preliminary report of 1916, it should be considered as in the nature of a progress report and not as final, as it is impossible at the present time to finally answer many of the outstanding questions involved. Also, it is to be understood that the report is confined to the technical and engineering aspects of the subject and does not attempt to deal with matters of policy or with legal questions, such as the rights and responsibilities of the several interests concerned.

"At times great differences of opinion between members of the committee have arisen, but the subject differed upon has been patiently discussed at sub-committee meetings, and in some cases tests have been made and a final discussion held on the subject by the main committee until unanimity of opinion existed. The results as thus determined are herein recorded."

From one angle, the book or report might be regarded as a complete text of electrolysis and in a way is so presented, and arranged. A good ground work of principles and definitions of terms is placed at the beginning of the report.

More than one-third of the 204 pages of the book are devoted to discussion of the design, construction, operation and maintenance of railways and of underground structures affected by electrolysis and to a discussion of measures involving the interconnection of affected structures and railways, ending with a summary of good practice as analyzed by the committee. Early in this chapter, the committee states: "The practical electrolysis problem is due to stray current from electric railways. Instances of stray direct current from other sources sometimes occur, but such cases are not specifically considered in this report."

The committee makes this recommendation:

"Prior to the consideration of measures of electrolysis mitigation, the following features should be given due attention:

1. Measures tending both to railway economy and the reduction of stray current.

(a) The return system, including track bonding, should be put in proper condition.

(b) The number of substations should be made a maximum consistent with railway economy.

2. Measures employed solely for electrolysis prevention. Where necessary to effect a still further reduction in electrolysis below that provided by the most economic railway system, one or more of the following measures should be taken:

(a) Applicable to railways. (1) Additional substations. (2) Insulated feeders. (3) A modified system of power distribution, such as a three-wire system.

(b) Applicable to affected structures. (1) Insulating joints in pipes and cables. (2) Insulated coverings for pipes.

(c) Interconnection of affected structures and railway return circuits. (1) Electrical drainage of cable sheaths. (2) Electrical drainage of pipes."

In the summary of good practice, some comment favorable or unfavorable is based upon most of the methods of electrolysis mitigation which have been attempted. It is interesting, in this connection, to remember that this report is one which represents a unanimity of opinion.

The other chapter headings in the book are: "Electrolysis Surveys," "European Practice," and "Electrolysis Research."

Under the first of these headings, there is an excellent portrayal of the whole question of electrolysis surveys, their purpose, scope, possibilities, interpretation, as well as the instruments available for making them.

EUROPEAN PRACTICE REVIEWED

The practice among the European countries which have made any study of electrolysis is analyzed and summarized thus:

"In Europe, the effectiveness of the co-operative or regulatory measures applied to the electrolysis problem may be summarized as follows:

"Germany, through voluntary co-operation, has probably remedied the former dangerous electrolysis conditions for all of its important systems. The instrumentality of agreements on definite technical standards was sought in preference to legislation.

"France has not been as successful in bringing prompt results through legislation as has Germany through technical co-operation.

"England, which has had government regulation for many years, has now no electrolysis troubles or disputes.

"Italy will probably give more consideration to the subject of electrolysis whenever the general conditions will permit.

"The methods followed to attain the satisfactory results obtained abroad are these:

1. Maintenance of good bonding.
2. Elimination of intentional contacts and liberal separation wherever possible, of pipes and rails.
3. Avoidance of bare copper returns and use of insulated returns in all installations where the conductivity of the rail alone would give a too great maximum drop.
4. Use of insulated return feeders with balancing resistances, or to a lesser extent "boosters" for the purpose of maintaining equality of rail potential at the feeding point of all feeders.
5. Small feeder drops and frequent substations to give close line regulation."

As to research, the committee's principal point is that there must be a development of practical means for measuring current density across contact surfaces of pipes and earth, and for the determination of polarity of structures and adjacent earth. (In ELECTRIC RAILWAY JOURNAL, Nov. 5, p. 809, Burton McCollum, a member of the committee, outlined a new method of earth current measurement and described a new instrument which will probably form the basis for much of the research work on electrolysis in the future.) The committee also outlined certain researches which should be carried out in order to make it possible to reach more nearly definite conclusions with reference to the best practice to follow, under various conditions, in electrolysis mitigation work.

The committee making this report is a joint committee of nine organizations, each organization having three members on the committee. Those organizations represented and contributing to the support of the committee's work are American Institute of Electrical Engineers, American Electric Railway Association, American Railway Engineering Association, National Electric Light Association, American Gas Association, Natural Gas Association of America, American Telephone & Telegraph Co., American Water Works Association and the National Bureau of Standards.

The report may be obtained from any one of these associations, although the handling of it is by the American Institute of Electrical Engineers, from whose representatives the chairman, Bion J. Arnold, is chosen. The address is 33 W. Thirty-ninth Street, New York. A nominal charge of $1 covers cost of distribution, but this charge is not at all intended to be or to represent the cost of the book, whose publication has been financed by the supporting organizations.

Electric Railway Lubrication*

The Author Enumerates the Principal Uses for Oil in Electric Railway Equipment and Describes Precautions That Should Be Taken To Insure Satisfactory Operation

BY DEAN TREAT
Lubrication Engineer Standard Oil Company of Indiana

THE lubricating engineer's duty is to reduce friction by proper oil and its proper application. A great deal of the success secured in the reduction of oil costs can be traced to the use of a cost system, whereby comparisons are made from month to month of lubricants and bearing metal. These two items go hand in hand as too little oil means excessive bearing costs and too liberal oiling means a rise in the cost of lubricants. The plotting of curves or comparative figures month by month by heads of departments furnishes the key to reduction in the costs or to changes in methods of oiling whereby good results can be obtained.

The average cost per thousand car-miles generally is about 25 cents, but if costs are lower than this average figure the management should not be entirely satisfied. Comparisons should be made monthly on bearing metals and lubricants in order to have reliable data. Each railway property has its own problems to work out and no rules can be devised for lubrication excepting in a general way.

Armature speed varies from zero to 1,500 r.p.m. and the bearings can be classed as medium speed bearings. The older type motors were grease lubricated, but at the present time this class is rapidly disappearing. Before the grease was warmed up sufficiently to flow and give the necessary film to keep metal from metal, particles of bearings were being removed and the life of bearings was from 3,000 to 5,000 car-miles. It was also necessary in hot weather to grease them daily and sometimes oftener. Operators frequently attempted to change these grease bearings to oil by substituting waste and oil. Due to the size of the slot in the bearing it was not usually successful, due to insufficient area of contact with the waste. In some cases manufacturers have substituted new motor frames with modern waste and oil lubrication and good results have been obtained. The use of felt on old type motor axles with waste packed on top gave fairly good results, but oil poured on top of the waste made it soggy and the oil fed as rapidly while the car was standing as in motion.

Modern bearings for armatures are of the solid sleeve type, ball or roller bearings. Sleeve type bearings on modern motors are solid, the pinion end being larger than the opposite one due to its needing greater strength. They may be of hard metal lined with babbitt, or solid bronze or babbitt.

Semi-modern motors used the split type bearings employing either bronze or hard metal lined with babbitt. The keying of the above was secured with dowel pins and holes and frequently a key in addition. The modern type use dowels in the flange or shoulder. It is very necessary to prevent movement of the bearings in order to secure long life, as movement changes the bearing pressure area.

Clearances between axles and bearings vary from .006 minimum to .016 maximum on diameters 3½ in. to 7 in. Successful lubrication requires clearance so that the lubricating film can be maintained so as to prevent seizing or rapid wear of bearing metal.

Axle bearings are always of the split type to allow interchanging and to prevent excessive labor as the solid type would make it necessary to remove the gear and wheel in order to renew or replace a bearing. These bearings need special attention as loose bearings allow poor meshing of gear and pinion teeth and frequently form a new pitch line. If kept closely fitted long life is secured and they are not worn to knife edges so rapidly. Electric current causes a great deal of trouble at this point and aids in breaking down the oil film. Axle collars that become loose cause a great deal of trouble on both gear and pinion and also affect the life of axle bearings.

Journal bearings need attention at the box cover, dust collar and the guard. Dust and water entering cause a great deal of trouble, water especially, as it floats the oil and prevents syphoning of oil. It is very necessary that journal bearing edges do not touch the journal as they act as a scraper and wipe away the oil film. Probably more hot boxes occur from this source than any other. Worn pedestals and boxes allow jamming of journal bearings and should not be allowed to exist. With welding machines as now produced this condition can be easily prevented by building up and grinding to original size.

GEAR AND TROLLEY LUBRICATION

Grease or heavy pitch like oils are used in gear cases. With tight gear cases heavy gear oils are used, allowing only a small portion of the gear to dip into the oil in the bottom of the gear pan. Some operators prefer a grease entirely and cord and wood chips have been used to deaden the noise. The addition of too much fiber increases the power consumption, similar to the use of asphaltums that congeal at low temperatures.

Air compressor lubrication depends considerably upon the fit of piston and rings on the cylinders. These parts should be kept in proper fit in order to permit the use of lighter oils. Trying to overcome mechanical defects with lubricants is not good practice. Horizontal lubrication is apt to be overdone, and guides to prevent too much drip of the splash system recently employed are very successful. Herringbone gears are rapidly supplanting chain compressor drive. Churning of oil by the gears due to too high a level is being taken care of on modern compressors by a trough that controls the dip into the oil. Air brake cylinders should be overhauled and cleaned every six months and lubricated by use of a good grade of semi-fluid grease, especially on the leathers.

Trolley wheel lubrication is secured by grease on some and oil on others.

Some types of wheels are equipped with graphite bushings in which the manufacturers claim that no lubrication is necessary. Generally railway operators oil these regardless of the graphite bushing in order to increase their life.

Too high a tension on the trolley pole caused by poor trolley bases affects the lubrication of the wheels inasmuch as the bearing pressure is increased above normal. In the use of ball and roller bearing bases it has been possible to increase the life of the trolley wheel due to their free movement and the lubrication is much more satisfactory than with the old type bases.

The life of trolley wheels depends greatly upon the service to which they are subjected, viz., the amount of current that flows through the wheel. The higher the amperage the greater the heat, which makes more necessary good conductivity for this current from the wheel into the trolley pole. Inasmuch as there is an oil film between the wheel and the spindle this is rather a serious proposition. The use of graphite greases is much more satisfactory in conducting this current than straight oil or ordinary greases, as the current passes more freely through the graphite grease.

TRACK CURVE OILING PREVENTS WEAR

Track or curve oiling is done to prevent cutting of the rail or flanges of the wheels. This is done with a grease or asphaltum lubricant, the latter gaining in use due to its adhesiveness. Too liberal a quantity applied usually causes the top of the rail to be coated, which, in turn, causes danger of sliding of wheels and accidents.

Two general classes of babbitt metal are used for armature, axle and journal. Sentiment appears to be in favor of high tin base metal for armatures and lead base for axles and journals. Some railways are going to bronze bearings throughout, using a skin of babbitt, while others are using the straight bronze bearings.

Long fiber wool yarn waste is most generally used for armature and axle bearings, but cotton waste is growing in favor for journal bearings. Some use metal turnings in the cotton waste to give it elasticity. A great many companies use straight wool waste throughout, using the new on armature and axle bearings and used waste on journals.

Waste saturation is an item of great importance, and waste should be submerged in oil for forty-eight hours and then drained for twenty-four hours. An oil room should be provided and the temperature should not be lower than 75 deg. F. Oil should never be poured on waste in a bearing, but alongside of it to prevent the waste from becoming soggy. On the modern type motors oil wells eliminate this trouble. Oilers should not forget to loosen up the waste packing at least once a month and renew it at least each six months. Waste washing and reclaiming is gaining in favor with larger companies and is worth consideration, depending upon waste loss and cost of installation.

All lubrication should be done on a car mileage basis instead of by days operation. If railway managers would appoint men thoroughly to follow up their lubrication, bearing practice and cost system a great reduction in cost would be secured. Too little attention is given the lubricants and bearing metal and to the application of them. This condition should be changed as high friction means higher costs.

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*Abstract of a paper presented at the first annual convention of the American Society of Lubrication Engineers, held at Chicago, Ill., Oct. 12-13, 1921.

Waste in Industry

Preliminary Movement Toward Reduction of Waste in Industry Reflected in Report of Committee Now Published in Book Form

THE report of the committee on elimination of waste in industry should have a concrete effect in focusing attention of engineers and other leaders in industry upon the subject of the inefficiencies of the nation's industrial machine. Preliminary and partial indications of the scope of this report and some of its conclusions have been given from time to time in these columns as work progressed. The publication of the final and complete report in book form should do much to stimulate interest and encourage study of the problems which it attacks and of some of the facts or indications which it outlines.

This report, it will be recalled, constitutes the first piece of public service undertaken by the Federated American Engineering Societies, which came into being exactly a year ago today. Herbert Hoover, in his address at the opening meeting when he was elected president, pointed to the existing restrictions and waste in industry and suggested the investigation of this subject as being the most worth-while contribution the new organization could make at that time. Acting upon authority from the American Engineering Council, the governing body of the Federated American Engineering Societies, he appointed a committee of seventeen in January of this year, who reported to the meeting of the Council on June 3, the present final report being the completed form.

In introducing the report in its final form, Herbert Hoover presents the following foreword:

"This reconnaissance report on waste in industry is the result of five months of intensive study, carefully planned and rapidly executed. A part of its value lies in the speed with which the work has been done and the promptness with which it presents definite lines for future action. It reveals facts which may serve as a foundation for an advance in American industry. It has a special message for government officials, financial, industrial and commercial leaders, labor organizations, economists, engineers and research groups, the public and the press.

"We have probably the highest ingenuity and efficiency in the operation of our industries of any nation. Yet our industrial machine is far from perfect. The waste of unemployment during depression; from speculation and over-production in booms; from labor turnover; from labor conflicts; from intermittent failure of transportation of supplies of fuel and power; from excessive seasonal operation; from lack of standardization; from loss in our processes and materials—all combine to present a huge reduction from the goods and services that we might all enjoy if we could do a better job of it."

It is hardly to be expected that accurate or definite conclusions can be drawn from this report. While it is, in nature, an engineering report, it is an engineering report in a field in which other elements than engineering are present. Its value lies in trying to apply the engineering method of analysis to a subject which has confounded most economists and industrial students in their attempts to find a definite solution. Perhaps the chief criticism which can be directed toward the present report is that it falls into the more or less easy and common phraseology of the economist and industrial student with reference to those conclusions which it does try to make rather than retaining the engineering method of analysis and conclusion without the least variation.

It is only fair to point out, however, that this problem has successfully resisted all other methods of attempted solution and if the engineers have made any progress in analyzing it and portraying methods of attack, they have to that extent made a noteworthy contribution.

Actually the report is based upon an "assay" of six industries of the country; namely, the building industry, men's clothing manufacturing, shoe manufacturing, printing, metal trades and textile manufacturing. To this is appended general reports on the following subjects: Unemployment, strikes and lock-outs, legal machinery for adjusting disputes, industrial accidents, health of industrial workers, eye conservation and purchasing and sales policies. While the details of the six assays are of particular value only to those and related industries, it is an advantage to have these general reports collected and it is also of value to see how the investigation has been made in other industries.

For example, Chapter 4 is devoted to the method of assay which was used by the committee in its investigation of the various industries. Any other industry can learn much as to the advantageous methods of analysis of its lost motion by a study of this method of assay, which includes a description of the questionnaire and valuation sheet used by the committee.

The report has been published by the McGraw-Hill Book Company as a 409-page, 6 x 9 cloth-bound book. The societies are placing a nominal charge of $4 for the book, the preparation of the text having been financed by the societies.

Personnel of C. E. R. A. Engineering Council

FOLLOWING approval by the executive committee of the plans tentatively adopted at the summer convention of the Central Electric Railway Association for a subsidiary organization which would give the engineers of the territory greater activity and a better opportunity to interchange experience and ideas, the personnel of the organization has been selected. As pointed out in the ELECTRIC RAILWAY JOURNAL for Oct. 15, page 699, the organization consists of an engineering council which also comprises four geographic sections. It is provided that the second vice-president of the association shall be chairman of the council and that two other members of the executive committee shall be members. The other four members are to be the directors of the four local sections, which are each to meet three times a year with one joint meeting at the time of the annual convention of the association. Given in that order the members of the engineering council are:

G. T. Seely, vice-president and general manager, Pennsylvania-Ohio Electric Company, Youngstown, Ohio, chairman; Harry Reid, Indianapolis, Ind., H. C. De Camp, Dayton, Ohio; Pierre V. C. See, Akron, Ohio; E. B. Gunn, Wapakoneta, Ohio; G. D. Nicoll, Springfield, Ohio; and Adolph Schlesinger, Indianapolis, Ind.

The members appointed to the executive boards of the four local sections are as follows:

Northern Section: E. B. Gunn, superintendent and master mechanic, Western Ohio Railway, Wapakoneta, Ohio, director; W. E. Richards, Toledo, Ohio; H. W. Savage, Detroit, Mich.; R. C. Taylor, Albion, Mich; J. R. Lawrence, Wauseon, Ohio; A. V. Brown, Sandusky, Ohio; and Allen Karns, Bowling Green, Ohio.

Western Section: Adolph Schlesinger, superintendent of distribution and substations Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.; director, T. H. David, Indianapolis, Ind; R. N. Heming, Fort Wayne, Ind.; Frank H. Miller, Louisville, Ky.; L. A. Mitchell, Anderson, Ind.; T. W. Osborne, Lebanon, Ind; and Charles Sigler, Warsaw, Ind.

Eastern Section: P. V. C. See, superintendent of equipment Northern Ohio Traction & Light Company, Akron, Ohio, director; A. B. Creelman, Youngstown, Ohio; Lawrence D. Bale, Cleveland, Ohio; Guy H. Kelsay, Elyria, Ohio; C. H. Folwell, Parkersburg, W. Va.; H. J. Mayer, New Brighton, Pa.; and R. D. Miller, Alliance, Ohio.

Southern Section: G. D. Nicoll, superintendent of equipment Ohio Electric Railway, Springfield, Ohio, director. The names of the other six members of the executive board of this section have not yet been made available.

American Association News

Mid-Year Dinner Committee

PRESIDENT TODD has appointed the following as the special dinner committee for the mid-year conference: Harry Reid, Indianapolis, chairman; S. W. Greenland, Fort Wayne; L. E. Gould, Chicago; Myles B. Lambert, East Pittsburgh, and E. C. Faber, New York.

Committee Activities Under Way

ALREADY the committees of the American Electric Railway Association are picking up their activities.

The Executive Committee is scheduled to hold its next regular meeting in Indianapolis on Dec. 2, at 10 a.m., in the office of President R. I. Todd.

A meeting of the papers committee has been called by Chairman C. D. Emmons to meet at Association headquarters on Nov. 25, at 10 a.m.

The publicity committee has been called by Chairman J. N. Shannahan to meet at Association headquarters on Nov. 26, at 10 a.m.

The membership committee, which has a large program ahead of it, has been called by its chairman, F. R. Coates, to meet in Indianapolis on the afternoon of Dec. 2, after the meeting of the executive committee.

Recent Happenings in Great Britain

Expiration of Term of War-Time Control Over Buses Creates Problems for Tramways—Leeds Reports Deficit

(From Our Regular Correspondent)

The most important subject discussed at the annual conference of the Municipal Tramway Association, which was held in Salford, Manchester, on Sept. 28 and 29, was the question of possible unlimited competition by privately owned motor omnibuses with municipal tramways. Hitherto municipalities have had a certain amount of control over the running of buses by other people, but an act of Parliament which gave them expired with the recent official termination of war. The matter will now be regulated under the roads act of 1920.

J. B. HAMILTON, general manager of Leeds City Tramways, who brought forward the subject, quoted the opinion of a legal authority as to the effect of the act. It was that whenever application is made for a license for an omnibus to ply for hire, unless there are valid reasons for refusing it, the application must be granted. The licensing authority would not be justified in refusing a license merely on the ground that running of vehicles would set up competition with tramways or omnibuses of local authority. On the other hand, Mr. Hamilton pointed out that should licensing authority be of opinion that sufficient services are already provided, they may refuse to license, but the applicant has the right to appeal to the Minister of Transport. The latter might say that: If a road was already sufficiently served, proposed buses were unnecessary, but he might take the opposite view.

This was the difficulty and uncertainty before the conference. Tramways, it was insisted, form a monopoly granted by Parliament under proper safeguards and conditions, and they cost great sums to construct. It was, therefore, contended that they should not be subjected to the competition of vehicles which were under no regulation. If buses were needed on routes where there were no tramways, they should be run by the local authority. In the end the conference adopted a resolution declaring that the roads act encourages wasteful and overlapping competition which will result in increased traveling charges to the public and is contrary to the intentions of Parliament. It was further agreed that representations be at once made to the Ministry of Transport urging statutory regulation in the public interest.

J. M. McElroy, general manager of Manchester Tramways, presented a paper showing the growth of traffic in recent years and the important fact that the percentage increase in the average fare per passenger was a long way below the percentage increase in operation costs. A suggestion was made that the shilling should be decimalized, so as to give a coin of slightly higher value than the present penny. The high cost of permanent way construction would, unless materially reduced, put strict limits to tramway extensions and must lead to the increased use of motor bus and the trolley bus.

A plea for freeing tramway undertakings from a large part of the cost of maintaining the street surface between the rails was made by W. Chamberlain, general manager of Oldham Tramways. The grievance is an old one, but it is becoming more and more acute owing to the increasing wear of the streets by heavy automobiles. At the close of the conference, Alderman R. Mayne, deputy Lord Mayor of Newcastle-on-Tyne and chairman of the Newcastle Tramways Committee, was elected president of the association for the ensuing year, and J. Timpson, Mayor of Portsmouth, was elected vice-president.

The Ministry of Transport is evidently alive to the grievance of tramway authorities over the question of maintenance of road surfaces. Sir Henry Maybury, director-general of the roads department of Ministry, addressing a meeting of the Commercial Motor Users' Association early in October, said that a matter which must soon engage the attention of his department was the burden on tramways for road maintenance. He suggested that tramway authorities go to Parliament for relief, and expressed the opinion that if they were relieved of road maintenance they should pay for the use of the road.

NOTHING LIKE THIS IN AMERICA

A peculiar tramway trouble is reported by Mr. Dalrymple, the manager at Glasgow. There is a shopkeepers' half holiday every Tuesday, and the public houses, like other shops, are closed in the afternoon and evening. In the districts outside the city boundary, however, the licensed premises are open on Tuesdays. A result is that during part of the evening cars going to the country districts are besieged by people seeking drink. They return later on, a great proportion of them intoxicated. Not only do they fill cars to the exclusion of the ordinary passengers, but they often behave in a disorderly manner. The conductors and inspectors accordingly have a bad time. The fundamental remedy, so far as the tramways are concerned, would be to have the Glasgow "saloons" open instead of closed. To arrange for the rural public houses being closed on Tuesdays would be difficult, as various local authorities are concerned. I have not heard of any similar trouble in England. In London, at all events, nothing of the sort occurs because the public houses are not closed on the shopkeepers' half holiday.

The Leeds City Tramways, which used to be a prosperous concern, is not doing well. A return for twenty-two weeks ended Aug. 31 last shows a deficit of £36,634, or 2.335d. per car-mile run. For the corresponding period of last year the loss was £1,863, or 104d. per car-mile. The income has decreased and the expenditure has increased. Both passengers and miles run show a falling off. The circumstances are not very favorable for celebrating a jubilee, but the undertaking completed fifty years of existence on Sept. 16. In the early days horse cars were used; these were succeeded by steam cars; the first electric line was opened in 1891.

In 1894 the Leeds Town Council purchased the private undertaking and proceeded to electrify the various lines. Figures just issued show that the total cost of running the rail-less electric cars of York Town Council, including capital charges, amounts to 1s. 7d. per car-mile. For electricity, solid rubber tires and wages alone the expense is 11½d. per car-mile run. The consumption of energy is 1.42 units per car-mile and the price at which it is purchased is 2d. per unit. The cars are single-deckers, seating twenty-four passengers, and are worked on the one-man principle. This is the most recent installation of trackless trolley system in the country.

The Metropolitan Railway, the Metropolitan District Railway and the London Electric Railway early in October put into operation improved services. Longer trains are run during the busy hours, the services are continued later at night, and the non-stop trains have been increased in number. To a certain extent the changes are restorations of service reduced about a year ago. The new development has been facilitated by the delivery of new cars, which were described in this journal some months ago.

The geological adviser to the Channel Tunnel Company recently stated that there is good reason to believe that the government is now generally favorable to the scheme. Revised plans have been prepared under which the tunnel will be placed at such a depth as to render it invulnerable to submarine attacks. The proposal for a railway tunnel under the Strait of Dover to connect England with France has been before the public for many years, but military considerations have prevented the work from being carried out. The scheme if executed will involve a large installation of electric traction. The new relations which have grown up between Britain and France may result in the tunnel being constructed.

A strike of Salford tramway employees, which lasted for only a few days and ended on Sept. 17, is worth noting because of peculiar reason for it. A number of inspectors and traffic clerks withdrew their membership in the United Vehicle Workers' Union in order to join the National Association of Local Government Officers. The union objected and its tramway members in Salford went on strike. A settlement for the time at least was arrived at by referring the matter to the consideration of a negotiating committee.

The Bradford Town Council intends to apply for Parliamentary powers next session to carry goods up to the weight of 20 tons on the tramways of the city. The street gradients are very heavy, rendering street transportation of goods by horse or automobile vehicles difficult, and it is thought the situation may be eased by utilizing the tramways for freight work.

Sir Philip Dawson, the well-known consulting electrical engineer, has been elected member of Parliament for West Lewisham. He had a large majority of votes over his two opponents.

The fifth international commercial motor exhibition, organized by the Society of Motor Manufacturers & Traders, is being held in London from Oct. 14 to 22. The exhibits include a wide variety of petrol, electric and steam road vehicles for passenger and goods transport. Motor omnibuses and motor coaches are represented, some with pneumatic instead of solid rubber tires.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

New Orleans Negotiations Halted

Settlement There Apparently Must Await End of Controversy Between City and State

Another hitch has been encountered in working out a settlement of the utility problem in New Orleans. As the matter was being thrashed out by the city and the representatives of the several classes of the security holders with a reasonable degree of hope that some amicable solution would be found, a sudden and unexpected jolt was given the negotiations by the State Supreme Court. The new cause of delay is due to the opinion handed down by the court of last resort on Nov. 12, recalling a prohibition writ issued last summer, granting the city a stay of proceedings against a restraining order given to the State in the Civil District Court, by Judge King.

The restraining order of the Civil District Court, it will be recalled, was based upon the contention of the State of Louisiana, through Assistant-General Hall, since deceased, that on information received, the city was about to enter into a compact whereby the railway was to charge fares in excess of 5 cents. This the state contended was in violation of the franchise rights the railway had obtained from the State. It was further averred that the city contemplated allowing an excessive rate of return upon an excessive valuation of the property of the railway.

The recall of the writ will now have the effect of reopening the proceedings *de novo* upon the application of the State that the city was without legal authority to enter into negotiations with the railway not in keeping with the franchises of the railway.

Mr. Hall, in behalf of the State, in his petition in opposition to the application of the city for a writ of prohibition, alleged that:

> 1. The city had an adequate remedy by an appeal from any order or decree that the Civil District Court might eventually render in the case.
>
> 2. The city did not, in the lower court, plead to the jurisdiction of the court or move to have the order of that court rescinded and did not except to the proceedings in any way.
>
> 3. The lower court had jurisdiction of the case and Judge King did not exceed his jurisdiction in issuing the restraining order.

The opinion handed down on Nov. 12 upheld Mr. Hall's contention concerning the lower court's jurisdiction. The opinion declared:

> The city's contention that the court has no jurisdiction seems to rest upon the idea the purpose and object of the suit, and the function of the temporary restraining order, was to interfere, generally, with the legislative power and function of the municipal council.
>
> On the contrary, an analysis of the prayer for injunction shows that the true and only object was to prevent the municipal council from contracting, with regard to the street railway franchises, beyond what the state alleges is the limit of municipal authority.
>
> We must bear in mind the State is the author of the municipality's authority to take such contracts. If the Civil District Court eventually should decide the state is not entitled to the relief prayed for, it will be, not for want of jurisdiction over the subject matter, but for want of a cause or right of action.
>
> If the Civil District Court should conclude the contemplation proceedings of the municipal council, of which the state complains, are matters over which the municipal council, as a legislative body, has exclusive authority, the court will not interfere. But the judgment of the courts, in determining whether the proceedings contemplated by the municipal council has exclusive authority, would be an exercise of jurisdiction on the part of the court.
>
> This suit was not an attempt at unlawful interference with the right of the municipal council to bring the railway problem to a settlement, if possible, and, to that end, to hold conference with the committees and organizations referred to.
>
> The restraining order complained of, or the injunction prayed for, could not have prevented or interfered with such conferences or proceedings, so long as they did not result in a contract beyond what the state alleged was the limit of the commissioners' authority.

Whatever the decision in the District Court, it is not improbable that an appeal will be taken to the Supreme Court by either party to the controversy.

Two points in the pending negotiations which yet await settlement and which were being discussed when the Supreme Court hurled its bomb among the conferees were the so-called "set-up" and the dividends of common stock.

The financial set up of the reorganized company contemplates the creation of a reserve fund with which to retire the 4½ per cent bonds, under certain stipulated conditions, for replacements and betterments. This movement has developed a three cornered deadlock as yet untangled. The proposed reserve fund amounted to $200,000, which was to be divided equally for improvements and retirements of the bonds. This fund was to have been created before the declaration of any dividends on the common stock of the company.

G. M. Dahl, representing the junior security holders, is said to have been strongly opposed to this course, though the representative of the holders of the 4½ per cent bonds held out for such a safeguard to their interests and were supported by the city in insisting that such a provision should be inserted in the compromise agreement.

The representatives of the security holders have left for New York and, like the Commission Council of New Orleans, will await the end of the legal tangle in which the city and the railway company now find themselves.

Maximum Award for 213 Trainmen

According to a count completed on Nov. 1, 1,921 employees of the Los Angeles (Cal.) Railway out of 2,163 will receive a cash bonus at Christmas as a reward for efficient service rendered the public and the company.

Two Bells, the official publication of the railway, states that only 182 trainmen now in service will not participate in the bonus, and the reason assigned is that they have not been in the service six months.

The full bonus for twelve months at the rate of $5 pen month will be awarded to 213 trainmen.

New York Transit Commission Begins Hearings

Plans Are Outlined and Bases Established for Further Discussions at Early Sessions

Public hearings on the plan of the New York Transit Commission for the consolidation of all of the traction lines of New York began on Tuesday morning, Nov. 15, as announced. In his opening statement, Chairman McAneny reviewed the powers of the commission as conferred upon it by the last Legislature, and then referred to the outline of the tentative plan of the commission for the consolidation of the lines in New York City, as published in abstract in the issue of this paper for Oct. 1, 1921.

In conclusion, Mr. McAneny said, in part:

> It is the purpose of the commission not only to bring about a physical reorganization of the roads for purposes of better travel and better development of the rapidly growing city but to restore as promptly as may be the citywide fare and an actual and honest charge of 5 cents. The commission, in its report, has pointed out many eliminations and reductions of cost that ought naturally to follow the municipalization of the roads, the unification of operation and the application of the strictest business principles in the administration of their affairs.
>
> Through these means it hopes not only to restore an actual 5 cent fare but to keep the fare indefinitely at 5 cents.

INQUIRY INTO EXPENSE ACCOUNTS OF COMPANIES

The chairman then declared that one of the first acts of the commission would be to go over the expense accounts of the companies, and as it would take too much time for the committee, as a whole, to do this for all of the accounts, the committee as a whole would examine the accounts of the Interborough Rapid Transit Company for June, 1921, of the New York Consolidated for May, of the New York Railways for April, Third Avenue Railway for March, Brooklyn Rapid Transit for February, Second Avenue Railroad for January, New York & Harlem Railroad for December, 1920, Eighth Avenue Railroad for November, Ninth Avenue Railroad for October, the lines in Queensboro for September, and the Staten Island lines for August. The accounts for the other months for each of these companies will be examined by individual commissioners.

Assistant City Corporation Counsel Kohler then challenged the powers of the commission to carry out any such plan as it proposed, and declared the statute under which its powers were granted to be unconstitutional, according to both the State and Federal constitutions and consequently the acts of the commission to be invalid and void. He urged the commission to abandon its proceedings at least until representatives of the city of New York should be able at the next Legislature, which would convene in January, to introduce a bill to cover the situation. The chairman, however, declined to discontinue the proceedings.

The special counsel for the commission, C. J. Shearn, then outlined the course which the commission intended to follow. He said he proposed first to show that although the number of passengers had greatly increased, the number of car miles had not increased in proportion. Consequently the quality of the transportation given was not as good as formerly. He declared also that maintenance had not been kept up, particularly on the surface lines, and this meant delays to the service. Later, the commission expected to take up the condition of each company through its president or receiver to see what they had to say on the subject, both as the causes of the present condition and the remedy, particularly the plan proposed by the commission. A similar course would then be followed with the various protective committees representing the bondholders so that the commission could learn their attitude toward the plan. Then the commission would consider what savings could be effected by changes in the physical layout and other changes, and the reduction of the number of franchises, which now amount to more than 1,000. Finally, the question of valuation would be taken up. Work on this question has been carried forward by members of the staff of commissions, and it was expected that valuations would be completed by the end of the year.

In referring to the matter of valuations Mr. Shearn said that the commission had been establishing valuations on these four different bases:

1. The investment value obtained from the books of the company, as to the amount of money actually expended, less depreciation.
2. Cost of reproduction on a pre-war basis, less depreciation.
3. Cost of reproduction at present prices, less depreciation.
4. Finally, as required by the law, on the basis of prospective earnings under the legal or franchise rate for fare.

The rest of the two sessions on Monday was devoted to the presentation of testimony by representatives of the commission on statistics of operation and on franchises.

FRANCHISE EXTRACTS INTRODUCED

Ralph R. Monroe read extracts from the franchises of a number of the companies. In general they provided for a 5-cent fare but in many cases this fare was specified only between certain limits and in some instances the fare was not directly mentioned.

Frederick W. Lindars, accountant for the commission, gave figures on the number of passengers carried, an increase of 27.7 per cent from 1917 to 1921, while the ratio of seats for passengers in that period had materially decreased. The witness also gave figures upon the reduction of the number of free transfers.

John H. Madden, engineer and head of the Valuation Bureau for the commission, gave figures on maintenance of way and equipment. He said that taking 100 as the index figure in 1912, the cost of labor had increased to 208 in 1920 and materials to 308. The following table of decreased maintenance figures was compiled from his testimony:

Company.	Spent in 1912.	Same Figure in 1920 Values.	Actually Spent In 1920.
N. Y. Rys. .	$2,035,441	$5,454,952	$3,036,370
3d Av. Rys. .	1,370,129	3,673,266	2,608,528
B. R. T. surface . .	2,683,970	7,193,040	5,472,065
Queens lines	492,802	1,320,709	685,136
Richmond lines	168,522	451,629	234,492
2d Av. lines	134,911	361,561	247,799

Figures also were presented to show that the roads had caught up on their maintenance work in 1921.

Harry N. Latey, engineer of equipment and operation for the Transit Commission, then testified that the breakdowns and delays of more than five minutes on these transit lines had increased enormously as the funds for maintenance were comparatively decreased. The increases varied from about 25 per cent to 202 per cent.

Daniel L. Turner, consulting engineer to the commission, presented testimony that on many of the surface lines there had been a general increase in passengers carried, but a decrease in car miles run.

Railway Ready to Comply

Detroit United Preparing to Discontinue Service on Lines Included in Ouster

Following the election at Detroit, Mich., in which the people approved the ouster ordinance requiring the Detroit United Railway to remove its tracks from Fort Street and Woodward Avenue on the sections where franchises have expired, Allen F. Edwards, vice-president of the company, issued a statement to the effect that the company would comply with the action of the authorities as indorsed by the voters.

COMPANY'S ATTITUDE MADE PLAIN

Mr. Edwards stated that according to his understanding of the situation the election returns must be accepted by the Common Council through the report of the board of canvassers. If this acceptance is made at the Council meeting on Nov. 15, then the ouster ordinance gives the company ten days in which to discontinue service and ninety days in which to remove its tracks and overhead equipment from the streets. This will make the suspension of service effective not later than Nov. 25.

In his statement he cited that the tracks involved are Woodward Avenue, from Milwaukee Avenue south to the river, and Fort Street, including West Jefferson Avenue, from Artillery Avenue to the eastern terminus of the line. He further stated:

> It seems unfortunate that a satisfactory price for the lines to be ousted could not have been agreed upon. The price of $388,000, which was named by the city as the amount they were willing to pay for these lines, we considered in no way consistent with the value of the property proposed to be taken over, and have therefore declined to accept it.

The company has, he stated, suggested arbitration as a means of arriving at a fair price for these properties. This seemed to its officials to be a means by which service to the public could be continued.

It is further cited in the communication that as a result of the ouster ordinance becoming effective, it will be necessary for the company to turn its Woodward Avenue cars at Grand Belt (Milwaukee Avenue) and the West Jefferson and Fort Street cars at Artillery Avenue. The company expects to operate the remainder of its lines as a unit and to render to the public the best service which it is possible to give under the conditions imposed upon it.

The company has communicated with the Council asking for permission to install the necessary Y's on which to turn its cars at the ends of the lines over which service is to be suspended. It is pointed out in the communication that the Y's on Fort Street and West Jefferson Avenue lines may be used for turning cars by both the Detroit United Railway and the city, and suggested that the installation and maintenance of the equipment be made the subject of a joint agreement between the company and the city. It is understood that the Y at Woodward and Milwaukee will be used exclusively by the company.

Mayor Couzens stated that he was much pleased with the support of the people of the progressive program and that he would feel encouraged to finish up the job which has been started. He was particularly pleased that the administration has been empowered to use the trackless trolley if it seemed desirable and that the people have supported the officials in their campaign to get control of the streets for which they have fought so many years.

No definite announcement has been made by the Mayor or the Street Railway Commission as to what the next step will be, but it is believed that an effort will be made to reach an agreement for an exchange of running rights over the lines in controversy.

Conference in Saginaw Awaited

The protective committee of the bondholders, and other creditors in New York of the Saginaw Bay-City Railway were asked Nov. 16 by the City Council of Saginaw, Mich., to confer in Saginaw in the near future to discuss the traction problem there. Resumption of railway service in the city will be the objective of the conference discussion.

This action is the result of the request of the City Council that Otto Schupp, receiver for the defunct company, wire the creditors for a meeting at the earliest possible date. The Council intends to discuss openly with the committee from New York what plan they can accept as a settlement of the transportation problem.

The transportation situation has so aroused the people who have been dependent upon jitney buses since the railway ceased operation on Aug. 10, that recall petitions for the Mayor and four Councilmen were started in circulation Nov. 16.

Steam Roads Will Not Electrify

Maurice E. Spratt, counsel for the New York Central and "Nickel Plate" Railroads, has informed the municipal authorities of Buffalo, N. Y., that neither road plans to heed the ordinance enacted recently which provides that steam roads entering Buffalo must electrify their lines before Jan. 1, 1923, and submit plans for the electrification before Jan. 1, 1922. It is claimed the cost of electrifying all lines entering the city would run between $75,000,000 and $100,000,000.

> We are chartered by the state to operate our lines as we do now, said Mr. Spratt's statement. The City Council of Buffalo or any other city has no authority to compel us to electrify. The ordinance is invalid and will not be obeyed. The cost would be too great, even if electrification were practicable.

Representatives of other steam rail lines entering Buffalo said that assuming the city has authority to order electrification, the short interval between the enactment of the ordinance and the time for filing plans for electrification would cause any court to declare the statute unreasonable.

Election Lends Complications

Change in Administration in Buffalo Spurs Present Incumbents to Renew Action

The City Council of Buffalo, N. Y., has voted $25,000 as an initial appropriation to prosecute the action brought before the Public Service Commission in an effort to restore the 5-cent fare on the local lines of the International Railway. The International now is collecting a 7-cent fare or four tokens for 25 cents.

John C. Brackenridge, valuation expert who assisted the municipal authorities in their last rate case against the International, and Milo R. Maltbie, former member of the Public Service Commission, will assist the city. Both traction experts have held conferences with William S. Rann, corporation counsel, and Frederic C. Rupp, deputy city attorney, who will have charge of the city's fight.

Some opposition to the prosecution of a rate case at this time has developed and even the city law department has warned the members of the City Council against such a proceeding at this time, but Frank C. Perkins, the Socialist member of the City Council, is insistent that the city proceed at once with the case before the Public Service Commission.

Newspapers opposed to a rate proceeding at this time brand the action of the Council as "a fishing excursion." An editorial in the *Commercial* says by bringing the action just before election, it appears that some members of the Council are playing for public favor.

Mayor George S. Buck, who has opposed the railway since he took office six years ago and whose fight against the traction company resulted in a sale and complete reorganization of the system, was defeated for re-election by the anti-prohibition candidate, Frank X. Schwab, a brewer.

Other newspapers, commenting on the action of the Council, at this time say that lower fares will mean bankruptcy, inadequate wages for employees and poorer service. The municipal bureau of public utilities has called attention to the fact that 200 fewer cars are being operated this fall than a year ago and 300 fewer cars than two years ago. The report submitted to the Council says that, "unless more cars are run this winter, the service will be the worst in the history of the city."

The Mitten Management, Inc., Philadelphia, which has a contract for operating the local and interurban lines of the International system, says that sufficient cars are being operated to meet traffic requirements and that the running time has been speeded up to offset any cars which have been taken off during the non-rush hour periods.

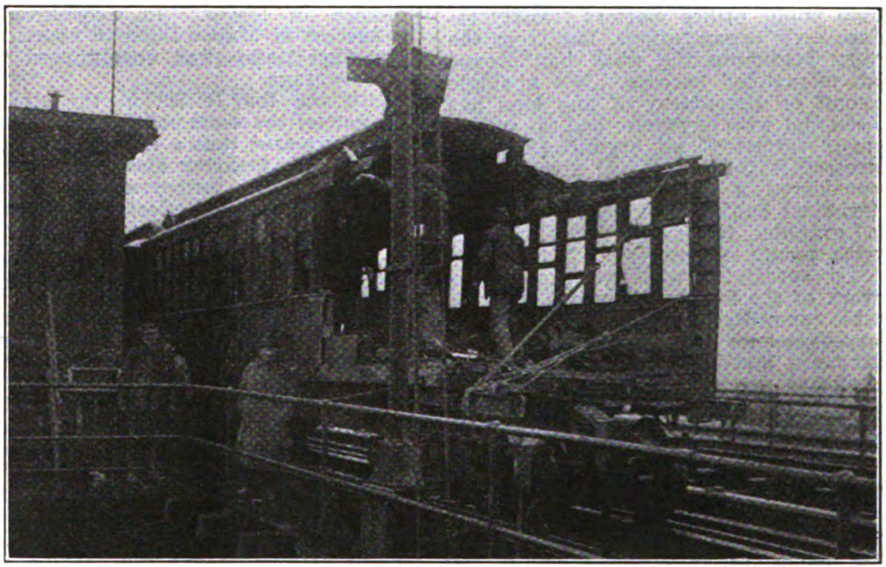
Railway Must Pay City

A judgment of $19,956 in favor of the city of Jamestown against the Jamestown (N. Y.) Street Railway has been awarded by Supreme Court Justice George E. Pierce. The amount represents the sum alleged to be due the city in unpaid percentages on gross earnings of the traction line. The judgment was taken by default. Although George E. Maltby, general manager of the Jamestown Street Railway, was in court with Marion H. Fisher, its attorney, no answer was made.

A section of the franchise granted the company in 1891 provides that the railway should pay to the city each year 3 per cent of its gross earnings. The judgment covers the amount due for the period between June 30, 1915, and June 30, 1920. Counsel for the city informed the court that the railway had promised to settle the case, but had continuously neglected to do so.

Thirty Hurt in Rear End Collision

Thirty passengers were injured in the rear-end collision on the Interborough Rapid Transit line near Woodside, Long Island, recently. A six-car steel subway train standing at the Fisk Avenue station of the Corona line was rammed by a Manhattan bound train of two wooden cars. Twelve feet of the first wooden car were shattered and the rest of the car jammed onto the top of the last steel car of the stalled train.



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REMAINS OF WOODEN CAR SHATTERED IN WRECK

Mr. Witt Sees Great Future for Seattle

The idea of municipal ownerships is growing fast. This opinion was recently expressed by Peter Witt, Cleveland transportation expert, in speaking before members of the King County Democratic Club, Seattle, Wash.

Mr. Witt said that Seattle had attracted great attention the country over by buying its electric railway lines and that now successful management of the railway would bring thousands of home owners from the East to reside in the city of Seattle. On the purchasing of the public utility, Mr. Witt said:

> I don't know how you feel about the public utility you purchased a few years ago, I don't know what your thoughts are now, but I have vision enough to know how you will feel in the future. The world knows now that you are big enough, great enough and have the courage to own your great utility. Your one aim should be to make it the best and finest system of municipal transportation in the United States.

His topic was municipal ownership, the history of which he reviewed, saying that it was an old established institution but still going forward.

Conductors Learn to Enunciate

Minneapolis street car conductors no longer may mutter and mumble the names of streets for their own distress and the passengers' mystification. Street names, if the course in the street name pronunciation of the Minneapolis Street Railway is successful, will not be mere trippings of the tongue. They will be nothing less than street names.

From now on the passenger may read a paper with peace of mind, instead of interrupting the report of the Disarmament Conference with a jerking look at the signpost of each corner. He will read with the confidence that at his block he will be informed in intelligible English that this street is River Road.

In Minneapolis the conductors are going to school to learn pronunciation, and soon there will be no need for Esperanto there, for all Minneapolis will be speaking the English language. The course is the latest in the school of the Minneapolis Street Railway, where for more than eight years motormen and conductors have been trained. Courtesy and how to handle an emergency are taught there, as well as the mere mechanics of running a street car and collecting fare.

Receivers Inform Public

T. H. Tutwiler and Frank S. Elgin, receivers for the Memphis (Tenn.) Street Railway, recently published in the daily papers of Memphis an interesting symposium, educative in character, entitled "The Truth."

The misuse of transfers was the subject of one article which explained very plainly the decreased revenue and unfairness to patrons produced through the wrong use of the transfer.

Another article gave a little financial history of the workings of the railway in 1920. The statement in part is as follows:

> The receivers, during the year 1920, charged as a part of the Cost of Service $280,000 to the account of Injuries and Damages. Actual Payments during the year amounted to $353,000. It cost each revenue passenger (each time a ride was taken) over half a cent to pay the Injuries and Damages Account.

The receivers then urged the co-operation of the public in its Accident Prevention Campaign.

Utilities' Problems Discussed

Ohio Public Utility Information Committee Conducts Frank Talks Before Civic Bodies

People everywhere are anxious to hear the story of the public utilities. This is the emphatic conclusion reached by the Ohio Committee on Public Utility Information, after having operated a Speakers' Bureau for a few months on an experimental basis.

The work has now passed the experimental stage in Ohio and has become a fixed part of the Ohio committee's activities in creating good will toward public utilities and a better understanding of their problems.

SUCCESS ASSURED DESPITE MISGIVINGS

It was with some misgivings that the experimental speaking program started in Ohio. There was doubt as to the reception which might be accorded speakers who should attempt to discuss public utility matters frankly before civic organizations, but from the very beginning the work has proved an unqualified success. Not a single rebuff or discourtesy of any kind has been met with anywhere and the unanimous verdict of all organizations addressed is that what had always been considered a dull, uninteresting and technical subject had been covered in a graphic, fascinating way, replete with points of interest.

So successful was the preliminary work of the Speakers' Bureau that the Ohio committee a short time ago made arrangements for its permanent continuance and issued an attractive descriptive pamphlet outlining the service offered and giving a few of the salient facts relative to the magnitude of the public utility industry. This pamphlet has been sent to the secretaries of all civic organizations, and as a result the committee is flooded with requests from all sections of the State for speakers and engagements are booked several months ahead.

Among the subjects chosen for addresses before civic organizations are the following:

"A Half Century Miracle."
"Making Great Cities Possible."
"A Community and Its Utilities."
"The Community's Greatest Asset."
"Applying Nature to the Needs of Humanity."
"The Story of Electricity, Gas, the Street Car and Telephone."

PROMINENT SPEAKERS RETAINED

In addition to speakers of state-wide prominence in connection with the industry in either regulatory or managerial capacity, men of national reputation are being called upon for addresses in some of Ohio's larger cities. The officers of chambers of commerce, rotary clubs, Kiwanis clubs, exchange clubs and other organizations before which addresses have been made are enthusiastic in their commendation of the work and the committee has received many letters from them testifying to the undoubted good which has been done in creating a better understanding by the people of the problems of the utilities and the necessity for adjusting such problems on the basis of the square deal.

A conspicuous feature of the work in Ohio is the publicity given it by the newspapers. Not only have thousands of business men in these various organizations heard the message directly, but through the co-operation of the papers the message of the speaker has been carried to every home in the various communities.

Significant Elections in Albany District

At the election on Nov. 8 the cities of Schenectady, Troy, Cohoes and Albany, N. Y., elected complete Democratic municipal tickets, the latter city turning over politically for the first time in twenty-two years. While the strike on the lines of the United Traction Company in Albany, Troy and Cohoes, in progress since Jan. 29, was not specifically mentioned as a campaign issue by either of the dominant political parties there is no doubt that the attitude of the Albany administration under Republican rule toward the United Traction Company influenced several hundred votes against its continuance in power. In Schenectady the success of Mayor Lunn in averting a traction tie-up was openly used to his advantage.

With the four cities in the strike zone now of the same politics after Jan. 1, it is rumored that a concerted effort will be made to bring about conditions favorable to the former employees, if the company does not effect a settlement before that date.

COMPETITIVE FRANCHISE THREATENED

Another development predicted is that the incoming Democratic administration will grant franchises for increased territory to the Woodlawn Improvement Association Transportation Corporation, which now has some thirty buses in operation over established routes covering territory not reached by the United Traction Company. In this connection it is even said that the possibility exists that if the traction company by January does not discharge its present employees and re-engage those who went out on strike months ago, the new administration will grant competitive franchises covering the entire city of Albany.

There is little disposition, however, on the part of Albanians to embark in the venture so popular with Mayor Hylan of New York City of municipally owned bus lines.

Miami Votes to Operate Defunct Railway

The special election on Nov. 1 in Miami, Fla., resulted in approval by the voters of the purchase of the tracks of the defunct Miami Traction Company and the issuance of $100,000 of city bonds for the equipment to resume operation of the line.

The Miami Beach Electric Company which operates cars to Miami Beach through a portion of Miami, has agreed to lease the city's system. Operation over the former Miami Traction Company's lines will be begun the latter part of December.

The City Commission has ordered new trolley wire, new poles and eight new trolley cars. The Miami Beach Electric Company will increase the service over present line as rapidly as traffic will permit. A ten-minute schedule is promised as soon as the fares total $2.50 per round trip, which is the actual cost as figured by General Manager R. L. Ellis.

News Notes

Wage Cut Notice Given.—Employees of the Interstate Street Railway, Attleboro, Mass., have received notice of a proposed wage reduction, effective Jan. 1, 1922. The cut amounts to 20 per cent for car operators and 30 per cent for office employees.

Railway Announces Cut.—The Hull (Que.) Electric Railway has announced a 10 per cent reduction in wages, to become effective on Dec. 1. The new rate for senior motormen and conductors will be 43 cents an hour instead of the old 48 cents. The employees are considering the proposition.

Men Reject Cut.—Employees of the New England Investment & Security Company, which controls the Springfield Street Railway and the Worcester Consolidated Street Railway, have rejected the company's proposition for a wage reduction of 26½ per cent and an hourly basis of pay instead of the day basis.

Receiver Asked for Account.—Harry Evers, receiver for the Buffalo & Lackawanna Traction Company, Buffalo, N. Y., has been ordered by the Public Service Commission to make a report regarding what his company has done toward the cancellation of a contract with the Buffalo & Lake Erie Traction Company. The latter company is asking for an increase in fare. Mr. Evers also has been asked to submit a report of the revenue of the Buffalo & Lackawanna Traction Company for the last three months.

Will Continue to Serve.—The *News Bulletin* issued by the Ohio Committee on Public Utility Information, had its first anniversary on Nov. 7. It now starts in on its second year and promises to keep the people of Ohio informed about its electric railway, telephone, electric light properties and other conveniences. The committee, on the occasion of its first birthday, urged editors and correspondents to communicate with its bureau to secure first-hand and authentic information about the development of the utility problems in the State.

Union Appoints New Advocate.—James M. Sheehan, president of the local division of the Amalgamated Association at Albany, N. Y., in 1901, who successfully negotiated with the United Traction Company a termination of the strike in that year, has been selected to open negotiations again with the company with a view to a settlement of the strike, which has been operative since last January. This is accepted by members of the union and their friends as a virtual repudiation of Joseph S. Droogan, president of the union, as far as his ability to get successful results in parleys with the railway is concerned. So far as the railway is concerned the strike has long been over, but it has never been officially declared off by the union. That Droogan was gradually dropping out of sight as a directing factor in the Albany union was indicated in the ELECTRIC RAILWAY JOURNAL some time ago.

Financial and Corporate

Short-Haul Riding Popular

Number of San Diego's 5-Cent Riders Shows Largest Percentage Increase

In spite of country-wide depression, bound to affect a tourist city, the report of the San Diego (Cal.) Electric Railway for eight months ended Aug. 31, 1921, shows that the second year of the zone fare is improving on the first as regards every class of passengers except beach travel. The only kind of passengers that have decreased are the unwelcome "transfer" kind. The accompanying table will be found especially interesting because comparison is made not only with the same period of 1920, covering the first zone months, but also with the first eight months of 1919 when the 5-cent universal fare with free transfer prevailed throughout San Diego.

Revenues Rise Rapidly

"Revenue from transportation," the most significant figure to the operator, rose from $655,063 in the 1919 period to $937,038 in the 1921 period, a gain of 43 per cent. At the same time "total cash-fare and revenue ticket passengers" rose from 13,815,120 to 14,710,835. This is a gain of 6.4 per cent although the comparison is between a flush period then and a depressed period now.

As compared with the first eight months of 1920, it will be seen that the biggest increase (5,251,806 to 5,914,825 passengers) was in the 5-cent classification. The decline from 2,841,849 to 2,706,215 passengers or about 4¾ per cent under "other revenue tickets" is due to the drop in long-distance pleasure riding to the beaches. The effectiveness of the San Diego zone fare in getting revenue without driving away traffic is crystallized in the fact that the average revenue per passenger, comparing 1921 with 1919 period, has risen 34 per cent.

Fewer Transfer Passengers

Although the "total revenue passengers," including "transfer passengers," rose from 16,126,729 in the 1920 period to 17,190,570 in the 1921 period ("transfer passengers" dropped from 2,623,313 to 2,479,735 in the same periods. Other improvements of the second zone-fare period as compared with the first are the more efficient use of car-miles furnished, the number of purely revenue passengers rising from 5.61 to 6.36 passengers per car-mile. This shows, incidentally, under what thin traffic conditions San Diego must work. Another index to the better use of the transportation facilities is that the seats per passenger in 1921 were but 1.44 compared with 1.87 in the 1919 and 1.83 in the 1920 periods. In conclusion is the gratifying result that a daily deficit of $1,067.58 in the last flat-fare period has been cut to but $9.40 in the first eight months of the differential fare, showing that with some legitimate relief in the paving and similar burdens, the San Diego Electric Railway will be able to prosper and meet every reasonable need for service.

CHANGES IN PASSENGER REVENUE AND TRAFFIC OF SAN DIEGO ELECTRIC RAILWAY COMPARING FIRST EIGHT MONTHS OF 1919, 1920 AND 1921 RESPECTIVELY

	1919	1920	1921
Revenue from transportation	$655,063	$884,217	$937,038
5-cent passengers	11,181,592	5,251,806	5,914,825
10-cent passengers	....	461,308	488,972
Other cash passengers	....	23,221	26,674
Total cash fares	11,181,592	5,736,336	6,430,471
7½-cent revenue tickets	....	5,326,232	5,574,149
Other revenue tickets	2,633,528	2,841,849	2,706,215
Total cash fare and revenue ticket passengers	13,815,120	13,903,416	14,710,835
Transfer passengers	2,279,535	2,623,313	2,479,735
Car-miles operated	2,389,184	2,468,693	2,312,631
Car-miles per car-hour	9.42	9.37	9.20
Cash and revenue ticket passengers per car-mile	5.78	5.61	6.36
Seats per passenger	1.87	1.83	1.44
Average net deficit per day	$1,067.58	$383.45	$9.40

$2,000,000 Additional Stock Offered Under Customer-Ownership Plan

In pursuance of its policy to enlist as partners as many as possible of its customers, and thus extend the ownership of its securities, the Public Service Corporation of New Jersey offered for sale, beginning Nov. 1, an additional issue of $2,000,000 of its 8 per cent cumulative preferred stock, under the same partial payment customer-ownership plan which governed the recent sale of a similar issue of the same stock.

The previous offer was accepted by more than 7,400 customers within eleven weeks. The success of that campaign has confirmed the belief of the management of the corporation that many persons appreciate the advantages of closer participation in the affairs of their public utilities and realize the stability of investment in securities based upon the earning power of companies engaged in providing essential utility services to a rapidly growing and highly prosperous group of communities.

It is the desire of the corporation to extend to every user of the services furnished by it an opportunity to become a partner in the enterprise, and for that reason the terms under which the 8 per cent cumulative preferred stock is being sold have been so arranged as to make it possible for any person to acquire the stock by monthly payment of such portion of his or her savings as he or she may care to invest.

The utilities controlled by Public Service Corporation of New Jersey furnish gas, electric and railway service to a population of 2,599,489.

Consolidation Details Being Perfected

Henry L. Doherty & Company, New York, N. Y., direct the attention of the holders of the first lien 5 per cent bonds of the Consolidated Cities Light, Power & Traction Company to the consolidation recently made of important public utility properties in eastern Ohio, securities of which are deposited as collateral back of these bonds.

The Ohio Public Service Company will take over the properties in eastern Ohio which heretofore have been operated as the Alliance Gas & Power Company, the Massillon Gas & Electric Company, the Trumbull Public Service Company, the Lorain County Electric Company and the Utilities Construction Company. More than 99 per cent of the common capital stocks of the Alliance Gas & Power Company, the Massillon Gas & Electric Company and the Trumbull Public Service Company are deposited as part of the collateral back of Consolidated Cities Light, Power & Traction Company first lien bonds.

These three properties, together with the Lorain County Electric Company and the Utilities Construction Company will be consolidated under the Ohio Public Service Company, all financing of which has been completed, this financing providing for the retirement of various issues of bonds on the separate properties, the reimbursement of the treasury for expenditures made on account of additions and improvements to the properties, for the funding of current indebtedness and for other corporate purposes.

In connection with the consolidation, arrangements have been made for the retirement of the preferred stocks of the underlying companies through the exchange of the Ohio Public Service Company 7 per cent cumulative preferred stock for preferred stocks of the individual companies. The consolidation of the three companies, stocks of which are deposited as collateral back of the Consolidated Cities Light, Power & Traction Company first lien 5 per cent bonds and the addition also of two other companies, should add much strength to the position of Consolidated Cities Light, Power & Traction Company first lien bonds. Details are now being completed for the substitution of common stock of the Ohio Public Service Company for the stocks of the three companies now deposited as collateral.

Canadian Company Issues Bonds

The Manitoba Power Company, Ltd., is offering a $3,000,000 issue of first mortgage 7 per cent sinking fund gold bonds at 90 and interest, to yield about 8 per cent. They are dated Nov. 1, 1921, and are due Nov. 1, 1941. The bonds, which are guaranteed as to principal and interest by the Winnepeg Electric Railway, will be secured by a first mortgage on the hydro-electric plant and transmission line which the company is now constructing and by collateral lien through pledge of stock of 13 miles of standard-gage steam railroad of Winnipeg River Railway.

The net divisible income of the Winnipeg Electric Railway for the twelve months ended Aug. 31, 1921, after payment of all bond and other interest charges, was $957,674, or over 1¾ times the annual interest requirements of the bonds of the Manitoba Power Company.

Public Service Corrects Erroneous Deductions Drawn from Its September Report

John L. O'Toole, assistant to Thomas N. McCarter, president of the Public Service Corporation of New Jersey, Newark, has issued a statement correcting erroneous deductions drawn from the report of the Public Service Railway for September as made to the Board of Public Utility Commissioners. Because the operating statement filed by the company for the month of September, 1921, shows a balance of $9,175 over actual operating expenditures, fixed charges and depreciation, while a similar report for September, 1920, showed a deficit of $104,495, the claim was advanced that the rate of a 7-cent fare with a 2-cent transfer charge recently fixed by the Public Utility Commission has been vindicated, and credit is given to that rate for having converted a deficit into a surplus.

According to Mr. O'Toole just the reverse of this is true. In the first place there was a considerable saving in pay rolls in September, 1921, over the same month of 1920 and in addition there was a decrease of $114,000 in the expenditure for maintenance of equipment for September 1921, over the similar month a year ago. Mr. O'Toole says:

> The report shows, as published, that the 7 and 2 rate produced $2,077,707 of passenger revenue last month, which was $141,000 less than the 7 and 1 rate produced during the corresponding month last year. There was some diminuation in traffic due to industrial conditions, but allowing for this, had it not been that a saving was effected in payrolls last month the report would have shown a large deficit.
>
> In addition to effecting a saving in payrolls the company had to cut its garment according to its cloth, in other ways. It had accumulated such a large deficit during the last three years that it simply could not go on adding to it and was compelled to forego certain work because it didn't have the money to pay for it, with the result that the figures show an apparent profit.
>
> But a perusal of the figures filed with the Utility Board for September will disclose facts that change the aspect of the situation. It would show, for instance, that in September, 1920, there was spent $240,852 on maintenance of equipment, while last month this item of expenditure was held down to $126,360, a difference of $114,000 in this account alone, or more than enough to offset the "turnover" from a former loss to what seems to be a present profit. Other instances could be cited of what look like savings, but are really reductions in expenditures, due to deferred maintenance, such as track reconstruction and street paving.

6,015,151 Eight-Cent Fares Collected in Eleven Days

In accordance with the decision of Federal Judges Rellstab and Woolley granting the Public Service Railway, Newark, N. J., a basic fare of 8 cents the company has filed in the United States District Court at Trenton a statement showing returns from the increased fare from Oct. 20 to Oct. 31. The new fares became effective on Oct. 20. The company is required to file monthly statements hereafter with the court.

The report shows that the total number of passengers carried between Oct. 20 and Oct. 31 was 12,927,605. The number paying the base fare of 8 cents was 6,015,151. The company sold 4,446,864 tokens or tickets at the rate of four for 30 cents. It is shown that of the total number of tokens sold 4,010,048 have been turned in by passengers for fares. The number of transfers that was issued at 1 cent each was 2,169,374.

$447,299,000 Traction Bonds in Default

According to the *Wall Street Journal* an improvement is reflected in the amount of public utility bonds now in default, the total par value being $470,039,000 against $494,858,000 on Nov. 25, 1920. While the list as originally published contained all classes of public utility bonds, only the traction bonds in default have been included in the accompanying table. They total $447,299,000. Where the maturity date is given after the name of the security, it means that there is a default as to principal as well as to interest.

Cumberland Railway Transfer in Prospect

The stock of the Cumberland (Md.) Electric Railway and the Edison Electric Illuminating Company was recently bought by T. B. Finan of Cumberland and Townsend & Scott, bankers of Baltimore. About $2,000,000 is involved in the sale of the two properties. It is the plan of the purchasers to form a new company and to consolidate the railway, power and lighting plants under one management.

The transfer awaits the approval of the Public Service Commission, which is expected before Jan. 1.

Interest Defaulted by Michigan United Railways

A bondholders' committee of the Michigan United Railways, Jackson, Mich., in a circular issued on the default of interest due on Nov. 1 on the first and refunding 5 per cent bonds of the company, promised protection to all bondholders who deposit their bonds with the committee. The statement said:

> Default having occurred in the payment of interest due on Nov. 1, 1921, on the first and refunding 5 per cent bonds of the Michigan United Railways, the undersigned holders or representatives of a substantial amount of said bonds have consented to act as a committee to protect all bondholders who shall deposit their bonds with this committee. A formal agreement is being prepared.

The circular was signed by H. A. Kahler, president of the American Trust Company; Clifford Bucknam of Pynchon & Company, Marvyn Scudder of Marvyn Scudder & Company, and R. E. Smythe, president of the Gramatan National Bank.

The total mileage of the Michigan United Railways in operation is 261, single track. This mileage includes city lines in Kalamazoo, Battle Creek, Jackson and Lansing, Mich., and interurban lines between several other points. In the company's last statement the first and refunding gold 5s were shown to amount to $9,927,000.

TABLE SHOWING ELECTRIC RAILWAY SECURITIES IN DEFAULT

Issue	Amount	Defaulted	
Alton Granite & St. Louis Trac. 5s	$2,500,000	February	1920
American Cities Co. collateral trust 6s, 1919	7,500,000	July	1919
6% notes, 1918	3,000,000	July	1918
Atlantic Ave. R. R. (Brooklyn) gen. 5s	2,241,000	October	1919
Improvement 5s	220,000	January	1920
Atlantic City & Shore R.R. 1st 5s	950,000	December	1915
Atlantic Shore Line Ry. 1st 5s	361,000	October	1915
Atlantic Shore Ry. ref. 4s	641,000	April	1915
Aurora, Elgin & Chicago R.R. ref. 5s	3,079,000	January	1919
3-yr. 7½% collateral trust notes	1,219,000	March	1919
Brooklyn City & Newtown R.R. 5s	2,000,000	July	1919
Brooklyn Heights, 1st 5s	250,000	October	1919
Brooklyn, Queens County & Suburban cons. 5s	2,884,000	November	1919
1st 5s	2,500,000	July	1919
Brooklyn Rapid Transit 7% notes	57,735,000	January	1919
Gold 5s	7,000,000	April	1919
Refunding 4s	27,621,000	July	1919
5% notes, 1918	505,000	January	1919
Buffalo & Lackawanna Traction 5s	1,150,000	December	1918
Buffalo & Lake Erie Traction 5s	7,066,000	May	1913
Butte Electric Ry. 1st 5s	700,000	March	1919
Chattanooga Electric Ry. 5s, 1919	625,000	January	1919
Chattanooga Rys. cons. 5s	2,165,000	November	1918
Chicago Elevated Rys. 6% notes, 1919	13,601,000	July	1919
Collateral trust 6s	7,000,000	July	1919
Chicago, South Bend & Northern Indiana Ry. 5s	2,489,000	July	1918
Cincinnati & Hamilton Electric Ry. 6s. 1918	400,000	July	1918
Cincinnati, Lawrenceburg & Aurora Electric Street Ry. 5s. 1919	750,000	January	1918
Cleveland & Erie Ry. 1st 5s	500,000	July	1920
Cleveland, Painesville & Ashtabula R.R. 5s	1,000,000	January	1917
Columbus, Buckeye Lake & Newark Trac. 5s	1,243,000	November	1920
Columbus, London & Springfield Ry. 5s. 1920	500,000	October	1920
Columbus, Newark & Zanesville Electric Ry. 5s	1,211,000	November	1920
Columbus & Ninth Ave. R.R., N. Y., 1st 5s	3,000,000	March	1920
Coney Island & Brooklyn R.R. cons 4s	2,150,000	July	1919
Consolidated 4s of 1948	1,987,000	July	1919
Corpus Christi Railway & Light Co., 5s	829,000	July	1919
Dayton Traction 1st 5s, 1920	250,000	May	1920
Danbury & Bethel Street Ry. ref. 5s	458,000	November	1917
Denver City Tramway ref. 5s	9,892,000	May	1921
Denver & Northwestern Ry. 5s	496,100	November	1920
Denver Tramway Terminal 7% notes	$2,500,000	October	1920
Des Moines City Ry. ref. 5s	4,821,000	July	1921
Elgin, Aurora & Southern Trac. 5s, 1921	1,546,000	June	1919
Ft. Wayne, Van Wert & Lima Trac. 5s	1,470,000	January	1920
Hamburg Railway 1st 4s	745,000	May	1920
Hartford & Springfield Street Ry. 5s	600,000	July	1918
Indianapolis, Columbus & Eastern Trac. 5s	6,400,000	November	1919
Interborough Metropolitan, N. Y., 4½s	64,286,000	April	1919
Kansas City Rys. 7% notes, 1921	7,750,000	November	1919
2 year notes, 6s, 1919	1,000,000	December	1919
First 5s	15,917,000	January	1920
Second 5s	1,000,000	January	1920
Second 6s	3,924,000	January	1920
Lexington Avenue & Pavonia Ferry, N. Y., 5s	5,000,000	March	1920
Memphis Street Ry. 6% notes, 1920	1,250,000	November	1920
1-year 6% notes, 1918	200,000	November	1918
Nassau Electric R.R. (Brooklyn) 1st 5s	660,000	October	1919
Consolidated 4s	10,347,000	July	1919
New Orleans Railway & [illegible]	6,118,000	May	1919
New York Municipal Ry. 1s[illegible]	57,790,000	January	1919
New York Railways ref. 4s	18,061,000	July	1919
Oakland Traction cons. 5s	2,134,000	January	1919
Ohio Electric Ry. ref. 5s	4,200,000	January	1916
Second 5s	2,927,000	December	1918
Pensacola Electric 7% notes, 1921	281,900	January	1921
St. Louis & Suburban Ry. gen. 5s	4,500,000	April	1921
Consolidated 5s, 1921	2,000,000	February	1921
Sanford & Cape Porpoise 5s	246,000	January	1916
Second Ave. R.R. (New York) rec. ctfs. 6s, 1914	3,140,000	October	1914
Con. 5s	5,631,000	January	1919
South Carolina Light, Railway & Power 5s	3,497,000	May	1921
7% notes, 1921	450,000	June	1921
Southern Ohio Traction cons. 5s, 1920	1,350,000	May	1919
Southern Traction (Pittsburgh) 1st 5s	4,000,000	October	1918
Spokane & Inland Empire R.R. ref. 5s	3,685,000	November	1919
Toledo, Fayette & Western Ry. 5s	250,000	July	1920
Toledo & Western Ry. 1st 5s	1,250,000	July	1920
Refunding 5s	500,000	July	1920
Syracuse & Suburban R.R. 1st 5s	400,000	February	1921
United Traction (Pittsburgh) gen. 5s	4,804,000	July	1919
United Traction & Electric (Providence) 5s	9,000,000	March	1919
Total bonds in default	$447,299,000		

Grafton Line Will Soon Resume

Electric railway service at Grafton, W. Va., is to be resumed under the management of a local company to be known as the Tygarts Valley Traction Company. The decision to this effect was reached at a meeting of the Chamber of Commerce when assurance was given that a fund of $50,000 will be raised at Grafton. The plans as arranged call for the operation of one-man cars.

First mortgage bonds in the sum of $50,000 are to be sold in denominations of $100, $500 and $1,000. These bonds will bear interest at 6 per cent. They are being offered for sale at Grafton.

Along with the bonds there will be an issue of common stock. This stock will have a par value of $1. It will be coupled in the selling with the bonds, a $100 bond and one share of stock costing $101. Subscriptions to the bonds will be payable 50 per cent at once and the remaining 50 per cent on June 1.

Of the $50,000 which will eventually be received from the bond issue, $25,000 will become immediately available. Added to this will be $500 secured from the sale of stock. This will give the new corporation a net capital to begin with of $25,500. Of this amount $16,000 will go to pay for the property of the Grafton Traction Company, bid in under foreclosure. The balance will be used in making such repairs and improvements as are absolutely necessary at the outset.

The cars will be repaired, the Blueville extension will be built, the track improved, several pieces of machinery and equipment added and the river bridge repaired and repainted. The new line will operate on at least a thirty minute schedule. The new owners are confident that the line can be made to earn all operating expenses and the interest on the bonds, with the prospect that a substantial amount will soon accumulate for distribution among the stockholders.

Bonds Authorized to Reimburse Company for Improvements

The San Diego (Cal.) Electric Railway has been authorized by the Railroad Commission to use the proceeds from the sale of $577,000 of its 5 per cent general first lien sinking fund gold bonds to reimburse its treasury and finance in whole or in part construction expenditures incurred on or before Sept. 30 of this year. The effect of the order, it is pointed out, will be the substitution of bonds for the indebtedness incurred by current liabilities.

Originally the company asked the approval of $970,223 for construction expenditures. The propriety of a number of items was questioned by the commission and the application was thereupon amended and the present authorization applies only to expenditures properly chargeable to capital account.

During 1920 the company sold its power plant to the San Diego Consolidated Gas & Electric Company receiving in payment $425,000 of bonds and $575,000 of 7 per cent preferred stock of the purchasing company. Through the sale of these securities and the use of sinking fund the railway has retired $1,320,000 of its first mortgage bonds as of Sept. 30, 1921. The company had outstanding $1,250,000 of stock and $2,600,000 of bonds and has $344,103 in the depreciation funds and $596,015.33 current liabilities.

$417,426 Loss by Toronto Railway Last Year

The annual meeting of the Toronto (Ont.) Railway was held on Sept. 30. Sir Henry M. Pellatt presided in the absence of the president, Sir William MacKenzie, who is abroad.

The following statement was presented for the year ended Aug. 30.

Gross earnings		$7,909,891
Operating maintenance, etc.	$6,626,508	
Interest on bonds	109,175	
Percentage earnings (city)	1,308,339	
Pavement, taxes, etc.	283,294	
		$8,327,318
Deficit		$417,426
Profit and Loss Account—		
Balance from previous year		$5,578,527
Deficit after payment of all expenses, interest, taxes, etc		417,426
		$5,161,100

The balance sheet submitted shows road and equipment carried at $19,681,262, an increase of about $13,000; advances to subsidiaries at $1,341,344, a decrease of over $100,000; accounts receivable at $434,858, down about $75,000, and cash on hand at $109,087, down over $200,000. Total assets are placed at $21,683,174, as against $22,572,281 the previous year.

All the retiring directors were re-elected with the exception of C. P. Beaubien, Montreal, whose place was taken by William H. Moore, general manager of the Toronto & York Radial system. Mr. Moore has been prominently identified with the MacKenzie & Mann interests for many years.

Financial News Notes

Receiver Appointed. — Walter C. Graeff was recently appointed receiver for the Ephrata & Lebanon Street Railway, operated by the Ephrata & Lebanon Traction Company, Lebanon, Pa.

Vincennes Company Reorganizes.—The Vincennes (Ind.) Electric Railway has been incorporated, with capital of $100,000, as the successor under reorganization to the Vincennes Traction Company.

Wants to Discontinue Service.—The Geneva, Seneca Falls & Auburn Railroad, Seneca Falls, N. Y., has petitioned the Public Service Commission for permission to abandon a portion of its line in Seneca Falls. The railway's claim is that the operation of this line is unprofitable.

$149,395 Added to Boston Deficit.—The month of September added $149,395 to the deficit of the Boston (Mass.) Elevated Railway, which now totals $342,422, as revenue failed to meet expenses by that amount. Total revenue as compared with a year ago is decreasing about 7 per cent.

Wants to Abandon Line.—The Reading Transit & Light Company, Reading, Pa., notified the court on Nov. 1 that it wishes to abandon that portion of its line in Norristown on DeKalb Street from Brown Street to the borough line, a distance of 2,200 ft. Unprofitable operation was given as the reason for the suspension.

Wants to End Railway Service.—The Muskegon Traction & Light Company, Muskegon, Mich., has announced that it will seek permission from the State Utilities Commission to discontinue railway service on Nov. 20. The company has been operating in competition with jitneys and has lost considerable money. Recently it appealed to the City Commission for financial assistance.

Receivers for Utilities Win a Victory.—Receivers for the Memphis Gas & Electric Company and the Memphis (Tenn.) Street Railway have won a temporary victory at least in their fight against the State Tax Commission for a lower assessment, for on Oct. 28 Judge A. B. Neil, of the Second Circuit Court in Nashville, granted the receivers writs of certiorari and supersedeas against the State board.

Make Valuation for Rate Fixing.—The Indiana Public Service Commission has placed a valuation of $4,346,653 on the property of the Indiana Railways & Light Company, Kokomo, for rate-making purposes. A ten-year average of prices from 1911 to 1920 was used by the commission in figuring the value of the property. Non-utility property owned by the company, valued at $172,585, was not included in the valuation.

O'Connell Interests Extend Holdings.—Thomas E. O'Connell, president of the Phoenixville, Valley Forge & Strafford Electric Railway, Phoenixville, Pa., has purchased the Montgomery & Chester Electric Railway property from the Philadelphia Suburban Gas & Electric Company for $200,000. The old board of directors has resigned and a new one has been elected, with Mr. O'Connell as president; Thomas E. O'Connell, Jr., secretary, and A. J. Taylor, treasurer. Other directors are J. Gerald O'Connell, J. Fred O'Connell, V. N. Shaffer and Dr. W. K. Williams.

Valuation Hearing Started. — Proceedings for ascertainment of valuation of properties of the Altoona & Logan Valley Traction Company, Altoona, Pa., and Home Electric & Steam Heating Company, were begun on Nov. 10 before Public Service Commissioner W. D. B. Ainey. C. L. S. Tingley submitted figures. The reproduction cost of the traction system was given as $7,017,542, as of Dec. 31, 1919, with an average for five years from 1914 to 1919 of $5,328,560, while the electric and heating plant value was put at $823,304, as of Dec. 31, 1919.

Change in Control Contemplated.—Negotiations are under way for the absorption of the American Cities Company by the Electric Bond & Share Company. Collateral trust 5 and 6 per cent bonds of the American Cities Company outstanding to the amount of $7,709,000 have been in default of interest since July 1, 1919. They are secured by deposit of a majority of the stocks of subsidiary companies which include the following: Birmingham Railway Light & Power Company, Houston Lighting & Power Company, Knoxville Railway & Light Company, Little Rock Railway & Electric Company, Memphis Street Railway and New Orleans Railway & Light Company.

Traffic and Transportation

Five-Cent Fare Ordered

Connecticut Company Required to Reduce Charges Within City Limits of Bridgeport.

Under an order issued on Nov. 16 the Connecticut Company is directed by the Public Utilities Commission to put into effect in the city of Bridgeport, Conn., a 5-cent fare without transfer, on all its lines radiating from the center of the city to various specified points at the city limits. In the opinion of the commission additional jitney routes are not required at the present time in Bridgeport. The new fare is to continue for a trial period of ninety days and is to go into effect on Nov. 20.

Salient features of the commission's order are:

> On cars terminating in or passing through the center of the city, passengers may ride across said neutral zone without the payment of an additional fare.
>
> The rate of fare from the center of the city and points along the line to points beyond the city limits, but within the present fare limit, is to be 10 cents.
>
> No transfers are to be issued or accepted within the city limits.
>
> The order is not to apply to other lines and sections of the Connecticut Company not herein specially referred to.
>
> The 5-cent fare previously described is to be put into effect on or before Nov. 20, 1921, and to remain in effect for a test period of ninety days thereafter and until further order of the commission.
>
> The Connecticut Company is directed to keep a careful separate account of the riding and revenues of the city of Bridgeport, of the riding revenues and as far as possible of the operating and other expenses of the present Bridgeport, Norwalk and Stamford divisions, subject to inspection by the commission,

PETITION FILED OCT. 11

The petition on which the commission made its findings and rulings was filed by the city of Bridgeport on Oct. 11. It represented:

> 1. That the conditions for the conveyance and transportation of passengers in Bridgeport are such as to make the present rate of fare charged by the Connecticut Company unreasonable and prejudicial to the public welfare and necessity.
> 2. That public necessity and convenience require the reduction of the rate of fare charged by the Connecticut Company for transportation within the limits of Bridgeport from 10 cents to 5 cents, or to such other rate of fare as shall be reasonable.
> 3. That conditions affecting transportation within the city of Bridgeport make it reasonable and proper that a hearing upon an application to reduce the fares should be held in Bridgeport.

In the finding the commission says:

> Large centers of population should assist in supporting tributary lines having to do with the social, business and industrial activities of the community, but should not be called upon to assist in the maintenance of street railway service in remote sections of the state. Upon the request and advice of the commission, the respondent company has submitted a tentative plan for dividing its system into territories for accounting districts, which has not been approved by the commission. Each such district should be self-supporting and allow the company a fair return on the value and equipment, and any revenues in excess of such fair return should inure to the benefit of the public of that district in the form of improved service or reduced rates.

The commission also gives this opinion:

> It is doubtful under present economic conditions if a 5-cent flat rate can be successfully maintained on any portion of the company's system but we are of the opinion that the maximum 10-cent fare for short rides in population centers is not at present the economic fare for such daily riders and is not producing as much revenue as a lower fare with increased patronage would produce.
>
> The probable financial advantage of a lower fare is not so much from the carrying of a large number of passenger during the peak hours of the day as carrying a materially larger number of short haul passengers during the lean hours of the day. We are not satisfied that 5 cents without a transfer is the economic rate for short haul city travel, but the elimination of the transfer and the establishing of such fare on all lines radiating from the center of the city to the city limits is not equivalent to reducing the revenues 50 per cent based on the present limited number of passengers riding at a 10-cent fare through longer zones.
>
> The success or failure of a 5-cent fare in Bridgeport will depend largely upon the attitude of the city and the amount of patronage which the riding public will afford the railway, and also upon such additional economies as the company may be able to introduce, including the use of one-man cars as far as reasonably practical.
>
> It might be extremely dangerous to the financial interest of the company to experiment with a 5-cent fare in a city where the company is now receiving a fair amount of patronage, but in a city where the present patronage under a 10-cent fare is so limited that the revenues fall short of paying the actual operating expenses an experiment with a 5-cent fare in populous centers, without transfer and with contracted fare limits, ought not to result in serious financial loss to the company. A careful analysis may demonstrate the necessity of abandoning certain lines and substituting some other form of transportation at rates that will afford a reasonable return for such substitute transportation.

The commission believes that railway service in Bridgeport is an absolute necessity, irrespective of the large number of jitneys and the extent of their operation. The principal demand for increased number of jitneys is largely due to the difference in fares.

Considering the whole situation, the commission concludes that public necessity and convenience do not require additional jitney operation in the city of Bridgeport or additional jitney operation for the city, or upon any suburban or interurban routes applied for.

The hearing at which the petition for a reduction in fare was held at Bridgeport on November 10.

COUNSEL PROTESTS CHANGE

D. G. Watrous, counsel for the Connecticut Company, told the commission at the hearing on Nov. 10 that the federal trustees would do their best to give service at a 5-cent fare if the commission made such an order for Bridgeport, but pointed out that because of the fiduciary relations existing between the trustees and the company, the trustees could not agree to it. Mr. Watrous did not intimate, however, that the trustees would resign in the event that a reduction in fare was ordered.

That the attitude of the federal trustees has not changed since Judge Noyes imparted to the commission the information that the company would be in a better position to act on a reduction next spring was made evident by Mr. Watrous. He made the following claims:

> 1. That the trustees were convinced that a fare reduction at this time would upset the unity of the single fare idea for the entire system.
> 2. That a 5-cent fare trial should not be made in Bridgeport.
> 3. That it would be utterly impossible to operate the road on a 5-cent basis either as a test or otherwise.

L. S. Storrs, president of the Connecticut Company, also spoke for the company at the hearing and explained a situation which has arisen recently in Pittsfield, Mass., where a zone system with a 6-cent fare had not worked satisfactorily. As a result the public demanded a return to the flat 10-cent fare basis. Mr. Storrs spoke along the same lines as Mr. Watrous.

Those seeking a return of the 5-cent fare took comfort at the hearing on Nov. 10 in the recommendation which Chairman Higgins, speaking for the commission, made to the trustees of the Connecticut Company on Oct. 11. That recommendation follows:

> The 10-cent fare does not bring the necessary revenue. If the company can't manage to supply service in Bridgeport without a continuing loss, there is only one alternative. I would suggest as an experiment or test for a limited period of time the adoption of a 5-cent fare without transfer on all city lines radiating from the center of the city.
>
> This might necessitate a change of the outer zone point on certain lines. The revenues and expenses of such an operation in the city of Bridgeport division should be kept separate from other divisions and be considered in connection with the cost and maintenance of the Bridgeport division.
>
> Such an experiment could not put the company in a condition much worse than now exists, and in the absence of some prompt action or relief in Bridgeport, the commission will feel obliged in the interests of the public to authorize additional jitney routes and grant additional certificates.

WANT TRANSFERS

Although the commission has recommended a 5-cent fare without transfers, interests which were understood to represent the jitneymen objected to a system of lines radiating from the center of the city on the ground that the city's workers would still have to pay a 10-cent fare as they lived in one part of the city and worked in another part of the city. City Attorney Comley and Representative Kilpatrick asked for a return of the prewar flat 5-cent fare basis.

Jacob B. Klein, counsel for the jitneymen of Bridgeport, said a 5-cent fare with no transfers would mean nothing to the workers of the city and urged the commission to grant additional jitney permits. Representatives of the Chamber of Commerce and other business organizations approved of the 5-cent no-transfer scheme.

Louisville Watching Youngstown Experiment

James P. Barnes, president of the Louisville (Ky.) Railway, has been watching with interest the plan adopted in Racine some time ago, and just recently in Youngstown, underwhich the railways in those cities issue weekly tickets which allow unlimited riding. Mr. Barnes said in part:

> If it is possible to put the system in operation here, so as to give cheaper fares to the majority of the people and at the same time run no risk of our revenue falling off, we would be glad to try the system. However, it is too early to make a definite statement about it. We are watching the Youngstown experiment with great interest and are in constant touch with the situation and shall soon have some definite information.
>
> Louisville is a much larger city than Youngstown, and we do not know whether a city of twice the size can operate under the plan as economically and as successfully in making the unit fare the same. Before trying it out, we will gather actual facts and figures over a period of time long enough to determine the answer to these problems.

No Traffic Increase Probable With Reduced Fare

Public officials at Hartford, Conn., are wondering what effect a reduction in fares to 5 cents on lines of the Hartford division of the Connecticut Company will have on the number of passengers carried. Figures obtained from the company's headquarters at New Haven show that in September, 1916, a 5-cent fare was collected from 4,003,758 passengers. At that time industrial activity was at a peak in Hartford and the number of persons riding was consequently enlarged. In Sept. 1921, a 10-cent fare was collected from 3,366,930 passengers, a decrease of 636,828 for the month. The daily average for Sept., 1921, was 112,231, or 21,227 less than the daily average for Sept., 1916.

The operating expense of the Hartford division in Sept., 1916, was $123,609, which increased fully 120 per cent to $271,744 for the same month in 1921. On the other hand, the revenue increased only 68 per cent, from the $200,187 of Sept., 1916.

Under these conditions, to receive its present revenue, for which it is contending, the company will have to carry at a 5-cent fare 3,366,930 more passengers, than it did in 1920, but even at the peak period in 1916 and under a 5-cent fare the company carried only 636,828 more for September than at present.

Thus a return to the original 5-cent fare would provide only one-fifth of the increase needed to produce the present revenue.

Mayor Newton G. Brainard of Hartford, one of the federal trustees of the Connecticut Company, said that the decreased traffic on the Hartford division is a direct reflection of the decreased industrial activity in the city. He thinks that a reduced fare would not attract many more passengers, but feels that Hartford is entitled to the smaller rate if the Public Utilities Commission is to follow that policy in other cities.

Ten Cents Authorized in Helena

The State Railroad Commission recently authorized the Helena Light & Railway Company, Helena, Mont., to establish a 10-cent fare. The order provides for tickets at 6¼ cents.

The present fare is 8 cents, with tickets at 5 cents. This charge, the company claimed in renewing its application for increased rates, failed to bring the revenues up to the expenses.

In its finding the commission criticised the service rendered by the railway and said that more efficient service would be expected in the future in consequence of granting the company's demands. Reference to the petition of the company was made in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 24.

Seven-Cent Fare Extended

The Missouri Public Service Commission at Jefferson City recently extended the 7-cent fare now in effect on the lines of the United Railways of St. Louis until June 30, 1922. The order states that the added period will expire on that date and the fare will revert to the rate of May 31, 1918, which was 5 cents.

The commission is now hearing evidence to assist its placing the valuation on the property of the United Railways and when this valuation is completed the rate of fare will be determined. The company will have the right, when the commission orders the lower fare, to ask for a higher rate.

Boston Not Returning to Five-Cent Fare

Notwithstanding repeated explanations, says the *Boston News Bureau*, there still exists a misconception of the Boston Elevated Railway's 5-cent fare policy. The extension of the 5-cent service to include more and more outlying communities does not presage a return to the nickel unit on the rapid transit system. The single idea is to enlarge the sphere of usefulness of the elevated system. Halving of the fare in suburban districts has not multiplied the number of passengers; in fact, the elevated management aimed at only a 100 per cent increase in order that introduction of the lower fare might not cut into the revenues of the system as a whole. As a matter of fact, the company is getting about a 75 per cent increase in riding traceable to the 5-cent fare, which is considered satisfactory in view of the depression in industry and rediscovery of the lost art of pedestrianism.

Safety First Educational Campaign Via the Public Schools

All the public schools of San Francisco, Cal., in which there are enrolled a total of about 100,000 school children, are being visited seriatim by a lecturer who is showing moving pictures and telling stories with a "safety first" moral which have a bearing particularly on street traffic in cities. The lecturer's time for the 60-day period that will be required to cover all the schools is being paid on a fifty-fifty basis by the San Francisco Municipal Street Railway and the Market Street Railway. The moving pictures are supplied gratis by the Firestone Tire Company and the Ford Motor Company.

The street railways have found this method of promulgating the safety first idea most effective because by this means it is possible to gain access to the home circle. In other words, the children are missionaries through whom it is possible to reach adults who have become so accustomed to the usual safety first literature and other ordinary educational measures that these are passed by without heed.

Bus Line Into Boston Begins Operation

The Norfolk & Bristol bus line began operation on Nov. 9. These buses give residents of the Hyde Park district transportation service into Boston, Mass., for 15 cents. Service is given over four lines from Cleary Square.

Bus operation in this section grew out of the recent controversy with the Eastern Massachusetts Street Railway over a 20-cent charge to Boston.

Residents of Hyde Park boycotted the cars of the Eastern Massachusetts Street Railway and when Mayor Peters was unable to effect a compromise a permit was granted to the Norfolk & Bristol bus line with the assurance that the rate of fare would be 15 cents. Reference has been made previously in the ELECTRIC RAILWAY JOURNAL both to the boycott and the bus permit.

Fare Increase to Stand Pending Final Determination

The 8-cent fare recently granted to the Public Service Railway for its lines in New Jersey stands, pending the final determination of the appeal that has been filed with the U. S. Supreme Court.

This court on Nov. 14 denied the motion of the New Jersey Public Utilities Commission for a stay against the 8-cent fare. The court has had the motion under consideration since it was made on Nov. 14 by Attorney General McCran and L. Edward Herrmann, counsel of the utilities board. The denial of the motion was announced by Chief Justice Taft.

The United States District Court for New Jersey held the rate of fare fixed by the commission confiscatory, and permitted the company to increase fares, but required it, under bond, to redeem rebate slips issued to passengers should the decision be reversed or modified.

The State Commissioners sought to have the old rates continue until the Supreme Court disposed of the case, the company objecting on the ground that it could not be secured against loss which it would suffer if old rates were charged and the increase allowed by the lower courts finally should be approved by the Supreme Court.

Ticket Sale Is Ordered Resumed

By a recent order of the Public Service Commission the New York State Railways must resume the sale of tickets on cars on the city line in Syracuse. The commissioners hold that failure to offer tickets or tokens for sale on cars at 7½ cents is a public inconvenience. The cash fare is 8 cents.

This is the first point won by the city in its fight before the commission for the restoration of ticket sales, termination of one-man car service and a reduction in fares.

Chicago Fare Case Closed

The fare case of the Chicago Surface Lines is now in the hands of the Illinois Commerce Commission for decision, closing arguments having been presented on Nov. 14 and 15 by attorneys for the city and the companies. The companies have been collecting an 8-cent fare since July, 1920, and the city is insisting that they be held to the ordinance rate of 5 cents.

Rate cases of the elevated roads, the gas and the telephone companies were also set for hearing during the week ended Nov. 19. These cases are somewhat different because action was started by the commission instead of by the city.

Further hearings on the question of subway construction in Chicago have been held before the local transportation committee of the City Council. Citizens were invited to present their views.

The city comptroller reported that the companies have paid into the traction fund since 1907 the sum of $22,411,528. Investment of this fund in Chicago city bonds, tax warrants and liberty bonds has added $5,414,132 in interest. There is also due about $3,000,000 additional which the companies have tendered but which the city refused to accept for fear that this would be an acknowledgment of the validity of the ordinances.

"Pep" Put in Public Policy Promises

Winnipeg Company Carries Its Message of Service Direct to All Its Patrons

"Service" is the slogan adopted by the Winnipeg (Man.) Electric Railway for its new campaign to win the good will of the public. The purpose, as stated by A. W. McLimont, the vice-president, is to impress upon the public "that we desire to give service to the end that they may prefer to buy what we have to sell—car rides, gas, light and power; and, second, to impress upon our employees that in mutual interest it is necessary that the best type of service be rendered by every one working for this company."

The campaign opened with the Oct. 15 issue of the *Winnipeg Electric Public Service News,* the company's house-organ, with an article "Why We Are Out to Give Service." This publication was distributed to the public through "Take One" boxes in the cars and sent to nearly 1,000 citizens. In it was this statement:

> We want the people of Winnipeg to know that we are their servants, that we are in business to satisfy their utility wants, and to please them. We want to give Service, first, last and all the time. That is the policy which underlies our whole activities.
>
> But we also believe that the best service can only be obtained by the fullest measure of co-operation on the part of those we are serving. We don't think that any utility service can be entirely satisfactory until the public and the operating company realize they must work together.

Criticism and suggestions from the public have been invited that would help the company to give greater satisfaction. By following the suggestions whenever possible the company has proved its sincerity.

Customers will receive with their November electric and gas bills cards headed "We Are On Our Toes to Serve You," and through regular issues of the *Winnipeg Electric Public Service News,* the public will be informed of the service campaign.

Without the co-operation of the employees the officials realized that their efforts would fail. Each employee received instructions in a letter how to extend courtesies characteristic of the department. On the street car, in the office of the company, in the homes during the reading of the gas meter, the employees are expected to give the utmost service.

A circular, here reproduced, was inclosed in each pay envelope on Nov. 1, entitled "Stop, Look and Listen."

The company feels the "Better Service" campaign already has brought good results where the public is concerned and that the employees have given excellent co-operation.

STOP

¶ "Running By" intending passengers, or leaving them at transfer points. Why lose revenue that way?

¶ Discourtesy to our patrons and obtain their goodwill to the end that they may *prefer* to use the services we sell in our electric railway, gas, and electric light and power departments.

¶ Waste of time or materials—make every hour you are paid for give value to the organization and we will all benefit.

¶ Careless practices wherever you see them and *do your part* towards realizing our "Safety First" ideal.

LOOK

¶ For leaves on the track, or for "greasy rail" if you are a motorman, and *operate carefully*.

¶ For defects in equipment or materials. *Report the defects* and thus prevent accidents and loss.

¶ After the ventilation of the car in your charge, if you are a conductor, and thus please and satisfy your patrons.

¶ For passengers at car stops and transfer points, and for new customers for our gas and electric departments.

¶ For opportunities to improve the service and let us have your suggestions.

LISTEN

¶ Carefully to requests from passengers or customers and comply with them if consistent. Remember we are all salesmen—selling the products, car rides, gas, light and power, we manufacture—and we must have the goodwill of our customers if we are to succeed in our business.

ADVICE TO EMPLOYEES OF WINNIPEG COMPANY CONTAINED IN ATTRACTIVE CIRCULAR

U. S. Supreme Court Upholds Seattle's Right of Regulation

The Supreme Court of the United States on Nov. 9 upheld the right of the city of Seattle, Wash., to oust the jitneys from the city streets. All of the state courts had already upheld the city's right, but the jitney interests took an appeal to the United States Court. The city of Seattle has been battling the jitney for five years. Estimates have placed the loss sustained by the municipal railway there from the jitney as high as $350,000 a year. The entire controversy was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 1, 1921, page 571.

A further development in the jitney situation is the resumption of operations by the jitneys owned by the Sound Transit Company, under a certificate of necessity issued by the State Board of Public Works at Olympia permitting the company to operate stages from Roosevelt Heights in the Cowen Park District into the business section.

Armed with a legal opinion from Corporation Counsel Walter F. Meier to the effect that the jitneys were being unlawfully operated, Superintendent of Public Utilities Carl H. Reeves, ordered their operations stopped. The company again resumed operations when a temporary restraining order was issued by Judge Brinker in the Superior Court, giving the jitneys operating to Roosevelt Heights protection until Nov. 14.

W. R. Crawford, representing the jitney interests, alleges that the company had made proper application for a certificate of necessity, specifying the termini of the proposed stage route, and a schedule of tariffs, and that the certificate was duly granted by the State Department of Public Works at Olympia; that the jitneys commenced operation under this authority, and that one driver was subsequently arrested and the other 26 drivers operating were threatened with arrest.

The city legal department takes the stand that the certificate of necessity granted to the jitney drivers contains a clause which specifically states that the buses shall be subject to the existing ordnances of the city, and Corporation Councel Walter F. Meier has issued an opinion that the certificate of convenience and necessity granted by the State Board of Public Works did not supersede an existing city ordinance to regulate service within the city.

In support of this opinion, a statement has been made by E. V. Kuykendall, director of the State Board of Public Works, to the effect that the city of Seattle has sole authority in regulating jitney service.

The board holds that it has no jurisdiction over city streets and is unable to fix routes or termini of stage lines within the city limits. The Department of Public Works was compelled to grant the certificate, according to Director Kuykendall, because of the uncontroverted showing that the Sound Transit Company had been in legitimate operation between Roosevelt Heights and Seattle on and prior to Jan. 15 last.

Federal Court Will Not Judge in St. Paul Case

The Federal Court having refused to interfere at present in the St. Paul (Minn.) City Railway rate case the way was left open for hearing before Judge F. M. Catlin on Nov. 15 in the Ramsey County District Court of the appeal of the company from an order by Judge J. C. Michael of the same court restraining the company from collection of an emergency rate of 7 cents, an increase of 1 cent, granted by the Minnesota Railroad Commission.

Judges W. H. Sanborn, W. F. Booth and T. C. Munger of the Federal court in their decision on the appeal of the St. Paul City Railway of Nov. 3 for an order restraining the city from interfering with the collecting a flat rate of 7 cents per ride held that although the court has jurisdiction in the case it should not interfere until the state court of concurrent jurisdiction has completed its adjudication or shows lack of prompt diligence in reaching its decision. The appeal to the Federal court was on the basis that the present rate of 6 cents did not permit the company to make a due return on its investment, in effect confiscation of the property.

Pierce Butler in speaking for the company made the points that the case argued in Federal Court is not the same as that in the Ramsey court, because it deals with the 6-cent fare that is in existence, while the state case relates to the 7-cent fare ordered by the Railroad and Warehouse Commission; that no contract was entered into to appeal only to the state courts, as the city contends; that the section of the Brooks-Coleman act, which gave the Railroad and Warehouse Commission rate control, requiring a complete new trial is unconstitutional in that it gives to the court legislative authority; that the judge in the Ramsey County District Court exceeded his authority when in addition to granting a restraining order, he also in effect set the rate of fare by prohibiting collection of a fare at a rate higher than that existing.

The Federal judges ruled as follows:

> However, this suit will not be dismissed. This court has jurisdiction of the suit, and the court will stay its hand and await the action of the court of Ramsey County until such time as it has completed its duties or until such time as it appears necessary in the discretion of this court that action should be taken and that it can take action without violating the rules heretofore stated.

Railway Rejects City Proposition

The St. Johns Electric Company, operating street railway service in St. Augustine, Fla., and St. Johns county, also, including a line to Anastasia beach, has refused the city's offer of $20,000 for its Matanzas River bridge, because of the city's requirement that rent be paid for crossing the bridge and service maintained right along. The company has countered with a proposition.

It offers the bridge for $21,000 provided the city and county allow the company to traverse the bridge free of rent, and agree to abrogate that portion of the franchise requiring the company to maintain service along certain routes. Abrogation of this section would permit the company to withdraw from the street railway field in St. Augustine, which is something the city and county is trying to prevent.

Many other concessions besides the payment of $100 a month by the company for the use of the bridge were included in the city's proposition.

Regulative Bus Ordinance Invalid

A Muncie (Ind.) ordinance, passed in September, forbidding jitney buses from operating in Muncie on streets used by street cars, has been declared invalid by William A. McClelland, judge of the city court, on the ground that the object of the ordinance was to protect the Union Traction Company. The court said that if the city has power to enforce an ordinance of this kind, it would have equal power to say that no hacks could operate for hire on any streets of the city, and that, although the right of the city to regulate traffic is admitted, prohibition is not regulation. It is understood the traction company will appeal.

Six Cents Lowest Rate in Large Canadian Cities

According to the *Monetary Times* of Toronto, Canadian public utility companies will now have their day as rate reductions will come more slowly than falling costs, and while their losses during the war were stupendous, their improved status is seen from the advanced rates of fare which have been authorized. Cities listed by that paper follow:

Ten-cent fares: Regina, Calgary, Saskatoon, Sherbrooke, Sydney, N. S., North Cobalt, Levis, St. John.

Seven-cent fares. Montreal, Toronto, Winnipeg, Edmonton, Fort William, Port Arthur, Brandon, Peterboro, Quebec, Halifax, Guelph, Haileybury, New Glasgow.

Six-cent fares: Sarnia, Moose Jaw, Vancouver, Victoria, New Westminster, North Vancouver.

It is noticed in the above summary that 6 cents is the lowest fare rate in the large cities of Canada.

Small Road Turns to Gasoline Car

The Indiana Truck Corporation, Marion, Ind., has constructed a gasoline street car for the Gallipolis & Northern Traction Company, Gallipolis, Ohio. The new car is built on the lines of the regular Indiana truck, with the 40-hp. motor enclosed in the regulation truck hood. The motors and bodies will be built in Marion. The car makes a speed of from 25 to 30 m.p.h. and has four speeds forward and four in reverse. The car has three brakes, an emergency, a service brake and the "pony truck" brake. The builders claim it will make 10 miles on a gallon of gasoline. Four wheels are on the "pony truck" which carries the front part of the car, and there are two wheels in the rear. All are flanged to run on the street railway tracks. The car is of the pay-as-you-enter variety and will comfortably seat thirty persons.

City Council Will Pass on Bus Routes

By a recent vote of the City Council of Decatur, Ill., bus routes will be regulated by the City Council and not by the Illinois Commerce Commission.

Bus operation has become very active in the city of Decatur and bus owners wanted the Council to approve of routes designated by the commission and had asked the Council to pass a resolution giving its approval to whatever routes the commission chose.

No action will be taken by the Council until it has an opportunity to go over the various routes that have been submitted. At a recent meeting of the Council Mayor Borchers said that the future growth of the city demanded careful consideration of all methods of transportation and that every one would be given a respectful hearing on his petition.

Connecticut Company Analyzes $1,352,918 Profit

The startlingly high income of more than $1,000,000 announced for the Connecticut Company by President L. S. Storrs recently has made it one of the leaders among electric railways which are recuperating from the period of depression. The details for the first seven months of 1921 as compared with the same period for 1920 are as follows:

	1920	1921
Total operating revenue.....	$8,359,760	$9,588,807
Total operating expenses.....	8,178,330	7,832,105
Net operating revenue.....	$181,430	$1,756,702
Taxes.....................	457,369	409,230
Operating income.........	*$275,939	$1,347,472
Total non-operating income..	9,025	5,447
Net income available for return on capital invested.................	*$266,914	$1,352,919

* Deficit.

Taxes were reduced by the State Legislature to 3 per cent of the gross revenue, and operating expenses have declined by $346,225. A further saving will follow the wage reduction of 8⅓ per cent which was made by the wage arbitrators, retroactive to June 1. By this decision the maximum wage for motormen and conductors was reduced from 60 cents to 55 cents.

As indicated in the ELECTRIC RAILWAY JOURNAL for Oct. 29, page 798, the increased income of the company is due to a 10-cent fare and to the liberal policy followed by the State Legislature. Among the measures passed were those regulating jitneys by a Public Utilities Commission and granting electric railways the right to operate buses, those exempting the electric railways from obligations to bear cost of new bridges except for the cost of strengthening those used by the trolleys and those exempting the companies from paying for maintenance and construction of paving except for 8 in. on either side of each rail.

Transportation News Notes

Gives Sanction to Operation of Buses.—The Board of Public Utility Commissioners has granted authority to the Camden, Marlton and Medford Bus Company to operate five buses between Camden and Medford, via Marlton.

One-Man Cars in Use.—The Trenton & Mercer County Traction Corporation is now using exclusively one-man type cars on all the lines in the city of Trenton, N. J. With the arrival of five new one-man cars all the cars of the larger type have been placed on the suburban lines.

Wants Reduced Fares.—The Emporia (Kan.) City Commission has requested the Kansas Electric Utilities Commission to reduce its rate of fare from 10 cents to 5 cents. The City Commissioners last year authorized the higher fare because of the high cost of operation.

Fares Jump.—The Columbia Electric Street Railway, Light & Company, Columbia, S. C., recently increased its rates from 7 to 10 cents between the Fair Grounds and the city and at the same time put into effect a 3-cent charge for transfers for passengers coming into the city.

Filed Applications to Be Considered.—The Public Utilities Commission of Washington, D. C., will hold a hearing this month on four motor bus applications. The principal request is from the Washington Rapid Transit Company, which is seeking to establish a route across town from Union Station to 3rd and O Streets.

Civility and Courtesy Reign in Akron.—The Northern Ohio Traction & Light Company, Akron, Ohio, was so infected with the "courtesy" disease last month that it appears it will remain in the system for at least another month. The company continues to receive congratulatory messages on the courteous acts of its trainmen. The effort is to make "Civility as universal in Akron as the transfer."

Syracuse Against One-Man Cars.—An ordinance has been adopted by the City Council of Syracuse, N. Y., making illegal the operation of one-man cars in Syracuse after Dec. 1. Edmund H. Lewis, Corporation counsel, has announced that injunction proceedings will be taken by the city if the New York State Railways, operating the local lines in Syracuse, persists in using one-man cars after the date fixed for their discontinuance.

Traffic Signs Installed.—Stationary ornamental traffic signs have been placed on the downtown business streets of Dallas, Tex., to safeguard pedestrians in boarding or alighting from street cars. These stationary signs are made from concrete, heavy enough to withstand any ordinary shock, and display red and green lights at night. They are large enough to be seen by any motorist and are placed at the ends of the safety zones. Motormen of the Dallas Railway have been instructed to stop their cars so that patrons in alighting or boarding will be behind and protected by these traffic signs.

Personal Mention

Toronto's Management

Task of Rehabilitating Municipal Property in Hands of Messrs. Couzens and Harvey

A bold sign is now being displayed all over the city of Toronto and has become as familiar as were during the war the route signs displayed in battle-scared villages of the war zone. It reads something like this, "Temporary change of route owing to the urgent necessity of renewing the tracks on —— Street. Cars will be temporarily rerouted as follows: . . ." Even the main thoroughfares of Toronto for several miles have been closed to traffic for about three weeks. People take a little longer getting to work and getting home. Changes in routes unless closely followed are puzzling to the citizens and entirely confusing to the visitor. But it is all borne cheerfully, for in every part of the city there is evidence of the vigorous pushing ahead of the rehabilitation of Toronto's broken down transportation system.

This big experiment in public ownership was placed above and beyond municipal politics when the Toronto Transportation Commission was named, consisting of T. W. Ellis, chairman, a manufacturing jeweler; George Wright, a hotel proprietor, and Fred Miller, a construction engineer, but the real planning and execution of this work is being done by two very able railway men. These are H. H. Couzens, general manager, and D. W. Harvey, assistant manager, whose duties commenced on Sept. 1 when the commission took over the operation of the street railway system from the Toronto Railway. Mr. Couzens, who is also general manager of the Toronto Hydro Electric System, was given an indefinite leave of absence last year to accept this position as general manager for the commission. The expectation is that he will be general manager of both. For the most part the old department heads have remained with the commission in their former capacities.

Mr. Couzens is indeed fortunate in having behind him a wealth of experience, most of which was obtained in England, as an asset invaluable to him in pushing forward this complete reorganization and reconstruction to a successful consummation. The latest developments of the industry are being utilized in the form of safety cars, buses, and trailers, each in its proper sphere, while the greater part of the old rolling stock has been made the subject of advertisements to ensnare the unwary operators of other street railways. It is understood also that trackless trolley lines are to be built if it is shown that they will fit into the general scheme as the most economical solution.

H. H. COUZENS

It is not surprising that the people are satisfied to wait perhaps two or perhaps three years for an adequate transportation system when they see everywhere before them concrete evidence of the determination of the commission management to push the work ahead just as fast as their resources will permit. Mr. Couzens has seen to it that months before the system was taken over new steel had been ordered, construction machinery purchased, engineers employed, and material gathered in large dumps. On the very day that it was taken over gangs of men started to work not in one section, but in many, tearing up old tracks, reballasting and laying new. Everything had been thought out ahead. The vigor of the whole thing was an object lesson in itself.

Mr. Couzens is a native of England. He was born in Totnes, Devonshire, England, in 1877. After receiving his education at the Independent College at Taunton, England, he subsequently served as a pupil in both mechanical and electrical engineering with Allen & Sons, Taunton, and the Taunton Corporation Electrical Works, respectively. In 1898 he was appointed assistant engineer of the Bristol Corporation Electrical Department, in Bristol, England, and held that position until 1901, when he was appointed deputy chief electrical engineer of Bristol. He resigned in 1909 on his appointment as manager and engineer of the West Ham Corporation Electric Supplies, and in 1912 was appointed to a similar position with the Hampstead Borough Council, and continued for a year as consulting engineer for West Ham. He resigned that position at the end of 1912 on his appointment as general manager of the Toronto Hydro Electric system and took up the duties of this position early in 1913. As previously stated, Mr. Couzens will probably continue in this capacity in spite of the arduous duties connected with his appointment as general manager of the municipal property in Toronto.

D. W. HARVEY.

Mr. Harvey, the assistant manager of the commission, was previously superintendent and engineer of the Toronto Civic Railway. Mr. Harvey was with the Toronto Civic Railway when operation first began in 1911, at which time he was given charge of construction. In 1912 the operation and maintenance were also placed under his supervision.

Mr. Harvey was born in London, Ontario, on Feb. 24, 1887. After graduating from the Toronto University he was with the Ontario Power Company and subsequently was connected with the Toronto Structural Steel Company.

Leaves Holding Company

S. E. Wolff, of Hodenpyl, Hardy & Company, Becomes Executive in Food Products Corporation

S. E. Wolff, who for many years has been identified with Hodenpyl, Hardy & Company, Inc., New York, in the management of public utility properties, is retiring from his present connection to become vice-president of the United States Food Products Corporation.

Mr. Wolff is a Western man. He was born and educated in Michigan where he spent his earlier business life in the operation of public utility and railroad properties. In 1903 he became general manager of the Jackson (Mich.) Gas Company (now owned by the Michigan Light Company), and two years later became vice-president, and also vice-president and general manager of the gas, electric light and power and city traction properties in Saginaw and Bay City and the interurban road connecting these cities.

In 1908, he removed to New York City and was engaged in the executive offices of Hodenpyl, Walbridge & Company, principally in examination and reports on properties and the reorganization of working forces of such properties as were acquired. He remained with Hodenpyl, Walbridge & Company until 1911 when it was succeeded by Hodenpyl, Hardy & Company for whom he has been constantly engaged in examinations of organizations of working forces and management of corporations, principally public utilities but embracing also railroad, manufacturing and mining properties.

During the past six years Mr. Wolff has had general supervision of purchases of the Hodenpyl, Hardy & Company properties which include the Consumers Power Company, Michigan Light Company, Central Illinois Light Company, Southern Indiana Gas & Electric Company, the Northern Ohio Traction & Light Company, etc., and in the course of these duties it has been necessary to visit many manufacturing plants with a view of ascertaining their ability to produce apparatus, supplies, etc., and of inquiring into their facilities and organizations. Incident to the foregoing he has given particular attention to valuations of properties and the economics and engineering involved in the presentation of rate cases.

In 1917 he entered the army and was assigned to the Signal Corps and later to the Bureau of Aircraft Production where he served as the head of the Finance Division. On his discharge from the army he resumed his duties with Hodenpyl, Hardy & Company, Inc., and the properties under their management with which he has been associated until his recent election to the vice-presidency of the United States Food Products Corporation.

He is a member of the leading trade and technical associations and has done important committee work as well as filled various offices in organizations.

Lionel Drew, formerly connected with the Savannah (Ga.) Electric Company, a Stone & Webster property, has gone to Guatemala where he has accepted a position with the American International Company.

Alderman R. Mayne, deputy Lord Mayor of Newcastle-on-Tyne and chairman of the Newcastle Tramways Committee, was elected president of the Municipal Tramway Association of Great Britain at the recent annual meeting at Manchester.

P. E. Glenn, who has been acting secretary of the Oklahoma Corporation Commission for the past year, has assumed the duties of accountant for the commission following the appointment by the commission of G. F. Smith of the Oklahoma City Chamber of Commerce, as permanent secretary. Mr. Glenn was employed by the commission as accountant but was serving in both positions temporarily until the commission saw fit to appoint a permanent secretary. Mr. Glenn has served with the commission almost continuously since 1910, and is one of the most valuable employees of that body.

Obituary

William E. Baker, a well-known civil and electrical engineer who retired from active engineering practice some years ago, died suddenly on Nov. 1 at his home in New York. He was born in Springfield, Mass., sixty-five years ago. After completing his technical education at Lafayette College he entered railroad service, later becoming largely instrumental in breaking the westward trail for the Canadian Pacific. He was chief engineer of the International & Great Northern Railway from 1884 to 1888. After several years spent with the Thomson-Houston Electric Company, Mr. Baker was in Boston from 1892 to 1894 in charge of the electrification of the West End Street Railway system. Several years later he was general superintendent of the West Side Elevated Road of Chicago and subsequently came to New York as general superintendent and chief electrical engineer of the Manhattan Elevated Railway. Later, Mr. Baker opened an office in New York and was consulting and constructing engineer for several electric roads, including the Scioto Valley Traction Company, Columbus, Ohio.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Business Improvement

Department of Commerce Survey Indicates Increased Production in Representative Industries

That there is a real basis for the general statement of improved business already issued by the Department of Commerce is revealed by the detailed departmental survey for October. This publication, the third number of *The Survey of Current Business*, shows the trend of all important industrial movements at the first of October. A careful study of the figures presented shows that, considered as a whole, business and industry have moved forward. In the majority of industries production and consumption increased and stocks declined. Iron and steel showed a steady gain. The building industry indicated improvement. Textile consumption figures continued to advance and exports of raw cotton were substantially larger than a year ago. The unemployment problem, while still far from disposed of, showed a decided change for the better.

Taking up several important industries and treating them separately, the survey said that the iron and steel industry evidenced a slight improvement in production during September, with pig iron 2.7 per cent greater than in August and steel ingots 1.9 per cent greater. Exports and imports of iron and steel increased, by 24.2 and 35.1 per cent, respectively. An increase in unfilled steel orders marked the turning point in a long decline. Orders for bolts continued to increase, but for nuts and rivets the demand, as shown by new and unfilled orders, declined. Bar iron shipments increased slightly.

Copper production turned upward, with a slight increase in August. An increased foreign demand is noted for this metal, with September exports 44.1 per cent larger than August and, with one exception, the largest monthly shipment since May, 1920.

Zinc production continued to decline, but at a descending ratio; the September decline was only 2 per cent. Stocks declined 6.1 per cent. The decline in stocks of tin was arrested at a level 53 per cent below the previous September. There was an increase in imports, September being 13 per cent larger than August. During September, steel prices declined slightly, but in iron, copper, lead, tin and zinc, increases of from 1 to 6 per cent occurred

Building costs continue to decline. As measured by the Aberthaw Construction Companies' index for concrete factory buildings, the September cost declined 1.9 per cent, while the *Engineering News-Record* shows a further drop of 2.7 per cent compared with August. The latter index is based on the cost of steel, lumber, cement and common labor. Cement production was the largest on record for September, and new records of shipments were established for the quarter and the first nine months of the year. Stocks of cement at the mills were drawn upon to supply the demand during September, as is customary in the season of active demand, and declined 16.2 per cent from August.

In the field of railroad transportation good progress was made in reducing the number of idle freight cars during September with a decrease of 30 per cent, box car surplus declining 39.3 per cent and coal cars 24.9 per cent. At the end of September, car surplus had been reduced 65 per cent from the peak last March. Shortage of freight cars increased but the total shortage is still very small. Total car loadings increased 4 per cent in September, especially merchandise loadings, and are the largest since November, 1920.

Prices of Malleables Unsteady

As in the other branches of the iron and steel industry the manufacturers of malleable fittings are operating only on part time and quite a wide range in price quotations can be had. One New England foundry which turns out guy clamps, insulator pins and other miscellaneous small castings is operating from two to three days a week. Very few large orders are being placed and competition is keen. Price cutting is much in evidence and some manufacturers declare that prices have been quoted in a number of instances which cover only the bare cost of material and labor without any allowance for overhead cost or profit.

From the high mark two years ago of 36 cents a pound for small malleable castings the price has dropped to around 13 to 14 cents a pound at the present time. Some quotations as low as 8 to 10 cents have been reported. For the larger castings the price ranges from 8 to 11 cents per pound. Malleable prices at Pittsburgh have held steady around $20.50 per ton for the past month. However, slight changes would have little effect on finished castings and there is little to indicate that finished prices will change for some time.

Manufacturers state that many users of malleable castings have large stocks on hand which were purchased a year or so ago and these stocks must be consumed before any considerable activity can be expected.

Westinghouse Company Buys Seattle Plant

Negotiations leading up to the establishment in Seattle by the Westinghouse Electric & Manufacturing Company of a manufacturing and assembling plant were consummated a short time ago when this company purchased the plant of the Kilbourne & Clark Manufacturing Company of Seattle for a reported consideration of $130,000. The plant will be used for the assembling and testing of machinery, manufacturing switch-boards and instrument panels, warehousing of the company's products and the housing of its sales organization. Seattle is the principal distributing center for the Westinghouse products in the Northwest.

Carbon Brush Demand for Maintenance Needs

Deliveries Are Prompt Though Production Is Still on a Sub-Normal Basis

Manufacturers of carbon brushes quite uniformly report a quiet market for their product so far this fall. With industrial operation at its present low point in almost all lines of activity throughout the country fewer motors are being run and consequently there is not the normal demand for brush replacements. On the other hand, in certain lines of industry it has been possible to take advantage of the opportunity offered by these times of slack production to overhaul electrical equipment, and in those quarters the demand for replacement brushes has held up for the past few months fairly well. Electric railways are not endeavoring to carry surplus stocks, and their buying has continued on a hand-to-mouth basis.

There are many signs, however, of better business ahead. It is stated in several quarters that the carbon brush business is continuously showing an improvement, an indication that a state of normalcy in this line is slowly but surely approaching. Producers naturally are proceeding cautiously on the supposition that the next few months will not bring forth any startling increase in demands. At the present time production is averaging around 65 per cent of capacity while inventories have been brought down to a corresponding level.

Stocks of the semi-finished products are in ample shape to fill customers' current demand and all manufacturers are able to make very prompt shipments. Prices are no longer at their peak, most manufacturers having made reductions in their prices in amounts varying from 10 to 20 per cent Other manufacturers are still quoting on the same price basis that they have been for the past few years. This was the case when prices were not raised to correspond with peak production costs that existed during this time.

Seven Bids on Queensboro Subway Extension

The New York Transit Commission received seven bids on the construction of certain subway extensions to the Queensboro subway from Grand Central Station to Forty-first Street and Eighth Avenue. The extension will give substantial relief to the congested area of the Interborough shuttle operated in Forty-second Street and will materially improve the service of the Queensboro subway. This extension is regarded as one of the most important remaining links of the dual system to be constructed.

The bids received are: Powers-Kennedy Construction Corporation, 149 Broadway, $3,839,000; Keystone State Construction Corporation, 17 West 42nd Street, $3,895,000; F. L. Cranford, Inc., 149 Remsen Street, Brooklyn, $4,171,000; Patrick McGovern, Inc., 50 East 42nd Street, $4,235,000; Booth & Flynn, Ltd., $4,389,000; Rogers & Haggerty, 125th Street and Park Avenue, $4,800,000 and J. A. Gillespie Co., 7 Dey Street, which stated its bid would be approximately $5,000,000.

The plan for this extension calls for a two-track subway beginning at a lower level underneath the existing shuttle tracks, near Vanderbilt, extending west under Forty-second Street to a point in West Forty-second Street, a short distance east of Sixth Avenue where the line bends south under Bryant Park into Sixth Avenue and thence turns west into Forty-first Street and continues along that thoroughfare to a terminal joint just west of Eighth Avenue. Stations on the new line will be two in number, one at Fifth Avenue and Forty-second Street and the second beneath the Times Square station of the Interborough west side subway.

One reason given by the Transit Commission for constructing the line as far as Eighth Avenue is that eventually it will connect with a new subway through the latter thoroughfare, which, it is believed, will be the first to be built when new work begins.

Copper Demand Widespread

The amount of copper available at 13¼ cents a pound delivered for November and December shipment is becoming quite small, as most producers are holding at 13⅜ and some are entirely out of the market.

Consumption is showing improvement, and one large manufacturer of copper and brass goods says that he doubts whether the proportion of copper recently bought and used for building up stocks in consumers' hands is nearly as large as many are inclined to think. Demand for copper goods is today much better than for brass products, but the brass business has improved considerably during recent weeks.

The amount of scrap brass on the American market is becoming quite small, and this will tend to help raise the price of copper during the next few months. One consumer, however, does not expect any large increase in the copper price to result but rather a healthy and sustained moderate increase, while another says that his company has increased stocks of metal on hand greatly in the last few months.

Rolling Stock

Danbury & Bethel Street Railway, Danbury, Conn., will be in the market for four safety cars provided the receiver, J. Moss Ives, receives the permission from the Superior Court, to which he has petitioned.

Staten Island (N. Y.) Midland Railway has purcased from the Second Avenue Railroad New York forty of the 100 double-truck one-man cars which the latter company remodeled from open cars as was described in the Feb. 19, 1921, issue of the ELECTRIC RAILWAY JOURNAL.

Pennsylvania-Ohio Electric Co., Youngstown, Ohio, has ordered seventeen one-man safety cars, twelve of which are to be used in giving additional service on the Youngstown Municipal Railway which is a subsidiary company. With the arrival of these cars the number of this type of car used by the company will be increased to sixty-one.

Recent Incorporations

Norwood Street Railway, Birmingham, Ala., has been incorporated with a capital stock of $2,000. The purpose of the new corporation is to acquire, maintain and operate a railway in the city of Birmingham.

Vincennes (Ind.) Electric Railway has been incorporated with capital of $100,000, as successor under reorganization to the Vincennes Traction Company. G. H. Armstrong, J. H. Powers and E. C. Theobold are the incorporators.

Plaza Railway, Charlotte, N. C., has been incorporated with a capital stock of $50,000. The incorporators are H. B. Heath, D. H. Johnston and C. E. Barnhardt. The new company will resume the service on Central Avenue and along the Plaza which was abandoned some years ago.

Track and Roadway

Chattanooga (Tenn.) Traction Company expects to extend its Red Bank line a distance of about 12 miles along the Dayton highway.

Cape Girardeau-Jackson Interurban Railway, Cape Girardeau, Mo., will rebuild the line at a cost of $50,000. New tracks and new equipment will be purchased.

Cincinnati (Ohio) Traction Company, will place new rails on Vine Street from Mulberry to McMillan Streets. The estimate submitted by the company to W. J. Kuertz, director of street railroads, is $58,000.

Cincinnati, Ohio. An initiated ordinance to extend the East End line of the Cincinnati (Ohio) Traction Company to California was overwhelmingly defeated at the municipal election held here on Nov. 8. This was the second time the amendment was defeated by the voters.

Northwestern Ohio Railway & Power Company, Toledo, Ohio, will reballast about 5 miles of track. This ballast will not be put in under the ties until next spring, but can be purchased and distributed much more economically now than during seasons of heavy traffic.

San Diego (Cal.) Electric Railway has completed that part of the reconstruction of the double track and paving between Third and State Streets on Broadway which was begun the latter part of September.

Youngstown (Ohio) Municipal Railway, a subsidiary of the Pennsylvania-Ohio Electric Company, recently completed construction of 2½ miles of double track on one of its principal lines in Youngstown. The rails, with thermit welded joints, are laid on steel ties, embedded in concrete.

Little Rock Railway & Electric Company, Little Rock, Ark., has been urged to build a connecting line through the western portion of the city to provide service for residents of the district between Prospect Avenue and the route of the Highland lines. It is estimated that this proposed line would cost approximately $90,000.

Trade Notes

Westinghouse Electric & Manufacturing Company has announced the following changes in its service department: B. B. Burkett has been appointed district service manager in the Seattle office, succeeding N. P. Wilson, who has been transferred to sales service activities on switchboards and similar apparatus in the Seattle territory. The Salt Lake service department has been made a branch of the Denver office, under the direction of A. F. MacCallum, district service manager, Denver. M. R. Davis, formerly district service manager at Salt Lake, will remain at Salt Lake and devote his time to field service work and to securing repair business for both ships.

Fred B. Uhrig, for the past forty years an employee of the Western Electric Company has retired from active service. Fred Uhrig joined the Western Electric Company as an office boy in Chicago in 1881. The spirit of application and sincerity of purpose which have marked his whole life showed themselves even then, and promotion came rapidly. By 1883 he had become editor and service man, and in 1895, credit man of the Chicago office. When the Denver branch was opened in January, 1903, Mr. Uhrig was chosen as its manager. The following year he went to Kansas City as manager of the distributing branch there, and later became also western district manager. He contributed more than any other man to the development of his company's business in the southwest between the Mississippi and the Rockies.

New Advertising Literature

David W. Onan, 43 Royalston Avenue, Minneapolis, is distributing a leaflet describing the "Onan" lathe and mica undercutter.

Texas Company, New York, made "Diesel Engines" the subject about which the leading article was published in a recent issue of *Lubrication.*

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor CARL W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

Volume 58 New York, Saturday, November 26, 1921 *Number* 22

Nail the Lie at the Right Time

MESSRS. SCHWAB AND GARY have done a good work in nailing the lie that the steel makers are more interested in war than they are in peace. Among the unthinking it has been accepted at 100 per cent that the steel men were the accomplices of Mars. Even dramatists no less renowned than Shaw, in his "Major Barbara" with its millionaire Undershaft, have done much to keep the silly idea alive. The limitation of armament conference, however, afforded just the necessary background for the authoritative statement by Mr. Schwab, a statement which, if made at any other time, would have provoked derision except from the few who knew it to be true. It has been the despair of leaders in industry everywhere, this lie about their business, which persists in spite of the fact that its disproof is so simple.

In the electric railway business the number of erroneous notions about the industry that persist through the ages is probably greater than surrounds any other industry with the exception of the steam railroads. First there is the prevalent idea of overcapitalization. Again there is the idea that the interests of the company and the public cannot possibly be the same—the idea that the railway manager lives only to carry as many passengers in as few cars as physical limitations will permit. Another is that rush-hour traffic is immensely profitable. These are just a few that occur offhand.

It would do no good for the industry to disclaim all these things out of hand, but it would be well for electric railway managers everywhere to be on the lookout for just such opportunities as the disarmament conference presented to the steel makers to disprove these silly notions. A fixed plan for carrying the message of disproof to the public would fail of its purpose, but coupled with the proper incident in the history of the company at the time of the making of that history a great deal more can be done than has been accomplished in the past toward correcting misconceptions about the industry such as those which have been cited.

Momentous Decision for Des Moines

NEW YORK has its Mayor Hylan. Chicago has its Mayor Thompson. And Des Moines has its former Corporation Counsel Byers. All of them are of the same political kidney. They are traction baiters first, last and all the time. They are the type of politicians that are the despair of the statesman and a conundrum to the historian.

Mr. Byers doesn't like the proposal for a new grant to the Des Moines City Railway to be voted on by the people of that city at the election there on Nov. 28 and has aligned himself with a property owner as the instigator of a suit for an injunction to prevent the election. He sees lurking in the franchise a gentleman of dark persuasion discernible to none but him. The trouble with Mr. Byers is of course not with his eyes, but because he is suffering from the gall of previous defeat. If he came to the court without prejudice the case might be different. Under the circumstances the chances appear to be slight that this avowed hater of the railway will be permitted to thwart the will of the Council and jeopardize the future of the city.

However unwise Des Moines may have been in the past in her dealings with the railway, it seems altogether unlikely that the city will do anything less than overwhelmingly adopt the new railway grant. For Des Moines the choice that she makes on Nov. 28 will be momentous. Unless the city has gone stark mad there can be but one outcome at the impending election.

Who Will Buy Junior Issues?

THE practical difficulties of financing junior issues of public utility corporations at the present time have been set forth on a number of occasions, but perhaps never more clearly than in a paper presented by Mr. Peirce, a banker of San Francisco, at the last meeting of the Investment Bankers' Association of America and published in the issue of this paper for Nov. 12. Admittedly, the question of a proper and adequate return on a public utility security is a difficult one. When the average member of the public is paying his trolley fare or lighting bill an 8 or 10 per cent return looks high, although it takes on a ridiculously small appearance to that same individual when he is considering what investment he shall make with his savings. Nevertheless, as the number of people who pay fare is much larger than those that have to consider how they are going to invest their savings, commissions have felt that they had to be conservative in their allowance of the percentage of return permitted. But if bonds or preferred stock have to be put out at around 8 per cent, how are the junior securities to be marketed? Obviously there is very little opportunity of marketing them at all. Nevertheless, a corporation without a large part of its assets represented by common stock is top heavy and a menace to all who have to do business with it.

There are two possible solutions to the problem. One is that the public will become reconciled to the earning of a higher return by the successful utilities so that there will be a chance to issue more common stock. The theory upon which the return permitted has been kept down in the past has been that the utility had a monopoly of a necessity and so was immune in a very large measure to the risks encountered by ordinary commercial undertakings and that the safety of the investment was a compensation for the smallness of the return permitted. This idea will have to be revised, at least to some extent, in view of the events of the last few years. Many investors are now disposed to look upon utility enterprises as possessing a considerable number of hazardous factors.

The other solution, or rather a condition which will help in financing junior issues of utilities, is a general lowering of interest rates. This may not be so far off as many believe, in spite of the large amount of financing which will have to be done by our own government and foreign governments during the early future. Already the cost of call money on the New York Stock Exchange is considerably less than the average of the last three or four years, although of course it is still high compared with the pre-war situation. Some recent financing of utility securities in New York, as cited in our financial and corporate department this week, indicate that for certain securities there is a good demand. While this reduction in interest rates is due to some extent to the depression in business and lack of demand for money for commercial undertakings, it is probably also due to the general building up of surplus credit.

Organization Plan of C. E. R. A. Engineering Council

ONE of two things will likely prove necessary if the section meetings of the Central Electric Railway Association Engineering Council are to meet with a success equal to that of the meetings of the Pennsylvania-Ohio master mechanics which were superceded. Either a substantial attendance of track, overhead and power engineers as well as equipment engineers must be brought about, or the different classes of engineers must be segregated into separate meetings.

In organizing the engineering council, it was thought that the geographic grouping of all classes of engineers of the C. E. R. A. territory into four sections would reduce the average distance of travel necessary in attending meetings and that there would be broadening benefits and perhaps more comprehensive conclusions reached from the joint consideration of questions. There is some logic in this reasoning but it is certain that little can be accomplished in discussing a track problem, for example, at meetings attended by only one or two track men but many mechanical men.

Even if it were possible to insure a more representative attendance than has been had at the early meetings of the engineering sections, there is room for much doubt that the present plan is the best. Nearly every one seems to be agreed that the much-talked of success of the Pennsylvania-Ohio master mechanics' meetings was due to the fact that all present were master mechanics—every one interested in the same topics. In the joint gathering of all engineers, it is quite to be expected that discussions of equipment problems will dominate the meetings because there are ten or maybe a hundred equipment problems to one track or power problem. And there is much greater uniformity of practice in the track, line and power work than with rolling stock. Consequently it is a question whether there will be enough good resulting from the attendance of these other engineers at the meetings of the master mechanics, in the few cases where a joint discussion of the problem is desirable or necessary, to justify the former in sitting through a great deal of discussion in which they have only a secondary or remote interest. Those few non-mechanical men who attended the Youngstown meeting, reported in this issue, felt that their time was largely wasted—and it was, for the double reason of small attendance of these men and natural predominance of mechanical questions.

In view of these aspects of the new engineering organization, it may be well worth while for the annual meeting of the C. E. R. A. in January to give consideration to a change in the organization scheme. It would seem to be a more efficient plan to continue the geographic sections now organized, but make them exclusively for the equipment engineers and retain the present schedule of meetings. In addition, one or two meetings a year of the line and power engineers of the entire C. E. R. A. territory, and similarly one or two meetings for the civil engineers, would probably provide ample opportunity for interchange of ideas in these branches of the engineering work. Then all engineers would have contact and opportunity for joint consideration of any common problems at the time of the annual meeting as provided in the present plan.

One outstanding advantage of the new C. E. R. A. engineering council over the Pennsylvania-Ohio master mechanics' association is evident. The C. E. R. A. has provided the instrumentality through which these meetings can be made to show real accomplishment. Before, the men just met and discussed, and each learned from the other. Now, in addition, the discussion can be directed toward a definite conclusion and the adoption of standards or the recording of best practice.

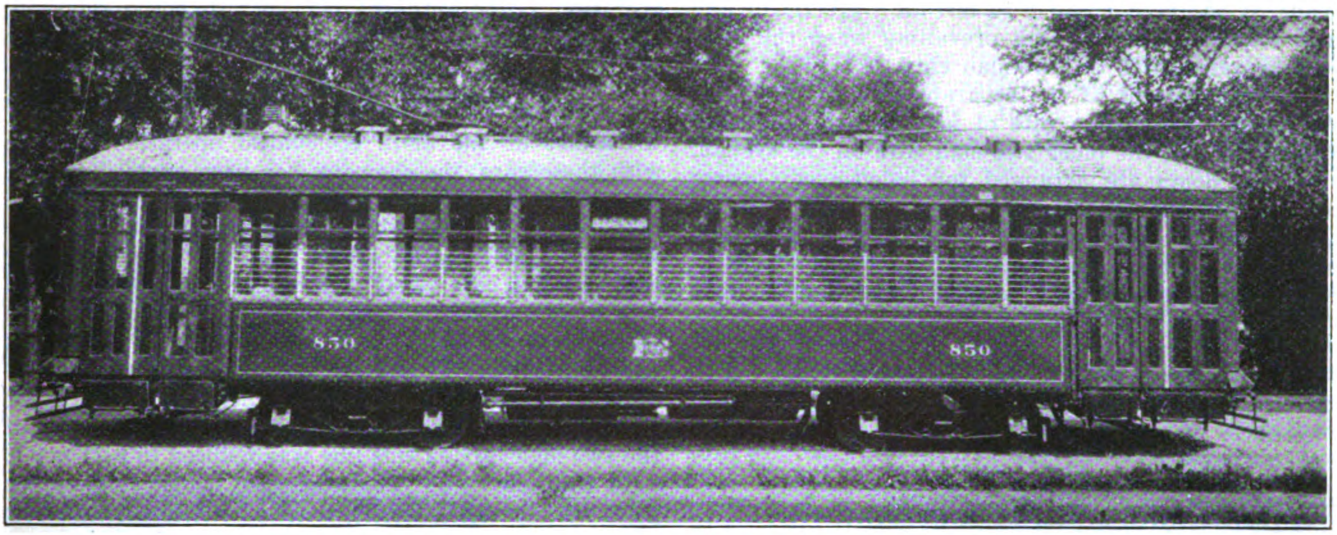
Increased Train Operation Does Not Mean Less Popularity of the Safety Car

THE large increase in the practice of train operation which has taken place this year shows that electric railway companies favor the use of trailers in many cases of congested traffic. The justification of train operation depends, of course, upon the extent to which the saving in time from a reduction in number of units, plus the saving in platform labor, overbalances the loss caused by the increased number of stops required by a train over two individual cars to receive and discharge passengers. Hence, train operation is particularly adapted to heavy traffic and to congested centers, because it is here that street congestion would require many stops in any event and a reduction in the number of operating units is most effective in speeding up the whole line. Of course, such trains have also to run to some extent into the outlying districts, but where the required stops are fairly far apart, the net decrease in running time caused by the use of two cars is not seriously felt.

This increase in train operation, in many cities, should not be interpreted as a tendency away from the use of safety cars, which are adapted to an entirely different set of conditions. These small units have proved of exceptional value for light and average service requirements. The increased tendency toward train operation has also been influenced to some extent by the fact that trailers have a low first cost and operating cost in comparison with the motor cars. In this latter respect it enters the field of one-man car operation.

On systems where safety cars are in use train operation during the peak period does not interfere with the safety car operation. In many cases the safety cars are operated over the same tracks through the congested sections that are used by the trains, but in most instances they are on different lines. The safety car headway is determined largely by the service necessary in the outlying sections which they serve rather than in the dense centers.

Both multiple-unit and trailer operation have individual advantages, and it is difficult to make an accurate comparison between the two because multiple-unit operation has certain inherent flexibilities that cannot be obtained with trailers. Both, however, are essential factors in the solution of heavy traffic problems and do not encroach on the safety car field.



MILWAUKEE'S NEW ONE-MAN, TWO-MAN DOUBLE-TRUCK CAR

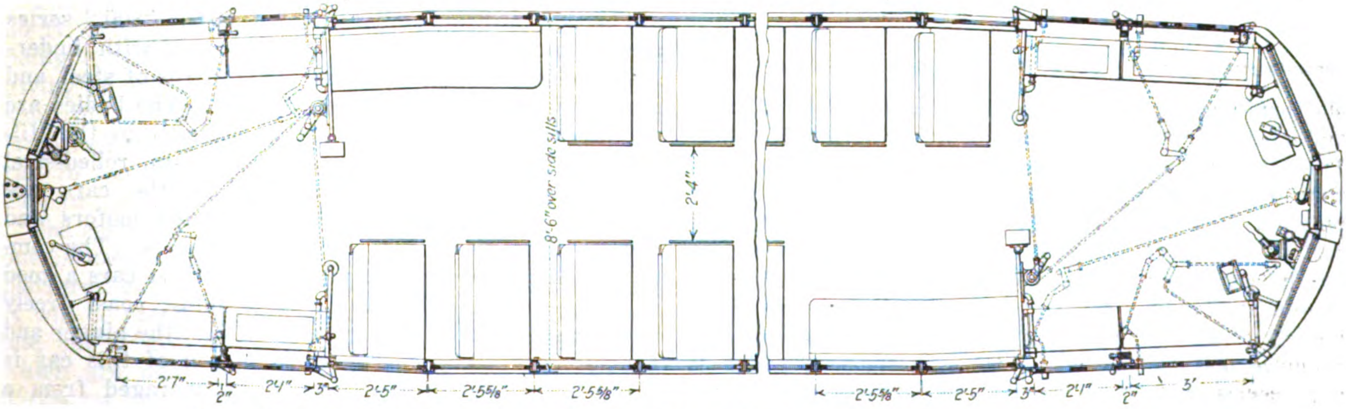
Double-Truck, One-Man, Two-Man Cars in Milwaukee

Distinctive Features Are Their Adaptability to Light or Heavy Traffic, Unusually Light Weight, Separate Exit and Entrance, Special Design of Trucks, and Advantages to the Patrons in Safety, Comfort and Improved Service

THE ELECTRIC RAILWAY JOURNAL of Aug. 20 made mention of the commencing of one-man car operation in Milwaukee and discussed briefly the new light-weight, double-truck, low-floor cars equipped with standard safety devices which were developed by the Milwaukee Company in preparation for this installation. This Milwaukee car, embodying as it does distinctive features of design, is believed by the company to be an up-to-date and satisfactory solution of the problem of adapting one-man car operation to the use of a metropolitan community in such a way that the new service does not suffer by unfavorable comparison with the old. The Milwaukee installation offers to the riding public there such superior advantages in the way of speed, safety and comfort that this innovation in service was practically assured of successful acceptance and support before it was started. The time and careful thought spent by the Milwaukee management in analysis of construction and operating features of design are plainly in evidence. The fundamental ideas of the design are accredited to S. B. Way, vice-president and general manager, the details having been worked out by T. W. Faber, engineer of car construction, though due acknowledgment is made by these gentlemen to advice and suggestions received from the transportation and other company departments.

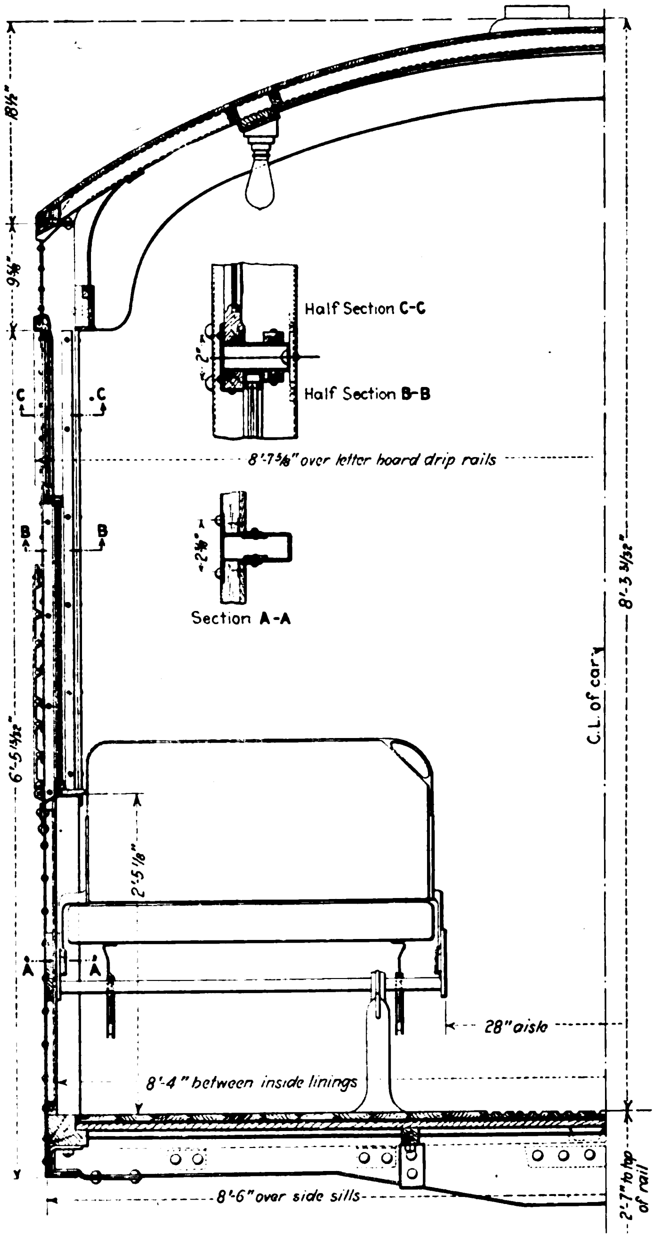
The arrangement of this car for either one or two-man operation makes it readily adaptable for use on any line of the system, hauling either heavy or light traffic or for operation on the same line as a one-man car in non-rush and as a two-man car in rush hours. At the time of this writing, two lines are being operated with the new cars as one-man cars all day, using the two-man three-truck trains, described in the ELECTRIC RAILWAY JOURNAL for Jan. 15, 1921, page 131, for the additional rush-hour equipment required, as this keeps the line entirely on the basis of one man per car.

To speed up loading at congested points, auxiliary street collectors are used, these cars being equipped with a shaft extending out from the steps and connected to the door-operating mechanism by beveled gears, so that these collectors are enabled by using a crank, to open the rear right-hand door and admit passengers. By this



FLOOR PLAN SHOWING LAYOUT OF SEATS AND PLATFORM EQUIPMENT AND VARIOUS DIMENSIONS means, it has been possible to maintain practically the same schedule speed as that prevailing when the lines were operated with all two-man cars.

The arrangement of the separate entrance and exit doors makes possible a rate of loading and unloading equal to that of the older two-man cars on the system, and these doors are arranged for independent operation, so that the operator can close the exit when all passengers have alighted and confine the ingress of passengers to the entrance door. This independent operation of doors is similar to that provided for the rear platform and is of advantage in preventing loss of fares and also minimizes the loss of heat in cold weather. The platform floors are practically on the same plane with the body floor, a very slight ramp giving easy step heights, facilitating passenger movement. Weight and cost in construction are economized to a great extent by the elimination of platform wells, and this feature should also reduce accidents. Aisles wider than those on any other cars on the system give greater freedom of movement of passengers through the car, which is very necessary in a car where the passenger movement is to and from the same platform as in the one-man operation. Despite the 28-in. clear aisle space, the seats are wider than most of the other cars, the width being 36 in.



Cross-Section Showing Floor, Side Post and Roof Construction

Improved Service Afforded

Because of the more economical operation possible with these cars, the company has been enabled to give its patrons a more frequent service. On the Thirty-fifth Street line, on which operation of the new cars was begun on June 19, a base headway with forty-four seat two-man cars of eight minutes in the morning and nine minutes in the afternoon was replaced with an eight-minute headway all day using the fifty-eight seat one-man cars. A stretch of single track made it impossible readily to shorten the headway under eight minutes. The average schedule speed of 9.67 m.p.h. of the two-man cars on this line was reduced to 9.24 m.p.h. with the new cars. The seats per hour past a given point was formerly 330 in the morning and 293 in the afternoon as compared to the present 435 all day.

A further improvement in service was made on the Twenty-seventh Street line, on which the new cars were installed on Aug. 1. Here the former base service was ten minutes in the morning and eight minutes in the afternoon, while the new headway with one-man cars is eight and one-half minutes in the morning and seven minutes in the afternoon. The former schedule speed was 11.05 m.p.h. and is now 10.97 m.p.h. The very slight reduction in schedule speed is more than compensated for from the standpoint of the patron by the shorter period he must wait for a car. The relative number of seats per hour on this line in the morning was 264 with the two-man forty-four seat cars and 406 with the new cars. On the afternoon schedule, the former service provided 330 seats per hour as compared to 545 in the new service.

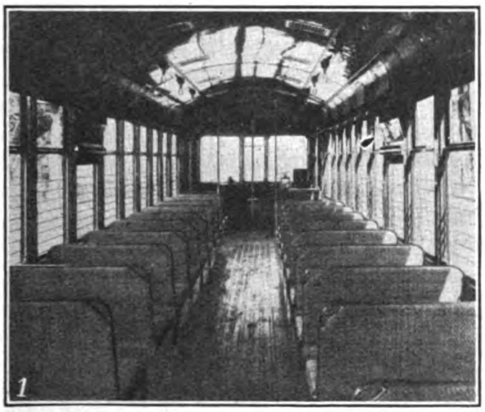
An idea of the density of traffic on the two lines on which these new cars have been installed can be gained from the following figures: On the Twenty-seventh Street line, the average number of passengers per car-mile as computed from recent figures is 10.51, while that of the Thirty-fifth Street line is 9.88. These may be compared with a city system average of 9.53 passengers per car-mile and with the heaviest city line which carries 13.54 passengers per car-mile.

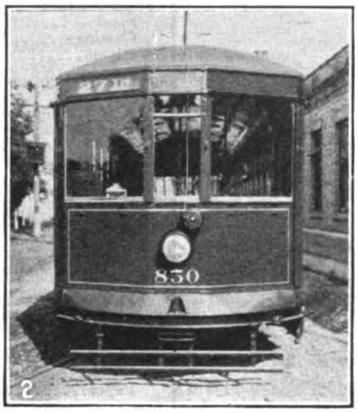
With the lower cost for operating these cars, lower cost for platform labor, less for power on account of the light weight and the small motors used, less for maintenance of equipment and reduced track maintenance the company is able to give the patron more for his money.

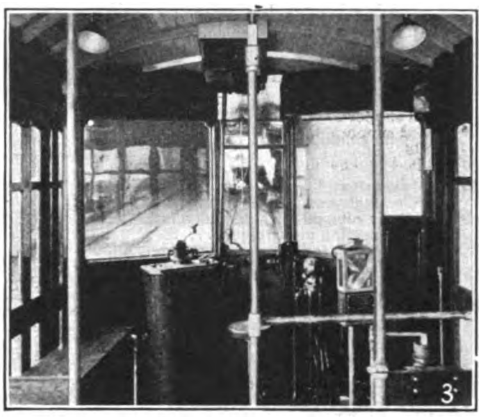
General Layout of the Cars

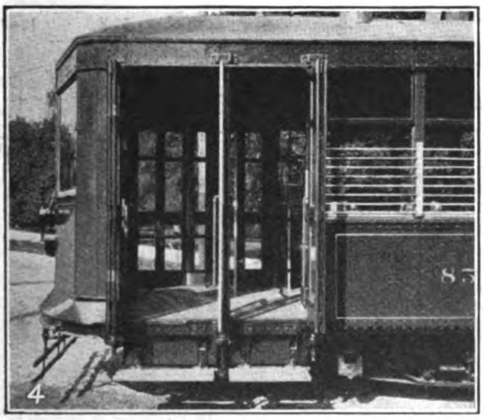
The new Milwaukee cars known as the "800" series are of semi-steel, arch-roof construction with underframe, side framing, posts and letterboards of steel, and roof, doors and interior trim of wood. The bodies are mounted on special arch-bar trucks designed by the Milwaukee Company and equipped with 26-in. rolled-steel wheels and four motors. Thirty of the cars are equipped with General Electric type 264 motors and seventy with Westinghouse type 508 motors. The comparatively low weight per motor gives these cars a good running speed. They accelerate rapidly, coast freely and get over the line in better time than the bigger and heavier cars. The energy consumption of this car is about 1.75 kw.-hr. per car-mile as averaged from a week's operation of one car. The air brakes are the standard safety-car control equipments of the Safety Car Devices Company, interlocking operation of power, brakes, doors, steps and sanders to insure maximum safety in operation, the same as on the safety car.

As indicated in the tabulated matter accompanying this article, a very detailed study was made of the weight distribution, and every effort consistent with adequate strength was made to produce a car of minimum weight, and the result of such careful designing is shown in the actual scale weight of 31,820 lb. of car completely equipped. With a seating capacity of fifty-eight in summer (one cross-seat being removed to make room for the stove in winter) this gives a weight per seat of 548 lb. The Milwaukee climate requires insulation in the steel car body, headlining under the roof, an inside lining of the body, double floors and coal-burning, hot-air, forced-circulation heaters. The full spring cushion seats weigh slightly more than a springless type which might have been used, but their desirability, from the viewpoint of the passenger who has to ride any distance, is obvious.









INTERESTING FEATURES OF THE MILWAUKEE CARS

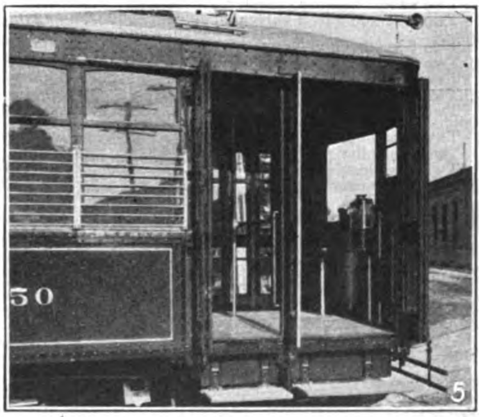
No. 1—Wide aisle and wide cushion cross seats are features of interior.

No. 2—Straight front view of the new Milwaukee car.

No. 3—Arrangement at front end for one-man operation.

No. 4—Rear doors and location of fare box when conductor is employed.

No. 5—Double doors and fare box location at front end when used as one-man car.



The car is 45 ft. long over buffers and approximately 30 ft. long over the body corner posts, each platform being 7½ ft. long. The trucks are at 20 ft. 9 in. centers, giving an overhang of 12 ft. 1½ in. The width over the side sills is 8 ft. 6 in. Other dimensions are: Height from rail to top of floor at door, 30 5/16 in.; height from rail to top of step, 16 in.; height from step to floor, 14 5/16 in.; height from rail to top of roof, 11 ft. 11 13/16 in.

The seating arrangement, position of conductor when one is used, arrangement of control equipment on the platform, etc., are seen in the accompanying drawings. It will be noted that the seating arrangement has been laid out to give the maximum number of cross seats, which are more popular with the public, one three-passenger longitudinal seat being used at either end at diagonal corners to provide a small well.

Differing from the platform arrangement of the common type of safety car, the operator's position was made in the center of the platform behind the middle window instead of at the left-hand side. The operating department considers that the center location gives safer operation, while it sacrifices but little of the loading well space available when the operator is stationed at the left side of the platform. The two locations of the fare box for one-man and two-man operation are shown in the drawing. Platforms are as long as required to provide for separate entrance and exit passageways. Railings are used to separate boarding and alighting passengers. The pipe rail dividing the entrance and exit passageways is carried in a vertical position on the rear platform when the car is operated with one man, thus leaving the rear platform seats clear of obstruction. This rail is reversible, so that it can be used for pay-as-you-enter fare collection arrangement on either end of the car by motorman or conductor.

At the front end of the car, the entrance doors only are air operated and controlled from the brake valve handle. The exit doors are operated by hand. Both conductor's doors are mechanically operated by hand. The conductor's rear or entrance doors are the ones connected to the auxiliary shaft and opened from the outside by street collectors when the cars are operated with one man. The conductor, under two-man operation, is stationed opposite the rear exit door at the far side of the platform. All doors have been made to open outward in order to retain all possible platform space for loading purposes, particularly when using a conductor. As explained earlier, selective operation of all entrance and exit doors on both ends of the car is provided to make most of the advantages that independent operation gives in the control of fare collection and the minimizing of loss of heat in the winter season.

Ample ventilation is provided through twelve Gar-

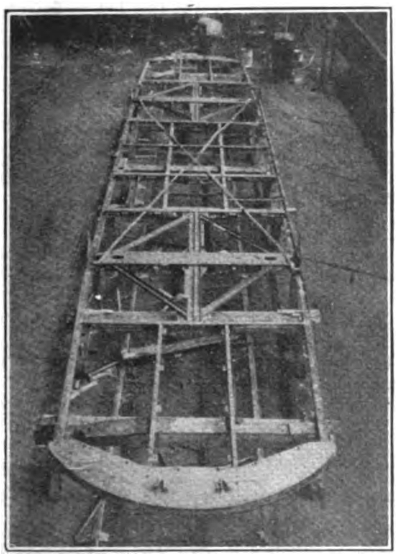
Table I—Weight Analysis of Milwaukee One-Man Double-Truck Car

		Total Weight Lb.	Percentage of Total Weight
Two trucks without motors		8,600	27
Electrical Equipment			
Two K-35 controllers	554		
One economy meter	26		
Two No. 503-D canopy switches	50		
Four GE-264 motors	3,840		
Two U. S. thirteen trolley bases	240		
One controller handle	2		
One grid resistance (large)	112		
One grid resistance (small)	82		
One armature circuit fuse box	56		
One M.P. lightning arrester	7.5		
One choke coil	1.5		
One fuse box—main	11.5		
Four axle collars	68		
Two trolley poles, harps and wheels	76		
Two trolley catchers	37		
260 ft. trolley and ground cable (7—.0974) (290 lb. 1,000 ft.)	75		
1,220 ft. motor and res. cable (7—.0545) (120 lb. 1,000 ft.)	146		
130 ft. motor cable (7—.0688) (170 lb. 1,000 ft.)	22		
Two trolley catcher sockets	2.5		
Steel supports	25		
Wood supports	30		
Bolts	10		
28 ft. ¾-in. conduit	30	5,504	17.3
Brake Apparatus			
One Westinghouse D.H.—16 air compressor	585		
One set air compressor suspension irons	23.75		
One 8-in. suction air strainer	12		
One type S-6-B compressor governor	35		
One ⅜-in. air strainer for compressor governor	2.25		
One 8x12-in. type "S" brake cylinder	125		
Two 12x48-in. enameled air reservoirs	174		
Two sets air reservoir hangers and blocks	14		
One type E-1 safety valve	3		
One 10x12-in. sanding reservoir	35		
One sand reservoir hanger and block	2.75		
One type K-1 emergency valve and bracket	33		
One No. 15 double check valve	7		
Two circuit breaker cylinders	10		
Two foot and cutoff valves	21		
Two ¾-in. check valves for sand line	.75		
Two 3½-in. single pointer air gages	2.25		
Two M-28 brake valves	48		
Two door and step controllers	104		
Two snap switches	1.25		
Two controller handle base portions Two controller pilot valves	18		
Two ¾-in. insulating joints	1.5		
One ¾-in. cutout cock	1.25		
One fuse block and fuse	1		
Two ½-in. drain cocks	1		
Apparatus supports, rods, levers, chain etc.			1.6
184 ft. ¾-in. pipe	105		
248 ft. ½-in. rope	212		
2 ft. ½-in. pipe	0.5		
21 ft. 1-in. pipe	35.25		
23 ft. 2-in. pipe	84		
2½ ft. 1½-in. pipe	5.68		
Pipe fittings	105		
Total weight of brake apparatus		2,334	7.3
Fenders		450	1.4
Seats			
Twenty cross seats at 59 lb	1,180		
Eight vestibule folding seats	117		
Two longitudinal seat cushions	63		
Two longitudinal seat backs	44		
Two longitudinal seat frames	53		
Wall end supports for cross seats	80		
Pipe supports for vestibule seats	43	1,580	5
Sash			
Twenty side lower sash	110		
Four lower side sash	20		
Two vestibule center top sash	3.88		
Two vestibule center bottom sash	8.63		
Two vestibule storm sash center	7.75		
Four vestibule sash side	22.25		
Four vestibule storm sash side	21.00		
Twenty side upper sash	48.00		
Four side upper sash	9.00		
Sash Glass			
Four lights side upper, 24 ¾-in. wide	9.3 sq.ft.		
Twenty lights side upper, 25¼ in. wide	47.4		
Four lights side lower, 25¾x26½ in	18.8		
Twenty lights side lower, 25¾x26¾ in	96.1		
Two vestibule center top glass, 6½x16¾ in	.7		
Two vestibule center bottom glass, 27x16¾ in.	6.1		
Two vestibule center storm glass, 16½x34½ in.	7.9		
Four vestibule side glass, 34½x33¾ in	32.5		
Four vestibule side storm glass 33x34½ in	31.6		
	250.4 sq.ft.		
Sash Glass			
250.4 sq.ft. at 1.64 lb	410 lb.		
Storm sash fixtures	10		
Sash	250		
Sash racks	10		
Total for sash, including fixtures		680	2.1
Doors			
Wood	229		
Glass	113		
Castings	632		
Steel (including door operating mechanism)	562	1,536	4.8
Underframe			
Center construction steel	1,938.66		
Center construction rivets	110.82		
Center construction bolts	8.72	2,058.20	6.5
Superstructure			
Steel	2,933.73		
Castings	182.00		
Rivets	85.27	3,201.00	10
Roof			
Roof carlines steel	126.37		
Roof carlines, wood	130.00		
Roofing	417.00		
Running boards and saddles	133.00		
Trolley baseboard	18.00		
Roof side stringers	86.10		
Bolts	6.50		
Canvas	31.50	950.47	3
Floor			
Floor stringers	390		
Floor stringer steel supports	64		
Floor stringer bolts	35		
Flooring (double)	1,274		
Nails	15		
Paper	50	1,828	5.7
Inside Finish		550	1.4
Light Wiring			
Lamp receptacles	6		
Lamp blocks	7		
Wire moulding	24		
Wire—550 ft. No. 14	36		
Lamps	2.5		
Reflectors	1		
One three-way switch, 3 amp	.75		
Three three-amp. switch and cutouts	3.75		
Screws	1	82	
Passenger Signal			
Twenty-six push buttoms	7		
One interrupter resistor	9.5		
Two buzzers—1 lb. 5 oz. each	2.5		
Wire—490 ft. No. 18	20	39	
Miscellaneous			
Six motorman's roof steps	6.00		
Two push pole pockets	17.00		
Two coupling pin pockets	18.00		
Drawbar, pin and bracket	125.00		
Two gongs	14.75		
Twelve ventilators, complete	145.00		
Twenty-four side curtains	100.00		
Two motorman's curtains	16.00		
Two motorman's seat sockets	3.50		
One motorman's seat	8.50		
One switch hook and two holders	11.75		
Two sand traps	24.00		
Eight grab handles and sockets	63.00		
Heater duct and shields	65.00		
One jack 98-lb. and one jack stick 7 lb	105.00		
Two turtles	46.00		
One tool box	146.00		
Window guards	185.00		
Pipe railings	145.00		
Two front destination signs and boxes	48.00		
Two headlights	22.00		
Step treads	40.00		
Safety treads	48.00		
Two single stroke bells	6.87		
Two door signal boxes	12.00		
Eight step springs	16.00		
Door signal switches	2.00		
Two sand boxes	15.00	1,464.37	4.6
Paint		600	
Total estimated summer weight		31,316	
Actual scale weight of car complete, ready for summer operation		31,820	

land exhaust ventilators, and with good ceiling height the results obtained in eliminating odors and changing air even under crowded conditions are most satisfactory. The lighting consists of five circuits of 23-watt Mazda lamps, the bare lamps being set in such relation to the ceiling as to make best use of the light-colored enameled surface as a reflector. The number of lamps used is rather more than is ordinarily thought necessary for a car of this size, but the bright and cheerful appearance of the car by reason of the extra light is very pleasing to the passenger.

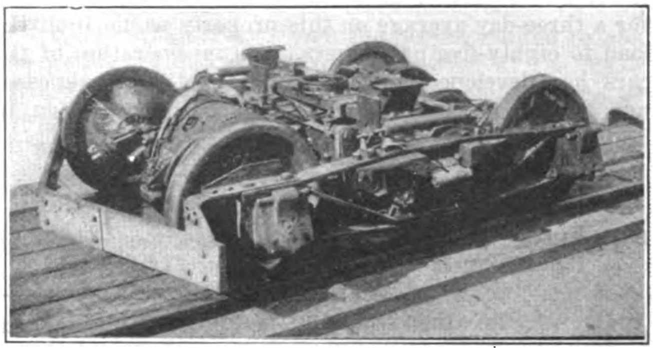
In this Milwaukee car, brass sash has been used to good effect in adding to the appearance of an exceptionally bright, neat equipage. In engineering for weight reduction, it was determined that, including the 1 sq.ft. of additional glass required, the brass sash was 13 oz. heavier per unit than the wood sash of equivalent size would be, but appearance and reduced maintenance cost weighed more in making the decision for its use. In other words, while saving in weight was important and wonderful results in this direction were accomplished, it was not obtained by any sacrifice of strength, safety, comfort or appearance, such as has been the case with some of the efforts along this line in the past. Window curtains of standard material and full length are provided for all windows, push-button buzzer signals are available for the passengers, and the car carries a full equipment of illuminated destination signs, jacks and necessary tools for emergency purposes.

SOME DETAILS OF BODY CONSTRUCTION


STEEL UNDERFRAME OF MILWAUKEE CAR

A side girder of steel is made the main carrying member of the car. Pressed channel cross members are employed to transmit the load to the side girders. The side sills are made of 3-in. x 2½-in. x 5/16-in. rolled-steel angles extending on either side of the car from buffer channel to buffer channel. At the door openings, the side sills are reinforced with 3/16-in. pressed-steel channels and a 1½-in. x 5/16-in. open-hearth steel bar extending from the first body side post to the buffer channel. The side sheathing consists of 1/16-in. patent leveled plate steel made up in three pieces on each side of the car. The belt rail at the window sills consists of a 3-in. x 5/16-in. bar extending from corner post to corner post on each side of the body. Rolled channels, 4 in. x 5¼ in., bent to a 5-ft. radius, form the buffers. The superstructure is of particularly light construction. The side posts are "U" shaped pressings made from 1/16-in. open-hearth steel. They are 1¼ in. wide and 3 in. deep with flanges at the open side of the "U" to which are riveted the side girder plates. The letter-boards are also made of 1/16-in. pressed steel and reinforced at the door openings with ⅛-in. pressed steel plates extending from the second body side posts to the vestibule corner posts. At each side post a 1¼-in. x 3/16-in. steel carline forged to a shape to conform to the roof curvature is riveted to the top flange of the letter-boards. To each steel carline is bolted a 1½-in. x 1⅛-in. ash carline, and an additional intermediate wood carline is provided between each set of main carlines between bulkheads.

A very light roof construction was secured by using ⅜-in. x 2¼-in. poplar, tongue and grooved, covered with No. 8 cotton duck laid in white lead and oil. Inside the body, headlining of 3/16-in. agasote is used, but no headlining is provided in the vestibules. The interior trim is in cherry, with all furring designed to serve its purpose with the least possible weight. The double flooring is made up of an under layer of ⅝-in. yellow pine with ⅝-in. maple on top.


SPECIALLY DESIGNED ARCH BAR TRUCK OF LIGHT WEIGHT

DESIGN OF THE TRUCKS

The low weight of 4,300 lb. per truck without motors was obtained through the use of chrome vanadium steel in the arch bars. The use of this special alloy steel for the side-frame members made it possible to employ a lighter section with safety and hence reduce the weight. The elastic limit of these special steel members is 50 per cent greater than that of ordinary steel, a characteristic which is expected to avoid the trouble which some companies have had in the past with breaking the bottom arch bar. The top arch bar of these trucks is made of ⅞-in. x 3½-in. flat bar, the bottom arch bar of ¾-in. x 3½-in. bar and the arch bar tie bar of ⅜-in. x 3½-in. flat bar. No springs are provided over the journals. Full double elliptical springs with long (34-in.) centers and comparatively thin (⅜-in.) leaves are provided in the bolsters. The springs have six leaves and are very resilient. While no auxiliary springs are employed over the journal boxes and no equalizer bars are used, the car rides well. Simplified truck design contributes materially to reduced maintenance cost.

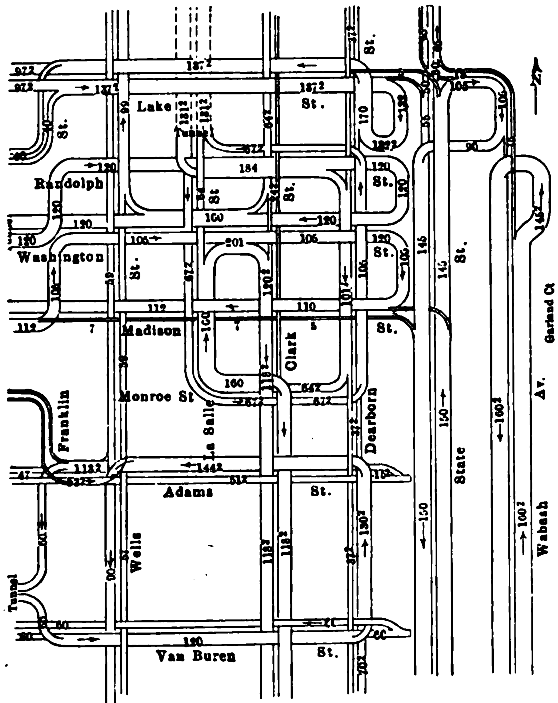
The brake head on the dead lever side of the trucks is hung directly by the dead levers, eliminating the customary brake hangers. The axles are of special design, made of heat-treated carbon steel and are 3¾ in. in diameter with 3¼-in. x 6-in. journals. A hole 1¼ in. in diameter was bored through the entire length of each axle, producing a saving of 115 lb. per car and reducing by that much the unsprung weight. As a result of this hollow boring, the strength of the axles was decreased but slightly over 3 per cent. Ninety-nine car bodies are being constructed by the St. Louis Car Company and the trucks for these cars are being built in the company's own shops, where the car bodies and motor equipment are mounted.

Adequately to prove out all the ideas incorporated in the design, the Milwaukee Company constructed a sample car in its own shops early last year. This car has been in operation since March 1, 1920, or about eighteen months, and a considerable number of this type of car have been in operation for six months or more this year. The cars have been in the heaviest service, carrying 100 to 125 passengers per car in rush-hour trips, on occasions, although the rush-hour standards for a three-day average on this property would limit the load to eighty-five passengers. Actual operation of the cars has developed no structural or other weaknesses nor has it suggested any substantial modification in design.

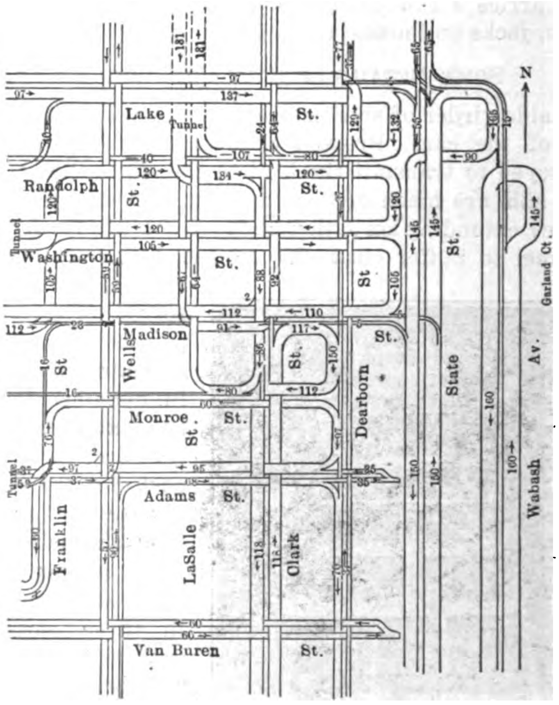
Chicago Loop Rerouting Proposed

Beeler Plan Submitted to Public Utilities Commission by Chicago Surface Lines Will Equalize Traffic and Materially Improve Movement of Cars

ON DEC 30, 1920, the Illinois Public Utilities Commission ordered the Chicago Surface Lines to submit within sixty days "preliminary plans for such switch and turn-back service and such revision of routing as they may deem practicable and calculated to facilitate the movement of cars, reduce congestion of traffic in the Loop, or otherwise bring about improvements in service." Accordingly, on Feb. 23, the Surface Lines forwarded to the commission a suggested plan of rerouting in the Chicago Loop district as prepared by the Beeler organization, which had been working on various service improvements for the company. The proposed plan did not become public at that time, but recently, in connection with the fare case before the Illinois Commerce Commission, Mr. Beeler and Mr. Buck testified against the rerouting plan submitted by the city and offered their plan as one which would better accomplish the results sought.



CAR FLOW CHART IN DOWNTOWN DISTRICT, CHICAGO UNDER PRESENT ROUTING



CAR FLOW CHART IN DOWNTOWN DISTRICT, CHICAGO, UNDER PROPOSED ROUTING

Ten changes in routing are recommended. They are based on the principle of obtaining a more equitable distribution of the cars within the district, a more evenly balanced traffic on each street, a minimized turning movement and the substitution, so far as practicable, of right-hand movements for the more difficult left-hand ones.

BEELER REROUTING PLAN

The accompanying car flow charts show the present and proposed routing. The plan contemplates no changes on State Street or Wabash Avenue. On the other streets it requires the addition of special trackwork only for four quadrants at four different street intersections.

The number of straight intersectional movements would be reduced from 7,518 to 7,187 during the maximum hour, or an average reduction of 331 per hour. The simple right-hand turns would be increased from 1,200 to 1,340 per hour, while the left-hand turns would be decreased from 1,120 to 855. Other benefits derived include the removal of curve movements from Washington Street between Franklin and State Streets, a very heavy traffic section; the removal of one-half the cars from the eastbound track on Van Buren Street, now badly congested; provision of good car service between the Union Station and the Loop hotels, where none is now given; greater utilization of the eastbound Madison Street track, now but little used, and release of the stub terminal at Adams and State Streets for the exclusive use of the Harrison Street line.

The principal advantages claimed for this plan may be briefly summarized as follows:

1. A more even distribution of the cars in the Loop district will be obtained.
2. There will be no radical changes in the present Loop routing, the proposed loops conforming to the present routing as far as practicable.
3. The interlocking features of the present loops will be minimized.
4. Greater segregation of the routes should prevent confusion and facilitate loading.

5. A reduction in car traffic through the heaviest intersections will be obtained.

6. The car traffic will be more evenly balanced on the two sides of the street.

7. The total number of turns required in the Loop district will be decreased.

8. Right-hand turns will be substituted for one-sixth of the present left-hand turns.

9. Better service will be provided between the Union Station and the Loop hotels.

10. All turning movements will be eliminated from Washington Street between Franklin and State. Since this is one of the heaviest east-and-west traffic thoroughfares street congestion should be reduced materially.

11. Greater use will be made of the eastbound Madison Street track in the heart of the Loop district.

12. The stub terminal on Adams Street at State will be released for the exclusive use of the Harrison Street line.

13. One-half of the cars now operated eastbound on Van Buren Street will be removed, thus balancing the car traffic on that street.

14. The traffic flow at several other heavy points will be reduced. Eastbound on Washington Street between La Salle and Clark the maximum flow will be reduced from 201 cars per hour to 105 cars per hour, and westbound on the same street between Clark and Wells the maximum flow will be reduced from 160 to 120 cars per hour.

15. No changes will be made in the State Street or Wabash Avenue lines.

16. The proposed plan requires but a minimum amount of track construction, this being limited to four new connecting curves, all of the simple inside type.

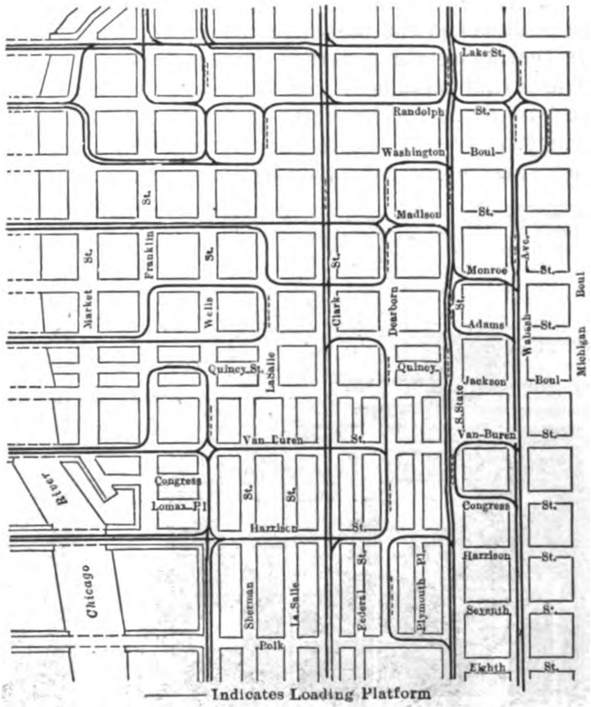
One great feature of the entire plan is that but little change in the habits of the car riders will be necessary, and only minor changes in transfer arrangements will have to be made. No claim is made for greater economy of operation, although there will be with the present service a reduction of some 300 car-miles per day, amounting to a saving of about 100,000 car-miles in the course of a year. This alone was not considered of sufficient importance to feature as a reason for making the change.

JACKSON REROUTING PLAN

The routing plan in the Loop district as proposed by George W. Jackson, whose testimony formed the backbone of the city's case, is reproduced herewith. It consists almost entirely of single-track loops and would do away with the necessity for special work intersections now in use to the extent of an investment of approximately $2,000,000, which would have a scrap value estimated at $137,000. It would also cost considerably over a million dollars to take up the track and special work not required and repave the streets. There would also be a cost of $1,000,000 required for rebuilding cars to permit the left-hand loading contemplated on State Street and Wabash Avenue, where it was proposed to use long loading platforms located in the devil strip.

Mr. Jackson claims that this Loop routing plan would increase the capacity of the system from a present ability to take in and out of the Loop 75,000 people hourly to a capacity of 150,000 people per hour, it would save 60 per cent of the time now required for running cars in and out of the Loop, would save at least 60 per cent in operating costs of all cars operated in and out of the Loop, would save the enormous cost of installing two, three and four-way switches, would make a very large saving in the cost of repairs to the special work and maintenance of equipment, and would do away with the noise made by the cars operating over the special trackwork.

Questioned for their opinion of the Jackson plan, Mr. Beeler and Mr. Buck testified before the commission that the Jackson plan would terminate routes two to eight blocks away from where the people wanted to go. This would greatly add to the congestion of the sidewalks, which are already overtaxed. It would virtually do away with the present transfer system, which is limited by ordinance to distances of 200 ft. The amount of short riding would be reduced as compared to the present routing and there would be less service to the railroad stations.



REROUTING OF STREET CARS IN CHICAGO LOOP DISTRICT PROPOSED BY CITY

Operation of cars in the Loop would be at a lower speed than at present because there would be the same number or a larger number of turning movements to be made in a shorter distance. The plan would involve more left-hand turns, would introduce the loading of greater numbers of passengers per stop because of the fewer stops, and hence would make the length of stop very long. The plan would also result in making fewer outlets from the Loop, which would mean a greater number of cars per outlet, and introduce a headway which would probably exceed the capacity of the track. Cars would be taken out of the tunnels where they operate at high speed and put onto bridges, where the speed is low, and thus again reduce the speed. It would result in greater interference from left-hand turns and would at the same time provide so few connections for emergency routing that it would be practically fatal to good service.

Mr. Beeler testified that the service given by the Chicago Surface Lines in general compared very favorably with that in other large cities and that he knew of no city in the country where a better schedule speed is made.

Featherweight Pressure Gate on the Interborough

Congestion Will Be Relieved and About 1,500 Station Employees Released by Complete Installation of This Type of Turnstile, Which Makes a Nickel the Ticket

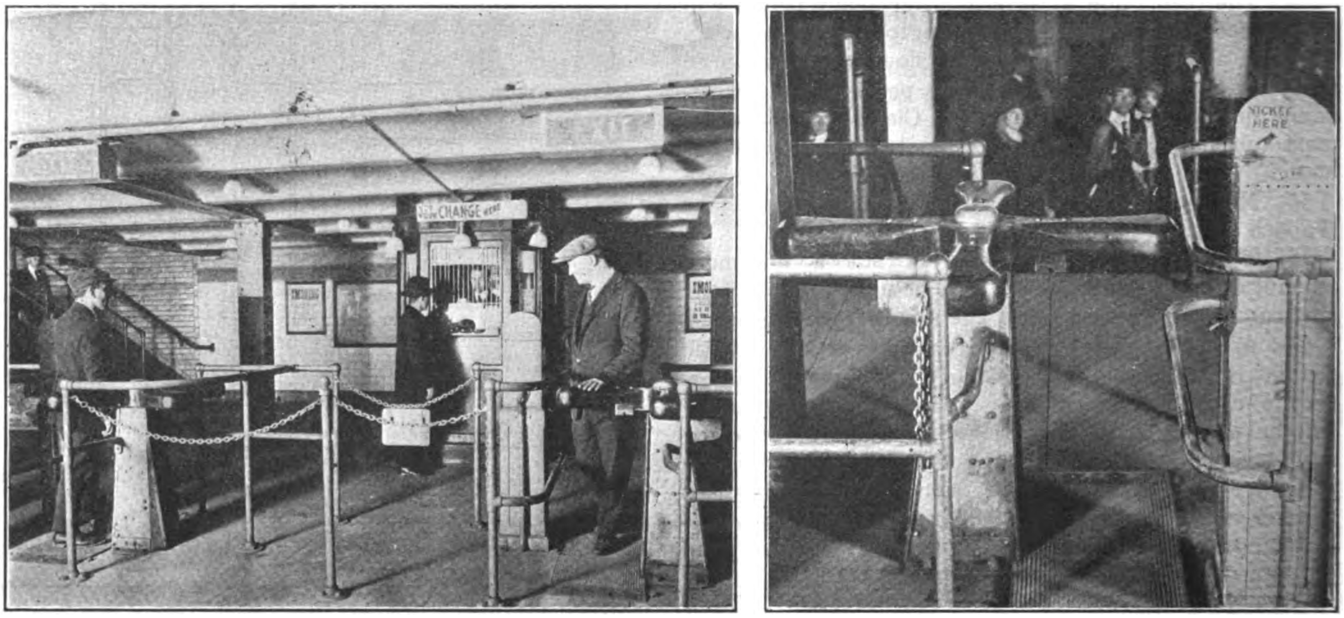
THE Interborough Rapid Transit Company, New York, after more than two years study of the problem of how to save the annoyance to and time of passengers in buying subway and elevated tickets, has now developed a light-weight, foolproof turnstile, several of which are being installed in each station of the Lexington Avenue line. Where these gates have been installed a nickel will be the ticket, while no other coin will unlock the gate. Any other which is inserted in the slot will be returned without unlocking the gate. When the gate is unlocked the passenger need exert scarcely more than featherweight pressure to pass through.

The initial installation of the featherweight pressure gate was made at the Fifty-first Street station of the Lexington Avenue subway some six months ago, since which time more than 3,000,000 passengers have passed through these gates. During that time there has not been a single line-up of more than three or four passengers at the change booth or the slot machine. At the ordinary ticket selling booth from ten to forty people in the rush hours have frequently formed in line. Twenty passengers a minute may pass through a single gate, or about 160 passengers a minute can enter the Fifty-first Street station through four gates. Their combined capacity exceeds any anticipated demand.

A very interesting observation has been made which goes to show that the traveling public will take advantage of any device to save their time. From the very beginning, the regular patrons using this station acquired the habit of having their nickel ready. For some time an actual count was kept of the number of passengers passing through these gates and the percentage of those who, coming without the proper change, had to procure it at the change booth. For a few days only was the change clerk kept even fairly active in busy hours. At the present time only four passengers out of each hundred, on the average, require change.

The new gates serve as exits as well as entrances, as they turn freely in the opposite direction for persons going out. The incoming and outgoing passengers do not interfere with each other. During the rush hours there is little conflict, for the great flow of traffic is unidirectional.

Not only will these gates facilitate fare collection and reduce the passenger's delay to a minimum, but it will also effect a very substantial saving to the company. Hereafter, only one man to make change will be necessary instead of two ticket agents and two choppers, as were formerly necessary in most of the stations. When the system is completely equipped about 1,500 station employees will be released, whose services will then be utilized in other departments. As a fare-collecting and recording device the machine leaves little to be desired. It is evident that there is no way for a passenger to enter without paying. The human element of employees is entirely eliminated, because every coin that is inserted is automatically counted on a recorder. There is no longer the opportunity for either the passengers or employees to practice the abuses formerly common.



At Left, Subway Station Showing Two of the Turnstiles in Use—At Right, Close-up of a Complete "Featherweight Pressure Gate" Unit

The mechanical operation of this gate is extremely simple yet very reliable. The insertion of the nickel makes an electrical contact, which operates a solenoid. Air is admitted to a piston through a valve actuated by this solenoid. The gate is then free to turn, for the piston has withdrawn the dog which held it from turning. In the same operation the gate has also been locked against rotation in the opposite direction. However, there is a commutator on the gate shaft which releases the dog holding the gate when turning in that direction after the passenger has advanced about half way through it. Since both air and 110-volt current are available from the signal system, conditions are quite favorable to their rapid installation.

Frank Hedley, president, and J. S. Doyle, superintendent of equipment of the Interborough Rapid Transit Company, are the inventors of this gate. About 500 machines have already been built, the contracts having been divided among the National Pneumatic Company, the Columbia Machine Works & Malleable Iron Company and the Westinghouse Air Brake Company.

Statistics of New York Traffic

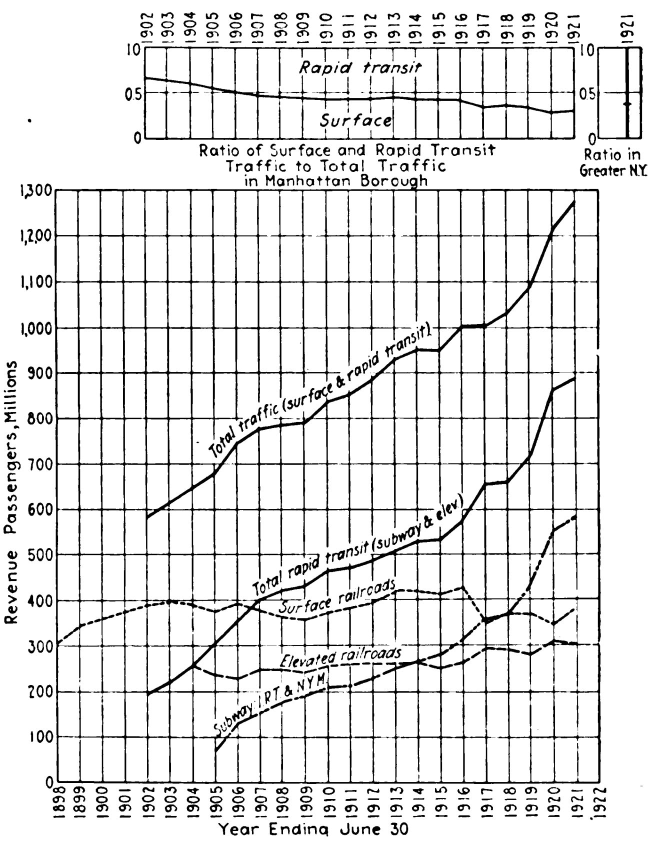
Statistics Presented at the Hearing Into the Affairs of the Railways Before the New York Transit Commission Last Week Show Intimate Facts Regarding the Various Properties

DURING the hearing now being conducted by the New York Transit Commission into the affairs of the railways in New York City to determine the best method of straightening out the existing tangle, much interesting information has been presented in the way of statistics by the engineers and other experts of the commission. Included in this information are the two charts presented herewith, compiled by Daniel L. Turner, consulting engineer of the commission and formerly chief of the Transit Bureau of the Public Service Commission of New York, First District.

The first chart shows graphically the increase in traffic in the Borough of Manhattan during the past twenty-two years for the surface lines and nineteen years for the rapid transit lines. The statistics are for the fiscal year ended June 30 in each case. Table I contains the information upon which this chart was based.

In discussing this chart Mr. Turner said it showed that the total traffic in Manhattan doubles about every fifteen years. For the entire city the total traffic on all lines last year was approximately 2,365,000,000, or approximately double the number of passengers on all of the steam railroads of the country during the same time. The increase over 1919 was 285,000,000 passengers. The figures quoted in each case are for revenue passengers, and one reason for the apparent increase during the past two years is the decrease in the number of free transfers given.

Another chart shows car-miles and number of revenue passenger receipts in cents per car-mile on the surface lines in Manhattan by routes. The left side of the drawing carries two vertical lines, one showing the average operating expenses for all lines and the other

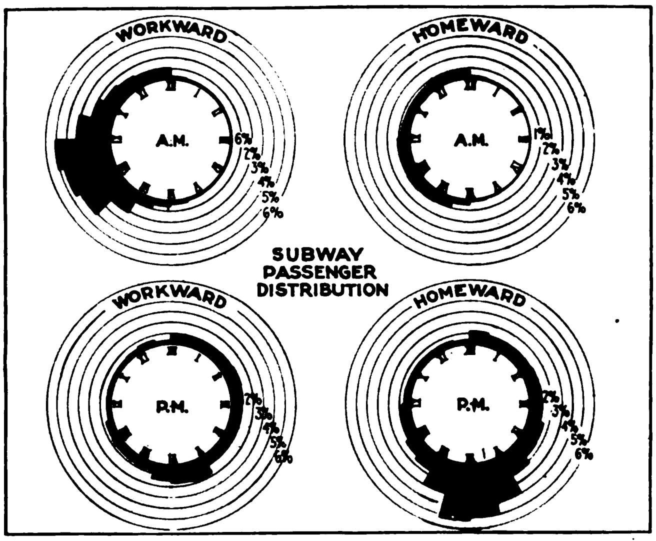


PASSENGER TRAFFIC IN MANHATTAN BOROUGH

The line showing the total number of passengers carried is constantly climbing and has doubled in the last fifteen years. The surface traffic is about continuous. The upper diagram gives the percentage of division between rapid transit and surface traffic by years and for the whole city for 1921.

TABLE I. STREET RAILWAY PASSENGER TRAFFIC—MANHATTAN, 1898–1921
(Revenue Passengers in Thousands)

Year Ended June 30	Total : Surface and Rapid Transit		Surface Railroads		Ratio of Surface to Total Transit	Rapid Transit Traffic: Rapid Transit					
	Total	Per Cent Increase	Total	Per Cent Increase		Total	Per Cent Increase	Second and Third Aves. Elevated R.R.	Sixth and Ninth Aves. Elevated R.R.	I.R.T. Subways	N.Y.M. Subways and Center Street Loop
1898	....	.....	305,116	......	.....	......	.....	......	......	......	......
99	....	.....	343,559	12.60	.....	......	.....	......	......	......	......
1900	....	.....	360,003	4.80	.....	......	.....	......	......	......	......
01	....	.....	373,570	3.80	.....	......	.....	......	......	......	......
02	581,845	.....	388,947	4.12	0.668	192,898	.....	88,186	104,712	......	......
03	616,460	5.94	396,570	1.96	0.642	219,890	14.0	106,502	113,388	......	......
04	646,455	4.86	389,928	—1.67	0.602	256,527	16.7	124,275	132,252	......	......
05	679,948	5.17	374,554	—3.94	0.552	305,394	19.05	119,589	116,031	69,774	......
06	746,558	9.80	391,708	4.58	0.524	354,850	16.20	121,074	106,087	127,689	......
07	778,624	4.28	377,017	—3.75	0.484	401,607	13.20	133,650	114,791	153,166	......
08	785,555	0.89	363,292	—3.64	0.463	422,263	5.14	132,621	115,032	174,610	......
09	789,111	0.46	357,760	—1.52	0.453	431,351	2.15	129,606	112,500	189,245	......
1910	836,465	6.00	371,166	3.75	0.444	465,299	7.87	139,084	116,817	209,398	......
11	853,667	2.12	382,047	2.93	0.446	471,620	1.36	142,217	117,871	211,532	......
12	884,039	3.55	395,238	3.45	0.445	488,801	3.64	141,513	118,656	228,632	......
13	930,520	5.26	419.722	6.19	0.450	510,798	4.50	141,253	119,153	245,027	5,365
14	951,133	2.23	420,662	0.22	0.441	530,471	3.80	144,161	118,925	254,041	13,344
15	949,555	1.66	415,551	—1.22	0.438	534,004	0.66	138,725	114,161	257,161	23,957
16	1,003,955	5.73	427,374	2.85	0.426	576,581	8.00	141,885	119,914	277,577	37,205
17	1,004,743	0.08	349,788	—18.15	0.348	654,955	13.57	157,144	137,572	310,058	50,181
18	1,031,909	2.72	371,136	6.11	0.360	660,773	0.95	152,437	137,823	304,546	65,967
19	1,088,261	5.46	370,085	—0.28	0.340	718,176	8.70	137,500	143,610	340,677	96,389
1920	1,212,350	11.40	348,960	—5.70	0.289	863,390	20.40	155,155	154,800	435,700	117,735
21	1,273,343	5.00	384,128	10.09	0.304	889,215	3.00	149,042	155,715	454,729	129,729
New York City, 1921........	2,491,857	.....	977,600	......	0.392	1,514,257					
Ratio Manhattan to New York, 1921........	0.511	.....	0.393	......	.....	0.587					



CLOCK DIAGRAM OF DISTRIBUTION OF TRAFFIC ON INTERBOROUGH SUBWAY

the average passenger receipts for all lines, both on a car-mile basis. It will be noted that the expenses are slightly in excess of the receipts. The receipts, however, as charted, do not include receipts from other sources than from passengers, as from advertising.

Mr. Turner said it took about five years to build a subway and that the most effective way of immediately caring for traffic growth in anticipation of new facilities is to spread the traffic peak. The two-hour morning and evening peak in New York is from 7:30 a.m. to 9:30 a.m. and from 5 p.m. to 7 p.m. During each of these periods on the Interborough Rapid Transit subway lines about 17 per cent of its total twenty-four-hour traffic is carried. During the maximum fifteen-minute period during the day the traffic in each direction on the subway is about 20 per cent of that of the maximum two-hour period in each direction and is 3.4 per cent of the total twenty-four-hour traffic in both directions. Similarly, the maximum half-hour period in one direction is 31.2 per cent of the maximum two-hour period in one direction and is 5.3 per cent of the total twenty-four-hour period in both directions. Similarly, the maximum one-hour traffic in one direction is 60 per cent of the maximum two-hour traffic in one direction and is 10.2 per cent of the total twenty-four-hour traffic in both directions. The maximum half-hour period is between 8:30 and 9 a.m. and in the evening between 6 and 6:30 p.m. During the fifteen-minute period the Interborough Rapid Transit Company provides 23,300 seats in one direction as against 68,000 passengers, and during the half-hour period it provides 46,600 seats as against 106,000 passengers.

Mr. Turner presented with these figures a clock chart published herewith but explained that the chart and the statistics quoted herein are based on Interborough subway traffic figures which are not fully up to date. Nevertheless, conditions vary from day to day and month to month and it is believed the percentages are approximately correct at the present time.

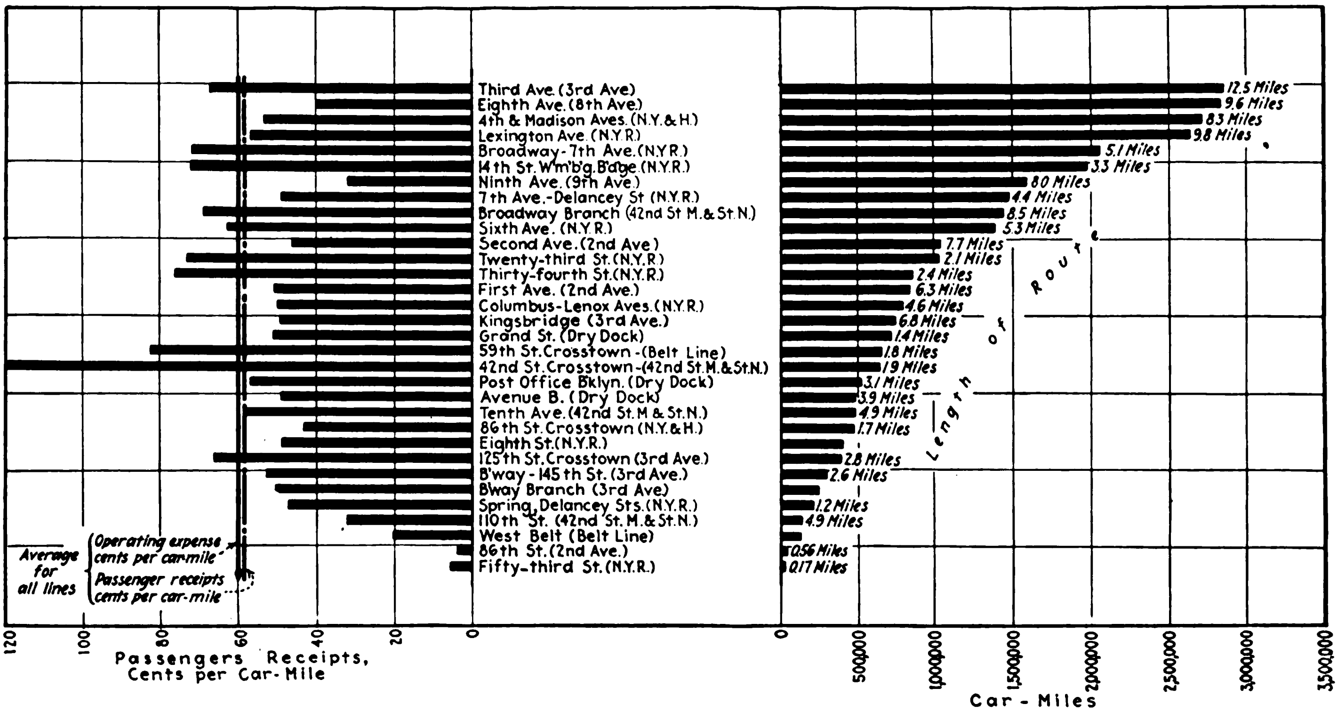
SPREAD OF PEAK PERIOD ADVOCATED

Mr. Turner declared in his testimony that it would be very desirable if this fifteen-minute peak could be spread over a longer time by means of staggering the hours of business as was done during the influenza epidemic in New York. He estimated that if the fifteen-minute peak was spread over two hours it would increase the subway capacity 60 per cent. His detailed analysis follows:

> The maximum daily traffic which has been carried on the Interborough subway system is 2,361,822 passengers on Feb. 9, 1920. On what may be called a normal business day, during the busy season of the year, namely Dec. 22, 1919, 2,118,753 passengers were carried. For the purposes of my calculations, I have assumed a maximum daily traffic of 2,000,000 passengers. Using the percentages set forth above and with the assumed daily traffic of 2,000,000 passengers, we obtain

(a)

Maximum fifteen-minute period	68,000 passengers
Maximum half-hour period	106,000 passengers
Maximum one-hour period	204,000 passengers
Maximum two-hour period	340,000 passengers



THE LINES AT THE RIGHT SHOW THE CAR-MILEAGE OF THE ROUTES IN MANHATTAN BOROUGH. THE LINES AT THE LEFT SHOW THE PASSENGER RECEIPTS PER CAR-MILE. THE FIGURES ARE FOR THE LAST FISCAL YEAR

If it is assumed that some plan could be effected which would distribute the two-hour traffic evenly throughout the two hours, then there would be carried during the

(b)

Fifteen-minute period	42,500 passengers
Half-hour period	85,000 passengers
One-hour period	170,000 passengers
Two-hour period	340,000 passengers

as compared with the maximum figures as set forth in (a). At the present time, from information furnished me by the transit bureau of the commission, I estimate that the Interborough Company provides during the

(c)

Maximum fifteen-minute period	23,300 seats
Maximum half-hour period	46,600 seats
Maximum one-hour period	78,200 seats

Assuming the seats provided in (c) as having to accommodate the traffic estimated in (a), and further assuming that the load has been evenly distributed as in (b), we find that on the average there would be carried with

(*a*) Loads during the		Whereas with (*b*) Traffic the Loads Would Be Reduced
Maximum fifteen-minute period	290 per cent	182 per cent
Maximum half-hour period	227 per cent	182 per cent
Maximum one-hour period	261 per cent	217 per cent

In other words, if the traffic could be distributed over the two hours, instead of a large part of it being concentrated in fifteen minutes, the overloading in the trains, assuming the same daily traffic carried, would be greatly reduced—from 190 per cent overloads to 82 per cent overloads.

But this is not the most important thing that would be accomplished by the spreading of the traffic peak. The most important thing is the increased traffic which the

TABLE II. RAPID TRANSIT AND SURFACE RAILROAD COMPANIES NEW YORK CITY

Comparative Statement Showing Total Cost (Cents) per Revenue Passenger for Operating Expenses and Fixed Charges for the Fiscal Years Ended June 30, 1915 to 1921, Inclusive

	1915	1916	1917	1918	1919	1920	1921
Total, All Companies (b)							
Operating expenses	2.78	2.74	2.92	3.07	3.65	4.06	4.30
Taxes	0.32	0.33	0.37	0.42	0.38	0.31	0.30
Fixed charges:							
Interest	0.91	0.93	0.83	0.86	1.00	0.98	1.05
Rents	0.75	0.76	0.78	0.76	0.76	0.64	0.65
Other	0.02	0.02	0.05	0.06	0.12	0.13	0.13
Total	4.78	4.78	4.95	5.19	5.91	6.12	6.43
Interborough Rapid Transit Company (Subway)							
Operating expenses	1.79	1.85	1.96	2.20	3.12	3.10	3.41
Taxes	0.13	0.14	0.19	0.39	0.19	0.07	0.07
Fixed charges:							
Interest	0.77	0.74	0.69	0.80	1.30	1.23	1.24
Rents	0.68	0.64	0.58	0.57	0.53	0.41	0.38
Other	....	....	0.00	0.09	0.26	0.25	0.26
Total	3.37	3.37	3.42	4.05	5.40	5.06	5.36
Interborough Rapid Transit Company (Elevated)							
Operating expenses	2.23	2.28	2.42	2.82	3.40	3.67	3.79
Taxes	0.56	0.59	0.59	0.60	0.65	0.59	0.61
Fixed charges:							
Interest	....	0.11	0.21	0.32	0.54	0.60	0.63
Rents	1.95	1.90	1.74	1.77	1.85	1.74	1.74
Other	....	....	....	0.03	0.11	0.12	0.13
Total	4.74	4.88	4.06	5.54	6.55	6.72	6.90
Manhattan Surface							
Operating expenses	3.28	3.12	3.73	3.59	4.08	5.08	6.15
Taxes	0.37	0.38	0.46	0.47	0.50	0.46	0.44
Fixed charges:							
Interest	1.25	1.38	1.23	1.16	1.18	1.40	1.30
Rents	0.50	0.49	0.60	0.57	0.55	0.47	0.44
Other	0.04	0.05	0.23	0.13	0.18	0.31	0.24
Total	5.44	5.42	6.25	5.92	6.49	7.72	7.57
The Bronx Surface							
Operating expenses	3.66	3.52	4.52	4.14	4.41	4.42	4.52
Taxes	0.31	0.33	0.35	0.36	0.35	0.29	0.28
Fixed charges:							
Interest	0.60	0.60	0.72	0.64	0.68	0.63	0.62
Rents	0.25	0.40	0.52	0.46	0.53	0.49	0.41
Other	0.04	0.05	0.06	0.06	0.06	0.05	0.04
Total	4.86	900	6.17	5.66	6.03	5.88	5.87
	1915	1916	1917	1918	1919	1920	1921
New York Consolidated Railroad Receiver (Subway and Elevated)							
Operating expenses	2.80	2.82	2.80	2.95	3.48	4.00	4.63
Taxes	0.32	0.28	0.33	0.31	0.28	0.26	0.27
Fixed charges:							
Interest	1.18	1.03	0.89	0.78	0.65	0.52	0.51
Rents	0.11	0.38	0.54	0.69	0.78	0.78	1.04
Other	0.00+	0.00+	0.00+	0.00+	0.01	0.00+	0.00+
Total	4.41	4.51	4.56	4.73	5.20	5.56	6.45
Brooklyn (a) Surface							
Operating expenses	3.20	3.14	3.23	3.38	3.88	4.62	4.72
Taxes	0.25	0.27	0.33	0.31	0.35	0.30	0.25
Fixed charges:							
Interest	0.70	0.70	0.69	0.72	0.81	0.74	0.82
Rents	0.73	0.69	0.67	0.67	0.54	0.21	0.19
Other	0.00+	0.00+	0.00+	0.00+	0.00+	0.00+	0 00+
Total	4.88	4.80	4.92	5.08	5.58	5.87	5.98
Queens Surface							
Operating expenses	4.27	4.31	4.56	5.05	5.21	5.38	5.63
Taxes	0.21	0.21	0.23	0.28	0.28	0.28	0.24
Fixed charges:							
Interest	0.76	0.74	0.96	1.16	1.10	1.05	0.96
Rents	0.21	0.21	0.22	0.26	0.25	0.23	0.24
Other	0.01	0.01	0.01	0.02	0.01	0.01	0.00+
Total	5.46	5.48	5.98	6.77	6.85	6.95	7.07
Richmond Surface							
Operating expenses	4.05	3.98	4.21	4.69	5.25	5.99	7.80
Taxes	0.20	0.20	0.26	0.30	0.30	0.36	0.31
Fixed charges:							
Interest	1.29	0.31	1.37	1.36	1.30	1.46	1.09
Rents	0.16	0.16	0.18	0.17	0.17	0.18	0.20
Other	....	0.00+	0.00+	0.01	....	0.01	....
Total	5.70	5.65	6.02	6.53	7.02	8.00	9.40

(a) Includes Bush Terminal, Van Brunt Street and Erie Basin, Manhattan Bridge 3-Cent Line and Marine.
(b) Includes Hudson & Manhattan Railroad.

TABLE III. NUMBER OF DELAYS EXCEEDING FIVE MINUTES ON VARIOUS NEW YORK RAILWAYS, 1915 AND 1921

(Compiled by the Bureau of Equipment and Operation, Accident Division, New York Transit Commission)

UNDERGROUND CONDUIT LINES

	1915	1921	Increase
New York Railways Company:			
Car-miles	34,891,203	13,606,428	
Derailments	321	315	
Defective equipment	273	384	
Total derailments and defective equipment	594	699	
Derailments and defective equipment per million car-miles	17.02	51.37	34.35
Third Avenue in Manhattan			
Car-miles	16,641,462	9,744,156	
Derailments	678	663	
Defective equipment	152	515	
Total derailments and defective equipment	830	1,178	
Derailments and defective equipment per million car-miles	49.87	120.89	71.02
Second Avenue Railroad			
Car-miles	3,013,016	1,916,730	
Derailments	24	2	
Defective equipment	34	27	
Total derailments and defective equipment	58	29*	
Derailments and defective equipment per million car-miles	19.25	15.13	4.12
Eighth Avenue Railroad			
Car-miles	‡	2,848,693	
Derailments	....	15	
Defective equipment	....	256	
Total derailments and defective equipment	....	271	
Derailments and defective equipment per million car-miles	....	95.13	
Ninth Avenue Railroad			
Car-miles	‡	1,549,379	
Derailments	....	13	
Defective equipment	....	124	
Total derailments and defective equipment	....	137	
Derailments and defective equipment per million car-miles	....	95.92	
New York & Harlem Railroad			
Car-miles	‡	3,175,011	
Derailments	....	0	
Defective equipment	....	1,469	
Total derailments and defective equipment	....	1,469	
Derailments and defective equipment per million car-miles	....	462.67	

OVERHEAD TROLLEY LINES

	1915	1921	Increase
Brooklyn Rapid Transit System			
Car-miles	61,819,359	47,207,892	
Derailments	1,359	994	
Defective equipment	574	1,217	
Total derailments and defective equipment	1,933	2,211	
Derailments and defective equipment per million car-miles	31.27	46.83	15.56
Third Avenue System in Bronx			
Car-miles	14,396,815	11,006,305	
Derailments	288	647	
Defective equipment	220	542	
Total derailments and defective equipment	508	1,189	
Derailments and defective equipment per million car-miles	34.28	108.03	72.75
Queens Surface Lines†			
Car-miles	8,734,190	6,740,681	
Derailments	351	980	
Defective equipment	200	1,136	
Total derailments and defective equipment	551	2,143	
Derailments and defective equipment per million car-miles	63.08	317.92	254.84

(*) Second Avenue Railroad figures for 1921 not reliable.

(†) Long Island Electric, New York & Long Island Traction and New York & Queens County Railway.

(‡) Formed part of New York Railways in 1915.

spreading of the peak would permit the existing facilities to carry.

If the traffic could be evenly spread over the two-hour maximum traffic period, and, as the increase in traffic occurred, if the facilities could be utilized throughout the entire two-hour period to the same extent that they are now utilized during the maximum one-hour period, then during the two-hour period, twice as much traffic could be accommodated as is now accommodated in the maximum one-hour period—or the traffic which would be developed under such conditions would amount to (200,000 × 2) 400,000 passengers during the two-hour period. This is an increase of 60,000 passengers over the present maximum two-hour traffic of 340,000—or it is a 20 per cent increase. Similarly, as the traffic increases, if the facilities are utilized throughout the entire two-hour period to the same extent that they are utilized during the maximum half-hour period, then (106,000 × 4) 424,000 passengers could be carried during the two hours, or an increase of 24.7 per cent. Similarly, if the facilities are utilized throughout the entire two-hour period to the same extent as they are utilized during the maximum fifteen-minute period, then (68,000 × 8) 544,000 passengers could be carried during the two hours, or an increase of 60 per cent. This would mean in the case of the Interborough alone, that it could carry 3,200,000 passengers instead of 2,000,000 passengers a day. But what this would really mean in the case of all city-owned lines can best be shown by measuring the increase in capacity with the cost of new facilities which would be necessary to provide for it with the present degree of use.

COST OF NEW FACILITIES

Contracts 1, 2, 3 and 4, covering all of the city-owned rapid transit lines in operation, have cost the city and companies together to produce to date, approximately $454,000,000. Sixty per cent of this is $272,000,000. A large portion of these facilities were constructed under pre-war prices. To reproduce them now would probably cost at least $500,000,000. Therefore, spreading the traffic peak evenly over the two hours morning and night, would in this sense increase the capacity of the existing facilities as much as new facilities costing perhaps from $200,000,000 to $300,000,000 could represent.

During the five years that must elapse before new traffic facilities can be made available, there will be a gradual increase in traffic, which judging from past growths will be from 7 to 10 per cent annually, or say a total of 40 per cent at the end of five years. This increase must in some manner be taken care of.

The traffic volume has already reached the point where during the peak the overloading of the trains and the crowds on the platforms are such that the train movement is retarded and thereby the capacity reduced at the very time when the need for it is greatest. If the traffic could be evenly spread over the two hours maximum traffic period, not only would the discomfort of traveling be lessened, but there would be in increased capacity, sufficient to provide for the growth of traffic. Even if the 60 per cent increase indicated above cannot be obtained, but instead 40 per cent increase were secured (two-thirds of the maximum possible) the conditions would be greatly improved.

Since a transit line will develop during the twenty-four hours of the day an amount of traffic proportional to its capacity at the peak traffic, an increase of 40 per cent during the two-hour peak would be accompanied by a corresponding increase during the remainder of the day so that the maximum daily capacity on the basis of present carrying would be 2,800,000 instead of 2,000,000.

Table II was introduced by Frederick W. Lindars, chief accountant of the commission, giving a comparative showing in total cost per revenue passenger, operating expenses and fixed charges for the fiscal years ended June 30, 1915 to 1921. He explained that the figures given for fixed charges represented sums that in many cases had not been paid and that there were also some earnings in addition to those received from passengers. He also said that one reason why the taxes on the elevated were materially higher than on the subway was because the subway was partly city owned.

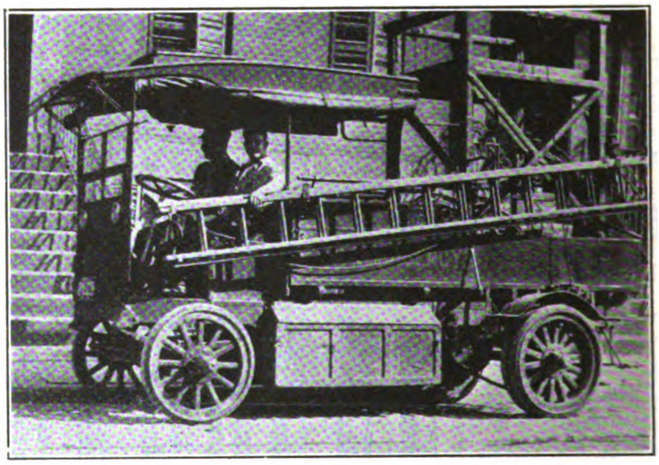
Harry N. Latey, engineer of equipment and operation of the commission, presented the figures given in Table III, covering the delays for pull-ins of cars for defects. These figures, he explained, did not include the delays to cars caused by traffic congestion.

Electric Trucks for Line Repairs

BY G. H. MCKELWAY
Engineer of Distribution Brooklyn (N. Y.)
Rapid Transit Company

AN ELECTRIC truck fitted with a tower as used for electric line work in Johannesburg, South Africa, was described in the Aug. 20 issue of the ELECTRIC RAILWAY JOURNAL. While the use of this type of truck for such work in the United States is somewhat unusual when compared with the number of gasoline-driven trucks used still there are quite a number in successful operation in various parts.

Some of the disadvantages found with electric trucks are: High first cost, as they average almost twice as much as a gasoline truck of the same capacity; they have a comparatively low speed, and their working radius is limited by the necessity of recharging the battery. The truck used in Johannesburg was said to be able to run at a rate of 20 m.p.h., and to make 50 miles on a single charge of the battery. For city work, where the paving is good and where there is little interference from snow, the working radius of this type of truck will undoubtedly be ample.



ELECTRIC TRUCKS FOR OVERHEAD LINE REPAIRS

The electric truck has some advantages over the gasoline truck, which include reliability, ease of handling, low maintenance cost and long life. Results from the use of such trucks indicate that they are seldom in the shop, and that an expert chauffeur is not required for their operation. The accompanying illustration shows an electric truck used in emergency service eight and one-half years and is still giving good satisfaction.

New Model Calculating Machine

THE Monroe Calculating Machine Company, New York, has just brought out a new model calculating machine to be made up in three sizes—of twelve, sixteen and twenty place capacity. The machine case and carriage case are aluminum castings and the background under the keys is an enameled green.

Some of the advantages claimed by the manufacturers for this machine include a light key touch with short stroke which insures speed and accuracy; the crank motion is fast and smooth and the key and dial numbers are large and conveniently placed. Mechanical locks are provided to eliminate errors. In operating, the repeat key is pressed if it is desired to retain numbers on the keyboard and the non-repeat key when it is desired to release them at each turn of the crank.

Burning Pulverized Anthracite Mine Waste

Results of Tests Obtained by Burning Pulverized Anthracite Coal in the Philadelphia Rapid Transit Company's Power Plant—Pulverizing Equipment Installed for Ten Boilers—One Boiler Put in Operation to Date

By O. M. Rau
Consulting Engineer, Philadelphia, Pa.

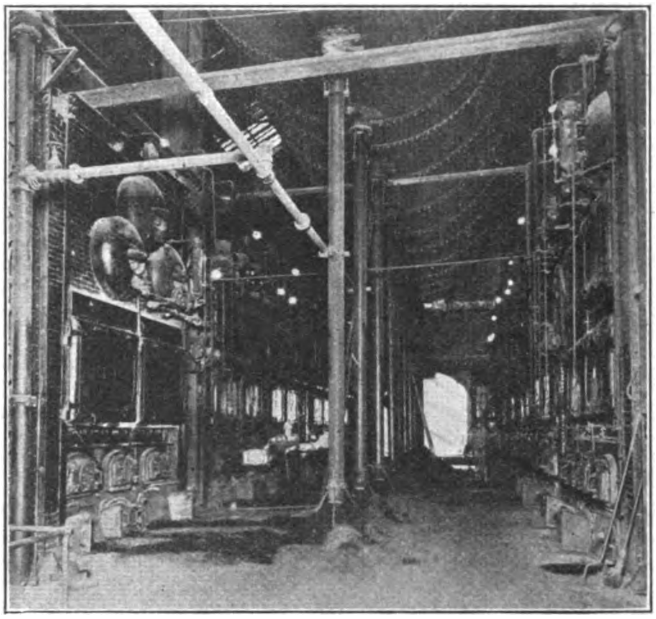
ACCUMULATION of culm from anthracite mines has been going on for years until mountains of this material have formed in these mining regions. The creeks and streams draining this area of the country contain deposits which, if recovered, would add materially to the anthracite fuel supply. Estimates of the total tonnage of these accumulations vary from fifty to one hundred million tons and the recoverable coal in the streams alone is estimated at millions of tons.

This material in the past was considered waste incident to anthracite mining and averaged approximately 10 per cent of the coal mined, and up to the time of the fuel shortage during the war, little if any effort was made to use it. At this time the high B.t.u. value of this material attracted the attention of engineers to its possible use as a fuel for steam boilers, resulting in extensive reclaiming operations being started by the mining and other interests to work over these accumulations. The high price of steaming sizes of anthracite left sufficient leeway to sell this reclaimed coal at a price that made these operations profitable, although only a small portion of the fuel was recovered, since only the larger particles found a market, owing to the difficulty in burning the finer material economically.

The use of the fine coal as fuel has not been attended with any great degree of success, although a number of plants have furnaces equipped with suitable grates and stokers. While its use was attractive during the peak prices for coal, this interest is being largely abandoned with the present conditions of the coal market. Particularly is this true in the use of so-called river and creek coal, the reclaiming of which resulted in establishing a substantial industry along the different creeks and streams in the anthracite district, which was reclaiming approximately 10,000 tons a day, up to the time the prices of steaming-size coal were lowered.

As power expert for the United States Shipping Board the author made an extensive survey of the power situation in the Philadelphia district, and as a result of this survey an investigation was undertaken to ascertain the possibilities of utilizing this mine waste in pulverized form. The large percentage of noncombustible and the difficulty of pulverizing to a fineness that would assure efficient combustion were outstanding obstacles. Studies were made of various methods of screening, jigging and other devices for the reduction of the ash. The method known as Trent process, which at that time was being developed at the United States Bureau of Mines, makes possible a reduction of the ash to a predetermined amount.

The pulverizing of anthracite culm, silt or river coal was found to be attended with difficulty and considerably more expense than the cost of pulverizing bituminous or other soft coal. The various attempts to pulverize anthracite were analyzed and the action on mills of the Fuller, Raymond, tube and pebble types was noted, with the result that it was found to be commercially feasible on a basis of a mill capacity of one-half that obtained with bituminous coal and with about double the maintenance expense.


Boiler Room Before Pulverized Coal Burning Equipment Was Installed

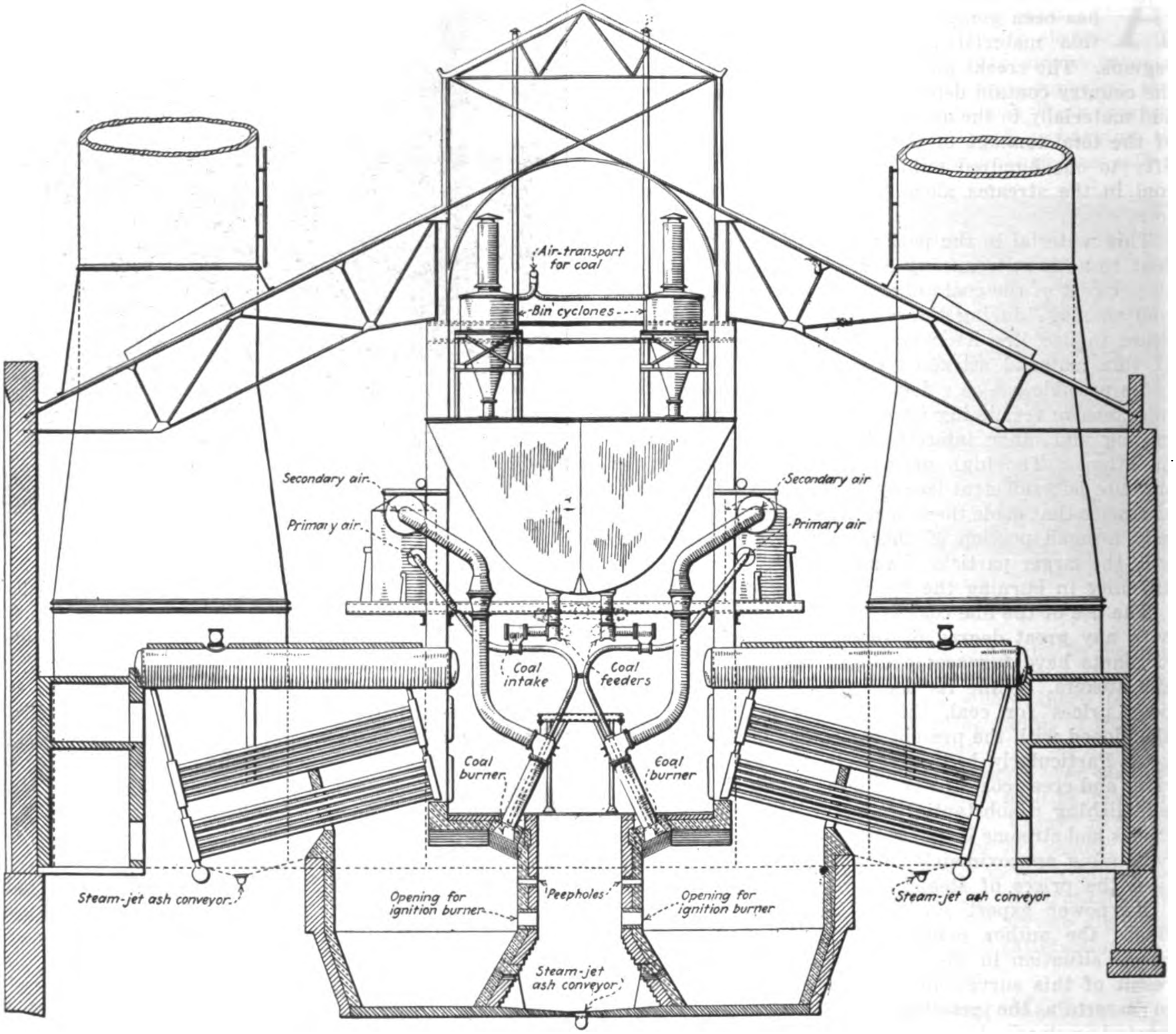
Experiments were then made to burn pulverized anthracite in existing installations. A 1,000-ton shipment of culm was sent to the Lima Locomotive Works to make a practical demonstration. This plant was selected as it had seven boilers in operation on pulverized bituminous coal. The only change made in the operation of the plant was to deliver the anthracite to the pulverizers in place of bituminous as formerly. The test developed no difficulties in burning this fuel, but indicated the desirability of modifications in the design of the installation if the best results were to be obtained.

With these preliminary studies completed and the possibilities of a material saving in power costs assured, the Philadelphia Rapid Transit Company approved a trial installation in its Thirteenth and Mount Vernon Street power plant. This plant was selected as the boilers were hand-fired, and being located in a semi-residential neighborhood it was restricted to the use of anthracite fuel. The plant operated part time as a peak-load power source and carried upward of 10,000 kw. for short periods during the evening loads, operating at a reduced output during the rest of the day with little or no load nights and Sundays. In addition to the change from hand-firing and the use of low-grade fuel it also would eliminate the use of coal for banking.

The plant consisted of 20 B. & W. boilers, each having 3,917 sq.ft. of water-heating surface, five Weatherall compound Corliss engines direct-connected to 1,500-kw.

direct-current 500-volt generators exhausting into two 800-kw. direct-current vertical Curtis exhaust-steam turbines, giving the plant approximately a total capacity of 10,000 kw.

A portion of the electric railway system's downtown section is operated from this plant, and until the high coal prices it was able to deliver power to the trolley at a cost that compared favorably with that delivered from the substations in this vicinity. The fuel used was No. 1 buckwheat at $3.50 per ton; when this coal increased to $5 and finally reached a price of $8 per ton, the plant was restricted to peak-load service. This resulted in a considerable expense for coal to maintain fires between peak periods and the cost per kilowatt-hour became excessive.



CROSS-SECTION OF BOILER PLANT SHOWING GENERAL ARRANGEMENT OF PULVERIZED-COAL EQUIPMENT

The boilers are set in two rows of ten each with a stack midway in each row. Only ten boilers on the north side of the stacks were selected to be equipped for burning pulverized fuel, since the increased rating at which the boilers can be operated with this fuel over hand-firing would give ample steam to operate the plant at full capacity.

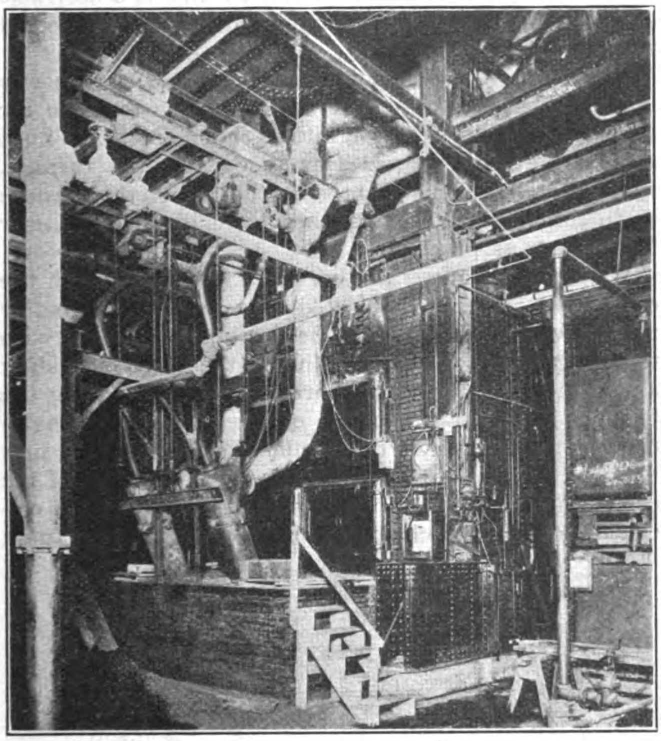
In the boiler room the principal changes consisted of placing dust-tight partitions in the existing Berquist-type coal bunker, so that each boiler would have its own pulverized-coal storage bin with a capacity of approximately 25 tons. Beneath the coal bunker and supported therefrom 20 Quigley screw-type pulverized-coal feeders (two for each boiler) were installed. These were driven from a shaft extending the full length of the bunker and operated by a 15-hp. motor arranged for duplicate installation in case of motor trouble. Each feeder is equipped with a clutch engaging with a chain drive from the main shaft.

Primary and secondary air is provided by two sets of direct-connected Clarage fans supported on a platform at a level with the top of the boilers, so as to eliminate all unnecessary bends in the air lines. Each set of fans supplies the necessary air for five boilers. The primary fans have 25-hp. motors and the secondary fans 15-hp. motors. The secondary air supply is controlled by grid-type air gates, which insure a distribution of the air through the entire area of the pipe, independent of the quantity delivered. The primary air is controlled with a diaphragm which, after proper adjustment, is permanently set.

The furnace changes consisted of combining the former combustion chamber and ashpit and extending this space in front of the boiler so as to form one large combustion chamber, into this chamber the Quigley burners enter at an angle through the top of the extended portion in front of the boilers. The total volume of the combustion chamber as constructed is 1,542 cubic feet.

Two 14-in. burners are required for each boiler. The fuel is fed into the burners through a 3½-in. pipe entering in the center of the secondary air elbow and extending approximately 2 ft. into the burners. The primary air and fuel enter the burner through this pipe and mix with the secondary air entering through the large opening. This allows for a thorough combination of the mixture into a combustible dust before being discharged into the furnace.

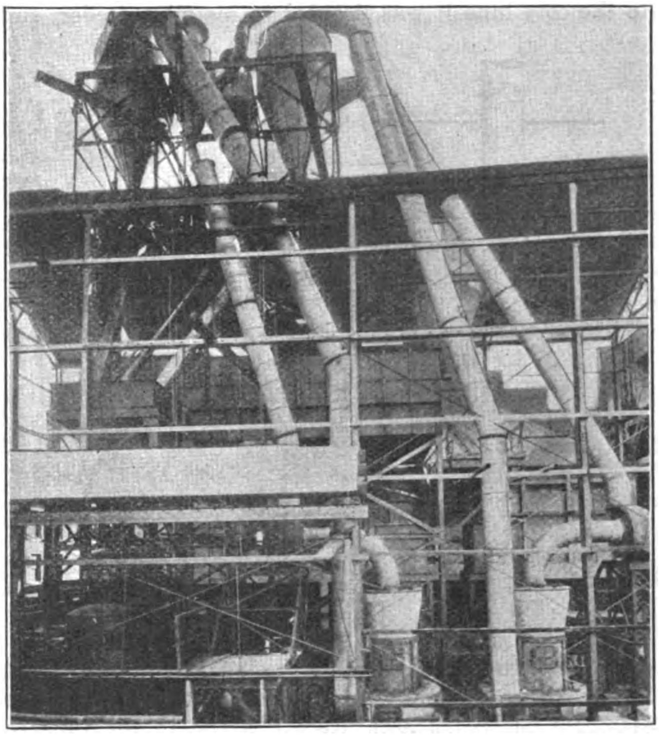
To insure rapid ignition of the anthracite when putting a boiler into service, which, owing to the low percentage of volatile in this kind of coal, does not ignite as readily as bituminous, the furnaces were equipped with two oil burners. These burners are capable of operating the boilers with oil fuel at their rated capacity. Burners of this size were selected so that in case of difficulty in obtaining raw coal, or accident to the pulverized-fuel system, oil could be temporarily used. This arrangement insures continuous operation and avoids expensive duplication of plant equipment. Owing to the similarity of the combustion chambers for burning oil with those for pulverized coal, the latter allow the use of oil with very efficient results, an advantage not possible with furnaces equipped with other methods for burning coal. The amount of oil required to ignite the pulverized coal varies from 30 to 40 gal. with a cold boiler and 10 to 20 gal. between peak-load operating periods.


BOILER EQUIPPED FOR BURNING PULVERIZED ANTHRACITE COAL

The milling plant, which is adjacent to the boiler plant, is in a separate steel structure covered with corrugated iron and equipped with two highside Raymond mills, one Ruggles-Coles drier and a Quigley air-transport system.

Raw coal is elevated to a 100-ton bin and is fed with a screw feeder to the drier, from which it is elevated to the dry-coal bins above each mill, into which the feed is by gravity. The pulverized fuel is discharged through cyclone collectors above the roof of the building into a pulverized-fuel bin over the transport tank. This tank rests on a platform dial scale and can be charged with such amounts of fuel as desired, up to 10,000 lb. Air pressure is then applied and any portion of fuel in the tank can be transported to any one of the coal bunkers in front of each boiler. By means of a signal system the boiler-room attendant can notify the milling plant when coal for any bin is required, and by adjusting the switch valve for the particular bin the amount of fuel required is automatically delivered.

This equipment installation was completed by the Quigley Furnace Specialties Company in the latter part of 1920. As soon as the combustion chamber under one boiler was ready, this boiler was put into service and operated for a short period, during which time some modifications were made in the combustion chamber and the burners were equipped with mixing vanes. On Nov. 23, 1920, the formal test was made, indicating full performance of the guarantees with the exception of the amount of combustible in the ash. However, as the effect on the efficiency was negligible, the plant was accepted.

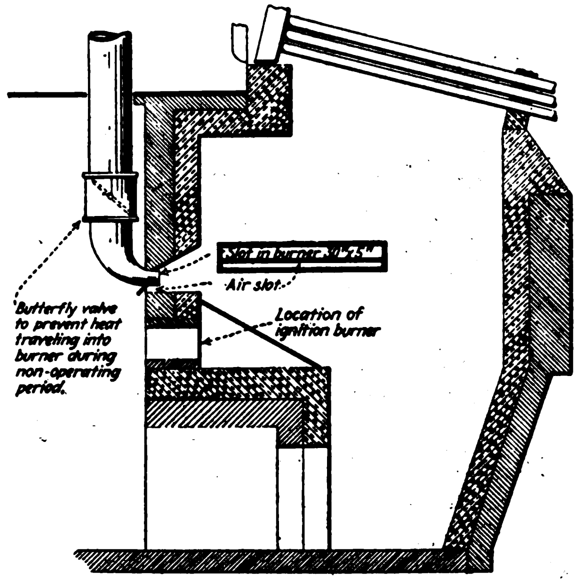

VIEW OF PULVERIZED-COAL MILLING PLANT

These test data were limited to the conditions of the guarantee, which did not take into consideration the boiler efficiency, but were based on the specific performance of the furnace and were specified as follows:

(a) Capacity of pulverized fuel plant.
(b) Fineness of pulverized coal.
(c) Capacity of feeders.
(d) Percentage of unconsumed combustible in ash.
(e) Percentage of CO_2 in products of combustion.
(f) Abrasion or effect on refractories in combustion chamber.

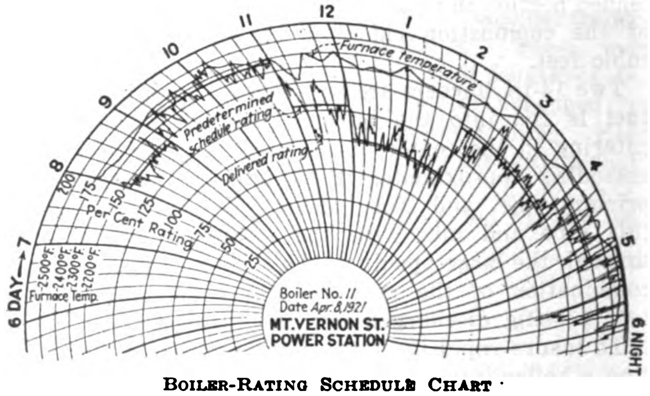
Further experimental operations were continued by the Philadelphia Rapid Transit Company's engineers to determine the most effective procedure for the equipment of the additional nine boilers. Careful observations were made of all parts of the installation to note developments of any defects or changes that might suggest themselves. Particular attention was paid to the condition of the combustion chamber, and after approximately six months of intermittent operation of the equipment, it was decided for comparative observation to reconstruct the combustion chamber, change the burners and install a new feeder.

The feeders furnished with the installation are of the screw type, having a capacity of 2,200 lb. per hour each, and when the coal supply is permitted to become low in the bins and then filled up, there is a tendency for the feeder to flush, which is inherent to all screw feeders of this type, and which can be practically eliminated in regular operation by keeping the proper amount of coal in the bins. To avoid the necessity of close attention to the coal bins it was decided to install a feeder, suggested by the writer and designed and built by the Bailey Meter Company, of the bucket type with an attachment to record accurately fuel fed to the furnace.


Slot in burner 30"-.75"
Air slot
Location of ignition burner
Butterfly valve to prevent heat traveling into burner during non-operating period.

SECTION THROUGH REMODELED FURNACE

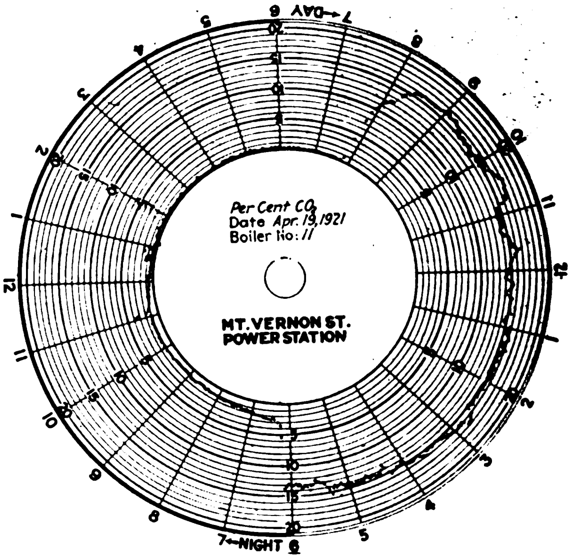
The burners were replaced by two multi-mix burners, and the combustion chamber was redesigned and considerably reduced in size. It was assumed that by providing these special means of mixing the air and fuel to a theoretically perfect combustible mixture, it would relieve the combustion chamber of functioning as a mixing chamber. Therefore the combustion chamber could be materially reduced in size, which is a desirable advantage in the application of pulverized coal to old installations.



BOILER-RATING SCHEDULE CHART

In rebuilding the combustion chamber, a change was made in the location of the burners so as to allow for the construction of an ignition chamber to be built around the burner nozzles as they enter the furnace. Instead of the burners entering the top of the furnace as in the original designs, they were installed as near the bottom as practical.

With these changes further tests were conducted, the conclusion of which indicated that as good or better results were obtained with the original equipment with the exception of the combustible in the ash. By adding an ignition chamber to the original design, placing the burners in the lower portion of the furnace and maintaining the volume of the combustion chamber as first installed it is believed that the complete burning of the combustible in the fuel can be accomplished, with efficiencies equal to mechanical stokers on high-grade fuels.



PER CENT CO$_2$ CHART FOR BOILER FIRES WITH PULVERIZED ANTHRACITE COAL

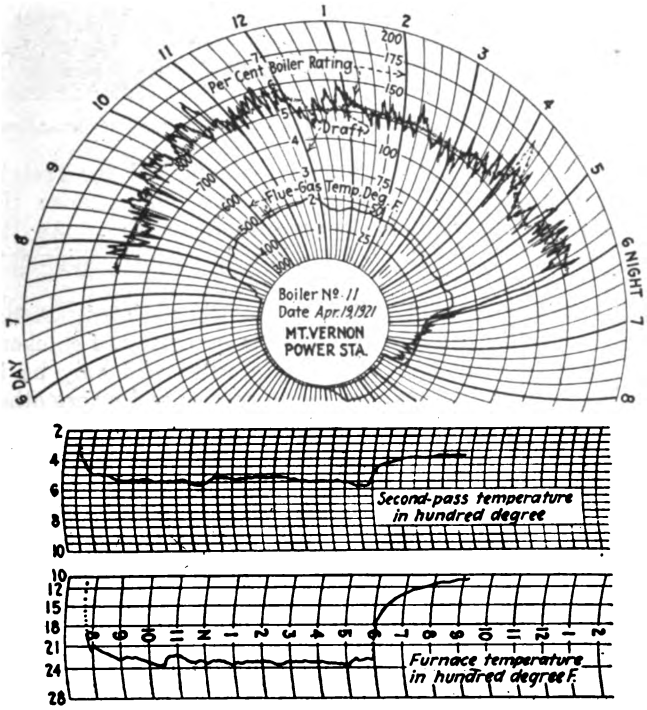
These tests were limited to furnace performance, as the boilers were of a very old type and therefore the guarantees were confined to furnace results only. The tests, however, include general data on boiler and milling plant operations.

Abstracts of the principal items of the tests covering the results of the original and of the revised installations are shown comparatively in the table.

Kind of boiler	Original Installation B. & W.	Revised Installation B. & W.
Volume of combustion chamber, cu.ft	1,542	800
Number of burners	2	2
Distance of flame path to heating surface, ft	24	14
Water-heating surface	3,917	3,917
Ratio of combustion-chamber volume to water-heating surface	1 to 2.54	1 to 4.87
Date of test	11/23/20	8/23/21
Duration of test, hours	12	10
Steam pressure, gage	148	149.2
Temperature of feed water entering boiler, deg. F	45.4	77
Temperature of escaping gases leaving boiler, deg. F	447	487
Temperature side walls of combustion chamber, deg. F	2,400	2,500
Moisture in coal as fired, per cent	0.87	0.46
Total weight of dry coal	25,987	25,950
Percentage of ash in pulverized coal	18.2	18.5
Total combustible fired	21,304	21,150
Total water evaporated	182,217	168,270
Factor of evaporation	1.218	1.185
Total equivalent evaporation	221,941	199,400
Dry coal fired per hour	2,165.6	2,595
Dry coal burned per hour, per cu.ft. of furnace volume. lb	1.4	3.25
Equivalent evaporation per hour from and at 212 deg. F., lb	18,495	19,940
Per cent of rated capacity developed	143	154
Calorific value of 1 lb. of dry coal	12,029	11,990
Calorific value of 1 lb. combustible	14,630	14,720
Per cent efficiency of boiler and furnace	69	62.2

It will be noted that the efficiency of the test with original equipment was higher than after the changes were made, although the combustible in the ash was less in the revised installation. The burned-out ash is accounted for by the effect of the ignition chamber, and the lower efficiency by the failure of completing combustion of the fuel in the smaller chamber, causing a larger percentage of combustible to escape up the stack.

The results of these experiences remove all doubts as to the successful burning of anthracite mine waste or river coal in pulverized form. When the remainder of the installation at the Thirteenth and Mount Vernon Street plant is completed, with the improvements and changes suggested by the preliminary operation, it is expected that efficiencies in excess of 76 per cent at ratings as high as 250 per cent will be obtainable. The tests and operation of this boiler have fully demonstrated the exceptional control possible by pulverized-coal firing, comparing very favorably with oil or gas firing. As shown by the boiler-meter chart, which recorded the performance of the boiler during a ten-hour period on a predetermined schedule of rating, the results were as follows:



BOILER-OPERATION CHARTS

Time	Schedule Rating, per Cent	Delivered Rating Average, per Cent	Furnace Temperature, Average, Deg. F
8 to 9	150	145	2,375
9 to 11	175	170	2,372
11 to 12	125	136	2,350
12 to 2	100	107	2,320
2 to 4	150	145	2,425
4 to 5	175	170	2,500
5 to 6	200	190	2,510

Industrial Rehabilitation in Germany

IN VIEW of the growth of German competition both with British and American manufacturers, a quotation will be of interest from a speech by Sir Trevor Dawson, managing director of Vickers, Ltd., at a shipbuilding, engineering and machinery exhibition held in London during September. He said that, when in Germany a month previously, he had visited a large electrical works and an important steel and engineering works. Both were hives of industry and output was high. The electrical works wrote down their book value during the war to a nominal sum. There had been no taxes like the munitions levy and the excess profits duty in England so the industry had been able to collect working capital. Wages ran about four marks per hour for an eight-hour day. It will be noted that at the present rate of exchange between Germany and Britain four marks is little more than a nominal rate of wage in sterling.

Cincinnati Road Uses Containers

Freight Is Collected and Placed in Containers in the Business Section of the City and Then Is Hauled to Terminal at Edge of City for Loading on Cars

THE Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, which operates between the outskirts of Cincinnati and Aurora, Ind., has introduced a new method for handling freight by traction lines. The freight is collected from shipping points in Cincinnati and assembled in containers which are conveyed by motor trucks to the Cincinnati terminal, where they are loaded on cars for shipment.

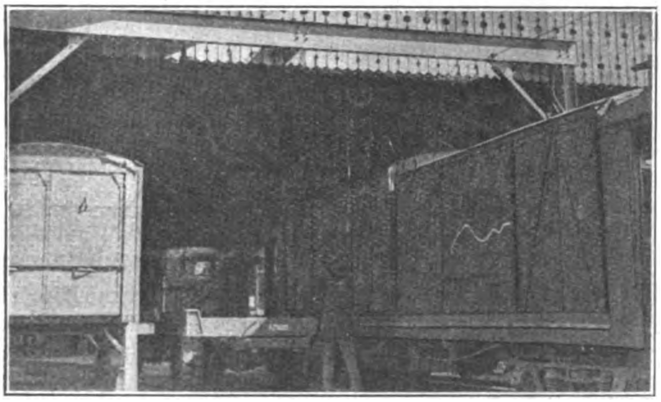
When L. C. Van Ness, general manager, took charge of the road for the receivers last July he saw possibilities for increasing the revenues through the freight package system which the management already had under consideration. Due to the fact that the company has no entrance into the heart of Cincinnati, some plan had to be devised to overcome this disadvantage because prospective shippers could not be induced to convey freight at their expense to the company's Cincinnati terminal, which is far removed from the commercial activities.

LOADING SMALL CONTAINERS INTO LARGER ONE

It was vitally necessary that any plan of freight movement adopted should be satisfactory to prospective shippers with reference to the time consumed in making shipments because of the fact that the traction company was obliged to meet the competition of two large railroads, the Baltimore & Ohio and New York Central Lines, both of which parallel the line of the traction company. In addition there were a number of independent truck lines which were bidding for the business of hauling freight. To be successful any plan of freight transportation must therefore combine speed and thoroughness to the manner of shipment.

METHOD OF HANDLING

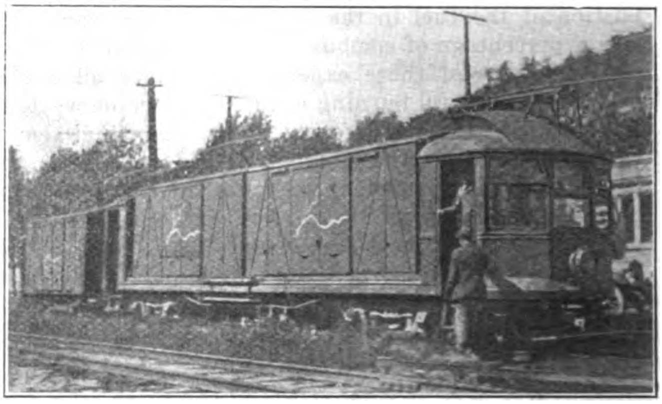
With the plan as adopted freight is assembled at a receiving station almost in the heart of the Cincinnati business district, loaded into wooden containers and transported on trucks to the Cincinnati terminal of the traction company, a distance of 6 miles, and then is transferred to an electric freight car and shipped over the line at one cost to the shipper. The transferring of the containers from the trucks to the freight cars or vice versa can be done in five minutes. The lifting is done by overhead cranes at the receiving station and at the terminal.


PLACING A CONTAINER IN POSITION ON A FREIGHT CAR

These cranes have a hoisting capacity of 10 tons and are electrically operated with the exception of the one located at the terminal, which has a hand traveler. In order to place two containers on the freight car at one time it was necessary to cut the cars in the middle and lengthen them 12 ft. Trailers are also used to haul freight to a designated point, where they are put on a siding and the freight distributed to points surrounding the station.

The containers are furnished by the Cincinnati Motor Terminal Company, which also does the hauling. They measure 17 ft. 6 in. long, 7 ft. 6 in. wide and 7 ft. high. In addition to the large containers, which are of 5 tons capacity, there are several small containers of which six can be placed in one large container. Each one of the small containers has approximately 152 cu.ft. of space. They are made of wood with hinged end doors. Legs at the four bottom corners elevate the containers so that a jacklift truck can be run underneath either at the ends or sides. The trucks used are manufactured by the Lewis-Shepard Company of Boston, Mass. After the jacklift is in position under the small container it is elevated to provide clearance by operating the handle. This raises the load by means of a simple mechanical jack mechanism. The load can be raised or lowered with the handle in any position and the lifting is vertically, so there is no tendency for the load to shift. With the container free from the floor it can be readily hauled into or out of the large container and thus the necessary time and labor are greatly reduced. The small containers are used principally for shipping perishable goods and when their destination is reached they are removed by a jacklift and left for the station agent to empty. The company started the freight business on Aug. 15 and there has been a noticeable increase in the volume of freight tonnage weekly. The cost to the traction company for transportation of the containers from the receiving station to the Cincinnati terminal is figured both by tonnage and mileage. If the container is loaded to capacity the transportation is computed on tonnage basis, and if partially filled on a mileage basis.

The freight rates of the company are on a par with the railroads, and the classification of freight is based on the same method except that classes 5 and 6 are omitted and incorporated in class 4. The rate is computed from the receiving station to all points on the line. If the company had been compelled to haul the freight in loose shipments instead of using the container system from the receiving station to the terminal the freight package business would not be possible because the transfer costs would consume the earnings. As the company is not equipped to handle carload shipments this class of business is not sought.


ELECTRIC FREIGHT CAR AND TRUCKS LOADED WITH CONTAINERS

Livestock is not handled except when crated. A list of commodity rates for such items as eggs and chickens is being worked up. Commodity rates will only be in effect on such items as are in abundance and where other carriers are offering competition.

While the plan of using containers is new to the shippers along this road, they are gradually realizing that it eventually will prove to their advantage and get their products to Cincinnati in quicker time than otherwise and in some instances at a reduced cost.

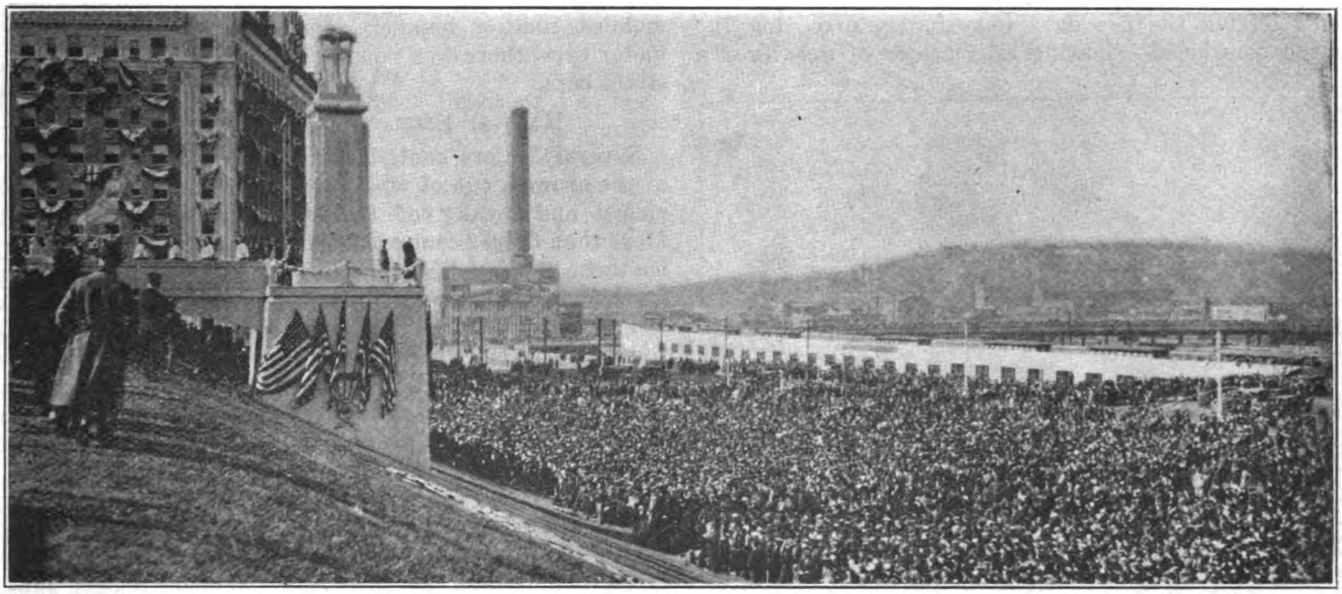
Presidio Terminus of Union Street Line in San Francisco

THE Presidio terminus of the Union Street line of the Municipal Railway of San Francisco consists of a loop and a concrete landing platform with a galvanized iron umbrella shed adjacent to the track furnishing shelter for railway patrons. The Municipal Railway contributed the sum of $1,000 from the operating funds and the national government spent almost $4,000 additional in the erection of a small stucco finish building near the landing platform, which contains a news stand, bootblack stand, restaurant, toilet facilities, and a room for the storage of tools and sand for the railway, and a telephone.

PRESIDIO TERMINUS OF MUNICIPAL RAILWAY OF SAN FRANCISCO

Handling Doubled Traffic with Dispatch

Kansas City Railways, with Half of Its Personnel ex-Service Men, Earns Widespread Commendation on the Effectiveness of Its Preparations to Carry the Crowds Brought to the City by the Recent American Legion Convention



CARS HAD TO BE OPERATED THROUGH CROWDS LIKE THIS AT THE SITE OF THE KANSAS CITY LIBERTY MEMORIAL MONUMENT

THE experience of the Kansas City (Mo.) Railways during the American Legion convention held in that city during the four days from Oct. 30 to Nov. 2, presents an interesting example of efficient service in transportation by a street railway. The traffic demands upon the company on one day reached nearly twice the usual requirements. The company met the emergency in an excellent manner by maintaining schedules and operating without serious accident to person or property. Perhaps the most remarkable incident of the performance is the fact that the company, owning 723 cars, had 723 cars in continuous operation during the entire convention, and had 723 cars still in service the night the convention closed.

The American Legion convention brought to Kansas City the largest crowd it had ever entertained. The total reached around 150,000 on Nov. 1, the day of the parade and of the dedication of Kansas City's Liberty Memorial. There were more than 50,000 men and women in the parade on that day, which was viewed by a crowd estimated at nearly half a million. About half this number attended the dedication of the Liberty Memorial, the services closing at noon. Within an hour and a quarter after the close of the dedication service, the crowd had been moved, and within an hour and a half after the close of the parade in the afternoon the street cars had finished their task.

One item in the Legion program was the aerial meet at a flying field southwest of the city. The Sunset Hill line with a single-track terminal was the nearest track to that locality, while the next nearest was the double-tracked Country Club line. Of the 150,000 people attending the aerial meet, the great majority was carried by street cars. There were football games, and other events in other districts on various days, for which the street railway provided the bulk of the transportation facilities.

To take care of the visitors as they arrived special schedules were maintained from the station to the business district, the headway on this line being as close as thirty seconds at certain times. This headway was maintained even when the streets bore crowds totaling as high as hundreds of thousands, swarming over the tracks ahead of and behind the cars.

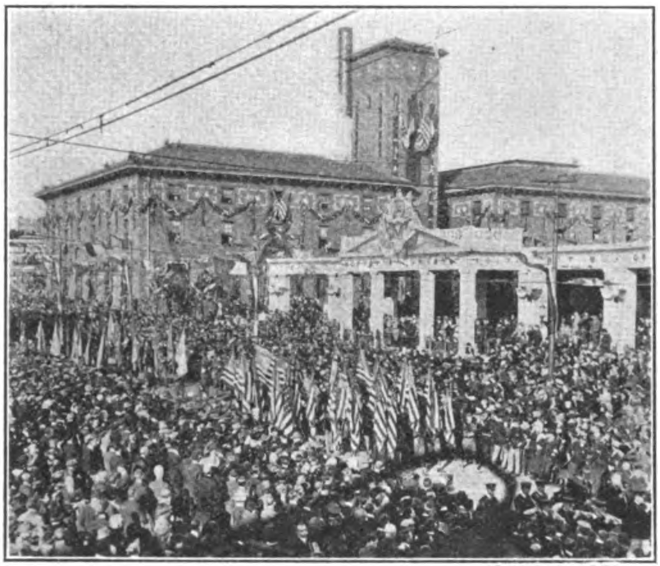
TRAFFIC CHANGES PUBLISHED IN BOOKLET

Many reroutings were necessary for the convention period to provide for the special events in various parts of the city, and to carry the crowds from downtown congestion. The reroutings and other information concerning the transportation department were scheduled in a booklet prepared by the company. These were issued to all employees, the police and the legion departments before the convention opened.

The preparedness of the company with reference to the condition of its equipment was not due to special effort, for it had been in practically perfect condition for several weeks under the program of maintenance already well established. No additional men were employed for the occasion so that the special training of extra men was unnecessary. It was found possible to draw from the various departments about 450 employees with experience in the departments to which they were specially assigned for the convention. These extra men were assigned to transportation facilities in the following capacities: 60 car dispatchers; 40 inspectors; 125 street fare collectors, 30 special officers; 50 mechanical and electrical workers and 150 conductors and motormen. These served in the capacities mentioned together with the regular employees.

Preparedness consisted chiefly in planning and in the distribution of the workers. The motor repair cars and trucks of the company were so distributed, for instance, that any point on the system where trouble might arise could be reached within five minutes after the failure had occurred. And in fact, in no instance was traffic delayed more than ten minutes by any accident.

The accident record presents an interesting display. For the five days of extraordinary traffic volume, from Saturday, Oct. 29, to Wednesday, Nov. 2, there were 161 accidents. This contrasts with a total of 141 accidents during the five days immediately preceding the period mentioned—showing an increase of only four a day in accidents of all kinds during the period of the convention. No person was even seriously hurt in any street railway accident, although there were several fatalities during the convention due to automobile accidents in which no street cars were involved.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LEGIONAIRES PASSING IN REVIEW ALONG THE CROWDED STREETS OF KANSAS CITY

The list of accidents presents a curious situation in view of the large volume of traffic, the crowds on the streets, and the natural haste of the traveling public. For instance, there was not a single accident in which a person was hurt alighting from a moving car; and there was only one person slightly hurt due to a car starting while the passenger was boarding. A total of but 161 accidents during the period suggests a remarkable degree of safety even for persons ignorant of practice and in congested circumstances of present-day street railway equipment and operation. Only two of the company's employees were injured.

Among accidents to property, the largest number consisted of collisions with automobiles—ninety of these. There were only nine collisions of street cars, six collisions with persons and three with vehicles. Only one street car was damaged in any accident, requiring that it be taken to the shop. This car was again in service the same evening.

The record of only six collisions with persons is the most interesting to one who observed the packed masses of people on the downtown streets, extending for many blocks. Yet the cars moved through these crowds with little or no delay in schedules, and few accidents. At the same time, there were hours during which motor cars could not pass through these crowds. The density was not the only bar, for the hilarious celebrants frequently turned back motor cars, or forced them to other routes.

But Legionaires, assuming direction of traffic during the high fever of the celebration in evenings, were solicitous to keep street cars moving. With Twelfth Street almost a solid mass of people for hours, street cars moved the length of Twelfth Street and across it without hindrance. Ex-top kickers with whistles arbitrarily directed traffic, each having twenty-five or thirty assistants. While celebrants manhandled automobiles, rode on bumpers, and attached trash cans to motor cars, there was not an instance of molestation of street cars.

HALF OF EMPLOYEES EX-SERVICE MEN

Several factors contributed to the efficient handling of the crowds, one of which was the high degree of efficiency and loyalty of the street railway employees. More than 50 per cent of the employees are former service men, totaling 1,500 men who themselves had a vital interest in the success of the American Legion convention. Each of these wore a badge announcing his former service. Every employee worked an average of fourteen hours a day, while many were on duty as long as fifteen hours, even though they were doubtless eager to attend meetings and sporting events. The visitors recognized the legion character of the personnel.

Another factor was the familiarity of Kansas citizens, and indeed of a great many visitors with the fare tokens used in Kansas City. Local people who might often be careless regarding purchase of tickets or tokens supplied themselves before the convention, and visitors soon "caught the idea." Dash cards on cars, signs at the Union station, and suggestions by street fare collectors and conductors advised the riders to buy two tokens for 15 cents when boarding a car or five tickets for 35 cents at stations. This advice was generously heeded for 70 per cent of the fares were paid with tokens, 17 per cent with tickets, and only 13 per cent with the 8-cent cash fare.

There was no power-house accident, nor suspension of current, and there was ample power for the service.

A HALF MILLION PASSENGERS DAILY

The largest volume of traffic in number of passengers was on Monday, Oct. 31, when 522,000 passengers were carried. The receipts on the four big days were as follows: Oct. 30, Sunday, $26,802; Oct. 31, Monday, $39,411; Nov. 1, Tuesday, $38,458; Nov. 2, Wednesday, $35,791.

These were the four largest days in the history of the company. But it is interesting to note that the largest previous day was but two weeks before the convention period—on Oct. 15 when receipts were $33,724. On other big days during the past ten years the passenger revenue has averaged at such times about $26,000.

There was not a complaint made against the service publicly during or after the convention, but many letters were received complimenting the company and individual employees.

The *Kansas City Post* published the following editorial, on Nov. 4 regarding the street railway service:

> Public commendation is due the Kansas City Railways for the admirable way in which it operated the street car service during the American Legion convention. The task was terrific, but the job was handled literally "with neatness and dispatch." The cars carried the crowds and carried them safely. No street car passenger suffered serious injury and no pedestrian was run down. No complaints of discourtesy upon the part of the car crews were made. To the contrary, many visitors were heard to compliment the conductors and motormen on their cheerfulness under extremely aggravating conditions.

"They simply laughed their way through," said Senator Wilson, one of the receivers for the railway company, alluding to the crews that took cars through the jammed thoroughfares downtown.

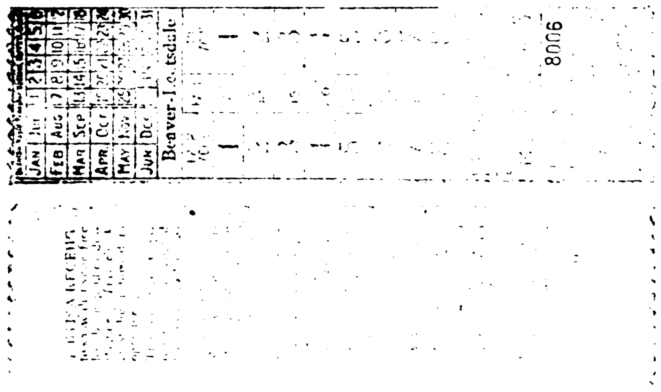
Zone Collections by Machine

The Beaver Valley Traction Company Adopts New Method of Issuing Zone Checks on One-Man Cars—The Method Is to Be Extended to the Entire System

FOR fare collection purposes the lines of the Beaver Valley Traction Company of New Brighton, Pa., are divided up into 5-cent zones, and up to recently a conductor would go through the car when it crossed a zone line and collect another nickel from each passenger. A few months ago the company decided to introduce one-man cars on a number of its lines so that some other method of collecting zone fares on these cars had to be adopted. The railway system of the company consists of about 26 miles of street and 51 miles of track, extending along the Ohio River and Beaver River. Its routes vary in length from those of one zone to one with eight zones. A map of the system was published in the ELECTRIC RAILWAY JOURNAL for April 9, 1921.

Obviously on a line with only one or two zones no special method of fare collection is necessary, as the car can be operated pay-enter, or pay-enter in the first zone and pay-leave in the second zone. On the longer zones, however, some zone ticket has to be used with one-man cars. On these routes the company is using Shanklin ticket-issuing machines and these machines have been ordered for all routes which are more than two zones in length.

An illustration of the ticket issued by this machine accompanies this article. The day of the month, "in" or "out" and hour are punched at the terminal, the time punch representing the time at which the car left the terminal. This leaves only the "zone from" and "zone to" to be punched on the trip. The operator on entering a zone presses a button on the machine to the proper "zone from" position. Then, when a passenger boards the car, all the operator has to do is to inquire the passenger's desired destination, see that the right fare is deposited in the box, push down one of the buttons and operate a foot lever. The machine then delivers the ticket properly stamped and punched. As the passengers leave the car they hand their tickets to the operator, who has only to notice from the "zone to" punch that the passenger has not over-ridden. The tickets thus collected are then bundled up and turned in by the operator at the end of each day's work. On his day card he gives the opening and closing numbers.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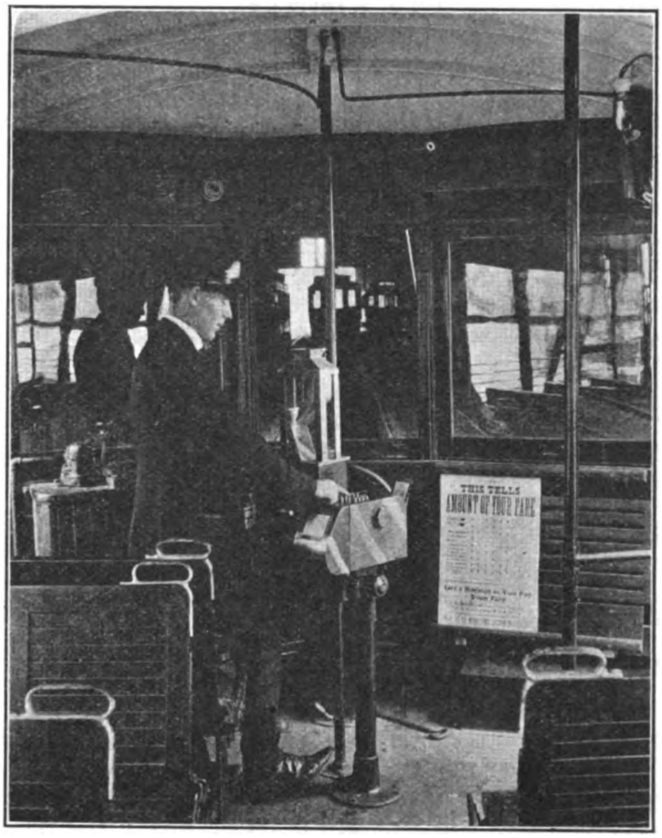
FRONT AND BACK OF FARE RECEIPTS USED WITH ZONE SYSTEM

If a passenger wishes to transfer, the operator collects the fare only to the next zone beyond the intersecting transfer point, and at the transfer point he lifts the ticket and issues a regular transfer. When the person boards the car to which he is transferred, the conductor on that car asks his destination and lifts the transfer, and the passenger drops into the fare box the amount of cash required to carry him to his destination, provided it is beyond the next zone limit on that line.



ONE-MAN CAR OPERATOR ISSUING FARE RECEIPTS

Outside of the first day or two after this ticket was introduced, when both passengers and trainmen were unaccustomed to both it and the one-man cars, there have been practically no delays due to the use of either tickets or one-man operation. During the first day or two the company used two operators on each car from the time the cars left the carhouse until 10 a.m., and again from 3 p.m. until 7 p.m.

There has been no change in the running time. The route on which the ticket shown is used is 13 miles in length, and the cars make the round trip in two hours and forty minutes with six minutes lay-over at one end of the line and four minutes layover at the other end. This is the same time taken when the cars were operated with two men.

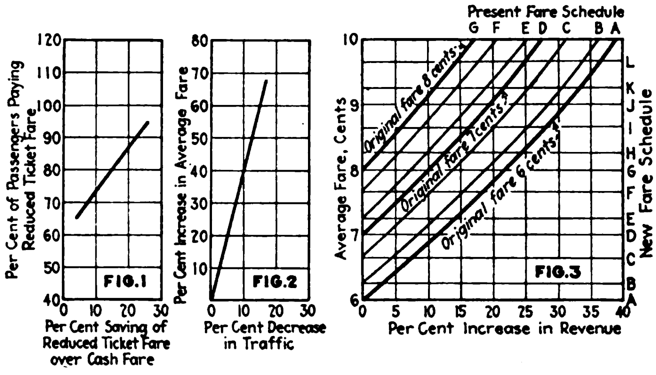
On the first day or two there was considerable difference between the amount shown by the zone checks as due and the amount in the fare box. Now the two amounts are very close each day. The company has equipped seventeen one-man cars with these machines. One important advantage of the machine, in the opinion of the management, is that it is possible by tabulating the slips returned to have an absolute traffic check on the number, time and direction of the trips taken on the cars. This, it is believed, will be found very useful in laying out future schedules.

Revenue Increase from Increased Rates

The Writer Shows by Means of Diagrams How to Estimate the Change in Revenue Which May Be Expected from a New Fare Schedule

By J. Kappeyne
Consulting Engineer, Syracuse, N. Y.

In times of insufficient income, when application is being made for an increase in rates, it is desirable to be able to estimate, within reasonable limits of accuracy, the revenue to be derived from a proposed higher fare schedule. The present tendency of electric railway rates, as established by the regulatory authorities, seems to be toward a basic straight cash fare combined with a reduced rate ticket that can be purchased in small lots. The average fare realized from such a fare combination depends upon the proportion of passengers which ride on the reduced fare tickets.



Charts for Computing Increase in Revenue Resulting from a New Fare Schedule

A number of statistics are available giving the relative proportion of reduced ticket fares and of cash fares obtained with different fare schedules. In some instances, a certain lack of uniformity exists in the resulting ratios between different cities having the same fare schedule. This is also true as between different months of the same year, nevertheless a fairly constant relation is found when the results are averaged over a long period of time when the basis of comparison is taken as the percentage saving of the reduced ticket fare over the cash fare.

It is realized that the amount of the cash outlay required to purchase tickets at reduced rates is also a factor which will to some extent tend to produce non-uniformity of results. Within reasonable limits, however, the relation as shown in Fig. 1 will be the result.

The revenue to be derived from an increased fare will depend upon the falling off in traffic due to the loss of the so-called short rider. Available statistics are of little value unless local conditions are properly analyzed. Usually increased fares are put in effect at times of general business depression and often the falling off in traffic is only partly due to the fare increase. There seems to be a tendency of traffic coming back, although not to its full extent, after a certain lapse of time, all other conditions remaining unchanged. Furthermore, the normal increase in the population served, the possible variation in the riding habit, the change in frequency of the service furnished, increased competition by other means of transportation, are all factors affecting the volume of traffic.

The relative greatest proportionate loss in traffic occurs when the first increase is made from the conventional nickel fare. Subsequent increases in the amount of fare result in fairly uniform decreases in traffic when the results are averaged over a long period of time and by taking as the basis of comparison the percentage increase in the average fare paid.

Fig. 2 is the result of a number of traffic statistics after modifications have been made to make conditions as nearly comparable as careful analysis will permit. In this analysis statistics relating to the initial increase from the original nickel fare are eliminated.

By properly combining the results shown in Fig. 1 and Fig. 2 the estimated increase in revenue to be derived from a change from one particular fare schedule to another can easily be computed.

TABLE I—BASIS OF CASH AND TICKET FARE ASSUMPTIONS

Schedule	Cash Fare (Cents)	Reduced Rate Tickets Unit Price (Cents)	Reduced Rate Tickets Sold in Lots of	Saving Unit Ticket (per Cent)
A	6	..	......	.....
B	7	6	4 at 24	14.27
C	7	6½	4 at 26	7.15
D	7	..	......	.....
E	8	7	4 at 28	12.5
F	8	7½	4 at 30	6.25
G	8	..	......	.....
H	9	8	4 at 32	11.12
I	9	8½	4 at 34	5.56
J	9	..	......	.....
■ K	10	9	4 at 36	10.0
L	10	9½	4 at 38	5.0
M	10	..	......	.....

For example, assume the successively increasing fare schedules, shown in the accompanying table.

Fig. 3 shows the expected increase in revenue that will be obtained, all other conditions affecting traffic remaining unchanged, when changing over to any one of the above fare schedules from a straight 6, 7, or 8-cent fare or intermediate fare schedules.

For example a company operating on a straight 7-cent fare, Schedule D, may expect an increase in operating revenue of 16.5 per cent when the rate of fare as shown in Schedule I becomes effective. This 16.5 per cent is arrived at by taking the abscissa of the intersection of the diagonal curve representing the initial fare of 7 cents with the horizontal line representing the proposed fare Schedule I.

Similar diagrams may be computed for any set of initial and proposed fare schedules.

Although the local conditions obtaining during the time the proposed new fare schedule is in effect will undoubtedly alter the actual results, it is believed that, for purposes of calculation, assuming that other conditions remain unchanged, the data as shown in Fig. 3 will give fairly accurate results for average conditions.

Remedy for Trouble with Door Guides

The Portland (Ore.) Railway, Light & Power Company had difficulty in holding the angle iron door guides on its Birney safety cars due to the screw holes becoming worn in the wood. The company found that by electric welding these guides to a ¼-in. plate that would just fit into the space at the top of the door and by drilling screw holes in a new place the difficulty would be overcome. The accompanying illustration shows a plate welded to the door guide.

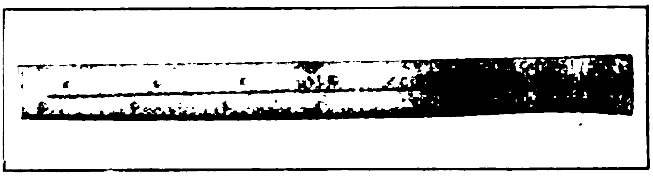
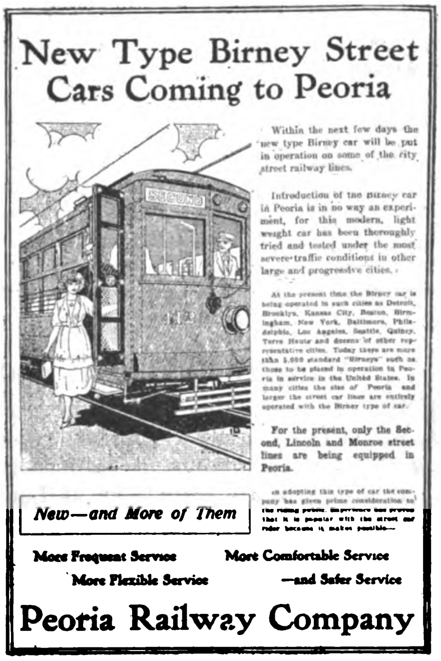


Plate Welded to Angle Iron Door Guide

Electric Railway Publicity

Devoted to How to Tell the Story

Birney Enters Peoria Amid Newspaper Heraldry



New Type Birney Street Cars Coming to Peoria

Within the next few days the new type Birney car will be put in operation on some of the city street railway lines.

Introduction of the Birney car in Peoria is in no way an experiment, for this modern, light weight car has been thoroughly tried and tested under the most severe traffic conditions in other large and progressive cities.

At the present time the Birney car is being operated in such cities as Detroit, Brooklyn, Kansas City, Boston, Birmingham, New York, Baltimore, Philadelphia, Los Angeles, Seattle, Quincy, Terre Haute and dozens of other representative cities. Today there are more than 5,000 standard "Birneys" such as those to be placed in operation in Peoria in service in the United States. In many cities the size of Peoria and larger the street car lines are entirely operated with the Birney type of car.

For the present, only the Second, Lincoln and Monroe street lines are being equipped in Peoria.

In adopting this type of car the company has given prime consideration to the riding public. Experience has proven that it is popular with the street car rider because it makes possible—

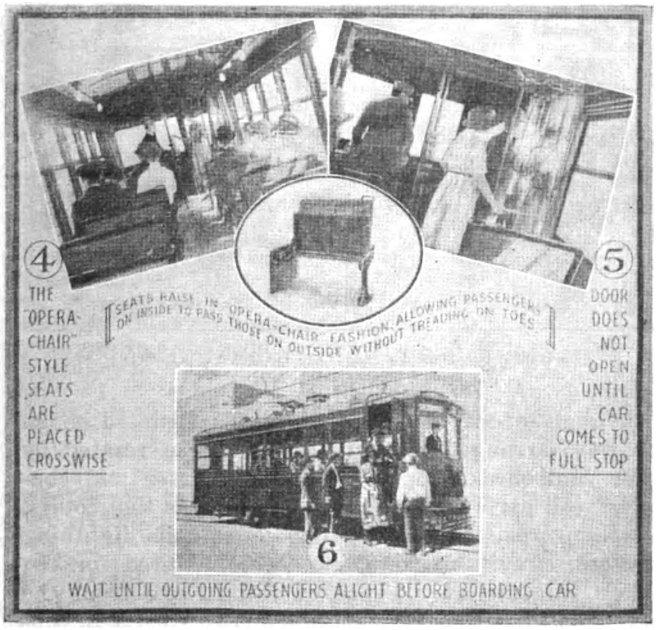
New—and More of Them

More Frequent Service **More Comfortable Service**
More Flexible Service **—and Safer Service**

Peoria Railway Company

A RECENT ADVERTISEMENT IN A PEORIA PAPER INTRODUCING THE NEW CAR

LONG before Nov. 16, the inaugural date of the Birney safety car in the city of Peoria, Ill., patrons of the Peoria Railway had been informed through a detailed and comprehensive publicity campaign by means of booklets and advertisements just what the railway was planning in regard to this new method of operation. Preliminary to the starting of the twenty Birney cars on the Second, Lincoln and Monroe Street lines the company, through its general superintendent, R. F. Palmblade, printed and distributed to the public an interesting booklet containing news of the outside and inside of the car, modern seating and standee arrangement, etc. The booklet gave a short history of the new type of car, its use in some of the large cities and its improved features over the old type of car. Specific instructions on the conduct of passengers traveling on the Birney car were also outlined in the pamphlet.



4
THE "OPERA-CHAIR" STYLE SEATS ARE PLACED CROSSWISE
SEATS RAISE IN "OPERA-CHAIR" FASHION, ALLOWING PASSENGER ON INSIDE TO PASS THOSE ON OUTSIDE WITHOUT TREADING ON TOES
5
DOOR DOES NOT OPEN UNTIL CAR COMES TO FULL STOP
6
WAIT UNTIL OUTGOING PASSENGERS ALIGHT BEFORE BOARDING CAR

ONE OF THE INSIDE PAGES OF THE BOOKLET USED IN THE PUBLICITY CAMPAIGN

Not only through the distribution of this pamphlet did the railway tell the public about the new system and seek its co-operation in making this safety car experiment a success but also through some newspaper display advertising. One advertisement, entitled "Birney Type Street Car Is Really New," told the story of the long wheelbase which makes it easy riding and the arrangement of the interior so that more passengers are seated. Graphically, it told the story of the crosswise seating arrangement with seats raised in "opera-chair" fashion and also showed an interesting trio waiting patiently to enter the car, but "Doors Cannot Open Until Car Stops and Step Drops." Another instructive advertisement entitled "Things to Remember About New Birney Cars" showed the front entrance of the car, the advantage of having the exact fare ready and the correct method of dropping fare in the box.

Magazine Commemorates P. R. T. Picnic

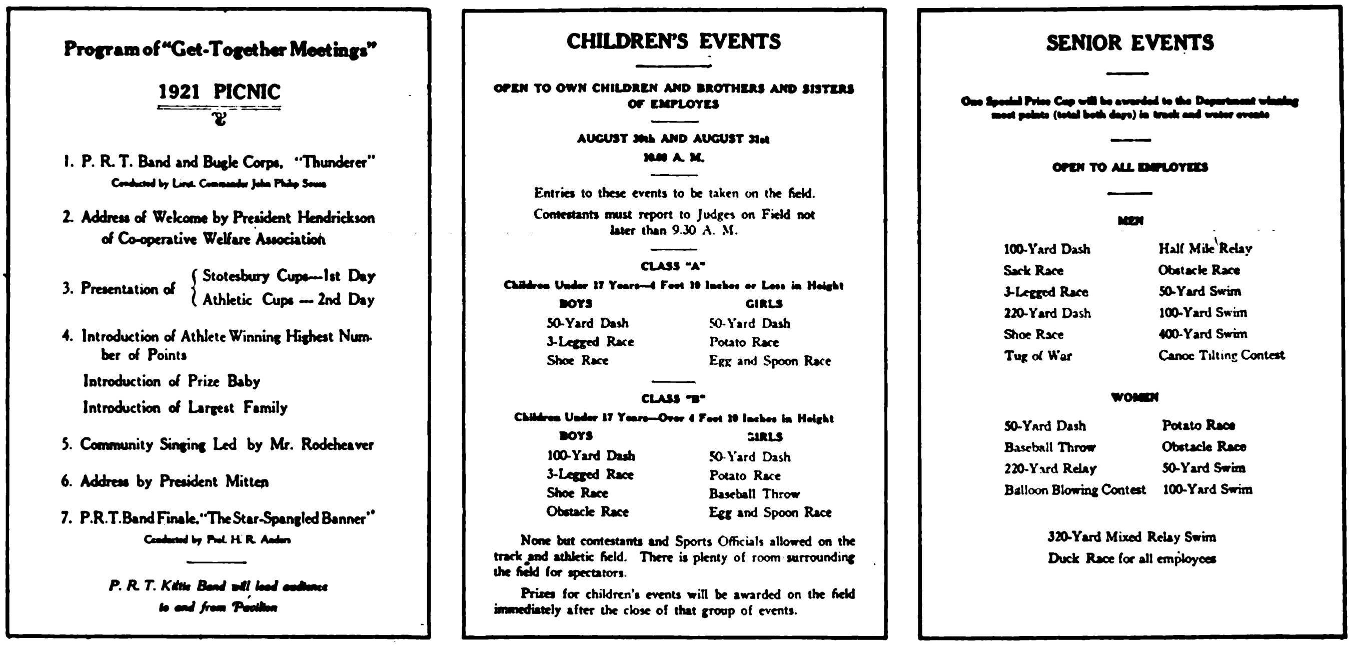
DETAILED accounts of the events and the success of the August picnic of the Co-operative Welfare Association of the Philadelphia (Pa.) Rapid Transit Company are given in the picnic number of the *Co-operative Record*. Cuts in profusion of babies, of officers, of members, of daughters, of wives, and full stories of all the happenings of the two-day picnic make the magazine a happy commemorative record.

The most striking feature of the publication is the great number of pictures. Approximately 145 halftones are reproduced in the fifty-two pages, and in addition the front and back covers are a continuous picture of the big get-together meeting. Every phase of the two-day outing is covered by the camera. Sports, recreation, entertainment, baby show, first aid contest, the dedication of the colors, find their permanent record in this issue of the *Co-operative Record.*

The message of the magazine is the Fifty-fifty Plan of the Philadelphia Rapid Transit Company, of which the picnic was the manifestation. Excerpts from the speeches at the picnic of Mr. Mitten, president of the Philadelphia Rapid Transit Company; of C. Edward Hendrickson, president of the Co-operative Welfare Association, and of other officers of the employees' organization express the spirit of the plan and reflect the co-operation existing throughout the company.

Mr. Hendrickson showed the stand of the Co-operative Welfare Association in the following statement, quoted from his talk:

> Our position as an organization in this time of general depression is one of which we may be proud. By the work of our hands, by good fellowship and by foresight we have built for ourselves a house with a solid rock foundation. Yet in our victories we are not boastful nor unmindful of the wants of others. The entire spirit of this picnic has been as though it were a great Thanksgiving service.



Program of "Get-Together Meetings"

1921 PICNIC

1. P. R. T. Band and Bugle Corps, "Thunderer"
   Conducted by Lieut. Commander John Philip Sousa
2. Address of Welcome by President Hendrickson of Co-operative Welfare Association
3. Presentation of { Stotesbury Cups—1st Day / Athletic Cups — 2nd Day
4. Introduction of Athlete Winning Highest Number of Points
   Introduction of Prize Baby
   Introduction of Largest Family
5. Community Singing Led by Mr. Rodeheaver
6. Address by President Mitten
7. P.R.T.Band Finale."The Star-Spangled Banner"
   Conducted by Prof. H. R. Anders

P. R. T. Kiltie Band will lead audience to and from Pavilion

CHILDREN'S EVENTS

OPEN TO OWN CHILDREN AND BROTHERS AND SISTERS OF EMPLOYES

AUGUST 30th AND AUGUST 31st
10.00 A. M.

Entries to these events to be taken on the field.

Contestants must report to Judges on Field not later than 9.30 A. M.

CLASS "A"
Children Under 17 Years—4 Feet 10 Inches or Less in Height

BOYS	GIRLS
50-Yard Dash	50-Yard Dash
3-Legged Race	Potato Race
Shoe Race	Egg and Spoon Race

CLASS "B"
Children Under 17 Years—Over 4 Feet 10 Inches in Height

BOYS	GIRLS
100-Yard Dash	50-Yard Dash
3-Legged Race	Potato Race
Shoe Race	Baseball Throw
Obstacle Race	Egg and Spoon Race

None but contestants and Sports Officials allowed on the track and athletic field. There is plenty of room surrounding the field for spectators.

Prizes for children's events will be awarded on the field immediately after the close of that group of events.

SENIOR EVENTS

One Special Prize Cup will be awarded to the Department winning most points (total both days) in track and water events

OPEN TO ALL EMPLOYEES

MEN

100-Yard Dash
Sack Race
3-Legged Race
220-Yard Dash
Shoe Race
Tug of War
Half Mile Relay
Obstacle Race
50-Yard Swim
100-Yard Swim
400-Yard Swim
Canoe Tilting Contest

WOMEN

50-Yard Dash
Baseball Throw
220-Yard Relay
Balloon Blowing Contest
Potato Race
Obstacle Race
50-Yard Swim
100-Yard Swim

320-Yard Mixed Relay Swim
Duck Race for all employees

PROGRAM OF EVENTS AT PICNIC OF CO-OPERATIVE WELFARE ASSOCIATION OF P. R. T.

The magazine includes a four-page section called "Service Talks," which are intimate editorial commentaries on matters of method, ethics, results, goals and, of course, co-operation.

A spirit of good will pervades the *Co-operative Record*. The running story of the picnic is told in a chatty, vivid style and lends unity to the various interesting accounts. These opening sentences give the tone of the entire publication:

> Another picnic is over—another milestone passed, but the remarkable two-day outing at Willow Grove gave stress to the fact that the miles, in passing, have been carefully measured. In the heart of depressing times, the great P. R. T. family stepped out to demonstrate once again that their Philadelphia "Fifty-fifty plan" which they created and in which they believe, was storm-proof.

The magazine is Number 5 of Volume 1 of the *Co-operative Record.*

United Railways States Issues

IN AN effort to make clear its position, the United Railways of St. Louis has issued a detailed statement of the traction situation there to counteract alleged erroneous reports of the press. Comparison of the St. Louis conditions to those in San Francisco is declared unfair, and a minute comparison with the New York Transit Commission proposals follows. The announcement says "that in St. Louis we have an approach to municipal or public ownership so close that the local situation has many of the advantages of the New York plan without the city itself assuming the transportation obligations."

To eliminate the $4,000 loss incurred daily by the company, and to give adequate transportation and build the needed extensions, the company states emphatically, "the car fare must be adequate."

The circular closes with the following statement from the company:

"When the valuation of the property is completed by the Public Service Commission, St. Louis will have a car service on a cost basis, absolutely. In the meantime it is getting it at less than cost. What the future service will be is largely a matter for the public to decide."

Railway Exhibit at State Fair

THE accompanying illustration shows an exhibit which the Louisville Railway recently placed in the new $300,000 Merchants' & Manufacturing Building of the Kentucky State Fair, held at Louisville during the week of Sept. 11 to 17. The company occupied two spaces, one in the name of the Louisville Railway and one in the name of the Louisville & Interurban Railroad. Photographs of cars were shown, beginning with the old horse-drawn cars and including the present most modern equipment.

In the Louisville & Interurban Railroad space views were shown of the terminal building, freight station and of the right-of-way. A pair of wheels mounted on an axle were arranged so that they could be rotated by power controlled through a grid resistance and controller. All parts of the equipment, such as the motors, controllers, resistors, fuse boxes, choke coils, lightning arresters, circuit breakers, etc., were lettered for the public's information. Types of rail in use from the years 1864 to 1921 were displayed. Also steel ties, concrete base, granite paving, etc. The costs of the various parts were posted for the public's information.

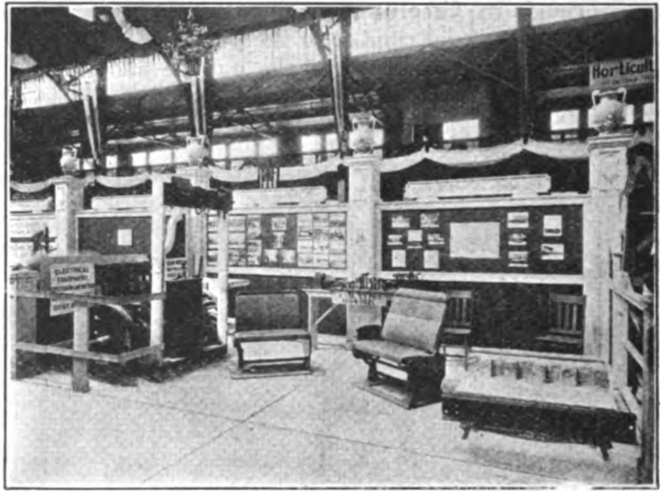


EXHIBIT OF THE LOUISVILLE RAILWAY AT THE KENTUCKY STATE FAIR

Publicity Campaign Launched in Dallas

TRAINMEN of the Dallas (Tex.) Railway have been given an opportunity to do a real worth-while job—to convey a message to the public and patrons of the railway property in that city. In addition to operating cars, collecting fares, etc., they have been asked to "sell service," to tell residents and visitors to the city what the railway is trying to accomplish, how it is striving to give satisfaction to its customers and what the spirit of the organization really means.

This "selling service" stunt, which has far-reaching effects, will be conducted through the publicity department. All trainmen have been invited to submit copy for the car card advertisements which appear on each end of the car. An acceptable piece of copy will be awarded a prize of $5.

One need not be learned nor have the gift of beautiful expression, but just the ability to talk to the car patrons in a simple straightforward manner—to have something to say about the service that is offered that will bring home to every rider the fact that the Dallas Railway is "selling transportation." In announcing the contest Mr. Crampton warned against any formal advertising copy and said that the determining factor in passing criticism on copy would be the reading matter, which should be such that it could be read easily from the center of the car.

The Nov. 15 issue of *Partners*, the official publication of the Dallas Railway, in explaining the reason for launching this "publicity campaign" tells what the Dallas Railway officials believe is the real relationship which should exist between an agency rendering service and the public whom it serves. In part it is as follows:

> The most valuable asset a public utility can have is a satisfied public for its customer. Too many times the public is inclined to think of such enterprises as large corporations without interest in public welfare beyond the income that can be derived from each individual user. Personality in service is lost sight of entirely. The Dallas Railway is fortunate in having a corps of employees who are thoroughly capable, loyal and interested in selling their services. The ordinary rider thinks of the company in terms of motormen and conductors. His opinion, good or bad, is molded by the reaction these men give when he uses their cars.
>
> The purpose of the car card is to convey the spirit of this organization to the passenger who uses the street car. He should be made to feel that he is being cared for by capable men who are interested in his satisfaction and who will go to any reasonable length to give him the highest type of service that is possible.

C. E. R. A. Engineering Section Meets

First Meeting of the Eastern Section of the Engineering Council Points to Real Accomplishment Along Mechanical Lines

THE first meeting of the Eastern section of the newly formed C. E. R. A. Engineering Council was presided over by Director P. V. C. See, superintendent of equipment Northern Ohio Traction & Light Company, at the Ohio Hotel, Youngstown, on Nov. 15. G. T. Seely, chairman of the Engineering Council, was present at intervals and aided the section in establishing procedure. There were thirty-two in attendance, practically all of whom were equipment men, as there was only one track engineer, one overhead superintendent, and two power engineers present. Consequently the discussion of questions propounded on track and power matters presented only limited view and led to no particular conclusion.

However, the equipment problems were the subject of lively and valuable discussion and the interest closely rivaled that at the meetings of the Association of Electric Railway Men, the loosely formed organization of the equipment men of Pennsylvania, Ohio and West Virginia, which was started and sponsored by the Westinghouse Electric & Manufacturing Company and was discontinued with the organization of the Engineering Council of the C. E. R. A. This section meeting differed from the earlier similar meetings of the independent organization in that an effort was made to have the discussion lead to some definite conclusion. The motion to make some definite disposition of the subjects discussed was made by Guy H. Kelsay, superintendent of power and equipment, Cleveland, Southwestern & Columbus Railway. This led to considerable discussion as to what should be the proper procedure of the section. In the absence of any definite plan from the Engineering Council, it was decided that after a discussion developed the fact that wide divergence of opinion or practice existed, a committee was to be appointed to make a thorough study of that subject and report back to the next meeting, of the section, presenting, if possible, a definite recommendation for the members to discuss, revise and act upon with a view to passing it on to the Engineering Council as a recommendation for a new standard or a recommended practice. Committees appointed by Director See to give special study to subjects discussed at this first meeting were as follows:

Standardization of car wheels, aside from contour — A. B. Creelman, Youngstown, Ohio, chairman; Walter Goodenough and H. P. Meyers.

Building up flanges by electric welding—Rufus Moses, Youngstown, Ohio, chairman; P. J. Wood and C. W. Folwell.

Standardization of length of trolley pole — Terrence Scullin, Cleveland, chairman; Clyde Doolittle and F. C. Martin.

Power saving—Guy H. Kelsay, Elyria, Ohio, chairman; A. A. Crawford and Carl Knittle.

A discussion as to the relative merits and economy of trolley wheels versus trolley shoes brought out some interesting information and a wide divergence in the mileage obtained. C. F. Doolittle, master mechanic Cleveland & Erie Railway, Girard, Pa., said that the trolley shoe is far better as a current collector than the wheel and that on his property the cost has been less than it was with wheels. Shoes have been in use on this property for four years and the maximum mileage obtained was 7,200, with an average mileage of about 4,500. After wearing a groove so that removal is necessary, Mr. Doolittle said that some of these shoes have been built up by electric welding with medium steel and 2,000 miles additional service secured, but he thought it cost about as much to do this as the additional mileage was worth. The trolley wire was calipered for wearing resulting from the sliding contact, and in one year's time the greatest wear at any of the test points was found to be .003 in, and the average wear .0015 in. He considered that the quieter operation of the shoe was a very important consideration. An important thing is to see that the current shunt on the shoe does not come off, for if it does it is possible for the shoe to catch on a span wire, should the shoe jump off the wire, and pull the overhead down. He said it is impossible to back up with the shoe after it becomes worn and it is necessary for the conductor, therefore, always to take hold of the trolley rope when backing up. In comparing the mileage obtained with wheel and shoe, Mr. Doolittle said he had never been able to get more than 1,500 miles out of 5-in. trolley wheels.

On the other hand, A. B. Creelman, Youngstown, with an average mileage of 6,000 with trolley wheels, had had very much better results with the wheel than with the shoe, and he said that this experience on the Youngstown Municipal Railway covered practically all possible conditions of motors, voltage, trolley stands, overhead, etc. He pointed out that much better results are obtained with the shoes where they are not mixed in with wheels, as the latter leave a certain amount of pitting and roughness on the wire, which tends to wear out the shoe, whereas the use of all shoes on a line tends to make the wire slick and smooth and reduces wear.

The discussion as to the possibility of standardizing on the length of trolley pole developed the fact that poles of 12-ft., 13-ft. and 14-ft. lengths are used on city and interurban cars and that there appears to be no very definite reason for the use of one length as against another. The committee appointed to study this matter will endeavor to tabulate the maximum heights of trolley, car heights and overhang and then determine through what ranges of these values a certain length of pole can be used, looking to the adoption of a single standard if possible.

R. D. Miller, master mechanic, Stark Electric Company, in responding to a question about the results obtained with energy saving devices, stated that a very substantial saving had been made on his property with the use of Economy watt-hour meters. In addition to the energy saving, they had been responsible for a brakeshoe saving of 5 per cent and a reduction in armature trouble of 30 per cent. A good spirit of competition among the motormen has continued after two years use of the meters.

The discussion then turned to some troubles that had been experienced with safety car equipment. Mr. Creelman related how on two or three occasions a motorman had complained that he could get no air on one stop, but that it worked all right before and after that particular stop. At first he thought it was due to the motorman throwing his valve into the wrong position, but it was later found that it is possible for the double-check valve to get gummed up or corroded and stick, so that the operator would get no air momentarily. He pointed out that it pays to take this valve off and clean it periodically; in fact, he was inclined to think that the double-check valve might be done away with altogether. Another trouble mentioned was that of receiving an emergency application of the air when only the ordinary application was wanted, one of the delegates stating that this had happened on several different cars. Mr. Goodenough had had the same trouble and had found it to be the result of scale in the pipe, or lead from the fittings, etc., a thing which is very likely to happen when cars are new, resulting in clogging up the triple valve.

It had been suggested that it would be very valuable to compile some comparative cost data on car maintenance. Mr. See presented a tentative suggestion as to the items to be covered in this tabulation and it was decided to utilize a portion of this suggested form and apply it for the present only to safety cars. This work will be done between now and the next meeting, at which time members were requested to bring in additional suggestions as to what information it is desirable to have tabulated. The data that will be compiled on this first study will be the cost as divided between repair and inspection, for the following: Total cost per car-mile; total cost per car operated; man-hours per 1,000 car-miles; man-hours per car operated; men per 1,000 car-miles; men per car operated; cost of car cleaning per 1,000 car-miles; man-hours per car cleaned; lubrication per car cleaned; lubrication cost per 1,000 car-miles; brakeshoe cost per 1,000 car-miles; pull-ins per 1,000 car-miles; pull-ins per cent of cars operated.

Mr. Shepard Will Lecture on Trunk Line Electrification

F. H. SHEPARD, director of heavy traction, Westinghouse Electric & Manufacturing Company, will give an illustrated lecture on "Electrification of Trunk Line Railways," at the Brooklyn Academy of Music under the auspices of the Brooklyn Institute of Arts and Sciences on Wednesday evening, Nov. 30, 1921. It will be Mr. Shepard's purpose to present a comprehensive but general picture of the present status of heavy electric traction in a popular and interesting way, and also to outline its possibilities and limitations.

Committee on Pipe Flanges and Fittings Starts Work

THE sectional committee of the American Engineering Standards Committee appointed to standardize pipe flanges and fittings held its first meeting Friday, Nov. 18, in the rooms of the American Society of Mechanical Engineers, New York City. Prof. Collins P. Bliss of New York University was elected chairman and A. A. Ainsworth of the committee of manufacturers on standardization of fittings and valves was chosen secretary.

The sponsors of the work being undertaken by this committee are the American Society of Mechanical Engineers, the Committee of Manufacturers on Standardization of Fittings and Valves and the Heating and Piping Contractors' National Association. In addition to these three societies twelve other associations, among which is the American Electric Railway Engineering Association, have representatives on the committee.

It was decided to divide the work to be undertaken into three divisions. The first includes the revision and extension of the present so-called "American" or "U. S." standards for pipe flanges and flanged fittings for working pressures of 50, 125 and 250 lb. The second includes the revision and extension of standards for pipe flanges and flanged fittings for working pressures greater than 250 lb. to the square inch, and the third comprises the work of standardization of the dimensions of malleable, cast iron, steel and non-ferrous screwed fittings. Sub-committees were appointed on these three subjects. Due to work already accomplished by committees of the three sponsor bodies the work of the third division on standardization of screwed fittings is well advanced and it is thought that this subject can be cleaned up shortly. A large amount of work is necessary in connection with subjects 1 and 2, and in order to avoid duplicating work in the collecting and assembling of various information these two committees will work together as a joint committee for the present.

American Association News

American Association Committees Appointed

PRESIDENT TODD has announced the following committees of the American Association for the association year 1921-1922. The committees as named below are practically complete but are not necessarily final. All those named have been invited to serve, and most of them have accepted, and there will possibly be some additions to some of the committees.

The committee work is getting started with an impetus this year, and augurs well for the year's work. The committees are being appointed early, as noted, there is a good geographical representation and everything points to a successful year's work for the various committees.

This list of committees constitutes all those regular committees provided by the constitution and those special committees authorized by the executive committee, except the one on arrangements for the mid-year dinner, names of which were given in last week's issue.

COMMITTEE ON FINANCE

J. H. Pardee, chairman, J. G. White Management Corporation, New York.

J. G. Barry, General Electric Company, Schenectady, N. Y.

R. P. Stevens, Pennsylvania-Ohio Electric Company, New York, N. Y.

COMMITTEE ON POLICY

Britton I. Budd, chairman, Metropolitan West Side Elevated Railway, Chicago, Ill.

Henry G. Bradlee, Stone & Webster, Inc., Boston, Mass.

H. E. Chubbuck, Illinois Traction Company, Peoria, Ill.

Thomas N. McCarter, Public Service Railway, Newark, N. J.

Paul Shoup, Pacific Electric Railway, San Francisco, Cal.

Guy E. Tripp, Westinghouse Electric & Manufacturing Company, New York, N. Y.

J. R. Lovejoy, General Electric Company, Schenectady, N. Y.

COMMITTEE ON SUBJECTS AND MEETINGS

C. D. Emmons, chairman, United Railways & Electric Company, Baltimore, Md.

C. S. Kimball, Washington Railway & Electric Company, Washington, D. C.

J. D. Mortimer, New York, N. Y.

L. H. Palmer, United Railways & Electric Company, Baltimore, Md.

C. G. Rice, Pittsburgh Railways, Pittsburgh, Pa.

F. E. Webster, Massachusetts Northeastern Street Railway, Haverhill, Mass.

H. V. Bozell, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

Harlow C. Clark, Public Service Corporation of New Jersey, Newark, N. J.

H. F. Dicke, Utah Light & Traction Company, Salt Lake City, Utah.

Charles R. Ellicott, Westinghouse Air Brake Company, New York, N. Y.

Harry Reid, Interstate Public Service Company, Inc., Indianapolis, Ind.

COMMITTEE ON PUBLICITY

J. N. Shannahan, chairman, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

P. S. Arkwright, Georgia Railway & Power Company Atlanta, Ga.

Barron G. Collier, Barron G. Collier, Inc., New York, N. Y.

Walter A. Draper, Cincinnati Traction Company, Cincinnati, Ohio.

P. H. Gadsden, United Gas Improvement Company, Philadelphia, Pa.

L. E. Gould, Economy Electric Devices Company, Chicago, Ill.

W. F. Ham, Washington Railway & Electric Company, Washington, D. C.

W. S. Huff, Third Avenue Railway, New York, N. Y.

H. D. Shute, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

L. S. Storrs, The Connecticut Company, New Haven, Conn.

Committee on National Relations

Charles L. Henry, chairman, Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.

W. R. Alberger, San Francisco-Oakland Terminal Railways, San Francisco, Cal.

Henry G. Bradlee, Stone & Webster, Inc., Boston, Mass.

Arthur W. Brady, Union Traction Company of Indiana, Anderson, Ind.

C. D. Cass, Waterloo, Cedar Falls & Northern Railway, Waterloo, Ia.

B. C. Cobb, Hodenpyl, Hardy & Company, Inc., New York, N. Y.

Samuel M. Curwen, The J. G. Brill Company, Philadelphia, Pa.

John J. Stanley, Cleveland Railway, Cleveland, Ohio.

L. S. Storrs, The Connecticut Company, New Haven, Conn.

Committee on Publications

L. S. Storrs, chairman, The Connecticut Company, New Haven, Conn.

Harlow C. Clark, Public Service Corporation of New Jersey, Newark, N. J.

E. C. Faber, The Aurora, Elgin & Chicago Railroad, Aurora, Ill.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

C. E. Morgan, Brooklyn City Railroad, Brooklyn, N. Y.

Charles C. Pierce, General Electric Company, Boston, Mass.

A. M. Robinson, The J. G. Brill Company, Philadelphia, Pa.

Martin Schreiber, Public Service Railway, Camden, N. J.

Committee on Company and Associate Members

F. R. Coates, chairman, Community Traction Company, Toledo, Ohio.

W. R. Alberger, San Francisco-Oakland Terminal Railways, Oakland, Cal.

F. G. Buffe, Kansas City Railways, Kansas City, Mo.

L. E. Gould, Economy Electric Devices Company, Chicago, Ill.

J. H. Hanna, Capital Traction Company, Washington, D. C.

P. N. Jones, Pittsburgh Railways, Pittsburgh, Pa.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Henry H. Norris, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

W. S. Rodger, Detroit United Railway, Detroit, Mich.

E. M. Walker, Terre Haute, Indianapolis & Eastern Traction Company, Terre Haute, Ind.

E. P. Waller, General Electric Company, Schenectady, N. Y.

Rolla Wells, United Railways of St. Louis, St. Louis, Mo.

E. F. Wickwire, Ohio Brass Company, Mansfield, Ohio.

Committee on Company Section and Individual Membership

Martin Schreiber, chairman, Public Service Railway, Camden, N. J.

P. S. Arkwright, Georgia Railway & Power Company, Atlanta, Ga.

J. P. Barnes, Louisville Railway, Louisville, Ky.

F. G. Buffe, Kansas City Railways, Kansas City, Mo.

Walter A. Draper, Cincinnati Traction Company, Cincinnati, Ohio.

J. H. Mallon, Metropolitan West Side Elevated Railway, Chicago, Ill.

Charles C. Pierce, General Electric Company, Boston, Mass.

J. N. Shannahan, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

Committee on Co-operation with Manufacturers

E. F. Wickwire, chairman, Ohio Brass Company, Mansfield, Ohio.

E. C. Faber, Aurora, Elgin & Chicago Railway, Aurora, Ill.

Frank Gale, General Electric Company, Schenectady, N. Y.

P. N. Jones, Pittsburgh Railways, Pittsburgh, Pa.

J. C. McQuiston, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Committee on Co-operation with State and Sectional Associations

W. H. Sawyer, chairman, East St. Louis & Suburban Railway, East St. Louis, Ill.

C. P. Billings, Wheeling Traction Company, Wheeling, W. Va.

Luke C. Bradley, Stone & Webster, Inc., Houston, Tex.

F. D. Burpee, Ottawa Electric Railway, Ottawa, Canada.

T. B. Donnelly, West Penn Railways, Connellsville, Pa.

W. V. Hill, California Electric Railway Association, San Francisco, Cal.

Louis D. Pellissier, Holyoke Street Railway, Holyoke, Mass.

R. V. Prather, Illinois Committee on Public Utilities Information, Chicago, Ill.

J. P. Pulliam, Wisconsin Public Service Company, Milwaukee, Wis.

Harry Reid, Interstate Public Service Company, Indianapolis, Ind.

John Shartel, Oklahoma Railway, Oklahoma City, Okla.

B. E. Tilton, New York State Railways, Syracuse, N. Y.

H. E. Weeks, Tri-City Railway & Light Company, Davenport, Ia.

Committee on Education

Edward Dana, chairman, Boston Elevated Railway, Boston, Mass.

Edward J. Blair, Metropolitan West Side Elevated Railway, Chicago, Ill.

H. C. Donecker, Public Service Railway, Newark, N. J.

Thomas Finigan, American Brake Shoe & Foundry Company, Chicago, Ill.

M. B. Lambert, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

F. R. Phillips, Pittsburgh Railways, Pittsburgh, Pa.

A. E. Potter, United Electric Railways, Providence, R. I.

Thomas H. Schoepf, Cincinnati Traction Company, Cincinnati, Ohio.

William Von Phul, Market Street Railway, San Francisco, Cal.

Edward A. West, Denver Tramway Company, Denver, Col.

Thomas S. Wheelwright, Virginia Railway & Power Company, Richmond, Va.

Committee on Electrolysis

W. J. Harvie, chairman, Auburn & Syracuse Electric Railroad, Auburn, N. Y.

L. P. Crecelius, Crecelius & Phillips, engineers, Cleveland, Ohio.

M. B. Rosevear, Public Service Railway, Newark, N. J.

W. H. Sawyer, East St. Louis & Suburban Railway, East St. Louis, Ill.

G. W. Van Derzee, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

Committee on Mail Pay

L. H. Palmer, chairman, United Railways & Electric Company, Baltimore, Md.

Gordon Campbell, York Railways, York, Pa.

G. K. Jeffries, Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

R. A. Leussler, Omaha & Council Bluffs Street Railway, Omaha, Neb.

Samuel Riddle, Louisville Railway, Louisville, Ky.

W. S. Rodger, Detroit United Railway, Detroit, Mich.

C. L. S. Tingley, American Railway, Philadelphia, Pa.

H. B. Weatherwax, United Traction Company, Albany, N. Y.

Committee on Special Taxes

C. D. Emmons, chairman, United Railways & Electric Company, Baltimore, Md.

Edwin Gruhl, North American Company, New York, N. Y.

W. F. Ham, Washington Railway & Electric Company, Washington, D. C.

A. M. Robertson, Twin City Rapid Transit Company, Minneapolis, Minn.

Henry B. Sawyer, Stone & Webster, Inc., Boston, Mass.

Committee on Trackless Transportation

H. B. Flowers, chairman, United Railways & Electric Company of Baltimore, Baltimore, Md.

R. E. Danforth, Public Service Railway, Newark, N. J.

W. J. Flickinger, The Connecticut Company, New Haven, Conn.

Samuel W. Greenland, Indiana Service Corporation, Fort Wayne, Ind.

C. W. Kellogg, Stone & Webster, Inc., Boston, Mass.

R. V. Miller, Sapulpa Electric Interurban Railway, Sapulpa, Okla.

H. A. Mullett, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

D. W. Pontius, Pacific Electric Railway, Los Angeles, Cal.

H. B. Potter, Boston Elevated Railway, Boston, Mass.

J. N. Shannahan, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va.

Committee on Valuation

J. P. Barnes, chairman, Louisville Railway, Louisville, Ky.

Arthur W. Brady, Union Traction Company of Indiana, Anderson, Ind.

Robert M. Feustel, Indiana Service Corporation, Fort Wayne, Ind.

Williston Fish, Chicago Surface Lines, Chicago, Ill.

W. H. Maltbie, attorney-at-law, Baltimore, Md.

Albert S. Richey, Worcester, Mass.

William H. Sawyer, East St. Louis & Suburban Railway, East St. Louis, Ill.

Paul Shoup, Pacific Electric Railway, San Francisco, Cal.

Engineering Association Committees Appointed

PRESIDENT KIMBALL of the Engineering Association announces the following committee personnel for the association year 1921-1922, which represents the committees in so far as they have been named, to date.

The committee on buildings and structures will be completed shortly and its personnel announced.

Committee on Equipment

R. H. Dalgleish, chairman, Capitol Traction Company, Washington, D. C.

Daniel Durie, sponsor, West Penn Railways, Pittsburgh, Pa.

W. S. Adams, The J. G. Brill Company, Philadelphia, Pa.

H. A. Benedict, Public Service Railway, Newark. N. J.

A. H. Daus, Metropolitan West Side Elevated Railway, Chicago, Ill.

L. J. Davis, Brooklyn City Railroad, Brooklyn, N. Y.

J. L. Gould, Wilmington & Philadelphia Traction Company, Wilmington, Del.

J. M. Hipple, Westinghouse Electric & Manufacturing Company, East Pittsburg, Pa.

J. C. C. Holding, Midvale Steel & Ordnance Company, Philadelphia, Pa.

Robert Long, Altoona & Logan Valley Railway, Altoona, Pa.

A. J. Miller, representative Association of Manufacturers of Chilled Car Wheels, Chicago, Ill.

M. O'Brien, United Railways of St. Louis, St. Louis, Mo.

C. M. Pittenger, Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool. Ohio.

E. D. Priest, General Electric Company, Schenectady, N. Y.

C. F. Rys, Carnegie Steel Company, Pittsburgh, Pa.

C. W. Squier, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

Committee on Power Distribution

M. B. Rosevear, chairman, Public Service Railway, Newark, N. J.

Charles R. Harte, sponsor, The Connecticut Company, New Haven, Conn.

J. R. B. Armstrong, Brooklyn City Railroad, Brooklyn, N. Y.

C. C. Beck, Ohio Brass Company, Mansfield, Ohio.

H. S. Burd, National Conduit & Cable Company, New York, N. Y.

R. W. Eaton, Public Service Engineer, Providence, R. I.

Prof. D. D. Ewing, Purdue University, Lafayette, Ind.

L. F. Griffith, Little Rock Railway & Light Company, Little Rock, Ark.

H. D. Hawks, Anaconda Copper Mining Company, Chicago, Ill.

G. C. Hecker, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Adrian Hughes, Jr., United Railways & Electric Company, Baltimore, Md.

Charles H. Jones, Metropolitan West Side Elevated Railway, Chicago, Ill.

F. McVittie, New York State Railways, Rochester, N. Y.

G. Hall Roosevelt, General Electric Company, Schenectady, N. Y.

F. J. White, Okonite Company, Passaic, N. J.

Committee on Power Generation

E. H. Scofield, chairman, Minneapolis Street Railway, Minneapolis, Minn.

A. B. Stitzer, sponsor, Republic Engineers, Inc., New York, N. Y.

L. D. Bale, Cleveland Railway, Cleveland, Ohio.

Walter E. Bryan, United Railways, St. Louis, Mo.

H. E. Davis, New York State Railways, Utica, N. Y.

W. S. Finlay, American Waterworks & Electric Company, New York, N. Y.

Frank G. Frost, New Orleans Railway & Light Company, New Orleans, La.

C. A. Greenidge, J. G. White Management Corporation, New York, N. Y.

F. C. Hanker, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

H. A. Kidder, Interborough Rapid Transit Company, New York, N. Y.

G. Hall Roosevelt, General Electric Company, Schenectady, N. Y.

George W. Saatnoff, Henry L. Doherty & Company, New York, N. Y.

A. E. Stierly, Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va.

G. W. Welsh, East St. Louis Railway, East St. Louis, Ill.

Committee on Purchases and Stores

W. H. Staub, chairman, United Railways & Electric Company, Baltimore, Md.

L. C. Datz, sponsor, American Cities Company, Birmingham, Ala.

William C. Bell, Virginia Railway & Power Company, Richmond, Va.

C. A. Harris, Pittsburgh Railways, Pittsburgh, Pa.

J. R. McGivney, New Orleans Railway & Light Company, New Orleans, La.

W. D. Pierie, Philadelphia Rapid Transit Company, Philadelphia, Pa.

W. S. Simonds, Denver Tramways Company, Denver, Col.

Committee on Standards

Martin Schreiber, chairman, Public Service Railway, Camden, N. J.

H. L. Andrews, General Electric Company, Schenectady, N. Y.

Edward J. Blair, Metropolitan West Side Elevated Railroad, Chicago, Ill.

C. H. Clark, Cleveland Railway, Cleveland, Ohio.

L. P. Crecelius, Crecelius & Phillips, Cleveland, Ohio.

E. R. Hill, Gibbs & Hill, New York, N. Y.

C. G. Keen, American Railways, Philadelphia, Pa.

John Lindall, Boston Elevated Railway, Boston, Mass.

George P. Lyman, William Wharton, Jr., & Company, New York, N. Y.

H. H. Norris, ELECTRIC RAILWAY JOURNAL, New York, N. Y.

N. W. Storer, Westinghouse Electric & Manufacturing Company, East Pittsburh, Pa.

N. B. Trist, Carnegie Steel Company, Pittsburgh, Pa.

Committee on Unification of Car Design

H. H. Adams, chairman, Chicago Surface Lines, Chicago, Ill.

H. A. Johnson, sponsor, Metropolitan West Side Elevated Railway, Chicago, Ill.

H. A. Benedict, Public Service Railway, Newark, N. J.

J. A. Brooks, J. G. Brill Company, Philadelphia, Pa.

J. W. Hulme, International Railway, Buffalo, N. Y.

G. L. Kippenberger, St. Louis Car Company, St. Louis, Mo.

John Lindall, Boston Elevated Railway, Boston, Mass.

Victor R. Willoughby, American Car & Foundry Company, New York, N. Y.

Committee on Way Matters

W. F. Graves, chairman, Montreal Tramways Company, Montreal, Quebec, Canada.

R. C. Cram, sponsor, Brooklyn Rapid Transit Company, Brooklyn, N. Y.

C. A. Alden, Bethlehem Steel Company, Steelton, Pa.

V. Angerer, William Wharton, Jr., & Company, Inc., Easton, Pa.

S. Clay Baker, East St. Louis Railway, East St. Louis, Ill.

W. R. Dunham, Jr., Engel and Hevenor, Engineers, New York, N. Y.

E. B. Entwisle, Lorain Steel Company, Chicago, Ill.

H. Fort Flowers, Differential Steel Company, Findlay, Ohio.

C. F. Gailor, consulting engineer, New York, N. Y.

Howard H. George, Public Service Railway, Newark, N. J.

J. H. Haylow, Memphis Street Railways, Memphis, Tenn.

Eugene P. Roundey, New York State Railways, Utica, N. Y.

E. M. T. Ryder, Third Avenue Railway, New York, N. Y.

Francis Tingley, Washington Railway & Electric Company, Washington, D. C.

W. W. Wysor, United Railways & Electric Company, Baltimore, Md.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City Operation Ends Argument!

Meridian Light & Railway Retains Ownership Under Municipal Board For Three Year Experiment

City operation of the Meridian Light & Railway Company, Meridian, Miss., is the basis of the agreement reached between the municipal authorities and the company after months of negotiations. The contract will be subject to ratification at the polls.

Under the agreement, the City Council is granted the right to operate the entire plant of the company, which furnishes the city with gas, power and railway service, through a board of directors. This board is to be composed of three members appointed by the Council, three appointed by the company, and the Mayor, who shall be the chairman. The board has the power to fix rates. The balance of power in the board rests with the city.

The city under the proposed contract does not guarantee to the company either earnings or interest returns, and no fixed capitalization is agreed upon as a basis for rate making. On the other hand, the company agrees to pay the city in full the total amount already expended by the city in establishing a municipal light and power plant. The city agrees not to build any gas, light or street railway plant during the term of the contract.

The contract is to run for three years, and is subject to renewal thereafter. It is an experiment only, so that the city may, by actual operation, determine the cost and expense of service furnished. Thereafter a permanent agreement is to be made.

This understanding, which must be approved by the Cities Service Company, holding organization for the Meridian Light & Railway Company, concludes the long disagreement between the city and company. For several years the city has been preparing to construct a plant of its own, and recently the citizens voted $600,000 for the purpose. Another election will now be necessary to approve the new contract.

The company has left to the city the responsibility to operate the plant for the best interests of the citizens. It is generally agreed that both company and city displayed good faith in the intentions of the other in coming to an understanding, and making possible the amicable settlement. Two representatives of the company on the board are to be chosen by the committee of bondholders and the other is to be selected by the City Service Company.

Wages Cut 10 Per Cent at Dallas

The Texas Electric Railway, Dallas, Tex., announces that wage cuts of approximately 10 per cent will be put into effect over its entire system on Dec. 1. Shrinkage of a $500,000 in passenger receipts since Jan. 1, 1921 is assigned as the reason for the reduction.

The reduction will affect all officials of the road, the personnel of the general offices, motormen, conductors, passenger and freight agents, freight handlers, employees of the main shops at Monroe and the branch shops at Sherman and Waco. The employees on the local lines in Sherman, Denison, Waco, Corsicana, Waxahachie and McKinney will also be affected.

The Texas Electric Railway employs approximately 954 men, of which number 242 are motormen and conductors. Approximately 300 work in the shops, and the others in the various offices of the company, or as its traveling agents. The payroll for the entire system last month was $77,690.

Officials of the company declared that they faced the alternative of reducing the force or cutting the pay, and the wage cut was decided on because laying off any number of men would aggravate the unemployment situation in Texas.

Albany Strike Declared Off

The strike of the 714 trainmen employed on the lines of the United Traction Company, Albany, N. Y., which has been in progress since Jan. 29, was called off on Nov. 22 by a vote by ballot at a meeting of the union followihg the calling off of the strike in Troy by the trolleymen's union there on Nov. 21.

The vote to call off the strike on the Albany division came after a two-hour debate at which many members of the union voiced opposition. The vote stood at the close of the balloting ninety-four in favor of calling off the strike and sixty-five for continuing it. When the result was announced a resolution was passed at the suggestion of Joseph S. Droogan, president of the Albany union, making the vote unanimous.

The immediate effect of calling off the strike is the sanctioning of the riding on the cars of the general public, many of whom have remained off the cars since the starting of the strike. Members of the union declared that there was an understanding that a large percentage of the present conductors and motormen would be dismissed and that old men would be placed on jobs as fast as possible.

Political and business leaders in Albany and Troy are said to have been behind the movement to bring about peace. Over half of the old men are engaged in other occupations and the union, except in name, is virtually broken. The United Traction Company under its system of one-man cars will not be in need of as many men as before, and this coupled with the fact that some of the present employees will be kept on their jobs, is expected to result in some of the former employees being prevented for several months from being returned to their old positions. The men will return to work at the rate against which they struck, 45 cents an hour. The majority of the men seemed elated over the fact that the strike had been called off.

Des Moines Campaign Closing

Restraining Order Sought from Court on Eve of Putting Franchise to Public Vote.

Opponents of the new franchise proposed for the Des Moines (Iowa) City Railway have sought to prevent by injunction proceedings the franchise election which had been set for Nov. 28. Grant Van Horn, a member of the North Des Moines Improvement League, on Nov. 18 filed a petition in the District Court asking a temporary order restraining the election.

Mr. Van Horn had his petition prepared by a group of attorneys inimical to the franchise, among whom was H. W. Byers, former corporation counsel, who has been waging an emphatic fight against the Des Moines City Railway.

Claim is made by Mr. Van Horn as the principal reason for enjoining the election that the City Council did not comply with the statutes by having the franchise published four consecutive weeks before it was passed by the Council. Mr. Van Horn also contends that the Des Moines City Railway is insolvent and that for this reason the city does not have proper guarantee that the company will bear the expense of the special election. Attention is also called to the fact that no bond has been filed by the company. Another claim is that in view of the company's insolvency the city has no guarantee that the franchise terms will be carried out by the company.

The business and civic interests of the city have, however, been roused and it seems that there is a determination to put the franchise across. A committee of fifty representative citizens and women has now been named and the conduct of the campaign will be guided by an executive committee of which Alex. Fitzhugh, former president of the Chamber of Commerce, is chairman. One of his two associates is Miss Luella Clark, head of the Department of Women's Affairs of the Chamber.

Women will play an important part in the campaign. Miss Clark, who is heading up the women's campaign, is authority for the statement that they have pledges from 5,000 business women and 6,000 club women to vote for the franchise.

Straw votes taken by one of the daily newspapers indicate that the franchise will carry.

Bus operation has gradually been curtailed since the railway service was restored until there are now only twenty-five or thirty buses running as against a maximum of 125. Many lines have been abandoned entirely by the bus operators.

The hearing on the injunction case was not completed on Nov. 23. Mr. Byers took up most of Nov. 23 with his argument and Mr. Gamble, the railway attorney, had barely started his argument when the court adjourned until Nov. 26.

Mr. Shearn Stresses Interborough Dividend Policy

Examination by New York Commission Is Devoted Principally to the Affairs of Interborough Company—Auditor Gaynor and President Hedley Chief Witnesses

The hearing into the affairs of the New York transportation companies, begun Nov. 15, has been continued during this past week. The plan followed has been first to establish certain data, then examine the officials of the different companies on these data. During the early part of the week the chief point discussed was the inclusion in the Interborough balance sheet at cost of the stock of unprofitable trolley lines in Queens Borough, as well as the inclusion of advances to those and other unprofitable controlled lines. Stress was also laid on the large dividends paid up to 1919 by the Interborough Company and its failure to amortize certain organization expenses.

ATTORNEY SHEARN of the commission declared at one point in the examination that this purpose in asking certain questions relating to past financial acts was not to place obloquy upon any person living or dead, but to get facts so as to bring about a remedy. In addition to the summary printed below of the hearings, some of the charts and tables presented at the hearing will be found on page 941 of this issue.

At a hearing on Thursday morning, Nov. 17, the first testimony presented was in regard to the abandonment of routes. It was shown that the total amount abandoned was 189 miles, of which 108 miles were on the Brooklyn surface lines, 9 miles on the Queens surface lines, 11 miles on the Bronx surface lines, and 60 miles on the Manhattan surface lines. This figure is larger than the miles of track abandoned to the extent of the length of track formerly used jointly by two or more companies and abandoned by one but still used by another or others.

INTERBOROUGH BALANCE SHEET CONSIDERED

Frederick W. Lindars then testified as to the outstanding capital stocks and bonds of the different companies in New York, which aggregated $1,165,849,431. Of this amount $850,228,126 is in the hands of the public. He also testified as to what portion of the capitalization of each company is in the hands of the public and what owned by another company, the dividend records, the interest payment dates, and the approximate market value of the securities as shown by recent quotations, when they were available. He said among other things that the Interborough Rapid Transit Company showed a deficit for 1917 after dividends of $139,607; for 1918, of $1,462,241, and in 1919 of $5,560,340. The differences between the deficits thus shown and the amount paid out in dividends, Mr. Shearn, counsel for the commission then intimated, must have been paid out of surplus, if there was a surplus, or out of capital if there was not any surplus. Mr. Quackenbush declared that the surplus from previous years supplied these dividend payments.

E. F. J. Gaynor, auditor Interborough Rapid Transit Company, who then went on the stand, was asked about the balance sheet of the Interborough Rapid Transit Company, particularly the account of miscellaneous investments, consisting of the stock of associated companies which totalized $19,378,244. This account includes stock of the New York & Queens County Railway with a par value of $3,204,800, which cost the company $2,895,160, and was carried on the books as that amount. Mr. Shearn pointed out that the last annual report of the New York & Queens County Company to the commission showed a corporate deficit of $4,677,949, and a net loss in operation for the year of $635,855, and he asked Mr. Gaynor whether there was justification for carrying in the Interborough balance sheet that stock as an asset when the company had been showing year after year a net loss in operation. Mr. Shearn also called attention to the inclusion in the assets of the advances made to this company by the Interborough amounting to over three million dollars, and also accounts receivable from other railway companies, including the New York Railways.

The question then arose as to the amount at which these securities should be carried in the Interborough balance sheet, Mr. Gaynor declaring that the rules of the commission require that they should be carried at cost. After some discussion Mr. Shearn asked the witness whether the stock of a company is carried in a balance sheet as an asset and the stock is worthless that report gives a true statement of the condition of the company. Mr. Gaynor claimed that this situation did not apply in this case as he did not know the value of the stocks in question, but Mr. Shearn said the question was a hypothetical one, and the commission said it would ask the witness to reply to it at the next session, or at that on Nov. 21. Before the close of the session Mr. Quackenbush, attorney for the Interborough, explained that the witness and the company had no desire to evade any questions. He said that he himself was ready to answer "yes" to the question, on behalf of the company, but that he believed the investigation by the commission's experts would show that the value of the Queens County Company was not far from the book value.

SUBWAY EARNED $67,000,000

It was also brought out in Mr. Gaynor's testimony that unpaid taxes of the Interborough Company at the end of the fiscal year, June 30, 1921, amounted to $2,165,162. The reason they had not been paid was that the company last year lost four and a half million dollars on top of a loss of about the same amount the year before, and it was extremely short of cash.

At the hearing on Monday, Nov. 21, Mr. Lindars, accountant for the commission, was again the first witness and testified that the accounts of the Interborough Rapid Transit Company showed that its total dividends during the eighteen years of its life amounted to $65,625,000, and that its entire net income during this time, after surplus adjustments, was $67,867,878.48, leaving as a surplus $2,242,878.48. He said that this amount did not include any deductions for worthless stock, many uncollectible debts, and open accounts and bills receivable. The dividends paid amounted to 187½ per cent on the capital stock of the company, and to 306 per cent of the actual cash capital of the company. The witness also said that during these eighteen years the company had paid under its lease of the Manhattan Railway Company as dividends to the stockholders of that company $75,336,000, which, Mr. Shearn declared, was within $4,000,000 of the entire cost of the original elevated railway, according to the reports which he had from the valuation department of the commission.

Mr. Latey, engineer of equipment and operation of the commission, then testified as to changes in the Interborough train schedule between 1916 and 1921, showing on some routes fewer trains run and on other routes more trains. Testimony was also presented as to the cars run by other companies in New York during the rush hour and mid-day.

AMORTIZATION DEPRECIATED ASSETS RECOMMENDED

Mr. Gaynor was then recalled and in reply to the question, "If your account on its asset side includes among the assets stocks to the extent of millions of dollars which are in fact worthless, then so far as that item is concerned, the account does not truly set forth the condition of the company," answered "Yes." Mr. Shearn then asked whether, if the investments were put down at cost there ought not to be set up on the opposite side of the account in a reserve an amount to represent what was written off, as well as to cover advances which had been found uncollectible. At the same time he declared that the rules for uniform accounting provide for optional reserves as well as for required reserves and that in an amount of $29,000,000 set up as coming from accruals on contract No. 3, the company did not let that stand on the assets without some reserve against it on the liability side. The witness replied that in that case the change was ordered by the commission. Mr. Shearn then quoted the practice of the Third Avenue Railway, which had established a reserve account to carry losses sustained on stocks of controlled companies and other items some of which had been proved worthless. Mr. Gaynor thought that had been done because of the reorganization of the company. Mr. Shearn then asked the witness in regard to whether reserves had been established for amortizing the cost to the company of acquiring the Rapid Transit Construction Company. He then brought out the fact that John G. McDonald, who held the original subway contract, had transferred three-quarters interest in this contract to the construction company. Then when the Interborough took over this contract it had issued for the stock of the construction company its own stock for $9,600,000 and had paid $2,400,000 in cash, or $12,000,000 in all for the construction company. In addition, it paid Mr. McDonald $2,500,000 for his quarter interest, and Mr. Belmont $1,500,000 for his services in procuring the contract and for certain property, making a total of $16,000,000. Mr. Gaynor, however, pointed out that in acquiring the construction company the Interborough had also acquired a company with $6,000,000 of cash paid in by the shareholders of the company, so that the cost of the subway lease was about $10,000,000. No part of this has been written off by the company.

A discussion then followed as to the extent to which these reserves, had they been established by the company, would have affected the surplus shown by the company during some of the years when dividends were paid, and Chairman McAneny suggested that it might be well to invite the directors of the company to testify on these points. Mr. McAneny said in part, in this connection:

> Mr. Gaynor can tell us about matters of record. He cannot tell us about matters of judgment where the company in its action has been represented by its own directors.
>
> The commission has no desire to rake over what is merely old, but until these matters have been rightly adjusted none of them are old. Moreover, a great deal has been produced that is distinctly new and important and tending to indicate that the inquiry should proceed further into the direction of responsibility.
>
> There are questions here already on the record that will intimately affect the matter of ultimate valuation; there are questions with relation to the strength or propriety of the position taken by the company in the immediate past in relation to its ability to furnish proper service; there are points that have developed here this afternoon that raise in my mind, and I am sure in the minds of my associates as well, serious questions as to the practical result of inter-company relationships of the sort that the plan of the commission seeks to eliminate.
>
> For all of these reasons it seems to be important that the attendance of the directors should be invited.

It is expected that some of the directors will be called next week.

The greater part of the hearing on Tuesday, Nov. 22, was given up to the examination of the operating expenses of the Interborough Rapid Transit Company for June, 1921. Mr. Gaynor, the auditor, explained how these accounts are audited and how the payroll is made up and checked, and he followed through a number of items to illustrate the manner followed. In the discussion on the power accounts it developed that the cost of a. c. generation at the switchboard at the Fifty-ninth Street power station for the month of June 30, 1921, was 0.8289 cents per kilowatt-hour. The cost of coal was 0.6247 cents. The question of the disposition of the bonuses voted to different people several years ago for their services in negotiating for the subway contracts was inquired into, and Mr. Gaynor said that these were now being carried in a suspense account. In answer to another question he said the cost of the recent publicity work is considered operating expense.

The morning of Wednesday, Nov. 23, was devoted to the examination of Mr. Hedley, who said that he had been elected president in October, 1919. Prior to that time, while vice-president and general manager, he had given special attention to operation, construction and maintenance. He has been in charge of operation with the Interborough Company since the subway was opened, under different titles.

When asked in regard to the last balance sheet of the company and more particularly the inclusion in it at cost of the New York & Queens County stock as well as debts of some of the controlled companies said to be uncollectible, Mr. Hedley said he would not admit the stocks were worthless or all debts uncollectible. All reports of the company to the commission had been made up, he understood, in the manner required by law. He did not believe that any investor had been misled by these reports. He believed that in balance sheets, assets which were known to be worthless should be written off. He welcomed the fact that a tribunal was planning to take up and straighten out the transportation situation in New York, and he said that the commission would have his full co-operation.

When asked why the Interborough company continued to supply power to the Queensborough lines when it was not being paid for such service, he said that if this supply was not continued the cars would stop. This would be a serious matter for both the company and residents of Queens Borough. The board of directors hoped that the situation with regard to the Queens lines would be improved as a result of the present hearing. He justified the charges to operating expenses for publicity because he thought the customers of a railway company were entitled to know about its condition. The information put out to a large extent was not propaganda for an 8-cent fare, that not having been mentioned for a long time.

Mr. Hedley said he had about come to the conclusion that if he was going to operate cars in New York, 5 cents was all he would get for some years. When asked if his personal judgment favored the payment by the company in dividends of a large proportion of its profits, he declared that, as events had turned out, it would have been better to have provided a substantial reserve in cash and in liquid investments. Nevertheless, if it had not been for the war, the Interborough could probably have kept up dividends. No dividend had been declared since he became president. If any dividends had been paid with borrowed money, as intimated, he disapproved of that course.

The Manhattan lease for a long time was profitable, but recently the Manhattan elevated lines had not earned their guaranteed dividends. In Mr. Hedley's opinion, this was due in a large part to the increase in prices of labor and material brought about by the war. The recent reduction in wages on the subway and elevated would mean a saving to the company of about $2,600,000 a year. This reduction was made voluntarily by the men in spite of the fact that they had a contract with the company to run until Dec. 31, 1921. Mr. Hedley said he had told the men that if there was no reduction in wages the company would probably have to go into the hands of a receiver. The men did not want a receiver, so they accepted the reduction.

The commission solicited Mr. Hedley's personal opinion on its proposed plan for readjustment of the traction situation in this city, with a 5-cent fare and three operating companies. He criticised the proposed board as dangerous because it might be controlled by politicians. He said:

> The owners of the new securities which the commission proposes to issue have the privilege of electing three directors; the Mayor names three. The six name the seventh, providing they agree. If they don't agree they come back to the commission and the commission names the seventh.
>
> Now, you have the opportunity of having on that board to control the transportation system four politicians. I think that should be positively avoided. If you introduce politics into the actual operation of these rapid transit lines in New York, it is my opinion that you will immediately step down the factor of safety and efficiency; and everything should be done to positively prevent politics from representing the majority on that board.

WANTS ALL REPRESENTED

> My remarks apply to all the boards that will be created if this plan of the commission is carried out. There should be no board in my judgment where the majority of that board could possibly be made up of politicians or people that were in politics, people appointed by a political party.
>
> I tell you in all candidness that if you ever bring about any condition in this city where any man appointed to public office who more or less is a politician, has anything to say about the character of the men that go in the subway and the things to do in order to make it safe and efficient, you are going to do a very serious thing to the public of New York. The manager has got to be absolutely, in my judgment, unrestricted.
>
> I believe that the board of directors in the management and development of these Rapid Transit properties should have representatives of the city representing the public, representatives of the owners, and also representatives of the employees. Then you have no chance of having any secrets. You have got to lay all your cards on the table, the right side up, and that is my way of doing business.

At the end of the hearing the commission thanked Mr. Hedley for his testimony and promises of co-operation, and he said that he would be ready to come again at any time "during the life of the commission."

When the hearings are resumed next Monday morning, the commission will take up the case of the New York Railways, now in receiver's hands.

Court Asked to Modify Master's Finding

Exceptions and motions to modify and confirm have been made regarding the report of Master Commissioner Okey to the Court of Common Pleas in the action which the Columbus Railway, Power & Light Company, Columbus, Ohio, brought against the Clark interests, formerly affiliated with the utility as its managers. A number of instances are cited in the 250 page plea filed with the court, in which it is urged that the master's decree was not in accord with the evidence presented.

The attorney for the company has made as his first exception the omission by the master to print or refer in any way to the resolution of the present company or its predecessor that grants authority to proper officials to draw funds of the company "to meet the ordinary business transactions of the company." This is regarded as the basic feature of the court proceeding—the thing on which the complaint mostly rests.

In his report the master said that it was not possible to find from the evidence the amount of railway funds contributed by Mr. Stewart, the treasurer of the company, to the Ohio *Sun*. Further the master said that as it was not possible to make even a remote guess or estimate of the amount so spent, it was idle to indulge in censure.

The company contends that Mr. Stewart in the course of his examination expressed the unqualified opinion that the amount he thought was contributed toward defraying the indebtedness of the *Sun* was more than $100,000. As stated previously, this is only one of many instances in which the company feels the master's finding was not in accord with the evidence.

The finding of the master was reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 15, page 714.

Respite Granted in Detroit

Conference Planned Between City and D. U. R Looking Toward Agreement for Mutual Rights

The City Council of Detroit, Mich., has agreed to suspend the ouster ordinance temporarily to permit negotiations between the Detroit United Railway and the city. This action was taken upon receipt of word from Elliott G. Stevenson, attorney for the Detroit United Railway, that a decision had been reached at a meeting of the board of directors of the company to submit a plan for the approval of the city officials proposing mutual running rights over certain municipal railway and company lines.

The enforcement of the ordinance, which was passed at the Nov. 8 election, would oust the company from Fort Street and Woodward Avenue where franchises have expired.

In a statement by Mayor Couzens the fact was brought out that the Detroit United Railway had asked for permission to submit to the city a proposal concerning mutual running rights in place of its being required to remove the tracks from Fort Street and Woodward Avenue. The city consented to entertain a proposition if the same were approved by the company's directors. The negotiations, according to the Mayor, may take two or three weeks.

A mutual exchange of running rights would help to bring the day-to-day lines and the Woodward and Fort lines into service in connection with the existing municipal lines. Operation of the municipal cars will be over certain sections of the Detroit United Railway system only and vice versa. An exchange of transfers will probably result from the contemplated arrangements.

The problem of the company's interurban service will also be solved by the exchange of running rights. The Detroit United Railway interurban system is one of the most complete in the country, as it is strategically located in southern Michigan connecting up other cities with Detroit.

The city will probably not decide upon the monorail elevated line, for which a proposal was submitted by the Michigan Elevated Railway, until after the present controversy with the Detroit United Railway is settled.

Elgin Officials Disagree on City Policy

Elgin will not join Aurora, Yorkville and Carpentersville to force the third-rail lines of the Aurora, Elgin & Chicago Railroad to continue service, if Mayor Price is successful in his present plans.

Other city officials of Elgin do not agree with the Mayor, however, and a statement issued by the commissioners made it clear that the city will be represented at the hearing on Nov. 21, to investigate financial conditions of the railroad company.

The attitude of the commissioners that Elgin should be interested in the future of the company is more harmonious with that of the other cities which would be affected by a discontinuance of railway service in Elgin and Aurora and the interurban service between Yorkville and Aurora, Aurora and Elgin, and Elgin and Carpentersville. The corporation counsel of Aurora issued the statement that "it is not in my judgment the law that a public utility can separate its paying properties from its unpaying properties and operate the former and stop the latter."

Mayor Price's demand for a 5-cent fare is considered useless by the commissioners until the hearing called by Federal Judge Evan A. Evans has determined whether the traction company is making money under the present rates. If not, then a reduction to a 5-cent rate could not be expected, the commissioners said.

Wage Decision Awaited in East St. Louis

The board of arbitration hearing the wage scale controversy between the East St. Louis & Suburban Railway, East St. Louis, Ill., and its employees, members of the Amalgamated, has completed the taking of testimony, listened to final arguments, and is expected to hand down a decision in a few days.

President W. H. Sawyer, in summing up the company's side of the case, argued that the wages should be reduced from the 60 cents an hour scale to a graduated pay ranging from 40 to 49 cents an hour. He contended that the present cost of living, as compared with war-time conditions, justified this decrease and would permit the employees to live in about the same manner as formerly. William McMorrow, an international vice-president of the union, argued against a reduction.

Popular Vote in Pomeroy Upholds Railway Against Council

As the election returns are reported from different sections of the country, other instances are shown of electric railway issues supported by popular vote. Several of these were reported in recent issues of this paper. Another example was the case of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio.

In October, 119, this company secured from the municipal Council a franchise that was considered workable, which it was proposed should be accepted. A referendum petition, however, was filed, within the thirty-day limit against this franchise which made it ineffective. This was voted on at the election in November, 1920, and the franchise was sustained by a majority vote of four to one. Under the law the company had thirty days in which to make its acceptance, but before this was completed, the municipal Council passed an ordinance purporting to repeal the franchise upon which such an overwhelming vote had been cast.

Another referendum petition was circulated and filed. This was brought to the vote of the people at the election Nov. 8, 1921. This repealing ordinance was not sustained, the vote being two to one in favor of its rejection. It has thus taken two years to make effective the franchise of 1919, but the public indorsement for street railway service in this case is decisive.

To Beautify Grounds.—The officials of the Dallas (Tex.) Railway Company have reached an agreement with the city for the beautification of the land before the promenade of the State Fair Grounds. It is planned to level the grounds, put down sod and keep the grass trimmed and the plot beautified.

News Notes

Electric Encourages Church-Going.—The Trenton, Bristol & Philadelphia Street Railway, Philadelphia, Pa., has begun a campaign to have attendants at church use its cars as a means of traveling to and from the services.

Protests Made Against Track Removal. — The Oklahoma Corporation Commission will hold a hearing on the complaint of the residents living in the southeast part of the city of Tulsa against the tearing up of the Oklahoma Union Railway's tracks from Eleventh to Eighteenth Street.

Revenue from Chewers Spurned.—The city utilities committee of the City Council of Seattle, Wash., has rejected a proposal to enter into a contract with a private company to install gum-vending machines on all Seattle Municipal Street Railway cars. The company estimated the machines would add about $30,000 to the yearly revenues of the railway.

Plans for Citizens to Vote on Franchise.—Alderman Kinard at Ottawa, Ontario, has filed a motion for presentation to the City Council, asking that the city counselor be instructed to prepare the necessary by-law to permit of the vote being taken at the January election on the question of a definite franchise of the Ottawa Electric Railway for thirty years.

People Will Decide Issue.—Muskegon and Muskegon Heights, Mich., will hold special elections within the next month to decide whether electric railway or bus transportation is desired. If the people vote against eliminating two competing bus lines, the commission will allow the Muskegon Traction & Light Company to discontinue service Dec. 20. The buses making short hauls charge 5 cents, while the street cars charged 10 cents cash fare or four tickets for 30 cents.

Will Discuss Railway's Problems.—Conferences between William L. Harrison, newly elected City Commissioner, who has been assigned to the department of public utilities; J. S. Pevear, president of the Birmingham Railway, Light & Power Company, and Lee C. Bradley, receiver for the company, will be arranged in a short time. Litigation now pending between the city and the company and the policy to be adopted by the new city administration in regard to the electric railway will be discussed at these conferences.

Ashtabula Refused Ownership.—By a vote of nearly two to one, the proposal was defeated that the city of Ashtabula, Ohio, take over the property of the Ashtabula Rapid Transit Company at $197,000. Two years ago the electors voted to buy the property at $296,000. The defeat of the plan to acquire the present transit system was somewhat of a surprise, inasmuch as it had been accepted at a previous election and at a much higher price, and in the face of the approval of the special committee of the Chamber of Commerce, which investigated the plan.

Financial and Corporate

Promising Conditions in Youngstown

Condition of Physical Property Much Improved Partly Through Aid of City Financing

There is an optimistic feeling about the outlook for the Youngstown (Ohio) Municipal Railway and the neighboring railway lines of the Pennsylvania-Ohio Electric Company. Patronage is picking up a little, though the present year has not been a good one. The companies at Youngstown, which as a steel center ranks next to Pittsburgh, were hit exceptionally hard by the general business depression. The number of passengers carried as compared with last year, declined 30 per cent to 35 per cent on the different divisions. By diligent study of all details of operation, however, the operating expenses have been reduced in even greater proportion than the revenues have fallen.

All the surplus earned this year, and such outside capital as could be secured, have been put back into the property, including $207,000 for pavement financed by the city of Youngstown, so that the physical property has been improved materially in condition over the status that attained a year ago. The maintenance expense during the coming year will therefore be much lighter than it was this year because the accumulated deferred maintenance has been very largely taken care of. In fact, it is estimated that only a little more than half the sum expended this year on maintenance and renewal will need to be spent next year.

Despite the heavy reduction in riding, the economies that have been worked have been brought about by refinements in management rather than by cuts in service, which has been reduced only 10 per cent, so that with practically no increase in car mileage, 50 per cent more passengers can be carried. The road would thus appear to be over-serviced at present, but this is not the fact when due consideration is given to the need for liberal service on account of jitney competition. Fourteen new safety cars have just been received, and these, together with an application of one-man operation to some of the present double-truck cars, will aid further in reducing operating expenses. A very successful work in accident elimination is also having its effect on operating costs.

Hence, as business gradually comes back, the company's financial position should steadily improve as the result of lower maintenance costs, safer operation, more passengers with little or no increase in platform expenses, a service-at-cost franchise, and a cash rate of fare of 9 cents or six tickets for 50 cents, which is felt to be as high as is needed.

In referring further to the paving work financed by the city, this is the first time the city of Youngstown has thus assisted in relieving the burden upon the street railway. The city acted on this theory: The company in contracting to pave a portion of the street, merely took over a part of the obligation of the city to the people. Since the company was unable to finance the repaving on a street where it was badly needed, the obligation simply reverted back to the city. The city therefore financed the work, comprising approximately 6 miles of single track, and will look to the future for the refunding of this outlay for the company, the same as for any other taxpayer. The plan worked out gives the company nineteen years to reimburse the city. The city secured the money by the sale of its general bonds and accepted a contract from the Youngstown Municipal Railway to pay off the loan in annual installments.

Two Ohio Companies Sold

The Plymouth & Shelby Traction Company and the Sandusky, Norwalk & Mansfield Electric Railway of Ohio have been sold, according to an announcement of A. G. Taylor, receiver for both companies. The Plymouth line sold for $20,000, bid by S. S. Burtsfield, principal bondholder. The Wilcoff Company, Pittsburgh, bid $60,000 for the Sandusky, Norwalk & Mansfield line. Neither line attracted bids at regular sales and will be junked. The road ceased operation more than a year ago.

It had previously been reported that the defunct South line between Norwalk and Plymouth, part of the Sandusky, Norwalk and Mansfield Railway, would be kept in operation by the use of gasoline cars.

Petition for Merger Rehearing

The Indiana Electric Corporation has filed a petition with the Public Service Commission asking for a rehearing of the proposal to merge the properties of seven electric utilities of the State. The Joseph H. Brewer interests, which are back of the corporation, proposed in the original petition to issue approximately $21,000,000 of securities to be used in effecting the merger. This proposal was denied by the commission, after an extended investigation and hearing, on the ground that the value of the properties, estimated at approximately $19,000,000 by the corporation, is not sufficient to warrant the issue of securities asked.

The corporation indicates that the amended petition would ask for authority to issue securities of smaller amount, but the total of securities to be proposed has not been determined.

As stated in previous issues of the ELECTRIC RAILWAY JOURNAL, the corporation proposes to purchase seven companies: Merchants' Heat & Light Company, Indianapolis; Indiana Railways & Light Company, Kokomo; Elkhart Gas & Fuel Company; Valparaiso Lighting Company; Wabash Valley Electric Company; Putnam Electric Company, and the Cayuga Electric Company.

The original petition indicated that the proposal includes plans to erect a central power station near the Indiana coal fields as an economy measure in the production of electricity.

Maloney Plan Modified

Valuation Having Been Fixed, Company Insists Upon Issue of Cumulative Common Stock

The local papers at New Orleans, La., published on Nov. 17 what purported to be the principal points reached by the conferees to the modified Maloney plan of settlement of the public utilities matter up to the time that the prohibition order of the Supreme Court abruptly terminated the negotiations.

While unwilling to disclose the full text of the agreement, Commissioner Maloney outlined some of the outstanding points of the financial "set up," report of which has already been published briefly in the ELECTRIC RAILWAY JOURNAL.

Briefly, the valuation of the property of the New Orleans Railway & Light Company for rate-making purposes is placed at $44,700,000, divided as follows: gas plant, $8,652,000; electric light and power plant, $10,048,000; street railway property, $26,000,000. The valuation is to start from Dec. 31, 1920. The fares, rates and charges are to net 7½ per cent, after deducting operating expenses, taxes, renewals, replacement and reserves.

The reorganization of the company is to start at once, the city to have the naming of four members of the board of directors.

The outstanding underlying bonds are not to be disturbed and the outstanding 4½ per cent general mortgage bonds due July, 1935, are to be exchanged, 25 per cent in cash and 75 per cent in new general lien bonds, due July, 1935. The new 4½ per cent bonds are to have preferred position, in that they will rank after the new first and refunding open mortgage bonds.

Income bonds, bearing 6 per cent interest, and maturing November, 1949, to the amount of $5,129,000 are to be used in refunding the outstanding refunding and general lien 5 per cent bonds, due November, 1949, upon which interest is still due.

Preferred 7 per cent cumulative stock to the amount of $3,955,000 is to be used in refunding the outstanding 7 per cent gold reserve bonds, upon which both interest and principal are now in default.

The balance up to the amount allowable as a rate base, at the date of organization, is to be in common stock issued to represent the equity in the present property now represented by the $10,000,000 of preferred stock and $20,000,000 of common stock.

Two reserve funds are provided to preserve the financial integrity of the company.

Provision is made for the creation of a fund of $200,000, 50 per cent of which is to be used for betterments and improvements, and the remainder for the purchase and retirement of the new 4½ per cent bonds, at their lowest bid value.

This fund is to be created before disbursements of any kind are made in the fiscal year out of earnings or surplus to securities junior in rank to the new 4½ per cent bonds.

Provision is made for the creation of an additional fund of $100,000 to be expended on the same basis as the $200,000 fund, before disbursements are made on the preferred stock.

To effect the sale of common stock, at par, for financial purposes, a dividend of not exceeding 9 per cent per annum in the aggregate is allowable. No cash distribution, or stock dividends are permissible to the common stock in excess of the foregoing limitations. The points yet to be adjusted include the creation of the two reserve funds and whether or not the dividends on the common stock shall be cumulative.

The company takes the position that the reserve funds should come out of the earnings, or from the sale of securities junior in lien to the 4½ per cent bonds. It also claims the dividend on the common stock should be cumulative because the city allows a return of 7½ per cent on the value for rate making but limits disbursements to the existing securities to approximately 6 per cent.

No new securities are to be issued by the company without the consent of the Council, the city to have a perpetual option on the property of the company at the valuation stipulated as of Dec. 31, 1920, plus such additions as may have been made.

Car fare is to be fixed at 7 cents and the gas rate at $1.30 per 1,000 cu.ft. upon termination of receivership. Electric light and power rates are to remain unchanged. No change in rates is to be made for the test period of twelve months.

The litigation instituted in the Federal District Court against the city by the receiver is to be dismissed when the agreement is closed and sufficient funds are to be provided the receiver by the security holders' committees for the purchase and installation of equipment for the electric light and power plants upon acceptance of the modified Maloney plan of settlement by the Commission Council.

The further announcement was made at New Orleans on Nov. 17 that the State will be urged to drop the suit against the city, in the Civil District Court, which has resulted in cessation of the negotiations looking to a solution of the utilities problem.

Attorney General Coco of Louisiana on his return to New Orleans contradicted the published statement that the State had any intention of lifting the restraining order of the Civil District Court placed upon the city in the matter of the 8-cent fare.

In discrediting the published statement, Attorney General Coco went on record as denying the authority of the Commission Council to assume rate-making powers over the railways of New Orleans. He reiterated the opinion of the late Assistant Attorney General Luther E. Hall, that such powers were vested solely in the Public Service Commission. He also questions the valuation placed upon the property of the New Orleans Railway & Light Company, declaring it to be *ex parte*, in his opinion, having been made by persons with a direct interest in the outcome of the controversy. He states the valuation should be subjected to "judicial ascertainment."

Attorney General Coco expresses himself, however, as anxious to have the railway matter settled properly.

Value Placed on Canadian Property.—The Hydro-Electric Power Commission of Ontario recently placed a valuation upon the Ottawa Electric Railway line and equipment within the Province of Ontario. The figure including an amount necessary for the operation of the system is $4,110,922.

Coal Properties Sold

4,675 Acres of Coal Land Disposed of by Electric Railway to the Consolidation Coal Company

The Monongahela Power & Railway Company, Fairmont, W. Va., has sold its entire coal holdings to the Consolidation Coal Company. The property that passes in this deal consists of 3,500 acres of Pittsburgh coal, 1,000 acres of Sewickley coal, 175 acres of surface land, and 300 standard gage coal cars for the marketing of the product. The purchase price was approximately $2,600,000.

One of these mining operations is known as the Stafford mine. This plant is located on Paw Paw Creek 6 miles north of Fairmont. This is a shaft mine 250 ft. deep. It is thoroughly equipped with compressed air mine haulage machinery. Electrically driven compressors furnish the air for the mechanical power used within the mine. The coal is brought to the surface by a steam hoist and is loaded into the railroad cars over a steel tipple which is equipped with self-dumping cages. The mine has a capacity of 1,000 tons a day.

The Stafford mining town is known as Baxter. It is one of the most attractive mining centers in the State. There are 150 dwelling houses for the employees of the mine.

MANY ACRES OF UNDEVELOPED LAND INCLUDED

The second plant is known as the Rivesville mine. This plant was installed about two years ago. It consists of a shaft mine which is located immediately adjacent to the Rivesville power plant. It was developed by the Monongahela Power & Railway Company for the purpose of supplying fuel for the operation of the power plant. The mine consists of two concrete lined shafts 100 ft. deep. One of these shafts is equipped with an electrically driven hoist for lifting coal from the mine. The other shaft is utilized for supplying air for the ventilation of the mine. The mine is equipped with electric cutting machines for cutting the coal. The development of this mine is only partially complete. It has a capacity of 500 tons a day. Thirty-five modern houses make up the mining town.

The 1,960 acres of undeveloped coal included in the deal are situated on Little Paw Paw Creek immediately to the north of and adjoining the Stafford mine property. This tract of coal was acquired by a subsidiary concern of the Monongahela Power & Railway Company about three years ago. This is one of the best tracts of undeveloped coal in Marion County.

The 300 steel hoppers included with the sale of the coal property are standard railroad equipment hoppers built in 1917 of 105,000 lb. capacity each.

The sale of this property will enable the Monongahela Power & Railway Company to give all of its attention to its power and railway business and to devote its revenue to the improvement and extension of its system.

A long-term contract for coal with the Consolidation Coal Company insures the railway of always having an ample supply of fuel for its operations.

The proceeds from the sale of the property will be applied to the reduction of the company's bonded indebtedness which will make a material decrease in the interest charges and thus operate directly to the benefit of the stockholders whose equity in the company's property will be proportionately increased.

The Monongahela Power & Railway Company is the new name adopted last May for the old Monongahela Valley Traction Company. The company serves an extensive territory in and around Fairmont with railway facilities and gas. Besides owning traction lines in Fairmont, Clarksburg and other towns, it owns nearly 200 miles of trackage in interurban lines.

The operation of the mines purchased in this sale will be taken over by the Consolidation Coal Company as soon as the details of the sale can be worked out.

Valuation Hearing Will Be Resumed

Notice has been forwarded to the receiver of the United Railways, St. Louis, Mo., and the City Counselor that the valuation hearing will be resumed before the Missouri Public Service Commission on Dec. 19. In the meantime the commission has extended the 7-cent fare, which was to have expired Jan. 1, to June 30, 1922.

The present fare is based on a tentative valuation of $50,000,000 for rate-making purposes, but the receiver expects to show that the property is worth not less than $80,000,000, no matter what method of valuation the commission may follow.

Touching upon the valuation question and the entire railway situation, the management has issued in pamphlet form to its patrons a statement of more than 2,000 words, in which these paragraphs are featured:

> It is to be hoped that the press will not continue to pander to the uninformed or the misinformed, and that politicians will refrain from attempting to ride into office on a false street railway issue. There is about as much logic in attempting to legislate the rate of car fare by popular vote as there would be in fixing the price of paving by ordinance or charging for water service without considering cost, unless the city is prepared to take care of deficits out of general tax funds. It must be paid for as a business proposition, on a cost basis.
>
> In the approaching valuation hearings before the Public Service Commission we hope unreasoning prejudice, born of the past but not justified in the present situation, will not enter the councils. A square deal is necessary if the service is not to be further crippled but restored, improved and extended. A fair policy is needed to pave the way toward further developments and rapid transit.
>
> In former years transportation forged ahead of the city's growth—population and industry followed the trolleys. Franchises were sought. Now it is the other way. Populous and growing sections of the city are waiting, suffering for car service which we should like to give them. The management knows what and where these needs are, and has earnestly studied the best means of meeting them. Franchises have been rejected because there is no money to finance them.
>
> Millions of dollars are needed today to give St. Louis adequate transportation and build the sorely needed extensions. More millions will be needed in the future to provide rapid transit if the city is to grow properly. Where and how are these millions to be raised?
>
> The money cannot be raised unless our citizens make up their minds that the use of the money must be paid for at fair interest rates, and to do this the car fare must be adequate. Whether the city should undertake the financing of the lines or private capital should be further enlisted. makes no difference in one respect. The service must be paid for. And if private investors are expected to furnish the money another thing is sure: Reasonable security will be demanded—public good will, freedom from unjust attacks, the assurance of a square deal from an informed public.

Pittsburgh Receivership Apparently Nears End

Ordinance Now Before Council Assures Reorganization of Pittsburgh Railways With Municipal Participation in Control—Valuation Set at $62,500,000

The City Council of Pittsburgh has approved on first reading an ordinance for reorganization of the Pittsburgh Railways. This is in effect the proposed plan evolved by the city and the company some months ago. It has lately been under discussion by all the public, civic, engineering, and other organizations in Pittsburgh and suburban towns. The plan, with slight revisions, has met with general approval. As both of the parties to the contract are understood to be in favor of the ordinance it is presumed that the plan for reorganiztion will become effective without delay as soon as the ordinance has been enacted into law.

BY THE adoption of the plan the Pittsburgh traction situation, for many years in an unsettled condition, will be completely altered and the affairs of the company, now in the hands of receivers, will be reorganized under a new company whose assets are set at $62,500,000, the valuation fixed by the Public Service Commission. Into this new company will be merged 114 companies constituting the present railway system, intended eventually to be operated under one franchise and financed as a unit.

The new company is entitled to an annual net return of 6 per cent, or $3,750,000, out of its earnings from all sources for a period of ten years, in addition to all operating expenses, a yearly depreciation allowance and taxes. The Philadelphia Company, as the principal stockholder of the railways company, will provide for finally bringing all subsidiary companies into one company and the conversion of the present mortgages into a single mortgage. The new company will authorize securities not exceeding $62,500,000 which it will endeavor to issue from time to time to refund all outstanding stocks, bonds or other evidences of indebtedness. An endeavor also will be made to borrow in the Pittsburgh district $5,000,000 to be spent in rehabilitation of the railways system.

CITY TO HAVE VOICE

An important element in the reorganization is the participation of the city in the conduct of the company under a board of control. This board of control will be composed of four members, two of which are to be appointed by the Mayor with the approval of two-thirds of Councils. Members may be removed by the Mayor only by the same approval. The various cities, boroughs and townships combined will appoint a third member and the new company will name the fourth member. The salaries of the members of the board, with expenses, are not to exceed $20,000 annually.

Thirty days before the end of each fiscal year the new company will submit to the city and the board of control a budget of gross receipts and proposed expenditures, this budget to be subject to revision by the board of control. If either the city or the company is dissatisfied with the board's action the matter will be submitted to arbitration, the board of arbitration to be composed of three members, one appointed by each side and these two to appoint the third, or, failing in agreement, the third member to be appointed by the Public Service Commission.

In lieu of present municipal franchise taxes of various kinds, bridge tolls, pole, car, wire, gross receipt and street cleaning taxes the new company will pay the city an annual lump sum of $100,000 in quarterly installments. In lieu of street repaving charges the new company will pay the city $200,000 annually in quarterly installments.

If it appears that for three consecutive months revenue is insufficient to meet approved expenditures and apparently will continue, on report of the board of control, the city agrees to cancel repaving charges during that period or will not object to an increase in fares.

What Reorganization of Railways in Pittsburgh Means

The reorganization of the Pittsburgh Railways in accordance with the ordinance just passed means:

Organization of a new company with a capitalization of $62,500,000.

Annual return fixed at 6 per cent or $3,750,000.

Board of control to have voice in affairs of company, two members to be appointed by city, one by other municipalities and one by company.

Termination of receivership.

New company to raise $5,000,000 to rehabilitate traction system.

Present traction system, comprising 114 companies, to be merged into one company under one franchise, with all obligations to be assumed by the new company.

New company assumes damage claims payable within ten years.

Fixed payment in place of tolls, taxes and other charges.

City claims settled for $526,091.

Fares to be reduced if there is a surplus from operation and increased if there is a deficit.

Agreement between city and company for ten years.

REGULATION OF FARES

Any annual surplus is to be paid to the board of control within thirty days, the board to prorate the money among the different municipalities in proportion to the trackage, one-third of the surplus due to economies to be returned to the company.

If the annual surplus is such as, in the opinion of the board of control, would justify a reduction in carfare, application for a reduction may be made to the Public Service Commission by either the city or the board without objection by the company. On the other hand, if there is a deficit, such as to justify it, the company has the right to apply for an increase in fare without objection by either the city or the board.

The city agrees to accept for its claim against the company $526,091, in full payment up to Jan. 1, 1921, which amount with accruing charges against the receivers will be paid or secured by the new company. The new company will also agree to pay all judgments and adjust all claims against the railways company prior to appointment of receivers, arising from personal injury or death, paying within ten years without interest, the first payment to be made within two years.

RECEIVERS TO BE DISCHARGED

Upon approval by Mayor Babcock, the plan will be presented to the Public Service Commission. Thirty days after approval by the commission steps will be taken to terminate the receivership and discharge the receivers.

The only dissenters to the plan have been a few suburban boards of trade that wished to substitute a settlement based on the Cleveland plan. George N. Monroe, Jr., assistant city solicitor, who prepared the ordinance, explained in an open meeting last week that the Cleveland plan could not be used in Pittsburgh as it delegated to the city powers which are expressly reserved to the Public Service Commission by law. Ohio has a "home rule" law through which a city can make any contract it desires with public utility companies, while Pittsburgh's power is restricted.

The Cleveland plan was considered in the preparation of the Pittsburgh plan and certain elements of it embodied, as were also parts of plans used in other cities. Those who have drafted the Pittsburgh proposal therefore believe that they have a plan which includes, as far as Pittsburgh is concerned, the most meritorious ideas embodied in the settlements in other cities.

An indication of the action the Mayor will take on the ordinance may be had from a statement he made at a meeting last week as follows:

> I want to commend every member of Council. I am proud of your action. You have given earnest and careful consideration to this situation for several years and now you have accomplished something. The traction situation has been a live issue during this entire administration. It has been before the public for fifteen years. Its settlement is the biggest thing that could be accomplished in this administration.

The action which the railways will take was made clear by a statement at the same meeting by A. W. Thompson, president of the Philadelphia Company. He said;

> Some of the members of our board of directors feel that this plan is very unfair to the company and it has been so criticised. However, although we do not agree with it, I stand ready and am properly authorized to sign it.

It will be recalled as already mentioned in these columns that foreclosure proceedings by the bondholders of one of the subsidiary companies of the Pittsburgh Railways are now pending in the courts. This has had a tendency to speed up consideration and passage of the present plan and ordinance as there was imminent danger of a complete dissolution and disintegration of the system into its integral companies. It was realized that this would be an immeasurable calamity.

William A. Magee was elected on Nov. 8 to be the next Mayor of Pittsburgh. He is of the same political party as the present Mayor. In deference to wishes expressed by Mr. Magee, the Council on Nov. 21 returned the franchise ordinance to the committee until Mr. Magee has an opportunity to study it. A meeting of the members of the Council was held on Nov. 22 with the Mayor-elect and minor changes were suggested by him in the grant as passed on first reading.

Foreclosure Decree Entered

Legal Counsel for Security Holders Give Notice of Appeal from Master's Finding

A final decree has been prepared by the Court of Appeals and sent to the Butler County Court, fixing the amount which must be paid to the Citizens' Savings Bank & Trust Company, Cincinnati, Ohio, under the mortgage covering the bonds issued by the Cincinnati & Hamilton Electric Street Railway and ordering the sale of all property under the mortgage to satisfy the judgment, as well as appointing a master commissioner to place a minimum valuation upon all assets, and take testimony as to further disposition of the funds to be received. Last summer a decree was prepared but objections to it caused the court to take the matter into its hands and prepare its decree.

Under the decree it is held that the Citizens' Savings Bank & Trust Company, trustee under the mortgage from the Cincinnati & Hamilton Electric Railway, to the American Trust Company, now consolidated with the Citizen's Trust Company, due from the Cincinnati, Dayton & Toledo Traction Company, on bonds payment of which was assumed, is entitled to recover $482,344 with interest from April 11, 1921.

It further is decreed that the mortgages delivered by the Cincinnati & Hamilton Electric Street Railway is a valid first lien upon all property real and personal, franchises, ordinances, privileges and rights formerly owned by that company, including its real estate in College Hill, Ohio, and in Fairfield Township, Butler County, Ohio, upon which power houses and depots are erected, and upon the line now operated by the Cincinnati, Dayton & Toledo Traction Company, between College Hill and Hamilton, Ohio.

By the terms of the decree the judgment must be paid within five days from the date the decree or the foreclosure will operate and a sale of the property by George Sohngen, receiver, will be made. Order for this sale, contingent upon the judgment not being paid, is contained in the decree and names Receiver Sohngen as master commissioner to make the sale.

Attorney Froome Morris of Cincinnati is named to be Master Commissioner to take testimony and report the lowest price for which the sale may be made, and as soon as this price has been fixed and approved by the court, Receiver Sohngen is instructed to advertise for bids; and if none is received which equals or exceeds the minimum valuations to readvertise the sale. Upon a sale of the property the proceeds are ordered to be applied as follows:

1. To the payment of all costs.
2. To the satisfaction of the amount due the Citizen's Savings Bank & Trust Company.
3. To the payment of unpaid balance due trustee under the mortgage from the Southern Ohio Traction Company.
4. To the Cincinnati & Dayton Traction Company.

The decree also fixes the status of all mortgages and the ownership in all rolling stock, power plants and rights-of-way. It also instructs the receiver to continue the lines in operation.

That no one on either side of the controversy was satisfied with the decree as finally ordered was manifested by the fact that all counsel gave notice of exception to the order.

Net for P. R. T. for Ten Months $1,267,738

The Philadelphia (Pa.) Rapid Transit Company for the ten months of operation ended Oct. 31 shows an operating revenue of $35,131,600 against $31,191,066 for the same period a year ago. The expenses including taxes increased $2,170,233 over 1920 operation and taxes.

After subtracting a fixed charge sum of $8,185,640 from the gross income of $9,453,378 the net income for the ten months of 1921 stands at $1,267,738 against a deficit in 1920 of $418,356. The accumulated deficit for the twenty-two months period to Oct. 31, 1921, is $1,100,197.

Third Avenue Railway Reports Deficit of $876,611

The report of the Third Avenue Railway, New York, N. Y., for the fiscal year ended June 30, 1921, shows a deficit of $876,611, which includes full interest on adjustment mortgage 5 per cent income bonds. For the previous year the deficit was $845,396. The total operating revenue for the year is $13,499,226, against $11,752,069. There was an increase of $1,752,885 in the operating expenses, which amounted to $11,037,607 for the present year.

In his remarks to the stockholders S. W. Huff, president of the railway, said that a decrease in operating costs has been felt since the summer and as a result of the 10 per cent reduction in wages which went into effect in August of this year net earnings have been steadily improving. He said further that greater economy had been effected through the extension of one-man operation and the abandonment of useless lines.

Toledo Company Shows Surplus

The net surplus from the operation of the Community Traction Company, at Toledo, Ohio, for the month of October was $21,308, which was enough to take care of deficits in all funds and enable the payment of $2,010 into the fare stabilization fund. This is the first payment made into that fund and from now on it is predicted the fund will be built up considerably each month.

The sinking fund trustees of the city who have control of the municipal ownership fund of the railway have purchased $75,000 of the 6 per cent bonds from Henry L. Doherty and his associates, and they now have $84,374 in cash which can be used for the same purpose. As soon as bonds are purchased they may be cancelled and common stock issued to the city in exchange for them. The earnings from the bonds go into the stabilization fund as long as they are held as such.

The interest on bonds held by the sinking fund trustees, amounting to $764, was paid into the stabilizing fund. The further purchase of bonds will enable $420 of earnings to be applied to that fund each month. The stabilizing fund is now at a level of $55,344, but it will have to climb to $500,000 before fare reductions may be made.

The ratio of operating expense to income for the month of October was 76.508 per cent, a reduction from the previous month of approximately a little more than 9 per cent.

During the month of October there was an increase in passenger revenue of $13,111. Operating expense was decreased, on the other hand, by $2,065. The operating expenses per car-mile of 36.72 cents for September was decreased to 35.25 cents a car-mile.

In October 4,746,700 revenue passengers were carried—an increase of 233,832 over the previous month. It is estimated that 150,000 may be assumed as the increase due to an additional day of operation. The operation was increased by 19,388 car-miles in October, for a total of 625,758 car-miles.

Financial News Notes

First and Refunding Bonds Offered.—Bonbright & Company, New York, N. Y., recently offered at 82½ and interest, to yield about 7.45 per cent, a block of first and refunding mortgage 5 per cent gold bonds, 1912 series, of the United Light & Railway Company, Grand Rapids, Mich.

Refunding Operation Planned.—The West End Street Railway, operated under lease by the Boston (Mass.) Street Railway, has petitioned the Massachusetts Department of Public Utilities for authority to issue $2,700,000 of thirty-year 7 per cent bonds to refund a similar amount maturing on Feb. 1, 1922.

No Common Dividends Paid This Year.—No dividend has been paid on the common stock of the Fort Dodge, Des Moines & Southern Railroad, Fort Dodge, Iowa, this year. Dividends paid this year on the preferred stock were: 7 per cent on Feb. 1 and 1¾ per cent May 1. No dividend was paid on the preferred stock on Aug. 1.

Indiana Company Nets $69,735.—Report of Receiver J. H. McClure for the Indiana, Columbus & Eastern Traction Company, Cincinnati, Ohio, in federal court here showed that operation for September had netted a balance of $69,735. The receipts were $223,763 and the disbursements amounted to $154,027.

Permanent Financing Planned.—During the past three months the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., has reduced its total indebtedness by $539,708 through the payment of $182,708 on account of purchase money contracts on coal properties and car trust certificates, and $357,000 on account of one-year 7 per cent notes due Nov. 1, 1921, leaving the amount of the latter obligation $3,123,000. The company is now said to be looking forward to maturing a plan to take care of a material part of the indebtedness of the company so as to put its financing on a permanent basis. For the twelve months ended Sept. 30, 1921, the company reports gross earnings of $31,558,895 as compared with $30,157,334 for the previous year, and a balance or surplus of $1,515,252 for the twelve months ended Sept. 30, 1921, as compared with $933,510 for the previous year.

Traffic and Transportation

Wants to Maintain Existing Rate

Suggestion Made that City Council of Cincinnati Eliminate Franchise Tax as Rate-Making Factor

In a statement accompanying the budget of the Cincinnati (Ohio) Traction Company for 1922, received by W. Jerome Kuertz, Street Railway Commissioner, W. Kesley Schoepf, president of the traction company, announces that "it is reasonable to anticipate that at least the 7½-cent rate of fare could be maintained throughout the entire year," if the franchise tax to be paid to the city of Cincinnati, when earned is not to be charged as a deficit for rate-making purposes.

The estimated gross receipts of the railway from all sources for next year are $8,708,000. The operating costs are estimated at $5,277,500, of which transportation costs are $2,500,000; power, $997,055; way and structures, $610,455; equipment, $617,500; traffic, $2,500; general and miscellaneous, $550,000.

Other expenses include taxes other than city of Cincinnati and Norwood, $798,300; rentals, $1,234,937; interest and sinking fund on new capital, $547,572; sinking fund and interest on reducible debt, $199,450; return on investment, $747,280; Cincinnati franchise tax, $350,000; Norwood franchise tax, $6,000. The total expenditures for the year are approximately $9,161,000, making a deficit of approximately $453,000 for the year. To overcome that deficit the suggestion is made that the City Council again pass an ordinance making it possible to eliminate the franchise tax as a rate-making factor in order that the existing rate be maintained.

Mr. Schoepf says in his statement:

> Your attention is directed to the fact that the city franchise tax for 1920 and 1921 does not appear in the statement because not having been earned and having been deferred it does not become due unless a surplus over all current ordinance requirements is earned. On the other hand the current franchise tax for 1922 becomes a direct charge on and after Jan. 1, 1922, and if not earned fares must be raised until it is earned.
>
> The only way in which fare increases can be avoided will be that the city place the 1922 franchise tax in the same position as the tax for 1920 and 1921; that is, that it shall be paid if it also can be earned without increasing fares.

Railway Officials Opposed to Additional Bus Permits

At a recent hearing before the Public Utilities Commission of Washington, D. C., on the applications for the establishment of four additional bus lines the electric railways through their officials openly voiced their opposition.

W. F. Ham, president of the Washington Railway & Electric Company, told the commission that he did not see the necessity for bus lines unless it were shown that the electric railways were not providing adequate facilities. In expressing this view he reflected the views of G. E. Hamilton, president of the Capital Traction Company, and J. E. Zimmerman, president of the Washington-Virginia Railway.

It is said that the real opposition on the part of the railway officials was to the application of the Washington Rapid Transit Company for a Union station-Georgetown line.

An official of the bus company stated that the petition for the new route had been the result of the demand from patrons on the Sixteenth Street bus line for a route to Union Station.

Houston Company Directed to Sell Tickets at Five Cents

The Houston (Texas) Electric Company has until Nov. 27 to reply to the proposed city ordinance directing the company to sell twenty tickets for $1. The fare in Houston is now 7 cents, this rate having been put into effect following a decision in the Federal Court holding that the old fare was confiscatory and failed to provide adequate return on invested capital guaranteed under the federal statutes.

A new franchise was framed as a compromise between the city and officials of the company, and this proposed franchise was referred to the voters of Houston at an election held on Nov. 4, and rejected by an overwhelming vote.

Since the election conferences have been held and agreement sought on a reduced fare scale, but without result. The city has now taken the initiative and had City Attorney Myer draft an ordinance directing the company to sell twenty tickets for $1. The company asked time in which to prepare data to show that such an ordinance would be unfair, and an extension was granted.

Freight-Carrying Trucks Under Jurisdiction of Commission

The State Railroad Commission of California in asserting recently that truckmen operating under contracts of employment were answerable to the commission, said: "If one engaged in the business of automotive transportation could avoid the provisions of the law by operating at irregular times, a handsome premium would be placed upon poor service to the public."

At a previous hearing before the commission this point was warmly debated by truck owners, whereby they maintained that the commission had no jurisdiction over them. On Oct. 18 the commission definitely settled the point in granting an application for freight truck service between Stockton and Oakdale to an applicant. This applicant had previously operated under a theory that as he was working under private contract he was not forced to seek the approbation of the commission. He also pointed out that he ran at irregular times. On this point the commission's opinion continued:

"The shipping public is entitled to know when and under what conditions transportation is available. As to operating under contract, every shipment involves the establishment of a contractual relation between the shipper or passenger and the carrier.

Jitneys Quit Railway Field

Eastern Massachusetts Lines Freed from Pest—Fares Coming Down in Consequence

The Eastern Massachusetts Street Railway has now cleared itself of all jitney competition in all cities and towns in which it operates, except in Hyde Park. Jitneys operate in Gloucester and on a line out of Woburn, but the railway has withdrawn service from both of those places. The line it gave up to the jitney in Woburn is between Woburn and Billerica, Mass.

The districts in which the railway had to fight the jitney, and the order in which these districts officially dismissed the jitneys so as to save the trolley are Lawrence, Salem, Brockton, Quincy and Lynn. The jitney men in Lynn were the last to give up the fight.

TEN-CENT FARE AT START

Thus controlling its territory again, the Eastern Massachusetts is making a number of operating changes. It announced on Nov. 21 a reduction of fares in Fall River to 5 cents per ride when tickets are used; it now sells twenty-ride tickets at the rate of $1, which is the cheapest rate on the system.

When the property was taken over by the public trustees, now operating it, the fare on all the lines was fixed at 10 cents. Since then there has been a reduction in every district, made available through the purchase of tickets, so that the rates to-day in the several operating districts on the system are as follows: Fall River, twenty tickets for $1; Lowell, fifteen tickets per $1; Lawrence fifteen, Haverhill thirteen, Salem sixteen, Lynn eighteen, Chelsea fourteen, Melrose fourteen in the interurban zone and eighteen in the city zone; Taunton fourteen.

FALL RIVER THE BANNER CITY

Single cash fares are still 10 cents, but the tendency is downward on the tickets, varying from time to time in the several districts according to variations in earnings. Fall River, which now has the lowest fare, is the only district that has earned cost every month since the trustees took control of the line.

Greenville Changes Its Mind—Will Operate Buses

The city of Greenville, Tex., which recently acquired at receiver's sale the railway lines and other property connected therewith announcing that the municipal government would operate the street cars, has changed its plans. Announcement is now made that the city will soon establish motor bus lines, municipally operated, instead of street cars.

It is asserted that motor buses operated along fixed routes and on regular schedule will solve the transportation problem for small cities not large enough to warrant operation of an up-to-date railway system, and the officials of Greenville believe that they will prove that this is true. After a try-out of the motor buses, Greenville will vote on the selection of a transportation system, and if the voters express preference for the motor bus lines they will be maintained.

Five-Cent Fares Result in Increased Patronage

J. P. Potter, manager of the Bridgeport division of the Connecticut Company, said early during the week ended Nov. 26 that the first day's trial (Sunday) of the 5-cent fare in that city was an unqualified success, both from the public point of view and that of the company. It was declared that patronage on Bridgeport lines during the first few days of the new schedule since Sunday was considerably more than under the old rate of 10 cents.

Disapproval of the decision of the Connecticut Public Utilities Commission in ordering a 5-cent fare test in Bridgeport was expressed by a majority of the federal trustees of the Connecticut Company at their meeting Nov. 19. The trustees are of the opinion that all lines of the company should be treated as one unit and that there should be no discrimination in fare rates on separate divisions of the company's system. The company has recently reached a position where it is earning a return on its investment, and the Bridgeport order disturbs the situation, in the opinion of the trustees.

The report of the Connecticut Company, New Haven, Conn., furnished the Connecticut Public Utilities Commission on the results of a week's operation on a 5-cent fare basis in Norwalk, over a distance of about a mile and a half, states that the fares increased over 3,000 during the first week of the reduction from 10 cents. Monday, Nov. 21, was the beginning of the ninety-day experimental test for the 5-cent fare as ordered by the Public Utilities Commission, and the report received by the Commission is for one week.

Though there was an increase in fares, the Connecticut Company operated the line at a loss as shown at the end of the week. Only on one day of the first week did the receipts for the day exceed the operating expenses and the excess receipts amounted to $9.27.

Lucius S. Storrs, president of the company, is quoted as having nothing to say.

Fare Suit Dismissed by United States Supreme Court

The United States Supreme Court on Nov. 21 decided that fares in Chicago are subject to regulation by the Illinois Public Utilities Commission, the court dismissing the case brought by the city, for want of jurisdiction.

The case was heard on Nov. 7. Chester E. Cleveland, special traction attorney for Chicago, presented the city's side. For the Chicago Surface Lines, attorneys James M. Sheehan and Harry Webber appeared. This case came before the United States Supreme Court as a result of an appeal made by the city of Chicago from the decision of the Illinois Supreme Court rendered on Feb. 18, 1920.

The city contested the right of the Illinois Public Utilities Commission to increase the rate of fare above 5 cents in view of the contract the city had with the companies which specified this rate of fare during the life of the grant. The court held in this case that the State Legislature had never delegated to the city the authority to fix rate of fare or regulate service.

The Interborough Rapid Transit Company, New York City, sought to intervene in the Chicago case before the United States Supreme Court in order that it might be a party to the decision, but the court refused to permit this.

Injunction Against Fare Order

Chicago Surface Lines Appeals from Commission Ruling Ordering Return to Five-Cent Fare

An order for a 5-cent fare on the Chicago Surface Lines was issued on Thanksgiving Eve to become effective at midnight Thanksgiving by the Illinois Commerce Commission. The ruling was not unexpected. Seemingly incontrovertible evidence had, however, been presented by the company showing that no reduction from the present 8-cent fare was justified until operating expenses could be reduced.

The commission, however, ordered a 3-cent reduction and wrote a lengthy order to show that the condition imposed could be met by the installation of numerous economies, the elimination of inefficiencies of management, cessations of payments to the renewal fund as provided by ordinance, release from paving and sprinkling obligations upon concurrence of the city and reduction of allowable rate of return from 7½ per cent to 6 per cent, though 6 per cent is all that has been earned with an 8-cent fare.

The order makes no mention of a wage reduction in relating possible economies. It declares that the service given is exceedingly deficient; that the service orders of the commission and its predecessor have not been lived up to, and that the service being given is not worth more than 5 cents. The order is replete with statements that are most unusual in view of the evidence submitted at the hearings.

The company petitioned Federal Judge George A. Carpenter on Thanksgiving Day for an injunction to restrain the commission order and a temporary restraining order was issued the same day so that the 5-cent fare did not become effective. The petition is to be considered on Dec. 2 and a decision reached then whether the injunction shall be made permanent. **Judge Carpenter** has called Judges Baker of Indiana and Geiger of Wisconsin to assist him in this connection.

On Nov. 25 Judge Baker ordered immediate issuance of rebate slips for fares in excess of 5 cents. Inasmuch as considerable time would be required to print such slips the court has ordered that the last transfer issued each passenger shall serve as a rebate slip.

Indianapolis Mayor Favors Six-Cent Fare

That he had agreed at one time with Dr. Henry Jameson, chairman of the board of directors of the Indianapolis (Ind.) Street Railway, that the city would not oppose a 6-cent fare was disclosed by Mayor Charles W. Jewett recently. The fact came out in a discussion of the railway situation with the traction head and other officials of the utility before the Board of Public Works.

The Mayor later suggested that the railway temporarily operate some crosstown bus lines to determine what kind of demand there really is for crosstown service at various points. Although the traction men did not flatly refuse to act upon the suggestion, they gave city officials no encouragement.

Dr. Jameson and Robert I. Todd, president and general manager of the company, repeatedly stated that the traction men do not believe the company can successfully operate upon a 5-cent fare. The city officials pointed out that the company officials led them to believe that if jitney competition were eliminated the city might expect better service on the basis of a 5-cent fare.

Bus Permits Refused

Mayor Peters, Boston, Mass., recently vetoed the licenses of three jitney companies which were seeking permits for operating in the Hyde Park district. He explained his non-indorsement of the bus operation on the ground that he had recently approved a license granted to the Norfolk & Bristol Bus Company.

He said further that the residents of the district had voiced a unanimous approval of this company, and that he himself believed the people were better served by one company than by many.

Suburban Line Must Carry Local Passengers

Suburban cars of the Minneapolis, Anoka & Cuyuna Range Railway coming into the city over the lines of the Twin City Rapid Transit Company must stop at intersections to pick up passengers and must give transfers to passengers paying full fare in the city limits. This fare must be only 5 cents. The Anoka line carries passengers to the city limits over the Minneapolis Street Railway tracks and thence on its own rails to Anoka. Going out these cars will not be required to take local passengers and need stop only for suburban passengers. This is the ruling of the city attorney. For years this line has utilized these tracks but has not carried local passengers and has not given transfers to city lines. Operating under the old franchise this line cannot charge the 6-cent fare granted the local railway under an ordinance passed in 1920. The Anoka company runs into the city over the Second Street Northwest lines to a terminal in the heart of the city.

Conditional Five-Cent Fare Established

The Corpus Christi Railway & Light Company, Corpus Christi, Tex., effective on Nov. 1, announced a reduction in fares from 10 cents to 5 cents, conditioned on the purchase of coupon books of twenty tickets for $1. Unless coupon books are purchased, the individual fare will remain at 10 cents. E. H. Eldridge, general manager, at the same time announced changes in the operation which included the cutting off of some of the urban and suburban lines which have proved unprofitable, and establishment of twelve-minute service on the remaining lines. This will be an improved service.

The new plan is an experiment, and its retention will depend entirely on the acceptance of the public, as manifested in increased traffic. The Corpus Christi Railway & Lighting Company is now in process of being taken over by Morrison & McCall, San Antonio, Tex.

Six Motor Buses Lose $15,000 in Nine Months

On the first nine months working of the six motor buses used by the Cardiff (Wales) Corporation to supplement the tramways service, the loss was nearly £3,000. The city treasurer has reported to the tramways committee that the loss on the buses to Sept. 30 averaged 5.63d. per car-mile, totaling £2,746.00.0. The revenue account showed a loss of £1,285.16.4, to which had to be added loan charges amounting to £1,507.14.8. The traffic expenses consumed 8.81d. per car-mile, general expenses 1.6d. and general repairs and maintenance 8.51d., making an average running expense of 18.89d. per car-mile. The traffic receipts amounted to £8,013.5.6, giving an average per car-mile of 16.44d., a deficit of 2.54d. per car-mile carried to net revenue account.

R. L. Horsfield, general manager of the tramways, in commenting on these figures, said the omnibus services in the city were purely experimental and had been tried when costs were at their very highest. The future success of the buses depended upon working outside the city boundaries.

Councillor Sydney Jenkins, the chairman, said Mr. Horsfield hit the nail on the head when he said that in Cardiff they were not likely to make much with the buses, seeing that the tramways service was an efficient and comprehensive one. Personally he believed the chief cause of the loss was trade depression. The sub-committee, however, had the matter under consideration and would report later. He was prepared to support the withdrawal of some of the buses after proper notice to the public.

He explained that a tentative arrangement had been made with the Newport Corporation whereby it would have been able to take its buses right into the town of Newport, but that the corporation had been prevented by the Monmouthshire County Council forbidding the buses to cross the roads, an attitude which the Ministry of Transport considered altogether unreasonable.

Various suggestions were made by members of the committee as to the manner in which the bus service might be made to pay. These included a reduction of fares to the level of those of the tramways, running the buses in direct competition with the tramcars on the most congested routes and the introduction of short stoppages.

The chairman and the general manager were finally empowered to experiment in any direction they considered desirable.

"Safety First" Propaganda Succeeds in Portland

According to figures recently compiled by the Portland Railway, Light & Power Company, Portland, Ore., organized and persistent efforts in combating the constant menace of traffic accidents in the streets of Portland have been producing substantial results. For the months of August and September, the report shows a considerable improvement as compared with the same months of last year.

The total number of accidents in the two months of this year were 1038 as compared with 1268 last year, or a decrease of 18.1 per cent. Complete checks were made to include mishaps involving the company's cars with automobiles, trucks, vehicles of all kinds, pedestrians and also boarding and alighting accidents involving passengers.

Success in the reduction of accidents of these various classes is attributed by officers of the company to the fact that regular "Safety First" instruction work is carried on among employees. The railway's record is in marked contrast to the showing of traffic mishaps in which the company's cars are not involved, this class of accidents showing a steady increase.

New Jersey Fare Hearings in December

It is probable that on Dec. 15 former U. S. Judge Thomas G. Haight, acting as special master, will begin the taking of testimony on the question of the permanency of the 8-cent fare on the lines of the Public Service Railway, Newark, N. J., recently allowed by Judges Rellstab and Wooley. The railway is to put in as much of its case as it is possible beginning Dec. 15 and continuing Dec. 16, 19, 20, 21, 22 and 23.

555,179 Passenger Vehicles in New York State

According to "Greater New York," the bulletin of the Merchants' Association of New York, 721,488 motor vehicles have been registered in New York State for the first half of 1921 up to July 10.

Of these 555,179 are passenger vehicles, 131,578 commercial, 28,495 omnibuses, 2,661 trailers and 3,575 cars exempt from tax registration. Of this number New York City has 223,435 cars, 156,116 being passenger cars, 52,658 commercial and 12,664 omnibuses. Manhattan has 58,191 passenger vehicles and 25,782 commercial, Brooklyn being next with 54,692 passenger and 15,475 commercial.

Railway and Jitney Men Agree

Both the Public Service Railway, Newark, N. J., and the jitney men recently appeared before the Board of Public Utility Commissioners to oppose the granting of a permit for an additional bus on the Park Avenue line operating in Woodcliff, Guttenberg, West New York and Weehawken with a terminus at the West Shore Ferry.

The railway, whose Palisade line covers the same territory as the Park Avenue buses, declared that though the number of passengers was greater than the seating capacity between rush hours, still during other hours of the day the traffic was very light.

The board will check the traffic in this area before a decision is made in the matter.

"Trolley Topics" Once a Month.—Baltimore *Trolley Topics*, published for the employees of the United Railways & Electric Company, will hereafter come out once a month instead of semi-monthly. It has been announced that the magazine will in this way have a greater opportunity to improve its standard. A promise is made "to develop its features and add new ones."

Jitney Service Again Discontinued —Mayor Approves Operation

Jitney service to the Cowen Park District of Seattle, Wash., started by the Sound Transit Company, operating under a certificate of necessity issued by the State Department of Public Works, was again summarily discontinued recently when W. R. Crawford, attorney for the auto company, and twenty-nine bus drivers were arrested, charged with contempt of court, by reason of an order issued by Presiding Judge Everett Smith. The arrests were made, when the company continued operating jitneys after a restraining order had been issued by Judge Smith, enjoining jitneys from operating within city limits without city permits.

In the meantime, Corporation Counsel Walter F. Meier obtained an affidavit, sworn to by Director E. V. Kuykendall of the State Department of Public Works, declaring that the Sound Transit Company's certificate of necessity for the Roosevelt Heights jitney line does not authorize operation of motor vehicles within the corporate limits of Seattle, without due sanction of the City Council. This affidavit is being used as an exhibit in resisting for the city the injunction proceedings brought by the jitney interests to prevent the city from arresting bus drivers for operating without city permits.

In the hearing before Judge Frater, Mr. Crawford asserted the city's jitney regulatory ordinance would conflict with the terms of the state certificate of necessity in matters of route and fares, and contended that the Sound Transit Company is seeking to operate a stage line, and not a jitney line. He said that the operation of stages does not come under the jurisdiction of the city's regulatory ordinance.

Birmingham Equal to Occasion—Shows What It Used to Be

During Semi-Centenary Week at Birmingham Ala., when the city entertained President Harding and wife and thousands of visitors the Birmingham Railway, Light & Power Company through the efforts of Lee C. Bradley, receiver, provided additional service on the important Avondale, Avenue C, and Tidewater lines, also on the East Lake line. Some of these lines have the pay-enter feature, on schedules four, five and six minutes. Information where to catch cars was advertised.

During this important week attention was called in the local press by pictured illustrations to the progress of transportation facilities in Birmingham and vicinity. Light and power company lines between Birmingham, Bessemer, Ensley, Fairfield and Gate City were pictured with views of the present day cars.

Seeks Higher Fare in Portsmouth

The State Corporation Commission recently heard the petition of the Virginia Railway & Power Company, Richmond, Va., for an increase in fare in Portsmouth. The fare at present is 6 cents and the petition asked for a 7-cent fare, the rate in effect in Richmond.

Thomas S. Wheelwright, president of the railway, in answering the criticisms of the residents of Portsmouth on the service rendered, said that the company had endeavored to get together with the City Council to effect some settlement but had been unsuccessful.

Transportation News Notes

Lower Fares in Honor of Foch.—The various traction lines operating out of Indianapolis, Ind., offered a round trip rate of one fare on these lines on account of the nationwide interest and historical importance of the visit of Marshal Ferdinand Foch of France to Indianapolis, Nov. 4.

Second Bus Line Started.—Another motor bus line, the second to be put in operation in Hartford, Conn., by the Connecticut Company, was started on Nov. 10. The bus will make regular trips, with transfer privileges, from the South Green to Cedar Hill, a locality which the Common Council declared was not served adequately by the electric railway.

Wants Lower Fare.—At the next meeting of the Public Utilities Board of Wilmington, Del., a resolution will be presented petitioning for a reduction in fares on the lines of the Wilmington & Philadelphia Traction Company. The present rate is 8 cents or four tickets for 30 cents. It is contended that four tickets for 25 cents would result in increased riding.

Eight-Cent Rate Extended.—The Missouri Public Service Commission recently issued an order authorizing the Kansas City Railways to extend its 8-cent fare rate for six months beginning with Nov. 18. The railway had asked for a year's extension. The commission accountants reported that the company could not earn a reasonable return if rates were reduced at this time.

Buses Supplant Cars.—A motor bus line is superseding the horse-drawn street cars in Iquique, Chile. The buses are American chassis, equipped with locally made bodies. They seat fourteen persons and are arranged with a front entrance, on the pay-enter plan, so that no collector is needed. The fare is 20 centavos (about 2 cents at present exchange), while the fare on the street cars is 40 centavos.

Council Increases Fare. — The City Council of Cape Girardeau, Mo., recently passed an ordinance authorizing an increase in fare from 5 cents to 7 cents on the lines of the Cape Girardeau-Jackson Interurban Railway. A petition with 1,500 names had been presented to the Council asking for an increased rate in order that the system might make the improvements necessary to provide an adequate service.

Jitney Passengers Increase.—According to the report made by J. J. Kroehl, clerk in Newark, N. J., treasurer's office, and submitted to Director Breidenbach of the Department of Revenue and Finance, jitneys carried 889,642 more passengers in October, 1921, than in September. The total number of passengers carried during the month amounted to 5,244,775. The receipts amounted to $262,239, which represented an increase of $44,482 over the previous month.

Writ of Review Denied.—Seattle jitney owners having failed to obtain from Associate Justice McKenna at Washington, D. C., a writ of review directed to the Supreme Court of the State of Washington, in the matter of the Seattle jitney ordinance case, recently submitted, through Congressman Merrill Moores, a new application to Chief Justice Taft at his residence. This writ has been denied by Justice Taft.

Fare Cut; Service Increased. — A 5-cent fare without free transfer for local service was established in South Boston by the Boston Elevated Railway on Nov. 14. In announcing this reduction General Manager Dana declared that there would be a substantial increase in service by the use of additional cars and that a new line would be operated between Winthrop Square, West Medford, and Malden Square via Pleasant Street.

Asks for Ten-Cent Rate.—According to figures recently submitted by the United Railways, Baltimore, Md., a 10-cent fare will very likely be the charge on the new auto bus line which the railway proposes to establish on St. Paul Street and Mount Royal Avenue. It is shown, further, that the service which is being planned cannot bring any profit on a 7-cent fare. The matter has been referred to the Public Service Commissioner for definite action.

Auxiliary Bus Line Planned for Minneapolis.—As an auxiliary to the present railway service in Minneapolis, a crosstown bus line is being planned by the Minneapolis Street Railway for Lowry Avenue, which will be the first such line in the city. The trackless trolley will probably be installed as an experiment. The grade crossing is to be eliminated on Lowry Avenue, and a bridge built across the Soo Line railroad tracks in preparation for bus service.

Bus Routes Restricted. — An ordinance which has been passed by the South Bend, Ind., City Council restricts motor bus transportation to streets not occupied by interurban lines entering the city and also places an annual license fee of $500 against the firms now running buses between South Bend and surrounding towns. The Chicago, South Bend & Northern Indiana Railway showed that since the buses were operating in streets through which its cars ran a decrease of 30 per cent in fares had resulted.

Skip-Stop Must Stop.—The Niagara Falls, N. Y., City Council has instructed City Manager Edwin J. Fort to order the International Railway, Buffalo, N. Y., to discontinue the skip-stop system in effect on the Niagara Falls local lines. Complaint against the skip-stop system was first made by the Niagara Falls Trades and Labor Council. The City Manager also was instructed to ask the railway to operate cars on a more frequent schedule and provide heat. Failure to comply with the suggestions, the City Council decided, would result in complaint being filed with the Public Service Commission.

Bus Certificate Granted.—The Frontier Automobile Transportation Company, Inc., has been granted a certificate of convenience and necessity by the Public Service Commission for the operation of a regular motor bus service between Niagara Falls and Lockport, N. Y., a distance of 22 miles, in competition with the Buffalo-Niagara Falls and Buffalo-Lockport divisions of the International Railway, Buffalo, N. Y. Service will be started between the two Niagara county cities within the next thirty days. Gustave Krueger, Jr., of Niagara Falls will be manager of the line, which will have offices in Niagara Falls. At least ten buses will be put in operation.

Bus Privilege Extended. — W. M. Collins, operating an automobile passenger, baggage and package service between Tulare and Porterville via Lindsay, was authorized by the California Railroad Commission recently to give local service between Lindsay and Porterville, serving Strathmore as an intermediate point. The application was opposed by the Valley Transit Company and by the Santa Fe & Southern Pacific Railways. The commission found that the Valley Transit Company had not provided accommodations for passengers in several instances, and that while there was ample rail transportation the communities do not patronize the railroads but demand better stage service.

Commission Must Act in Fare Case.—The New York, Westchester & Boston Railway, New York, N. Y., has obtained an order to compel the Transit Commission to show cause why the commission should not be compelled to grant permission to the railway to charge a 7-cent fare. The proceedings for the increase were started in 1919 before the old Public Service Commission, and in January, 1920, the commission reported that the company should be allowed the increase on the merits of the case, but that the city ordinances prevented. An appeal has been upheld by the Appellate Division and by the Court of Appeals, but the Transit Commission has refused to grant the higher fare.

Service Will Be Improved.—The Supervisor of Public Utilities of Dallas, Tex., has just completed a check of traffic on the various lines of the Dallas Railway. It is announced that orders will be issued shortly for the placing of more cars on a number of lines and the speeding up of traffic generally. Graphs showing the exact status of passenger travel on the various lines are being prepared by J. W. Monk, inspector of service in the Supervisor's department, and these graphs will be used as a basis for orders that will be issued directing improvement in service. The Dallas Railway has expressed a willingness to co-operate in every way possible and marked improvement of street car service in Dallas is expected to result from the checks and orders issued.

Jitneys in Beaumont Authorized.—Jitney buses can resume operation in competition with the street car lines of Beaumont, Tex., under an opinion rendered by City Attorney Charles Smith, who issued a ruling that the bus and hack ordinance recently enacted by the City Council repeals all other ordinances relating to the regulation of buses, hacks and all manner of service cars. The fact that jitneys can come back is evidenced by the conclusion that jitneys fall under the act's definition of service cars, and that if jitneys will comply with the provisions of the new ordinance relating to service cars, they may resume operation. So far no jitneys have started operation, but there is much talk of several lines being established at an early date. Officials of the traction company so far have had nothing to say about the prospective operation of jitneys.

Personal Mention

Railway Man Elected

E. M. Walker, Who Sold Terre Haute on Safety Cars, Heads Electric Light Body

It is not often that the central station fellows reach out to put an electric railway man at the top of their society tree. But a recent vote of the members of the Indiana Electric Light Association could be interpreted in no other way than that there was a unanimous desire to have Edwin M. Walker, general manager of the Terre Haute, Indianapolis & Eastern Traction Company, as president of their organization. These chaps, who are always hypnotizing people into buying percolators, curling irons and other things that consume watts, evidently recognized in Mr. Walker a friend and brother, for he, too, understands supremely well the salesman's art of inducing people to purchase just a little bit more than they had intended to. Concluding that any one who can perform such a stunt with the prosaic street car is a past-master, the electric light men have capitalized on the fact that Mr. Walker was one of them—hence the presidency.

E. M. WALKER

Walker certainly would not be the popular choice for the name of a man who makes them ride in his 100 per cent safety car city, but such is fate.

Although a native of England, Mr. Walker escaped before the homeland fog could chill his natural enthusiasm. He was born in Worksop, Nottinghamshire, in 1875. With his family he settled in Lockport, N. Y., shortly after their arrival in the United States. In the high school of that town the necessary preliminary training was received which enabled him in 1893 to attend Williams College at Williamstown, Mass., from which he was graduated in 1897. Between the terms of his college career he worked for the Lockport Gas & Electric Company, Lockport, N. Y., and became a full-timer there at the termination of his college course. Hardly a year's time had elapsed before the Hyde Park Gas & Electric Company, Hyde Park, Mass., recognized the ability of this young utility operator by making him its manager. His selling teeth sharpened on the hardened New Englanders, he now felt equal to almost any task. The year 1903 found him one of those protean public utility managers, located in the Tennessee-Virginia town of Bristol in charge of a gas, electric and street railway property. From 1907 to 1912 a similar task was his in Muscatine, Iowa, and then he moved over to Dubuque for another five years. His eyes then turned toward Terre Haute, a city that threatened to lose its place as a shrine of pilgrims when Gene Debs made his headquarters at Atlanta, but a city which Safety-Car Walker has made the Mecca and Medina of so many managers, mayors and others who have been seeking their salvation. Yes, it is the same Walker who was later elected president of the Illinois Electric Railway Association.

H. E. Ross Western Manager of "Electric Railway Journal"

Harry E. Ross, until recently business manager of *Electric Traction*, will hereafter represent the ELECTRIC RAILWAY JOURNAL in the Western territory, with headquarters at 1570 Old Colony Building, Chicago. Mr. Ross, in his connections with the former publication, has acquired an experience in the field and an acquaintance with manufacturers which will enable him to broaden the scope of ELECTRIC RAILWAY JOURNAL service. As Western manager he will succeed David Cameron, who has been made manager of the mid-Western territory, with headquarters in the Leader-News Building, Cleveland, Ohio. Both Mr. Ross and Mr. Cameron will represent also the new McGraw-Hill publication, *Bus Transportation*, the first number of which will be issued in January, 1922.

Mr. Ross became connected with *Electric Traction* ten years ago, and three years later was made advertising manager of the Kenfield-Davis Publishing Company, publishers of *Electric Traction*. For the past three years he has served as secretary of the company and business manager of *Electric Traction*.

Ten Years Service and Still Smiling

A speaking acquaintance with more than 25,000 people, in Dallas, Tex., more than one-sixth the entire population, is an asset possessed by few persons, yet G. C. Swearingen, a conductor on the Junius-Tyler line of the Dallas (Tex.) Railway, claims to be on personal speaking terms with this number of Dallas residents, and has acquired this acquaintance which in most instances is personal friendship while serving as conductor. He has been in the employ of the Dallas Railway for about ten years and has had runs on various lines. He is jovial and always has a kind word for every patron who boards his car. "Of course, I find many grouches," he says, "but the majority of the people who ride street cars in Dallas are kind and courteous, even to a street car conductor."

Successful Salesmanship

B. R. Bigelow Sells Service and Safety to the Inhabitants of Detroit with Prose and Poetry

About this time last year, as people were hurrying through Cadillac Square in Detroit, Mich., their attention was drawn to a spectacle for which the more curious side of their nature demanded an explanation. The cynosure of their wide-opened eyes was an enthusiastic and gesticulating man of Herculean proportions. Beside him stood what, in comparison to its fervent exponent, appeared to be a toy street railway car. Whether it was the intention of the huge gentleman on whom attention was focused to have somebody "take one home for the baby" or to entice a gullible public to share in the profit's of a wonderful new invention, many were at a loss to decide. The conjectures and suppositions of those who gathered around were not entirely allayed when words to this effect reached their ears:

B. R. BIGELOW

> This car is known as the Birney safety car. I presume some of you are wondering why it is called a safety car. Is that name one to sell it by or one to swear by? Well, I hope to prove to you while I am here in Detroit that this car is without question the safest and best from the viewpoints of the operator, the general public and the manager and directors of the company. This car is one-man operated, a feature that is not only feasible but practicable.

Such talk as this could surely be nothing but the forerunner to the surreptitious appearance among those engrossed listeners of a genteel person inquiring solicitously, "Wouldn't you be interested in sharing in the profits to come from this invention which will revolutionize the street railway industry? One man will be able to do the work of two, etc." However, as the demonstration progressed, the pecunious aspirations of some were damped while others felt more at ease. The demonstrator's explanation followed in some such words as these:

> I invite those present to take a trip in fancy with me on this car. You will notice that the car cannot be started when the door is open because the brake is set. When it is released the door automatically closes and the step folds up. After the operator has started the car with this controller he must hold this handle down while he is running. The mere removal of the operator's hand from the controller handle automatically cuts off the power, sands the rails and sets the brake with no other effort on his part. It also causes the doors, both front and rear, to be easily pushed open by any one.
>
> This car has been brought here by the

> Railway Commission of the city of Detroit. I am pleased to inform you that there are over 150 cities throughout the United States in which this type of car is in successful operation and this city is one of the largest places where they are soon to be run.

This successful and magnetic demonstrator was B. R. Bigelow, who has been appointed sales manager of transportation for the Detroit (Mich.) Municipal Railway. His working model was a sample of the 100 safety cars that were, several months later when the track construction was completed, to assist materially in augmenting street transportation facilities. Following up his first successful campaign of selling the public on the Birney car, he later demonstrated the Peter Witt type car with equal success. This scheme of feeling the public pulse was begun before any orders had been placed by the commission and it was almost entirely due to this stanch safety-car advocate that the idea was sold to the commission and city officials as well as to the riding public.

Mr. Bigelow is the first man to hold a position where his entire time is devoted to the selling of electric railway transportation. He was raised on a farm in the hills near Lewiston, Maine. His first electric railway work was "bucking the line" on the extra list. He soon became convinced that a cheerful greeting cost nothing and brought priceless rewards. For pasttime he wrote verse. Such experiences as throwing switches at a lonely spot on a rainy night or sleeping inclined against a favorite post in the carmen's room while waiting on the extra list were the incidents to which he tuned his lyre. One poem which he wrote on the safety car was reprinted far and wide.

Mr. Bigelow's practical experience was gained as motorman and inspector in Maine and later in Bridgeport, Conn. His connection with the Bridgeport division of the Connecticut Company was severed when he became associated with the Detroit Municipal Railway in August, 1920.

During the World War Mr. Bigelow acted as "Four-minute man," delivering addresses at the theaters and at other public gatherings. He often recited his original verses composed to suit the particular occasion.

In January last, when he was made sales manager of transportation, Mr. Bigelow established an office on the site of the municipal railway carhouse and offices where permanent buildings are now under construction. He lives on St. Jean Avenue in a newly settled section of the city where the first municipal cars were started in operation in February, and good-naturedly refers to the outlook from his window as the "Belgian frontier."

The loyalty of the operators to whom the sales manager has taught transportation salesmanship was recently evidenced by their giving him a ring which is prized very highly by Mr. Bigelow and which besides bearing his initials and "M.O. 35" is inscribed "The Pioneers."

Besides his sales talks to the car operators, in which he drives home the fact that courtesy is the keystone in the arch of transportation salesmanship, Mr. Bigelow has delivered safety talks at the city schools with the full co-operation of the principals and teachers and has been requested to talk at various clubs and churches. In his talks to the school children, which must be adapted to various groups from the kindergarten up, he frequently gains the attention of his audience by jokingly referring to his 310 pounds of avoirdupois and the conspicuous absence of his hair. His endeavors with the pupils are as earnest as any. His ideas in his own words are:

> The joy of service ever clings
> And to our hearts its comfort brings.

Secretary Appointed

E. N. Willis, of Long Utility Experience in Texas, Occupies Southwestern Association Post

E. N. Willis was recently appointed secretary of the Southwestern Electrical & Gas Association. Mr. Willis, who took over the work as secretary of the association on Nov. 1, is filling the vacancy caused several months ago by the resignation of H. S. Cooper.

This position affords Mr. Willis an opportunity to continue his previous efforts for the growth and development of all the utilities in the Southwest. He is well acquainted with the public utility problems and personnel throughout Texas and that section covered by the membership of the association through his connection for many years with the Southwest General Electric Company at Dallas, Tex. More recently he was with Smith & Whitney, power plant engineers, as manager at Houston. Mr. Willis is anxious to work with the members for the increased usefulness of the association by enlarging its membership and by making it a clearing house for all information of value to utilities in that section.

E. N. WILLIS

Mr. Willis was born in St. Lawrence County, New York, in 1880. He was graduated in electrical engineering from the Lawrence Scientific School, Harvard University, in 1903. He was connected with the General Electric Company in Schenectady in the test department and as construction engineer from 1903 until 1911, when he went to Dallas, Tex., with the General Electric Company of Texas. Soon after he was assistant to the sales manager of the Southwest General Electric Company. In 1919 he became manager of the Houston office for Smith & Whitney. He has been in close touch with the public utilities throughout the Southwest during the past ten years and from both a commercial and operating standpoint is well qualified for the work of the Southwestern Association.

H. H. Arnold Joins Miami Property

H. H. Arnold, for the past fourteen years connected with the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., has resigned and accepted a position with the Miami Beach Electric Company, Miami, Fla. The latter company, which is owned by Carl Fisher of Indianapolis, is a large concern which furnishes power for factories and beach lines in the neighborhood of Miami, and but several weeks ago agreed to lease and operate the lines of the Miami Traction Company, which were recently purchased by the city.

Mr. Arnold, who has had a very interesting career since joining the traction company, came into the employ of that corporation on July 1, 1917. For several years he worked in various capacities with the interurban system, and four years ago he was made superintendent of the Crawfordsville division. His resignation, which he tendered to the Terre Haute, Indianapolis & Eastern Traction Company recently, took effect on Nov. 15. Upon leaving the company last week, Mr. Arnold took a brief vacation, after which he will leave for his new position in Florida on Dec. 1.

Although no definite announcement has been made, it is believed that Frank Adair, Lebanon, Ind., will succeed Mr. Arnold as superintendent. Mr. Adair has been with the Lebanon branch for several years.

Obituary

James C. Gardiner, employment manager Chicago Elevated Railways, died recently. He had been an employee of the Elevated Lines for over twelve years.

Fred R. Fahlsing, claim agent Indiana Service Corporation, Fort Wayne, Ind., died Oct. 29 as the result of an infection arising from a nasal operation. Mr. Fahlsing was forty-eight years old. He was a native of Fort Wayne and had been in the employ of the Indiana Service Corporation and its predecessor, the Ft. Wayne & Northern Indiana Traction Company, for twenty-seven years.

Charles C. Beckman, a veteran employee of the Pennsylvania-Ohio Electric Company, Youngstown, Ohio, died recently. At the time of his death Mr. Beckman was superintendent of track and roadway of the Youngstown Municipal Railway Company, a position he had held since the Youngstown city railways were segregated under the service-at-cost plan of operation. Prior to that he had been superintendent of ways and structures of the system, rising to that position through years of faithful service. Particularly in Sharon and vicinity was his death keenly felt for it was there as a citizen and as a railway man that he had spent the greater number of his years and it was there as a young man he helped build and then operate the street car line between Sharon and Sharpsville. Mr. Beckman was born on Sept. 13, 1870. He was continuously in the employ of the company from his first construction job in 1893 till his death.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

"Pittsburgh Plus"

Opinions of Two Railway Purchasing Agents Differ as to Justice of This Price Basis

There has recently been a lot of discussion in official circles and in the newspapers about the "Pittsburgh plus" system of fixing prices on rolled steel, except light and standard rails. This discussion has referred to the trade practice of selling steel for a price equal to the market price at Pittsburgh, plus the freight from Pittsburgh to destination, no matter where the shipping point may be.

Certain sections of the country feel that this practice serves as a discrimination where the purchasers happen to be located close to a plant which may be a long way from Pittsburgh. For example: a Chicago purchaser of steel must pay the Pittsburgh market price plus a freight rate of 38 cents per 100 lb. in carload lots for steel shipped to him from Gary, Ind., as this is the rate from Pittsburgh, whereas the actual rate from Gary to Chicago is only 5½ cents. Similarly, the l.c.l. rate that must be paid for steel bought in Gary for shipment to Chicago is 54 cents, while the Gary-Chicago rate is only 17 cents. This represents a premium to the manufacturer in this particular case of 32½ cents or 37 cents per 100 lb. of steel sold, besides eliminating a base price that might be lower if the Chicago market was independent of the Pittsburgh market.

The following views of Harry H. Lloyd, purchasing agent Indianapolis Street Railway and Terre Haute, Indianapolis & Eastern Traction Company, are particularly enlightening:

"I am frank to state that I have never been able to definitely make up my mind whether we would gain or lose if the Pittsburgh plus practice were abolished. If the mills were to sell steel at approximately the same price f.o.b. shipping point, it can readily be seen that the consumer living in the vicinity of any steel mill would reap the benefit. But on the other hand, if prices were about equal, this would eliminate any competition from steel mills at points farther away. If we in the Central West were all buying from the Gary mills the Pittsburgh mills would be eliminated from competition unless they cut prices to equalize the freight charge for the longer haul. Suppose that after establishing business with the Gary mills, they became overloaded with orders, or through some disturbance had to curtail production so that we could not get material which might be needed in a hurry, it might then be necessary to go into the Pittsburgh district at a higher price, because of the additional freight. The Pittsburgh mills might be working up practically to capacity on orders for the district where they control business on account of short-haul freight and they would not be interested in our transient business. The abandoning of the Pittsburgh plus practice might thus give the steel mills a price monopoly on the business in their own district, but I do not believe it would work out even this way in actual practice.

"For example, if an Illinois steel company were selling steel in the Chicago district and its price was $5 or $6 per ton lower than the Pittsburgh market, because of the difference in freight rate, I am inclined to think this company would advance its price a sufficient amount practically to absorb the difference in freight. The Federal Trade Commission would have no authority to interfere and the purchasers in this district would have no power to complain, because they would be buying the steel at as low a price as it could be obtained elsewhere. My opinion is, therefore, that the practical result of abandoning the Pittsburgh plus practice would be to bring about a price which would vary at the different plants an amount sufficient to equalize the variation in freight rates and maintain a perfectly uniform delivery price to the consumer. The same thing applies today in certain bronze products used by all electric railways, on which if one asks quotations from four or five manufacturers located at greatly varying distances a uniform delivered price is bid.

"It has been suggested on occasions that the Pittsburgh base be changed to a Chicago base, and while this would be of advantage to us in this section, it would discriminate against the East, and particularly against the big independent plants. While I know it is thought that the steel corporation benefits by the Pittsburgh base, I think that the plan is really more equitable and of greater advantage to big independent plants such as Bethlehem, Midvale and Jones & Laughlin, as they are located in the Eastern district and therefore could compete there with any of the big plants of the steel corporation.

"I am inclined to think that an abandonment of the Pittsburgh plus plan would force the independents to cut prices to secure business in localities where the steel corporation could maintain a price level, having the effect of putting the big independents out of competition. To illustrate my point, the steel corporation could compete on even terms with Bethlehem, Midvale or Jones & Laughlin in the Pittsburgh district on account of the big Carnegie plant. In the Gary district the corporation could compete on even terms with any local plant through the Illinois Steel Company, or the corporation plant at Duluth. If the purchaser was in the South, the steel corporation would have the advantage through the Tennessee Coal & Iron Company plant at Birmingham. On account of the difference in freight rates, the corporation would have the advantage over the independents located in the Pittsburgh district. Therefore, as one looks at the plan from different angles, it seems after all that in the final analysis the Pittsburgh plus practice presents many advantages to offset any seeming discrimination."

George Kuhn, purchasing agent for the various properties controlled by the United Light & Railways Company, expresses his view of the practice in this way:

"We have felt since the Gary district was opened up that the purchasers of steel in the Central and Western sections of the country are not getting the benefit of the location of the steel mills in this territory. As I understand it, a large amount of the ore used in the Pittsburgh district comes from Michigan or Minnesota and the cost of shipping this should be less to Gary than to Pittsburgh. Presumably the cost of producing steel at Gary does not exceed that at Pittsburgh, and we do not see any reason why the Chicago district steel producers should arbitrarily add the Pittsburgh-Chicago rates on steel that we in the West have to buy.

"On the other hand, I presume that when the Gary mills sell steel east of Pittsburgh they have to meet the Pittsburgh competition, losing the freight that they pay on the finished steel from Gary to Pittsburgh. However, this is only an assumption. We feel that when we are arbitrarily charged the Pittsburgh market price and the Pittsburgh-Chicago rate on our steel we are paying for something we do not get."

Foreign Commercial Laws to Be Digested

The Commercial Laws Division of the Bureau of Foreign and Domestic Commerce, Department of Commerce, which was established some three months ago with A. J. Wolfe as its chief, has undertaken as its first task the preparation of digests of the commercial laws of the principal nations of the world. This undertaking was previously begun in a slightly different form, but never carried to completion. Needless to say, such digests will be invaluable to American firms having dealings abroad. Another project which the division will undertake is the collection of names of reliable attorneys in all parts of the world together with information as to the class of business in which each specializes, whether he undertakes the collection of accounts and his scale of fees, whether he can correspond in English and what American clients he has satisfactorily represented.

Japanese Railway Activity

An indication of the improvement in business conditions in Japan since the 1920 critical financial stress of that country is received from the recent placing of an order with the Westinghouse Electric & Manufacturing Company for substation material amounting to $76,000. This order covers the complete equipment for two substations and includes eight rotary converters, twelve transformers, two complete switch gear equipment and station lighting transformers.

Other large orders for railway material recently have been placed in this country by the Seto Electric Railway, the Bisai Electric Railway, the Nagasaki Electric Railway, the Tokio Municipality and by other large Japanese railway operating companies and municipalities.

Rolling Stock

East St. Louis, Columbia & Waterloo Railway, East St. Louis, Ill., has just completed the construction of one all-steel express car

Miami, Fla.—As a result of the action of the citizens of Miami in voting a bond issue of $100,000 to take over the defunct traction system in Miami, eight new cars have been ordered.

Birmingham Railway, Light & Power Company, Columbia, S. C., recently purchased ten steel car bodies, which are being repainted and equipped with new motors in the shops of the company. The new cars, each of which seats fifty-two passengers, will go into operation about Jan. 1. The cars were originally purchased by the railway at Columbia, S. C., during the war for use on the line to Camp Jackson, where they were used less than ten months. When repainted their color will conform to the regulation of the cars on the Birmingham Railway, Light & Power Company's lines.

Track and Roadway

Jacksonville (Fla.) Traction Company is completing an extension on the Brentwood line, which loops around and into the Florida State Fair grounds.

Oklahoma Railway, Oklahoma City, Okla., has practically completed its Blackwelder Avenue and Linwood Boulevard extensions. The McNabb line to Lincoln Park will be completed about Jan. 1.

Los Angeles (Cal.) Railway has started work on the renewal of tracks, ties and flooring of the part of the East First Street bridge used by the railway. New tracks and ties have been installed on Spring Street.

Plaza Railway, Charlotte, N. C., will begin a program of improvement of its way which will include repairing and ballasting. It is expected the line will begin operating within a month. The company was recently incorporated.

Texas Electric Railway, Dallas, Tex., may extend its line either from Corsicana or Waco to the newly discovered Mexia oil field. This proposition or the possibility of a new line to serve this district has been under discussion for some time and has been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Northwestern Elevated Railroad, Chicago, will install a very complete interlocking plant of the latest electro-pneumatic type next spring. This will be located at the branch-off from the main line to Evanston into the storage yard at Howard Avenue, which is the city limit of Chicago and terminus of a large number of the "L" trains.

Duluth (Minn.) Street Railway will complete work on the Twenty-first Street traction extension by Jan. 1, 1922. This was assured by Alfred Williams, superintendent of the Superior division of the company lines. The Wisconsin Railroad Commission set this date as the limit for the construction work.

New York & Harlem Railroad, New York, N. Y., has finished a connection on Eighty-sixth Street between its tracks and those of the Second Avenue Railroad, a portion of whose shop buildings the former road has remodeled to furnish facilities for repair and maintenance of its cars. This connecting link was necessary, as there existed no other way by which the cars of the New York & Harlem Railroad could reach the Second Avenue shops at Ninety-sixth Street and Second Avenue.

Mobile Light & Railroad Company, Mobile, Ala., according to a press report has suggested that the city permit it to operate its suburban cars across St. Joseph Street north to St. Francis Street as a relief for congested conditions. In the event that this permission is granted, J. Howard Wilson, president of the company, said that the railway would route the interurbans across the street instead of down Dauphin and around Water Street if the city would permit a track to be laid along St. Joseph Street.

Pacific Electric Railway, Los Angeles, Cal., according to engineer H. E. DeNyse, announced recently that the so-called "left-hand turn" at Seventh and Main Streets in Riverside would be eliminated at once. A new track lay-out has just been received for this intersection and work of putting it in place has been begun. There was but a single track curve and both the inbound and outbound San Bernardino-Redlands cars used this curve. As there was not sufficient room between the curb and the track for an automobile to pass a car, there have been many narrow escapes at this point. Fifteen thousand dollars has been appropriated to provide the necessary facilities and the work will be pushed through as rapidly as possible, according to Mr. DeNyse.

Power Houses, Shops and Buildings

Phoenixville, Valley Forge & Stafford Electric Railway, Phoenixville, Pa., is reported to contemplate the construction of a power plant at Williams Corners to meet the need imposed by the operation hereafter by that company of the Montgomery & Chester Electric Railway.

Hydro-Electric Power Commission, Toronto, Can., and the municipality will construct facilities for transfer of passengers and freight between cars of the city railway system and those of the commission at the northern part of the city. The commission and the city will each bear one-half the cost of construction and maintenance.

Mobile Light & Railroad Company, Mobile, Ala., has expended the following sums on improvements since the authorization of the 7-cent fare: One tuscan steel carhouse on Springhill Avenue, $24,688; special track-work at the central carhouse, $25,213; one-story office building at the carhouse, $12,473; Birney safety cars, $58,250; one boiler, $32,654.

Eureka (Cal.) Municipal Railway has announced that it intends to purchase soon a new converter of somewhat larger capacity than the one that now furnishes direct current to the trolley system. The reliability and capacity of the present substation with but one unit is not considered sufficient especially in view of higher standard of service that it is the intention of the municipality to give to the public since the system was taken over from its owners.

Trade Notes

L. H. Lund has been elected auditor of the Westinghouse Electric International Company, to succeed F. N. Kollock, resigned.

Tulsa (Okla.) Street Railway has purchased forty-three watt-hour meters from the Economy Electric Devices Company, Chicago, for measuring the energy consumption of the individual cars.

Holyoke (Mass.) Street Railway has purchased fifty-four Sangamo Economy watt-hour meters of the inspection dial type for a complete equipment of the action cars in Holyoke and Northampton.

Combustion Engineering Corporation, 43 Broad Street, New York, recently opened two branch offices, one at 216 Latta Arcade, Charlotte, N. C., in charge of T. E. Nott, and the other at Seattle, Wash., where the company is represented by Fryer-Barker Company, 1133 Henry Building.

American Steel & Wire Company, Worcester, Mass., contemplates an expenditure of $100,000 on its Worcester works at once to give employment to its men who would be idle otherwise. This is the local share of the $10,000,000 which the United States Steel Corporation has voted to expend in the extension of its manufacturing plants.

Cincinnati (Ohio) Traction Company is having electric heaters installed on some of its cars for experimental purposes. The heaters now are in operation on all cars on the Zoo Eden Park line, because it is impossible to heat with coal, as the smoke pipes interfere with the top of the Mount Adams incline shed through which the cars operate.

Wagner Electric Manufacturing Company, St. Louis, Mo., has announced the appointment of F. T. Coup as district manager in charge of its Cincinnati office, located at 20 East Ninth Street. Mr. Coup is well acquainted with the Wagner line of products, having been connected with the company for many years and until recently in charge of its Milwaukee office.

Edward M. Eliot has been appointed assistant to the vice-president of the Underfeed Stoker Company of America. He had previously been service manager for the Diamond Power Specialty Company, Detroit. Mr. Eliot was engaged in power-plant design and construction for eight years with the Oregon Electric Railway, the Electric Bond & Share Company and other companies. He is a graduate of Massachusetts Institute of Technology.

Virginia Corporation, Alexandria, Va., has been granted a charter by the State Corporation Commission to engage in the business of building remodeling and repairing railroad cars, electric cars, etc. The maximum capital stock is $100,000 and the minimum is $25,000. The officers and directors of this concern are as follows: E. A. Morse, Washington, president; L. D. Christie, Alexandria, treasurer, S. A. Aplin, Washington, secretary.

Westinghouse Electric & Manufacturing Company has established an oil testing service wherein operators can mail samples of insulating oil to the Westinghouse works for test. It provides a thoroughly dry bottle, a safe mailing container, which when received at the works allows careful testing by experienced men and a prompt report of test results. This fills the needs of many power plant operators who have no good method of telling whether or not their transformer oil is in perfect condition.

Detroit Seamless Steel Tubes Company, Detroit, Mich., has again found it necessary, since occupying its new modern plant, to increase its sales staff. The position newly created is that of assistant general manager of sales. C. C. Rosser, head of the department, has announced the appointment of C. H. Hobbs for this position. For over fourteen years Mr. Hobbs was with the Lackawanna Steel Company and for the last five years was the district representative in charge of the Detroit office.

Los Angeles (Cal.) Railway is preparing twenty-five new steel cars seating 54 passengers for service. The cars have multiple-unit control and will be operated singly or in two-car trains. The first of the new cars will be in service about Dec. 1 and some trains will be running by Christmas. The car was designed by the engineering department of the Los Angeles Railway and built by the St. Louis Car Company. Westinghouse motors and air brake equipment is being installed at the Los Angeles Railway shops. Two 526 L Westinghouse motors are used. The car weighs 38,000 lb.

Ikutaro Inouye, an electrical engineer of the government railways of Japan, has recently come to the United States to study electric railway operation. He is at present in Los Angeles investigating the methods in use on the Pacific Electric lines. He will study as well the operating methods in the repair and construction shops of the company and in its power houses and will study in particular the problem of connecting communities on opposite sides of the city.

New Advertising Literature

Pawling & Harnischfeger Company, Milwaukee, Wis., now has available Bulletin No. 206, dated October, 1921, illustrating and describing radial rail drills.

American Steel & Wire Company, Chicago, is distributing a bulletin describing two resistors for welding rail bonds recently developed by the company.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., now has available for distribution bulletin No. 1108, which is a new publication describing the various types and sizes of power transformers built by the company.

Root Spring Scraper Company, Kalamazoo, Mich., has issued a new catalog of its spring scrapers, lifeguards and accessories which is well illustrated and presents in an instructive manner the details of design and operation of these devices.

Jordan Brothers, 74 Beekman Street, New York City, have issued a new publication covering their well-known commutator truing devices. This type of device is used to true commutators and slip rings without taking armatures and rotors out of machine.

Westinghouse Electric & Manufacturing Company is distributing Vol. 3, No. 1 of "Westinghouse Electrification Data." This issue treats of the economy of railroad electrification and includes a portion of the progress report made by the Superpower Survey to the Secretary of the Interior. Among the installations mentioned are the Norfolk & Western Railroad, New York, New Haven & Hartford Railroad, Erie Railroad, Grand Trunk Railroad and Chicago, Milwaukee & St. Paul.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor CARL W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative PAUL WOOTON, Washington Representative

Volume 58 New York, Saturday, December 3, 1921 *Number* 23

Interborough Directors Make a Mistake in Not Testifying

FROM the standpoint of public policy the directors of the Interborough Rapid Transit Company have made a mistake in declining to explain the high dividends declared by the company from 1912 to 1918. Errors in judgment in forecasting for any considerable time the profits of the company may be readily understood, in view of the fall in the purchasing power of the nickel following the opening of the World War. There may also have been a reasonable expectation on the part of the directors that the company would receive power to increase the rate of fare, as has been the case in every other large city in this country. As regards such mistakes the public will be lenient, if frank explanation of them is made. But the directors in question unfortunately have not taken this opportunity to take the stand in the transit hearing, although the attitude of the railway witnesses up to this time has seemed sympathetic to the announced purposes of the inquiry.

The facts so far brought out appear to be that soon after the Interborough Rapid Transit Company had commenced operation in 1904 and had leased the Manhattan Elevated Railway, the combined property was found to be quite profitable. At first the directors were conservative as regards the dividends declared, but in 1912, when contract No. 3 came up for signature, the company found itself to be in so powerful a position that it was able to exact a large preferential from the city. Obviously that was the time to have husbanded its resources, because the contract required the establishment of a large number of lines which obviously would not pay for some time. But, considering it was protected by its preferential, the company continued the policy of high dividends, paying 16 per cent in 1912, 12 per cent in 1913, 15 per cent in 1914, 20 per cent in 1915, 1916 and 1917, 17½ per cent in 1918 and 5 per cent in 1919. The total amount paid on the capital stock of the company in the past eighteen years—187½ per cent—would not be considered excessive in most other lines of business for a company which had proved a money maker. Nevertheless the policy of high annual dividends was continued after the money inflation due to the World War had become generally apparent and thereby reduced the company's cash reserve.

It is too early to comment fully on the reasons for the various financial acts taken by the directors, but the part the holding company—the Interborough-Metropolitan, later the Interborough Consolidated—played in the dividends declared is apparently an important one. The creation of this holding company was perhaps a natural and useful step at the time and has many counterparts in railroad and industrial financing. Before its organization, the subways and the surface lines were being operated separately. It was evident that money would be saved and efficiency secured by unified operation, but on account of several factors it was impossible to combine the two properties into one. The natural move was a holding company, as named above. This company acquired the greater part of the stock issues of the Interborough and of the Metropolitan surface lines and issued preferred and common stock as well as 4½ per cent collateral trust bonds, securing the latter by its holdings of Interborough stock in the ratio of two $1,000 bonds to 10 shares of stock. While the Interborough stock at this time seemed amply able to pay more than the 9 per cent dividend required for the interest on these bonds, yet the organization thus created was essentially a pyramiding of securities on the basis of possible future profits before these profits were reasonably secure. Then a time came when the profits of the Interborough decreased because of rising expenses, and the holding company apparently became a convenient agent from which money could be borrowed to tide over what appeared a temporary condition. An interesting sidelight on the result of this financial policy is furnished by the fact that the 4½'s referred to which sold at the time of issue close to par now sell at about 13, while the Interborough Consolidated preferred and common stock which sold as late as 1915 at about 80 and 25 respectively are now quoted at about 6 and 2.

This is not the only time, either in railroading or other lines of business, that an enterprise starting out under most favorable auspices has been brought to grief through too great optimism for the future or because of an improper forecast of coming events. There is so much that is intrinsically stable about public utilities that there ought not to be a possibility of their becoming a basis for speculation in Wall Street. In the proposed new financing of railway properties in New York this point should be assured so far as is reasonably possible.

For Politics or Spur to the Company?

WHETHER or not the people of Chicago derive any benefit as the result of the Illinois Commerce Commission's order for a 5-cent fare, two things were accomplished. The campaign pledge of the Governor and Mayor was carried out, for certainly they cannot be held accountable for failure of their pledge if the courts stand in the way of its accomplishment. And by ordering a rate of fare impossibly low, the traction question is left unsettled and therefore is preserved to future campaigns as the premier of issues

Some of the conclusions reached by the commission are without substantiation in evidence presented and some ignore evidence to the contrary. In the former category are the commission's statements on the matter of service, which forms the predominating note of the order. The service is "grossly inadequate and inefficient," the companies are "managing and operating their street railways extravagantly and inefficiently," and citation is made of "certain items of operating costs peculiarly indicative of slack management." Another significant statement in this connection is as follows: "We believe respondent companies will profit most by basing their claim for additional rates of fare on the value of the service they render to the public as well as on their own constitutional rights." In another place the commission states that the character of service being rendered is not worth more than 5 cents.

Since it is very difficult to find that the commission has justified the 5-cent fare in its order, and in view of the evidence to the contrary submitted at the hearings, it is perhaps a plausible conjecture that the commission had it in mind to render a decision that would shock the companies into action to install economies known to be possible but not adopted. This would represent a somewhat unusual procedure, but it forms about the only satisfactory explanation—aside from politics—of a 40 per cent reduction order.

A unique part of the decision is the order to stop payments to the renewal fund and the recommendation that the city agree to release the company from paving, sprinkling and sweeping, both being required by the 1907 ordinances. These are of interest in view of the fight the city has carried to the United States Supreme Court (and lost) to hold the companies to the contract rate of fare. Now, apparently, the city is willing to accept elimination of the 8 per cent renewal requirement, though this has been the means of keeping the Chicago surface railways in a physical condition excelled by few if any street railways in the country. Its abandonment now might readily result in time in an opposite condition—a matter of very great concern to the car riders, for it would jeopardize the value of the property for which the city has agreed to pay in 1927 a certain price which is predicated upon the continuous expenditure of the 8 per cent in maintaining the property value. It is also interesting to note that no mention is made of a reduction in wages of employees, which, at 80 cents an hour for trainmen, are the highest in the country. This would have been unpopular with the labor constituency.

Mr. Hoover Heaves a Heavy Brick and Helps Standardize Paving Bricks

THAT Secretary Hoover believes in practicing what he preaches is evidenced by the number of conferences relating to standards which are being held at Washington under his auspices. On Nov. 15 such a conference was held on the subject of "Elimination of Excess Varieties of Paving Brick." This was the second conference on the subject and there resulted an agreement to the effect that only eleven out of sixty-six varieties of paving brick which have found currency in the brick industry need to be retained. This amounts to a reduction of 83 per cent in variety and may be considered as a very practical illustration of what may be done in standardization through earnest co-operation.

The United States Chamber of Commerce and the National Paving Brick Manufacturers' Association were active in the matter and the last conference was largely attended by representatives of the various interests involved, about equally divided among manufacturers and users of paving brick. The importance of the industry affected and the results obtained through Secretary Hoover's ability to organize such conferences on standardization matters are considered as good evidence that the administration is standing back of its promises to attempt all possible means of reducing costs not only in government departments but also in all lines of industry. An abstract of the matters discussed at the conference will be found on another page.

The Vice-Presidents Are Put to Work

THE committee appointments of the American Association, announced in last week's issue, are another indication of the closer active management to be expected under the new régime. President Todd has quite definitely put the vice-presidents—and as a matter of fact all the active members of the executive committee —to work. This is as it should be. These men were elected to manage the affairs of the association, and President Todd is to be congratulated that he has so adequately placed them all in positions which will assist the association in its committee work and assist the men concerned in the work which they perform on the executive committee.

An examination of committee chairmanships and personnel will show the four vice-presidents in active charge of four of the seven most important committees —the six standing committees and the membership committee. The other three are headed by three past-presidents, eminently qualified for their particular posts. This use of the vice-presidents puts into operation in a practical way the principle of having vice-presidents take a definite place in association management. They will be better presidents in the future for this very reason.

It will also be seen that every executive committee member is on some committee and also that every committee has a member of the executive committee among its membership.

All this is good and augurs well for association activity during the coming year.

Will Detroit Bury the Hatchet?

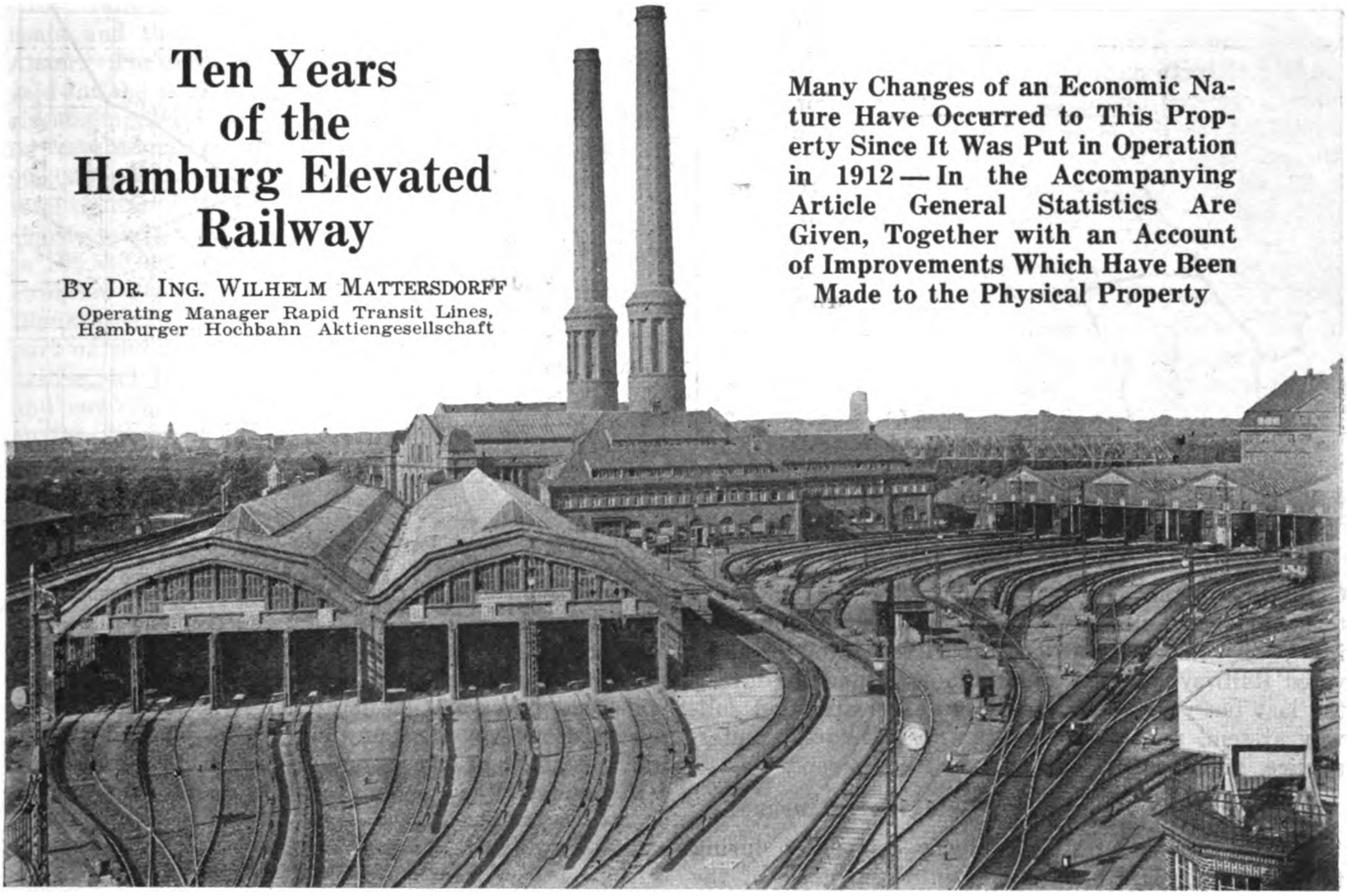
GOOD news comes out of Detroit. It is too soon to sound the tocsin of success for the negotiations under way there, but a good start has been made toward an agreement looking to mutual operating rights between the Detroit United Railway and the Detroit Municipal Railway over the so-called ouster lines. Mayor Couzens has delegated complete authority to the Street Railway Commission to act in his absence, and while he has the final word, it would appear unlikely that he would be unwilling to sanction any basis of agreement reached by those acting for him, particularly where the public has so much at stake. As far as the matter has been developed in the negotiations, the basis of the understanding would appear to be fair to both sides.

No matter what the outcome may be of the present negotiations, the event of the holding of the conferences is propitious for the company in that it marks the complete entry of Alex Dow into the relations of the company with the public. This means a great deal. As the representative of the new interests in the company he comes to the problem with a new point of view and the prestige for fair dealing that has made the Detroit Edison Company, of which he is president and general manager, a popular private institution and a huge success financially. Mr. Dow's sitting in at the conference augurs well for the future of all concerned. In short, the warring interests in Detroit would appear to be about to bury the hatchet. They ought to bury it. And having buried it, both factions in Detroit ought to forget the location of the place where the interment took place.

Ten Years of the Hamburg Elevated Railway

By Dr. Ing. Wilhelm Mattersdorff
Operating Manager Rapid Transit Lines,
Hamburger Hochbahn Aktiengesellschaft

Many Changes of an Economic Nature Have Occurred to This Property Since It Was Put in Operation in 1912—In the Accompanying Article General Statistics Are Given, Together with an Account of Improvements Which Have Been Made to the Physical Property



General View of Carhouses, Repair Shops and Power Station

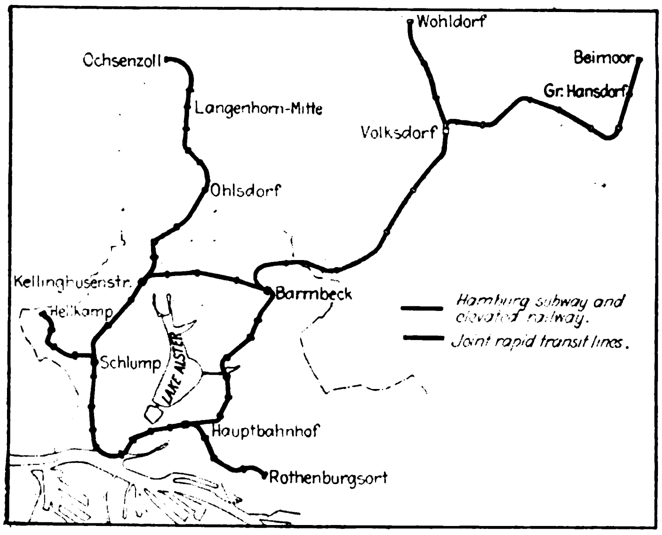
The Electric Railway Journal of March 8 and 15, July 5 and Aug. 2, 1913, contained a detailed description of the routes and installations of the Hamburg Subway & Elevated Railway. The operating company, called "Hamburger Hochbahn Aktiengesellschaft," was organized in 1911 and service on the first section was begun March 1, 1912. During the ten years which have passed the form of the company has changed, its line has been extended and its traffic has grown immensely, but the war and the resulting changes in economic and technical conditions have greatly affected the property. Originally an entirely private undertaking, with a capital of 15,000,000 marks, the company was consolidated in 1918 with the Hamburg Street Railway and the entire enterprise was then changed to a combined state and private undertaking. By this change the field of the consolidated company was extended to include nearly all existing transportation lines in Hamburg. Today the company operates not only a subway and elevated railway but also the adjoining rapid transit lines within a radius of about 20 miles from the center of the city, all surface street railway lines of Hamburg and environs, steamboats on Lake Alster and a bus line.

These changes required a complete reorganization and expansion of the executive force over that given on page 415 of the Electric Railway Journal for March 8, 1913. The board of directors is now made up as follows: In charge of general affairs, Mr. Stein; of financial affairs, Mr. Liez; of operation of the elevated railway and Lake Alster steamboats, Dr. Mattersdorff; of operation of the surface bus lines, Mr. Walther; of legal affairs, Dr. Mumssen.

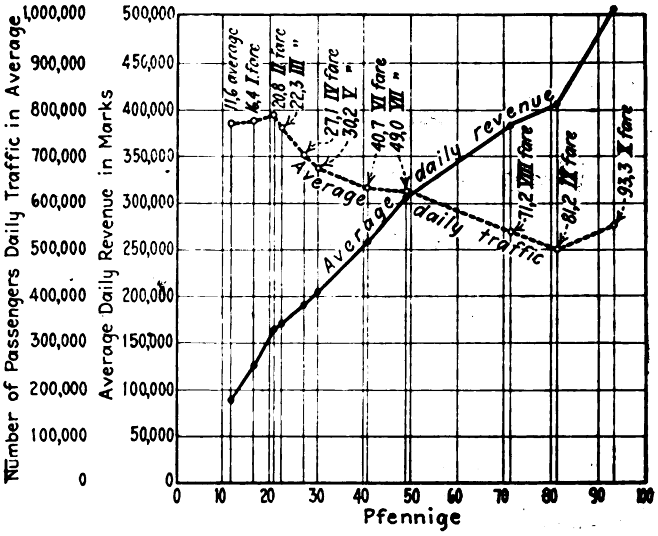
The following article will describe the origin in

TABLE I. STATISTICAL REPORT OF ALL BRANCHES OF THE HAMBURGER HOCHBAHN AKTIENGESELLSCHAFT

	Kilometers of Route	Kilometers of Track	Number of Cars Operated	Car-Kilometers or Boat-Kilometers	Number of Cash Fare Passengers	Number of Commutation Ticket Passengers	Total Number of Passengers	Passengers per Car-Km. or Boat-Km.	Operating Revenue in Marks	Revenue per Car-Km. in Pfennige	Revenue per Passenger in Pfennige
For First Six Months of 1921											
Subway and elevated (with connecting lines	....	....	....	3,288,477	17,901,772	3,838,097	21,739,869	6.6	19,690,700	598.8	90.6
Walddörfer Railway	....	....	....	207,395	481,068	239,895	720,963	3.5	665,025	320.6	92.
Surface lines	....	....	....	15,424,747	71,533,111	5,346,968	76,880,079	5.0	69,695,053	451.8	90.7
Lake Alster boats	....	....	....	87,791	832,144	247,787	1,079,931	12.3	971,275	1,106.3	89.9
Total	....	....	....	....	90,748,095	9,672,747	100,420,842	....	91,022,053	......	....
For August, 1921											
Subway and elevated (with connecting lines)	....	....	....	....	3,248,009	826,723	4,074,732	6.9	3,744,491	629.7	91.9
Subway and elevated (alone)	28.01	64.0	147	594,601	3,021,536	742,058	3,763,594	6.3	3,456,788	581.4	91.8
Walddörfer Railway	12.5	12.5	12	64,100	153,321	60,393	213,714	3.3	204,690	319.3	....
Langenhorn Railway	7.7	15.47	16	55,738	188,516	73,052	261,568	4.7	109,972	197.3	....
Surface lines	189.985	377.89	1,149	2,643,598	13,441,789	929,537	14,371,326	5.4	13,469,189	509.5	93.7
Lake Alster Shipping	27.5	....	8.5	22,971	240,287	54,755	295,042	12.8	289,715	1,251.5	92.7



MAP SHOWING ROUTE OF SYSTEM, INCLUDING CONNECTING LINES



RELATION BETWEEN DAILY TRAFFIC AND AVERAGE FARE IN PF.

Germany of the term "gemischt wirtschaftliche unternehmangen," literally "mixed commercial undertaking"; why that term is applied to the Hamburg Elevated Railway, and all important developments during the last ten years on the company's elevated and subway system, relating to traffic, rates of fares, routes, service, management and technical equipment.

A COMBINED PUBLIC AND PRIVATE ENTERPRISE

In Germany many street railway companies during the past few years have passed into the hands of the municipal authorities. In the case of some of these the municipality has taken over a part, in many cases 50 per cent, of the capital stock of the company. In such cases the company is called by the German expression already mentioned to signify that it is a combined public and private enterprise. It is the hope by this kind of organization to obtain at the same time (1) administration in public interest, (2) economical management, and (3) the enterprise and initiative characteristic of the private business man.

Originally the Hamburger Hochbahn Aktiengesellschaft was a stock company which leased the Hamburg subway and elevated railway system from the State of Hamburg for a proportion of the gross earnings. Beginning July 1, 1918, a new arrangement went into force by which the state of Hamburg became an actual stockholder. Under this agreement the state exchanged its interest then existing in the property for 56,130,000 marks in Form B shares. The franchise has no expiration date; *i.e.*, it is perpetual. The elevated railway company was also required to buy up the stock of the Strassen Eisenbahn Gesellschaft (the surface line company) and to operate the surface

TABLE II. FARES CHARGED AT FOUR PERIODS ON SUBWAY AND ELEVATED RAILWAY (all figures in pfennige)

	From Beginning to June 30, 1918	From June 14, 1919, to Nov. 20, 1919	From April 20, 1920, to Dec. 16, 1920	From Feb. 14, 1921, to Date of Writing
Cash fares				
For five or less stations..........	10	25	60	80a
From five to ten stations.........	15	30	80	100a
Full length of line..............	20	35	100	120a
Weekly ticket (twelve rides).......	110	300	900	1,000
Monthly commutation tickets				
For eight or less stations.........	.....	2,200	*	b
For more than eight stations.....	.....	3,200	*	*
Yearly commutation tickets				
For eight or less stations........	8,200	24,000	*	*
For more than eight stations.....	14,700	36,000	*	*

* Abandoned.
(a) Double this fare after 9:30 p.m.
(b) 75 marks for minimum distance, 20 marks for each additional station.

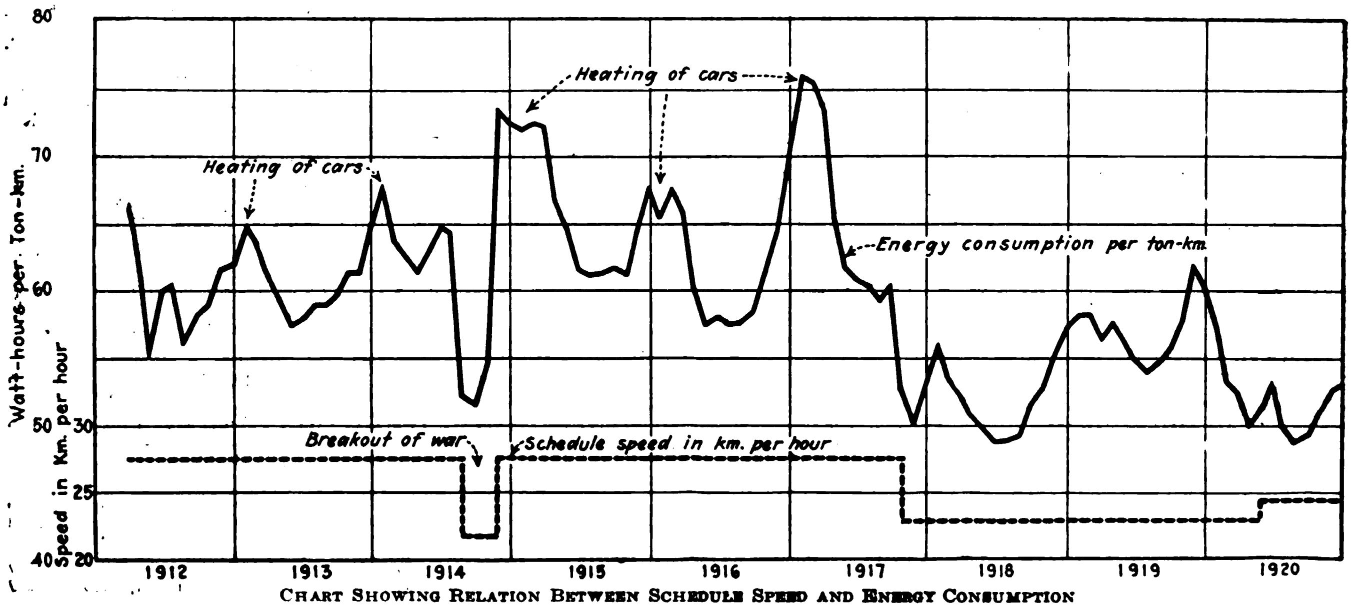
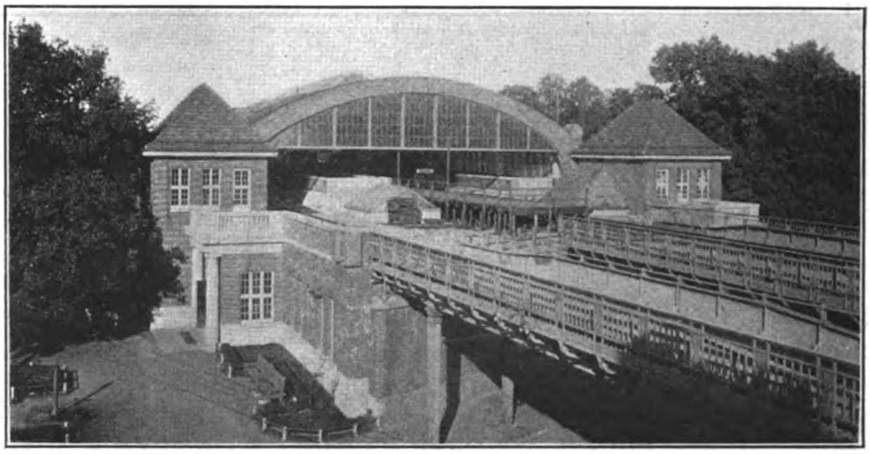


CHART SHOWING RELATION BETWEEN SCHEDULE SPEED AND ENERGY CONSUMPTION



PASSENGER STATION AT VOLKSDORF

street railways and also the steamboats and the steam ferry of Lake Alster. The elevated railway company paid for the stock of the old Strasseneisenbahngesellschaft 31,500,000 marks in Form A shares and for the boat line 900,000 marks in Form A shares. The total capital of the company (A and B shares taken together) amounts now to 103,530,000 of marks. Except the Prussian State Railway system from Blankensee to Ohlsdorf, which is today part of the new "Reichseisenbahnen" system, all transit lines of Hamburg and environs, including the Prussian surface lines to Altona, Wandsbek, Harburg, etc., are now consolidated in the "Hamburger Hochbahn Atkiengesellschaft." The franchise of the Hamburger Hochbahngesellschaft declares that the fares shall be such that a dividend of 6 per cent on Form A shares may be paid, and the state guarantees that the dividend shall be at least 5 per cent. The dividends on Form B shares, according to the franchise, are to be 1 per cent less than on Form A shares. The dividends on Form A shares during the past three years have been as follows: In 1918, 6 per cent; in 1919, 1½ per cent from earnings and 3½ per cent from the state; in 1920, 2 per cent from earnings and 3 per cent from the state.

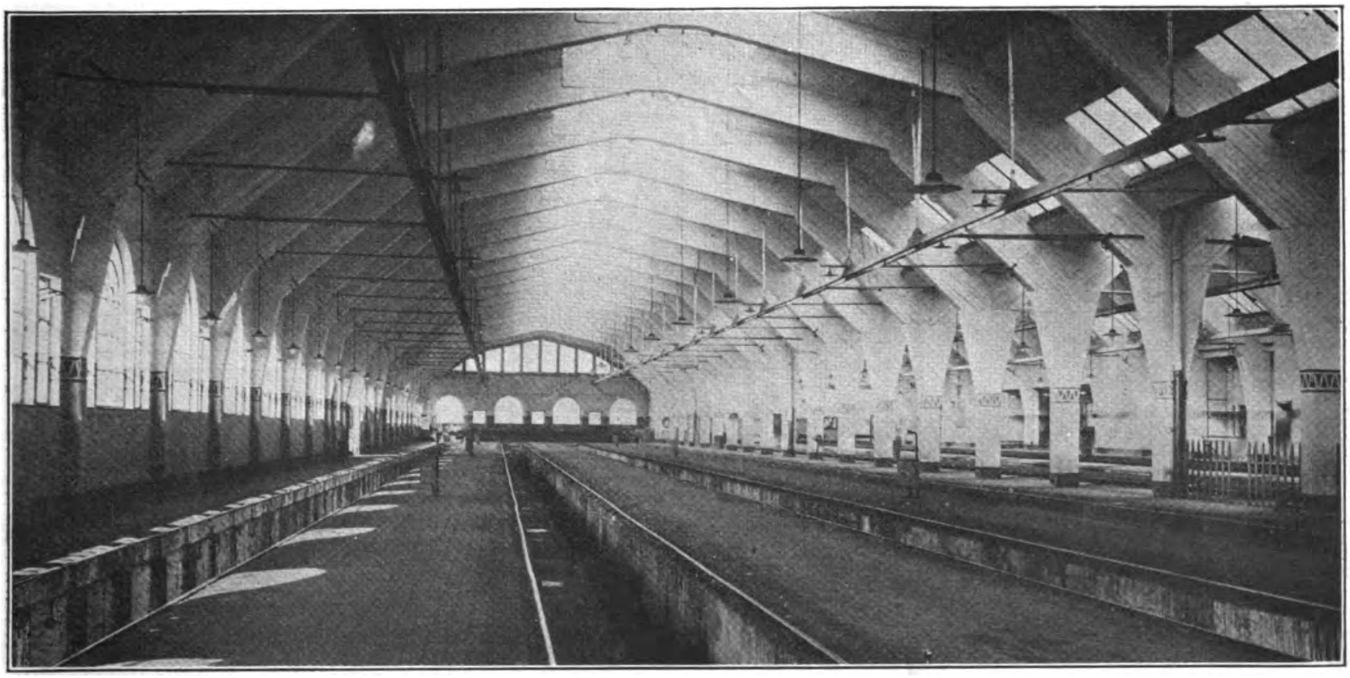
TABLE III. BASIC SCHEDULE OF THE SUBWAY AND ELEVATED RAILWAY LOOP

	Time for Running Around Loop		Headway of Trains in Minutes		Speed per Hour	
Beginning	Without Allowance for Delay	With 2 Minutes Allowed for Delay	Usual	For Evening and Sunday Morning	In Km.	In Miles
March 1, 1912	38	40	5	10	27.6	17.2
Aug. 6, 1914	48	50	5	10	21.8	13.6
Dec. 1, 1914	38	40	5	10	27.6	17.2
Nov. 3, 1917	46	48	6	12	22.8	14.2
May 19, 1920	43	45	7½	15	24.4	15.2
Oct. 1, 1921	43	45	5	15	24.4	15.2

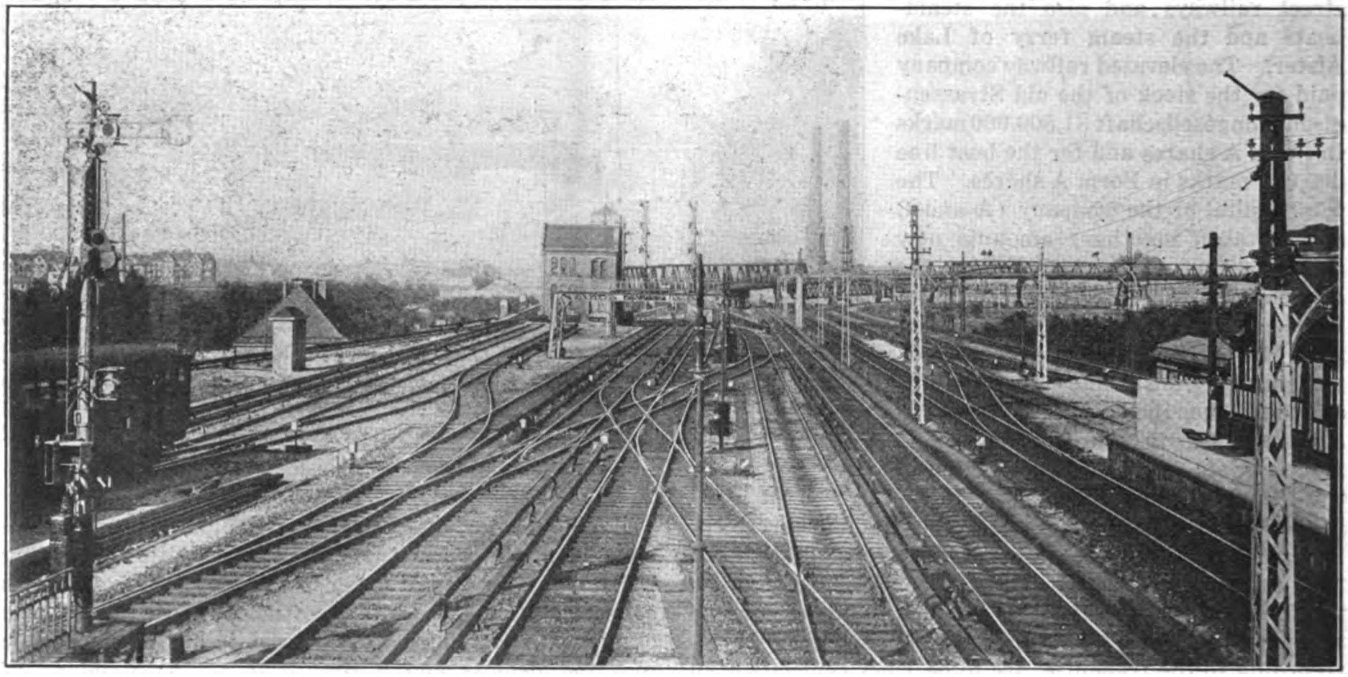
While most of the German municipal railways have done badly in these turbulent times with fluctuating exchange, it is a matter for congratulation that results so satisfactory as those mentioned above have been obtained in Hamburg, for at least it has been possible to avoid deficits and a receivership. A summary of the reports of all branches of the company for the six months ended June 30, 1921, and for August, 1921, is given in Table I.

FARES AND TRAFFIC

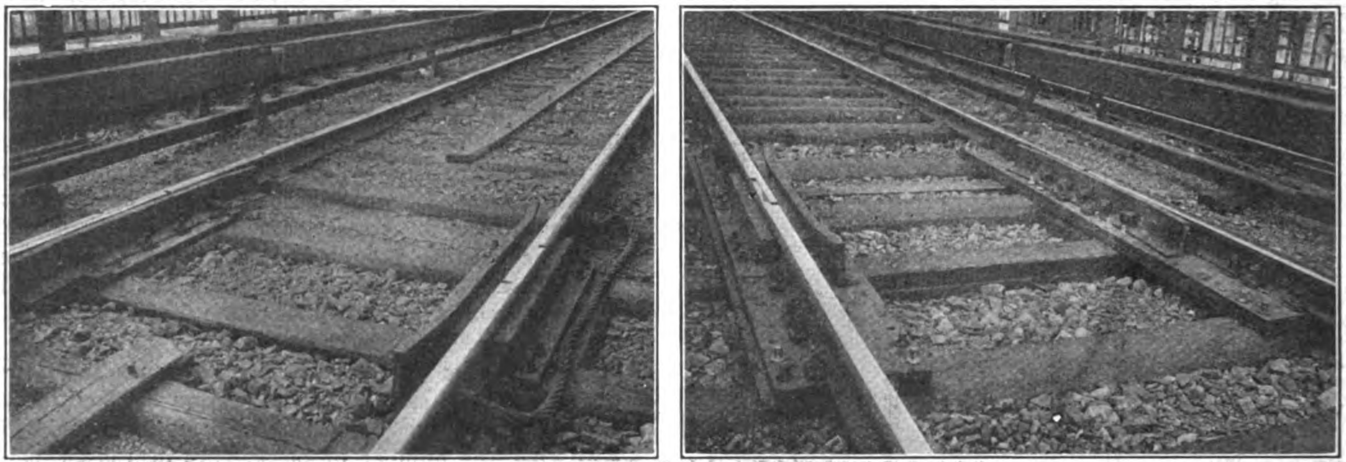
According to the new arrangement the company is obliged to consider the transit problems of Hamburg from the point of view of the traffic requirements, so competition was eliminated. As there is now no fundamental need to attract traffic, it has been possible as well as desirable to equalize proportionally the rates of fares for the different kinds of transit and to let time determine which of the various means of transport passengers would prefer. A diagram showing the number of passengers in three-month intervals on the subway and elevated railway from the beginning of the service to the year 1921 is presented. It will be seen that the number of passengers decreased con-



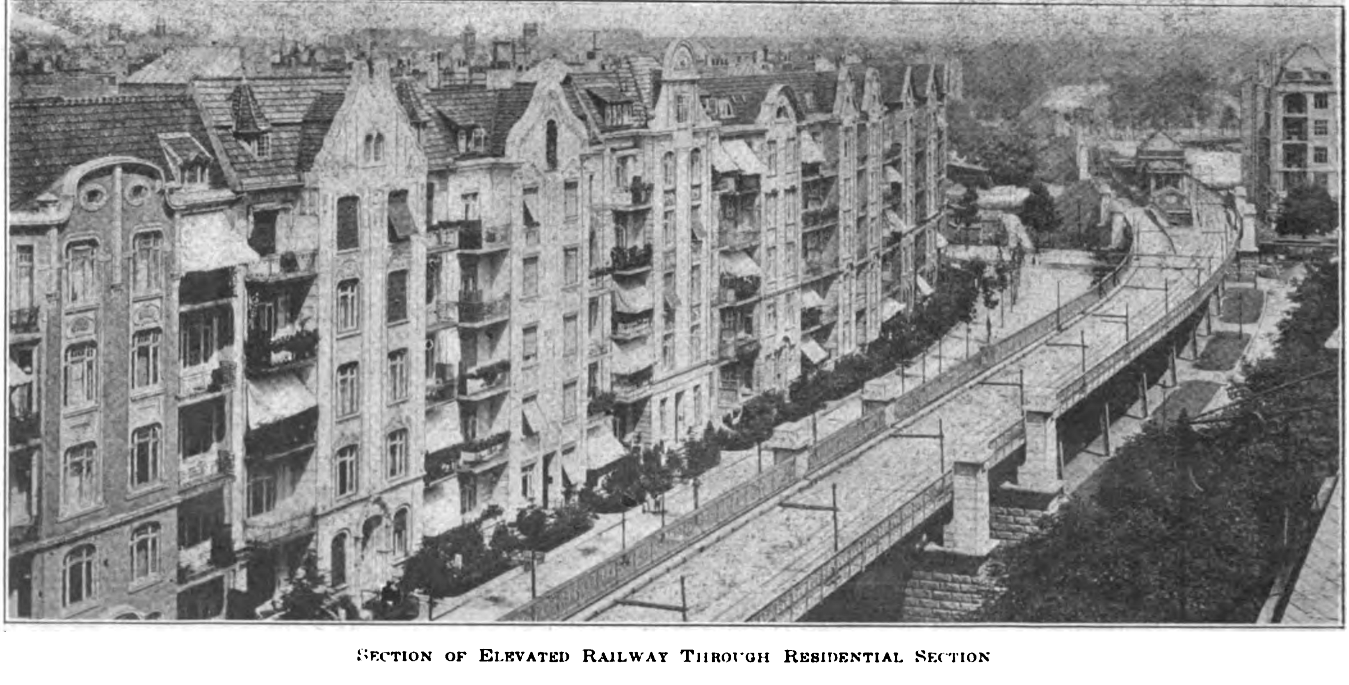
LATEST CARHOUSE TO BE BUILT



TRACKAGE AT BARMBECK JUNCTION

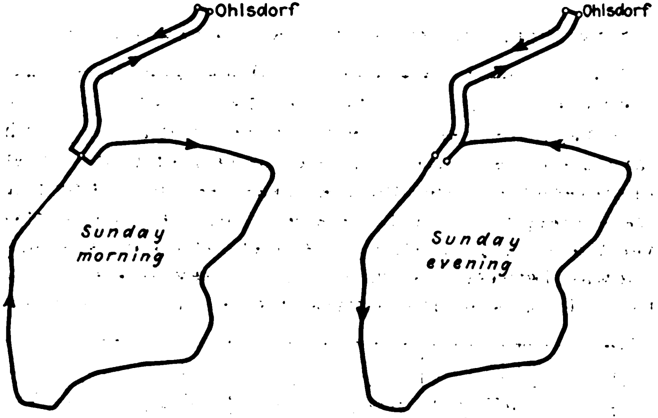


FORMER AND PRESENT METHOD OF MAKING EXPANSION JOINT

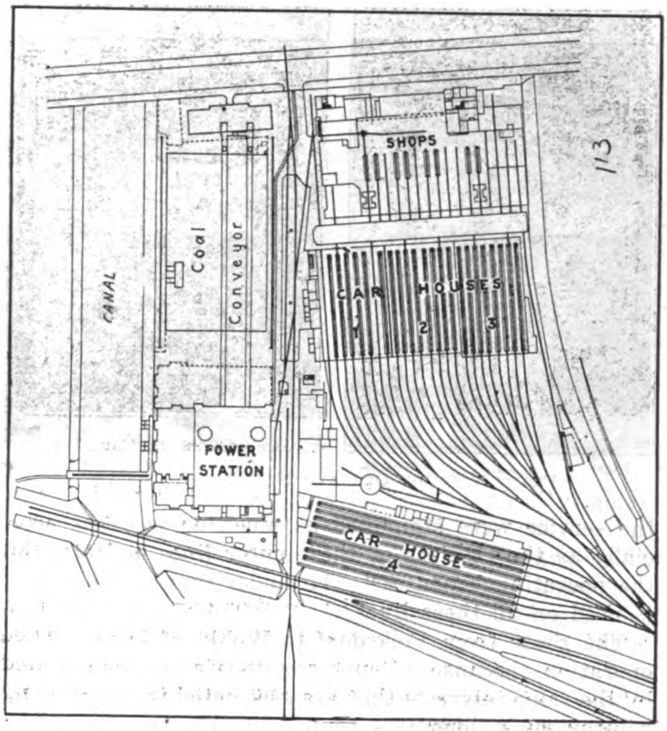


SECTION OF ELEVATED RAILWAY THROUGH RESIDENTIAL SECTION siderably after the outbreak of the war, but that later on it began to increase again, at first slowly, afterward at a faster rate, during the further course of the war, until 1918.

In 1919 wages began to rise and German exchange to decline; therefore fares rose, at first slowly, soon much more rapidly. In 1914, before the war, wages for unskilled workmen in Hamburg were 45 pfennig per hour. In October, 1921, they were 7.55 marks, an increase of approximately 1,600 per cent. In 1920 salaries and wages on the system amount to 62.7 per cent of all operating expenses and during the first half of 1921 to 64.2 per cent. Several steps in the rise of the rates of fares of the Hamburg Elevated during the same time will be seen in Table II. There were various intervening steps, making about ten changes in all. A comparison in the chart of traffic with Table II shows the disastrous effect which the increase in the rates has had on the total number of passengers. This effect was the greater because of the fact that the Reichseisenbahn or Government road did not raise its rates sufficiently to accord with the fall in value of German currency. The competition of this road was therefore severe, and much of the traffic went over to the parallel route, Blankenese-Ohlsdorf.



SUNDAY TRAIN RUNNING PLAN FOR OHLSDORF EXCURSION TRAFFIC



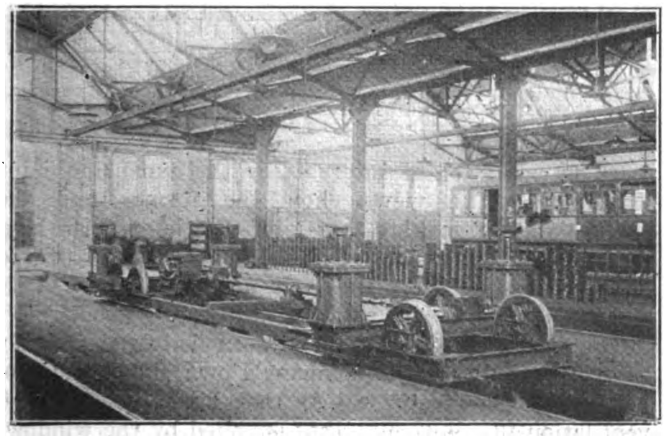
GENERAL PLAN OF CARHOUSE, SHOPS AND POWER STATION

The consequence was that trains had to be run at longer intervals and the public got used to patronizing the surface street railway lines. Between November, 1920, and April, 1921, a flat fare, first of 30 pfennige, then of 40 pfennige and then of 50 pfennige, was tried, but on April 20, 1921, there was a return to the former zone fare. The second class service was abolished in December, 1920. This change was damaging to the finances of the company, but for political reasons it seemed to be necessary. One of the accompanying diagrams shows how the average daily traffic in all branches declined in consequence of the increased fares.

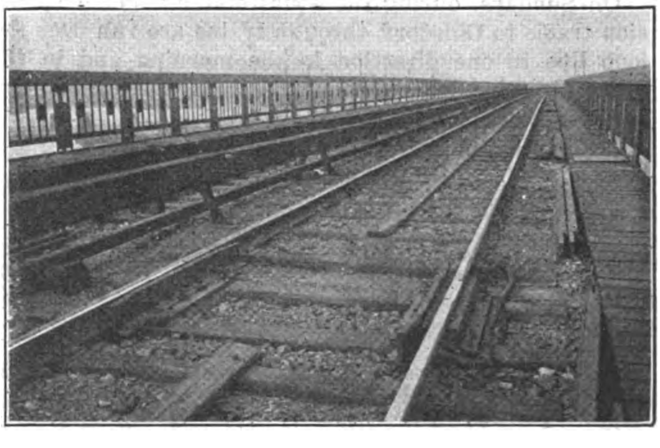
NEW ROUTES

The main lines of the Hamburg Subway and Elevated Railway, described in the ELECTRIC RAILWAY JOURNAL of 1913, were completed in 1915 and consist of 17.2 miles (27.5 km.) of route, all double track. Between the beginning of the war in 1914 and October, 1921, the length of lines increased from 12.8 miles (20.5 km.) to about 37.5 miles (60.0 km.), *i.e.*, about three times. The length measured as single track in October, 1921, was 95.5 km., or about 60 miles.

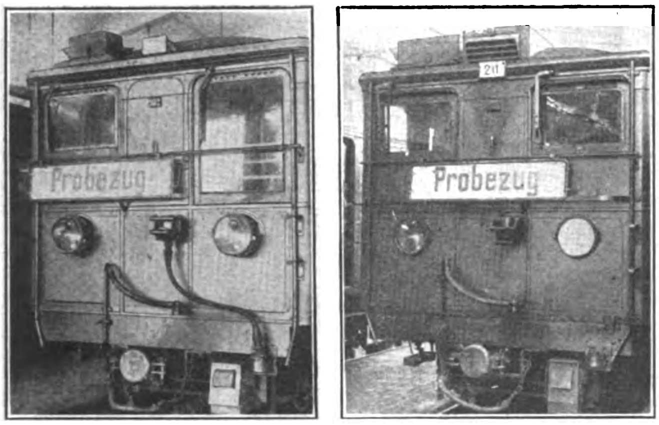
The extensions were built by the state of Hamburg according to plans made before the war, and fortunately much of the work was finished before high prices set in. Views showing some interesting constructional features on these extensions accompany this article. Owing to the enormous rise in prices for all materials after the war, the service could not be opened on all routes to the extent originally planned. Therefore, some sections are working only with one provisional track, instead of two tracks, and all arrangements for



TRAVELING CAR HOIST



WOODEN GIRDER SPIKED TO TIES TO PREVENT CREEPAGE



FRONT VIEW OF OLD AND NEW TYPES OF CAR

the service were simplified as much as possible, especially as the receipts of these outer lines do not cover the operating expenses. The under-running third rail is used on all these lines.

The route from Volksdorf to Wohldorf is not yet in operation, because a surface electric railway owned by the same interests that are associated in the elevated railway runs along this route and satisfies all existing transportation needs.

As shown in the map, the main line of the subway and elevated railway is a loop or belt line, hence the headway on each branch line must be some multiple of that on the loop. Table II shows the headways and speeds used. At the beginning of the war material lowering of the speed had to be made because many of the motormen and signalmen were called to the army immediately after the mobilization. Moreover, the service had to be continued largely without signals. As the table shows, this inconvenience was overcome on Dec. 1, 1914. In 1917 the great demand for coal by the manufacturing industries made it necessary to economize with fuel and again to lower the speed. It is notable that for the lower speed of 14.2 miles (22.8 km.) per hour the energy consumption was 10 to 20 per cent less than at the higher speed. This result is shown in the chart of energy consumption. In 1920 another feature influenced the schedules; at that time the fares jumped up in consequence of a sudden declining tendency of the German money. After the fares had been raised, a greater competition of the Prussian State Suburban Railway set in. The traffic sank so rapidly that the number of trains had to be reduced.

On Sundays, during the hours of the summer excursion traffic to Ohlsdorf, through trains are run over the loop line in one direction in the morning and in the other direction in the evening, as shown in an accompanying small diagram. These through trains consist of four or five cars. In the opposite direction on the loop two-car trains are run.

TABLE IV. NUMBER OF DEFECTS IN THE ELECTRICAL CAR EQUIPMENTS

I. Damages of the kind which affect the unit equipment.
II. Damages of other kinds.

Year	Motor Flash-over I	Motor Flash-over II	Motor Air Pump I	Motor Air Pump II	Reverser I	Reverser II	Controller I	Controller II	Contactors I	Contactors II
1912	...	13	1	1	4	13	10	7	33	73
1913	20	38	15	40	50	75	24	79	116	192
1914	79	406	8	9	44	80	21	68	114	162
1915	15	215	...	...	39	71	26	107	231	352
1916	17	274	4	26	23	65	26	146	318	437
1917	5	998	20	66	20	85	15	126	241	394
1918	18	611	22	71	20	98	26	131	138	318
1919	14	187	39	50	20	59	21	88	155	309
1920	4	90	31	49	15	50	18	52	85	177
Total	158	2,645	101	262	210	537	166	716	1,276	2,005
I:II	1:	16¾	1:	2½	1:	2½	1:	4⅓	1:	1½

The following figures show the average number of passengers carried per car-mile and car-kilometer:

	Average Number of Passengers per Car-Mile	Average Number of Passengers per Car-Kilometer
1912	8.16	5.10
1913	8.38	5.24
1914	8.40	5.25
1915	8.09	5.06
1916	8.72	5.45
1917	10.93	6.83
1918	11.89	7.43
1919	12.53	7.83
1920	11.02	6.89

Recently changes in personnel have been made to effect economy. The attendants at stations have been reduced in number, and the starting signal is given now by a train guard instead of by a station starter. The signal system has been simplified, and an automatic relay has been installed in the lighting circuit in the tunnels. The tunnel circuit is on a storage battery and formerly the lamps were kept continuously on this circuit. Now, by means of this relay, the circuit is on only when the third rail circuit fails or there is other special need for light.

NEW WORK IN BUILDINGS AND PERMANENT WAY

The proposed extension of shops and carhouses, mentioned in the ELECTRIC RAILWAY JOURNAL, Vol. XLI, page 468, has now been accomplished and a fourth carhouse of reinforced concrete has been erected. Other improvements made include measures for preventing track creepage on the elevated structure. As a preventive of this trouble a wooden stringer was laid midway between the rails and is screw-spiked to the ties. Expansion and contraction of rails in exposed track is cared for at intervals by the expansion joint illustrated. The views show the former and the present way of making this joint, the later form having a much longer base plate. Copper bands proved liable to loss by theft and have now been replaced by steel cables. They are attached to the rail web.

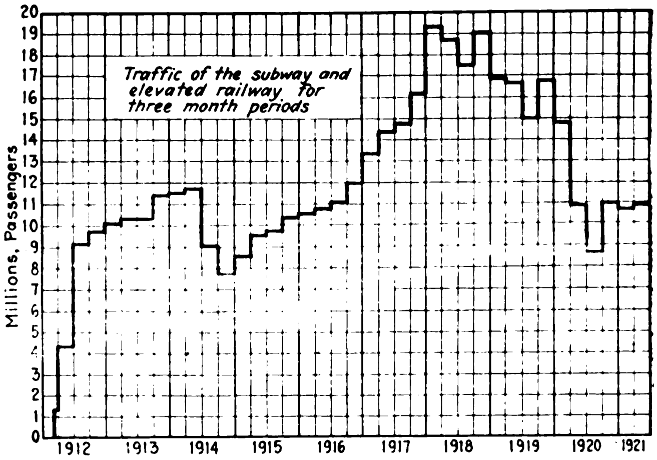


CHART SHOWING PASSENGERS CARRIED IN THREE-MONTH INTERVALS FROM BEGINNING OF OPERATIONS OF THE SUBWAY AND ELEVATED RAILWAY

The twenty cars which have been delivered recently have been built in the company's own shops and embody some new features. As they have an arch roof, ventilation in addition to that supplied by the windows was necessary, and an opening of 17¾ in. x 6¾ in.

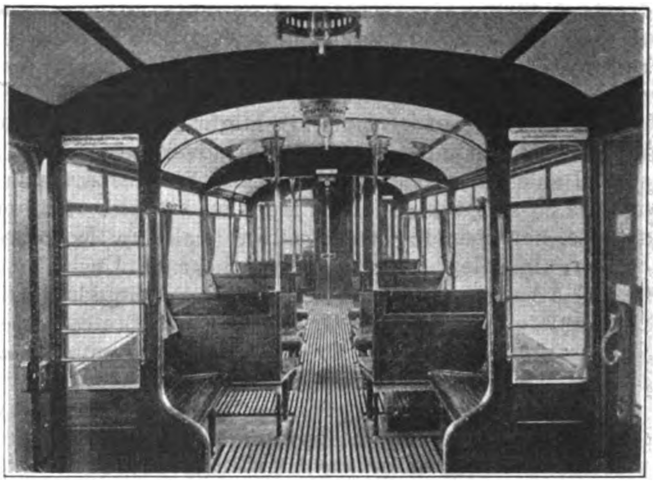
(45 cm. x 17 cm.) with louvres was provided in the hood. The marker lights are sunk into the ends of the car below the windows instead of being attached to the outside so as to provide better protection against damage. In consequence, the motorman's window has to be made smaller.

The truck construction was brought up to date; all bolt-holes are provided with renewable steel bushings; the brake shoes on two opposite wheels are connected by distance-bars to hold them accurately in place and are suspended so they can be removed by unscrewing a single bolt.

When the electrical equipment was first supplied two types of each part were delivered for test. It soon became evident that the type adopted was much more suitable for the Hamburg service than the other. This is further borne out by the small number of troubles that have occurred, as shown in Table IV.

The principal changes which have been made have been the addition of contact shoe fuses to protect all apparatus and wiring and an iron catch on each shoe so that in emergency the contact shoe can be quickly removed from the third rail.

For the shops an electro-mechanically operated hoisting car was supplied to supplement the two existing fixed electrically operated car hoists. After a car body is lifted by the fixed hoist (as described in the ELECTRIC RAILWAY JOURNAL for March 15, 1913, page 473) the hoisting car illustrated is rolled under the body and by use of its own electrically operated hoisting device it lifts the body and rolls it to another part of the shop for any additional work. By the use of the movable hoist the fixed hoist can be used continually for hoisting and work can be done on a large number of car bodies at one time.



CAR INTERIOR SHOWING POSTS FOR HAND-HOLD, CURTAINS ON RINGS AT WINDOWS AND OTHER INTERESTING FEATURES

How Can Salesmanship Be Applied in the Street Railway Business?

How Salesmanship Is Applied in Other Businesses Is Analyzed and Methods Applicable to Electric Railways Are Discussed—Peculiarities of the Product the Railway Has to Sell—Service to the Public

BY FRANK H. WARREN
Claim Agent Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.

AN EXAMINATION of this question will disclose in the beginning some general likenesses and differences between this business and others. Railways like other businesses have something to sell, but their sales unit has the lowest price of anything except that of the post office or the chewing gum unit. The article sold does not lend itself readily to quantity sales in such a way that both seller and buyer are benefited. The street railway, along with the telephone, electric, gas and water companies and retail stores, has a market limited to the immediate territory through which its lines run. The article sold, like that of telephone companies and banks, is not a material thing that can be weighed or handled or resold; it is a service only. Electric and gas companies sell a more tangible thing which vanishes as fast as delivered, so that they really sell service too.

Retail stores, banks, wholesalers and almost all business enterprises have a considerable variety of goods to sell. The street railway and telephone companies alone have a single and invariable article to sell. Also these two businesses give a strictly personal service. A very important distinction is the fact that both street railway and telephone services are intermediary services. The thing they sell is not a desirable object in itself, but only a means to some other object.

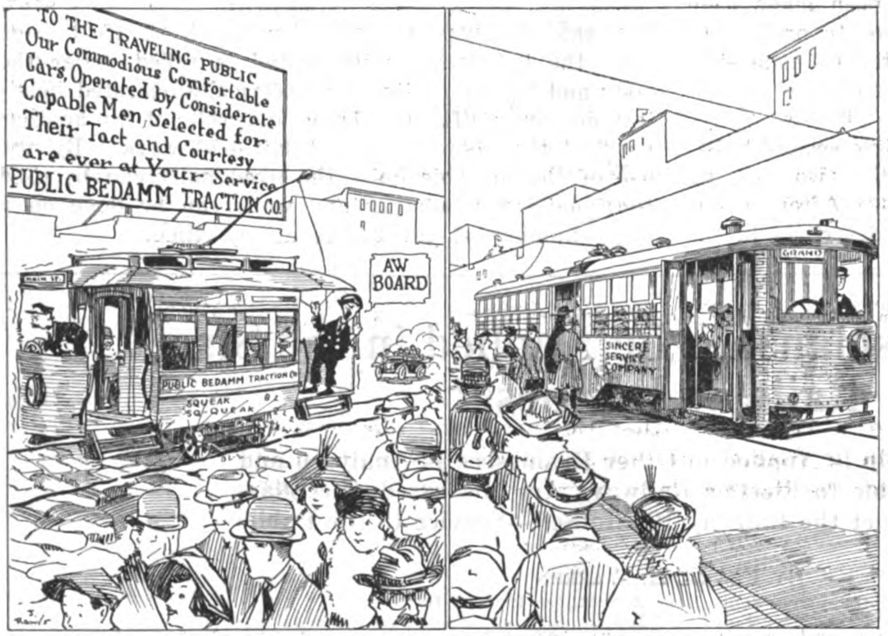
The function of a sales organization is to sell, to increase not the output, but the sales. Practically sales are made and increased in the following ways:

1. By the personal efforts of the salesman applied to the customer.
2. By increasing stock and adding greater variety.
3. By advertising.
4. By special bargain sales.
5. By advantageous locations.
6. By the personal efficiency of salesforce.
7. By the attractive appearance of stock and sales room.
8. By service rendered customers.
9. By quality of stock.
10. By the extension of credit.
11. By increasing places of business.

Now to get to the definite and practical, which of these is adaptable to the street railway business? It would not seem possible to increase the stock. All that could be done would be to find other uses for our article, and except the telephone, none permits so little variety of use. Advertising primarily seeks to create a desire, and then tells where it can be gratified. Can advertising create a desire for more street car riding? More of this later.

Special sales dispose of old or slow-moving stocks, create a temporary increase of receipts, bring people to your place of business, and advertise. If a street railway could put on a special sale, it could not dispose of any old stock; it might, however, create a temporary increase of receipts, it might bring people to its place of business, and it would advertise itself. If special sales are conducted at a loss on the particular articles on sale, which loss is made up by sales of other articles, how would a street railway make up the losses on bargain sales? Did you ever hear of Uncle Sam having a bargain sale on stamps? Or the Standard Oil Company on gasoline? Or the United States Steel Corporation on rails? Or Armour & Company on bacon? Or Ford on Lizzies?

The only special sale possible for a street railway is one that decreases the cost per ride but increases the cost per month or year. It must be something that will fool the buyer or stimulate him to increased use of service. Along these lines are quantity sales of tickets and tokens, excursions, commutation tickets, and the unlimited-rides cards or passes.


TO THE TRAVELING PUBLIC
Our Commodious Comfortable Cars, Operated by Considerate Capable Men, Selected for Their Tact and Courtesy are ever at Your Service
PUBLIC BEDAMM TRACTION CO.
MAIN ST.
PUBLIC BEDAMM TRACTION CO
SQUEAK
SQ-QUEAK
AW BOARD
GRAND
SINCERE SERVICE COMPANY

OUR SERVICE WILL DO WHAT ANY AMOUNT OF ADVERTISING WILL NOT DO AND ALL THE ADVERTISING IN THE WORLD WILL NOT BE EFFECTUAL UNLESS OUR SERVICE SUSTAINS THE ADVERTISING

Advantageous locations are hardly in point, since changing locations is practically impossible; and, anyway, the locations are nearly always the best. The business itself has made the location good. The nearest practical approach to this factor is car rerouting.

The salespeople of a street railway are admittedly its platform men. Now practically what can the conductor or motorman do to sell rides? He can't go out on the street and solicit business. He can't make a house-to-house canvass. He never has a chance to use sales arguments. His first point of contact with the customer is after the latter has been sold. He isn't a salesman; he is a collector who makes delivery of the article as soon as he has been paid for it. The very best this man can do is to transact his part of the deal in such a way that he creates a willingness in the customer to patronize the business again, should he again want the article purchased. This so-called salesman never has a chance to create a desire for the article sold, because the sale is always made before he has any contact with the customer.

Would any company consider for a minute the extension of credit as a means of increasing sales? Hardly. Increasing places of business, which is in trade terms building new lines or extending old ones, is a natural act when a business is making money, but he is a bold man indeed who contemplates such a course with a losing venture. The use of buses might come in here, though it has more the appearance of transition than of extension. Perhaps if it were considered as an extension, it would meet with less antagonism and resistance among street railway men than it now does.

SUMMARY

To face this sales proposition squarely, it appears that three of the above elements are absolutely unusable with street railways—increase of sales stock, more advantageous locations and extensions of credit; that there are three of them positively and certainly usable—efficiency of salesforce, attractive appearance of salesroom and service rendered (quality of stock); in the realm of doubt are advertising, special sales and extension of business.

As to those classed as usable, even private business depends on them largely and almost exclusively for the development of good will, with its indirect sales value. It would seem that a street railway must make even a larger use of them in this way. But it certainly is true that the so-called salesforce are only collectors, factory workmen and delivery men, all in one. They contribute to future sales just what these factors do and no more. They are not salesmen in any true sense of the word, and from the very nature of their duties and the business itself they never can be.

Bus operation viewed as an extension of plant and service for the purpose of building up receipts and profits has received much consideration and probably deserves more. No new business was ever developed intentionally by its enemies, and the bus will be no exception.

Special sales certainly form a limited field in this business. The efforts named above, excursions, etc., are about all that have been tried. Tickets, tokens, commutation books and weekly tickets are not properly bargain sales, because they can be bought at any time. They are rather quantity sales. Excursions are about the only real bargains offered, and their value seems to be a moot question.

To get right down to brass tacks on this advertising business, just what can advertising do to increase riding? An examination of the advertising of the South Bend *Tribune* of Nov. 5 and of fifty-four pages of the *American Magazine* for November showed that the advertising appeal was made as above.

	American	*Tribune*
Price reductions, saving money or making money	8	19
Quality, value or usefulness of article	46	31
Location of business and description of stock	7	53
Curiosity	0	1
Sentiment	3	0
General discussion	1	0
Historical and imitative	1	0
Self-improvement	6	0

There were two public utility ads among the above. The classifications were not sharply drawn as given. Most ads included two or more of the above and were classified on the apparently predominating appeal.

If the proper use of advertising is to create a desire and tell where it can be gratified, street railways surely could get no benefit in the latter respect from advertising. All we can do is to seek to create a desire for something that only we can provide. Since our product is an intermediary service, it does not seem possible to create a desire for it directly. People will no longer ride street cars for the sake of the ride. The desire created must therefore be in something else, in the gratifying of which our service is a necessary or valuable element. If you can increase the show-going desire, or the picnic, or the carnival, or the visiting, or the shopping, or baseball or football, or numerous others, you will indirectly increase the riding.

But nearly all these are separate commercial enterprises already widely advertised under highly-paid and competent specialists. What could street car advertising add to this? Practically, if it could add anything, the company could derive additional revenue from what it could do.

Advertising of service is certainly limited because the only effectual advertising is the service itself. Service is soon standardized and is well known. A few short notices are all that are necessary for new or changed service. We may advertise the quality of our service without accomplishing a thing that the service itself will not accomplish. Our patrons patronize us from one to four times a day. Our service will do what any amount of advertising will not do, and all the advertising in the world will be ineffectual unless our service sustains the advertising.

How does commercial advertising attract business? One important way is through the price. Can we cut the price? Or will we advertise that tomorrow a street car ride may be bought for 5 cents? Another is through the quality, value or usefulness of the article. Are these factors in street railway business attractive in themselves? Another is mere location and description. How can we use that?

CONCLUSIONS

To what extent can this salesmanship idea be adopted practically?

There is sometimes a very narrow margin between success and failure. A little bigger income, a little smaller outgo, a little larger effort turns failure into success. Commercial and other history must be full of instances of organizations and individuals that have fallen just short of success.

I believe that 90 per cent or more of what we have done has been well done, and that operation from the standpoint of sales would have made not a single change in these efforts. It is only in the other 10 per cent that the errors, and the possibilities, lie. If it be granted that *all* we have done has been done from the viewpoint of operation, it is still true that 90 per cent of this has been good from the standpoint of sales. It surely must be so in any business that has been able to exist for twenty years.

There should be a change in the point of view, so as to make the most of this other 10 per cent. It is very doubtful if any material change can be made in the actual working viewpoint of the operating heads. You may get an apparent change, acquiescence that sales must be considered, but down in their hearts these men will all believe they have always had this point of view and will see nothing more that they can do. There isn't one of them that won't really hoot at the idea that they have ever had any other viewpoint.

Therefore it seems to me that a special department must look after this feature. It must see the passenger's point of view and force consideration of that point of view. Such a department must be independent of the operating departments, and it might just as well face at the outset the fact that some of its proposals will be nullified by the operating departments. This is exactly the experience of sales departments in manufacturing enterprises.

It seems fairly obvious that the very nature of the street railway business precludes the use of some of the soundest methods of increasing revenue in private business. The conditions due to public control alone limit the activities of the industry. There may be a place in the industry for a sales organization, but just where it is and what it can accomplish are not very clear. All this discussion should bear some fruit, but it is certainly important to have in mind the very limited field of possible efforts, and not fool ourselves by expecting that a sales department will demonstrate all we have done to be utterly wrong, turn our methods topsy-turvy, and build up in a day a rejuvenated business.

Auto Safety Circular

THE accompanying circular, entitled "To the Man at the Wheel," was got out in April, 1920, by the Binghamton Railway. It was drafted by H. H. Sneck, claim agent of the company, but was sent out under the name of the Binghamton Underwriters' Association, as indicated on the circular. A copy was sent to every automobile owner in Broome County, New York. Copies of the circular were also left in garages and given to dealers of automobile accessories, etc.

To the Man at the Wheel

A Few Hints to Avoid Accidents With Trolley Cars

DON'T pull away from curb in front of trolley car.
DON'T try to pass between standing vehicle and moving trolley car.
DON'T follow car too closely as motorman may have to stop on short notice.
DON'T cut in sharply in front of moving trolley car.
DON'T stop suddenly on track in front of car.
DON'T pass standing trolley car while said car is discharging or receiving passengers.
DON'T cross tracks unless you are sure you are right.
DON'T park auto near tracks.
DON'T pass auto on wrong side of car; there may be another car coming in an opposite direction.
REMEMBER trolley cars cannot turn out for you.
HELP the insurance man to keep down your premiums, by doing your bit. It is estimated that 90 per cent of the collisions between automobiles and street cars result from the negligence of careless automobile drivers.

BINGHAMTON UNDERWRITERS' ASSOCIATION.
BY WILLIAM H. HECOX, *President.*

SAFETY CIRCULAR FROM BINGHAMTON

Whether due to the circular or not, there has been a large reduction in accidents on the Binghamton Railway, namely, 40 per cent from April, 1920, to April, 1921.

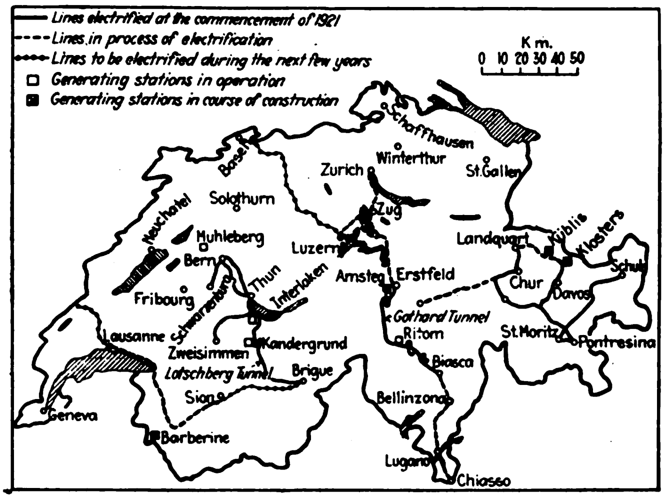
The company plans to send out the same circular again very shortly.

Electrification in Holland and Switzerland

Two Advance Reports to Be Presented at the International Railway Congress in Rome Next Year Give Interesting Facts Regarding Conversion to Electrical Operation

THE bulletin of the International Railway Association for October, 1921, just issued, contains two of the advance papers on the question of electrification of steam railroads to be presented at the meeting of that association in Rome next April. One of these is presented by J. J. W. Van Loenen Martinet, chief of electric traction, Netherlands State Railways, and relates to the situation in Holland and Great Britain. The other is on Switzerland and has been prepared by Dr. E. Huber, Ing. Dipl., permanent consulting engineer to the general management of the Swiss Federal Railways and acting chief engineer for the electrification.

Mr. Martinet's discussion of the Holland electrification gives the reasons for the recommendations by this commission of a standard of 1,500 volts direct current in its report of last February. Among these reasons was the fact that the country is a compact one so that the distances that energy has to be transmitted are not great, the grades are light, there are many telephone and telegraph circuits close to the right-of-way so that it is desirable to reduce the chance of interference, and it is expected that multiple-unit operation will be very extensively used.



MAP OF SWITZERLAND SHOWING THE ELECTRIFIED LINES AND THOSE SOON TO BE ELECTRIFIED OF THE FEDERAL RAILWAY SYSTEM

The first line to be electrically equipped is a well-traveled route between Amsterdam and Rotterdam by way of Haarlem and The Hague. In 1908 the government electrified a section of track with the single-phase system between Rotterdam, The Hague and Scheveningen, a route length of 35 km. (22 miles) and the part of this line between The Hague and Rotterdam is on the direct line of the proposed direct-current electrification. It has been decided, however, to electrify another route between these two cities by direct current so as to avoid, for the present, disturbing the existing single-phase system. The current supply will be by the overhead system as third rail construction has never been in favor in Holland, owing to the numerous private crossings and the bad soil which necessitates very frequent work on the track. With an overhead construction there would have been some advantages in favor of voltage higher than 1,500, but the committee kept to that figure in view of the expected great use of multiple-unit trains. It is expected that the 2,000 amp. required at a speed of 100 km. (62 miles) per hour for the heaviest trains can easily be collected by two pantographs.

Mr. Martinet also gives the particulars of existing and proposed English electrifications and sees a number of points of likeness in the problems of the two countries, such as in the general tendency to centralize the generation of electrical energy, and he sees for the conditions as they exist in England and in Holland no reason for the selection of the single-phase system.

SITUATION IN SWITZERLAND

In his article on Swiss electrification Dr. Huber declares that on the Swiss electric railways practically every system of current supply, voltage, transmission, locomotives and general arrangement can be found. The question of electrification is a very important one in Switzerland as that country has practically no coal but possesses considerable amounts of water power. In 1912 a commission appointed for the study of electric traction reported in favor of the single-phase system. This system has been employed on the recent important electrification and it has been found satisfactory. Where care is used to provide compensation, the effect of induction on both telephone and telegraph wires is slight if they are at a distance of 5 meters (16 ft.) from the track, but all other protective devices are superfluous if the low-tension currents are carried in lead sheathed cables.

Statistics have been carefully kept of the consumption of energy by trains and it has been found to vary between 43.1 and 61.7 watt-hours per ton-kilometer, depending on the season, the extent to which electric heaters are used and other conditions. The accompanying map of existing Swiss trunk-line electrifications is contained in the report, and extensive statistics are given of the various installations.

Tribute to Business Papers

ONTARIO'S Lieutenant-Governor, Col. Henry Cockshutt, president of the Cockshutt Plough Company, director of the Bank of Montreal, etc., in an address at the annual meeting of the Canadian National Newspapers and Periodicals Association at the King Edward Hotel, Toronto, on Thursday, Nov. 10, said in part:

> I believe that the influence of the business press will be one of the most important factors in re-establishing business conditions in Canada on a safe and sane basis. I make a distinction between the business newspapers and the daily press because I believe that your papers—the business newspapers of Canada—exert a greater influence than the daily press because of the greater confidence your readers have in them. People read the daily newspapers to satisfy their desire for excitement or interest or entertainment. But this is not the case with the business newspaper. Business men need the service of these papers in the conduct of their everyday business life.
>
> In these days when there is disorganization, dissension, disruption in all walks, business, politics and religion, there is a great place for the business paper to bring out more complete information, to assist in making us all realize we must work for a common cause, the upbuilding of our country. The business men of this country need your assistance. They are looking to you for information and advice, and are expecting it. On your shoulders therefore, perhaps more than on the shoulders of any other single agency, rests the obligation to meet the needs of these trying days, with a sane and sound presentation of the case as it exists at the present time, a presentation free from private bias, or the desire to serve a popular demand.

Valuation and Renewal Fund Considered

Evidence Presented by the Chicago Surface Lines in Fare Case Recently Closed Shows Valuation and Renewal Allowance to Be Low

IN CONNECTION with its case to show cause to the Illinois Commerce Commission why the rate of fare should not be reduced, the Chicago Surface Lines had A. L. Drum, consulting engineer, Chicago, present evidence as to the value of the property and as to the adequacy or inadequacy of the present 8 per cent maintenance, renewal and depreciation fund. One of the contentions of the city in trying to bring about a reduction in fare was that decreased cost of labor and materials was one of the reasons for a reduction in the rate of fare. Mr. Drum therefore endeavored to show the effect of the changing material and labor prices upon the value of the property. He submitted new valuations based on an inventory made during the early part of 1919 to which was applied prices to show the cost to reproduce new as of Oct. 1, 1921, and the average cost for the eight-year period 1914 to 1921. These values were compared with those he had determined in connection with the Surface Lines' case for an increase in fare in 1919. This comparison of reproduction values follows:

As of April 1, 1919	$200,371,689
As of April 1, 1920	247,246,637
Average for six-year period, 1914–1919	164,812,046
Average for seven-year period, 1914–1920	176,588,415
As of Oct. 1, 1921	220,468,432
Average for eight-year period, 1914–1921	181,615,357

From this it is seen that the cost to reproduce new as of Oct. 1, 1921, is more than 110 per cent of the cost to reproduce new April 1, 1919, and that the average cost for the seven-year period ending in 1920 is 88 per cent of the 1919 figure, while the average for the eight-year period ending 1921 is 90.46 per cent of the 1919 figure.

MAINTENANCE, RENEWALS AND DEPRECIATION (VARIOUS COMPANIES) SHOWN IN PER CENT OF GROSS REVENUE OR OF OPERATING REVENUE

Company	Period Covered	Per Cent
Chicago Surface Lines	Year 1–31–21	20.57 (*a*)
	Year 1–31–21	20.78 (*b*)
	Year 1–31–20	19.01 (*a*)
	Year 1–31–19	18.98 (*a*)
	Year 1–31–18	17.23 (*a*)
New York Railways (Surface)	Year 6–30–21	33.92 (*b*)
	Year 6–30–20	35.45 (*b*)
	Year 6–30–19	25.38 (*b*)
St. Louis	Nine months, 1921	23.13 (*b*)
	Year 1920	22.51 (*b*)
Kansas City	Year 6–30–21	19.16 (*a*)
	Year 6–30–20	20.98 (*a*)
	Year 6–30–19	21.92 (*a*)
Milwaukee	1–1–20 to date	20.00 (*b*)
Philadelphia (4 per cent Rapid Transit)	Year 1920	14.42 (*c*)
	Year 1919	13.31 (*c*)
	Year 1918	12.16 (*c*)
Boston (8 per cent Rapid Transit)	Year 1920	21.51 (*b*)
	Year 1919	27.45 (*b*)
Third Avenue (New York)	Year 6–30–20	25.00 (*b*)
	Year 6–30–19	21.18 (*b*)
	Year 6–30–18	20.00 (*b*)
Twin City (Minneapolis)	Year 1920	21.71 (*a*)
	Year 1919	20.51 (*b*)
	Year 1918	18.86 (*b*)
Buffalo	Year 1920	22.89 (*a*)
San Francisco (Municipal)	Year 6–30–21	17.60 (*b*)
	Year 6–30–20	24.60 (*b*)
	Year 6–30–19	22.72 (*b*)
	Year 6–30–18	20.01 (*b*)
Cleveland	Year 1920	26.29 (*a*)
	Year 1919	23.41 (*a*)

(*a*) Per cent of gross revenue.
(*b*) Per cent of operating revenue.
(*c*) Per cent of gross revenue, but not including power maintenance.

TABLE OF ANNUAL RENEWAL AND DEPRECIATION ALLOWANCES PRESCRIBED BY PUBLIC AUTHORITIES

State Commission	Railway Company	Annual Depreciation and Renewal Charge in per Cent	Computed on
Arkansas	Fort Smith Light & Traction Co.	4.5	Value of property.
Connecticut	Connecticut Company	5.0	Investment.
California	San Diego Electric Railway	3.79	Reproduction cost of property.
District of Columbia	Capital Traction Company	4.0	On cost of property.
District of Columbia	East Washington Heights Traction Co.	2.86	On way and structures.
		3.87	On equipment.
District of Columbia	Washington & Maryland Railway	3.34	On structures cost new.
		4.25	On power plant equipment cost new.
Georgia	Georgia Railway & Power Co.	2.5	Estimated value of property.
Illinois	Chicago Railways Company, et al	8.0	Of gross receipts.
Illinois	Springfield Consolidated Railway	3.56	Cost of property new.
Illinois	Quincy Railway	2.43	Cost of property new.
Illinois	Tri-City Railway of Illinois	2.14	Cost of property new.
Illinois	East St. Louis Railway	2.24	Value of property.
Illinois	Rockford City Traction Company	4.11	Value of property.
Illinois	Chicago, North Shore & Milwaukee Railroad	12.00	Of gross for first five years.
		14.00	Of gross for second five yrs.
		3.5	Of cost of additions.
Massachusetts	Holyoke Street Railway	5.00	Rolling stock—investment.
		6.00	Roadway investment.
Massachusetts	Bay State Street Railway	2.64	Based half on straight line and half on 4 per cent sinking fund.
Massachusetts	Springfield Street Railway	2.67	Based half on straight line and half on 4 per cent sinking fund.
Michigan	Houghton County Traction Company	2.0	Cash investment.
Missouri	Kansas City, Clay County & St. Joseph Ry.	3.0	Value of the property.
Missouri	United Railways Company, St. Louis	10	Of gross receipts.
Montana	Helena Light & Railway	3.0	Physical property.
Nebraska	Omaha & Lincoln Railway & Light Company	7.0	Entire outstanding liabilities.
New York	New York & Stamford Ry.	2.0	Track, roadway and electrical construction.
New York	New York State Railways.	3.0	Rolling stock, power house and other equipment.
Pennsylvania.	Erie & Buffalo & Lake Erie Traction Company	3.49	Value of the property.
Pennsylvania.	Wilkes-Barre Railway	3.00	Value of the property.
Pennsylvania.	Valley Railways Company	1.57	Value of the property.
Tennessee	Nashville Railway & Light Company	3.5	Of depreciable property.
Tennessee	Memphis Street Railway	3.0	Of cost of renewable property.
Texas	Houston Electric Company	4.5	Value of the property.
Wisconsin	Rockford & Interurban Ry.	3.0	Value of the property.
Wisconsin	Milwaukee Electric Railway & Light Company	2.82	Value of the property.
		3.0-4.0	Depreciable property.
Wisconsin	Waupaca Electric Light & Railway Company	3.0	Of cost new.
		2.0	Actual cost of depreciable tangible property.

The city contended that because a reserve of $11,254,215 had accumulated in the renewal and depreciation fund in thirteen years, the rate of 8 per cent of the gross earnings specified in the ordinance should be reduced, as one factor in making possible a reduction in the 8-cent fare. To answer this contention, an exhibit was submitted by Mr. Drum giving a comparison of the actual charges and credits to the fund for the ten-year period Feb. 1, 1911, to Jan. 31, 1921, with what these should have been on a higher estimated basis which it was held should have been allowed. Mr. Drum was of the opinion that a combined maintenance and renewal fund based on 9 per cent of the gross earnings for maintenance and 2½ per cent of the capital value of the property for renewals would be necessary to maintain and renew the property of the Chicago Surface Lines and provide sufficient funds to replace the physical property during an estimated actual service life under Chicago conditions of thirty-two and one-half years. This basis would permit of expending approximately 60 per cent of the annual renewal appropriation during the first ten years of the life of the property. The comparison under the actual and estimated bases follows:

	Actual Basis	Estimated Basis
Average capital for ten years	$145,398,665	$145,398,665
Average annual gross earnings	35,963,865	35,963,865
Total maintenance expenditures ten years	34,659,289	32,367,479
Maintenance, per cent of gross	9.64 per cent	9.00 per cent
Total appropriation for renewals, ten years	27,994,299	36,349,666
Renewals, per cent of capital	1.93 per cent	2.50 per cent
Renewals, per cent of gross	7.78 per cent	10.11 per cent
Total appropriation for maintenance and renewals	62,653,588	68,717,145
Total appropriation for maintenance and renewals, plus interest and salvage	67,456,525	70,828,897
Total actual renewal expenditures $21,543,021	56,202,310	56,202,310
Total actual maintenance exp.... 34,659,289		
Balance in fund at end of ten years	11,254,215	14,626,587
Shortage of maintenance and renewal appropriations and funds	3,372,371	

Mr. Drum said that when the ordinance was drawn, in 1907, few valuations of electric railway properties had been established and that the rate of 8 per cent decided upon then as the basis for computing renewals and depreciation had since been found to be low, in the light of later experience and study. As evidence of this, he introduced the accompanying table showing the annual renewal and depreciation allowances prescribed by various state commissions. Further evidence was submitted in the form of a table, also reproduced, comparing the amount set aside for maintenance renewals and depreciation by various companies and shown in per cent of gross or operating revenue.

Prosperity a Co-operative Game

The Mutual Interests of the Public and the Public Utility Should Be Capitalized by Utility Managements to Establish Certain Facts

By H. M. Atkinson
Chairman of the Board,
Georgia Railway & Power Company, Atlanta, Ga.

When the public understands the reasons for the present unfortunate condition of public utilities it will insist on businesslike regulation of them. The public has most at stake in this problem and is losing most at present. The trouble is mainly due to lack of co-operation between labor, rate regulation and capital, as shown by the following facts:

Labor has an idea that it can produce less and get more. So production has diminished and there is both less for wages and less employment.

The public, acting through its rate regulating commissions, has not recognized that as prices rise the amount of service that a dollar will produce diminishes, nor that in fixing rates the decreased purchasing power of the dollar must be equalized in the fair valuation of the property or in the reasonable rate of return or in both. Capital, as a consequence, is difficult to obtain for investment in public utilities when it does not feel assured of a permanent return and adequate security.

The conditions just described have largely destroyed the purchasing power of the public utilities (including steam railroads) and is one of the main causes of the present business depression. Purchasing power is a vital factor in general prosperity. The purchasing power of the public utilities (including steam railroads) is the backbone of the country's business, because their estimated invested capital totals about thirty-five billion dollars, and it is also estimated that one person in every eight of the entire population of the country is directly dependent upon them for a living. They have been impoverished and have no purchasing power because they have been paying higher wages per man for less production per man and have been forced to furnish service at inadequate rates. They are now unable to raise sufficient new capital to make necessary improvements. Prosperity is a co-operative game and can only be realized when there is team play.

Neither the public nor public service commissions are alone responsible for the present unfortunate condition of public utilities; owners and managers of public utilities must share the blame. Fundamental mistakes of owners and managers of certain classes of public utilities have contributed a large part of the present troubles.

The 5-cent street car fare, regardless of length of ride and difference in cost of haul, and the flat dollar rate for gas, regardless of conditions and difference in cost under which service is rendered, have contributed greatly to the present difficult position of public utilities. After a generation of these flat rates it is not strange that the public mind became crystallized on the idea that a flat 5-cent street car fare and a flat dollar rate for gas were fixtures, and that any higher rates are exorbitant and an imposition on the public. These flat rates became a part of the family budget and car fare came to mean 5 cents, neither more nor less. The fact that the public has benefited enormously for a generation from these flat rates makes the problem of changing them all the harder. This difficulty is enhanced by the fact that the public feels that it is asked to part with a valuable vested right which was inaugurated by the companies themselves.

The public and the public utilities do not understand each other's point of view and have been viewing each other's problems in a different state of mind. They have been looking at each other through glasses of different colors. Mutual understanding and confidence must be the basis for mutual co-operation. This statement is not intended to suggest a new idea, but a new spirit which gets away from partisan company argument and substitutes facts which affect the public interest. The public must be convinced of what is to its own true interest from a cold business standpoint and it must not be stated as a company matter. As evidence of a new spirit a frank admission of past mistakes by the public utilities would tend to create a more friendly and co-operative frame of mind on the part of the public, which at last is the controlling factor. This new spirit based on hope, optimism and confidence in the fairness of the public should avoid controversy and stick to facts. A few such facts may be expressed as follows:

Prove to the public that in its own interest it must provide rates sufficient to preserve its own service.

Prove to the public that a losing business will die and cease to exist.

Prove to the public that it suffers most from rates that merely keep the utilities "one lap ahead of the sheriff."

Prove to the public that it is dependent on the service of the utilities—transportation, electric power and light, and gas—in every phase of its life, even for the existence of human life itself.

Prove to the public that the war has changed all conditions permanently and adjustment to these new world conditions is necessary.

Prove to the public that prices and costs are now fairly stabilized on the basis of at least 75 per cent over pre-war costs and prices.

The public will finally admit that two and two cannot make five, and that it has lost heavily by adhering to that idea.

Chile Starts on Extensive Electrification Program

First Zone of State Railways, Comprising 144 Miles, Which Includes Valparaiso-Santiago Line, to Be Completely Electrified at 3,000 Volts Direct Current—Equipment Includes Thirty-nine Locomotives and Five Substations

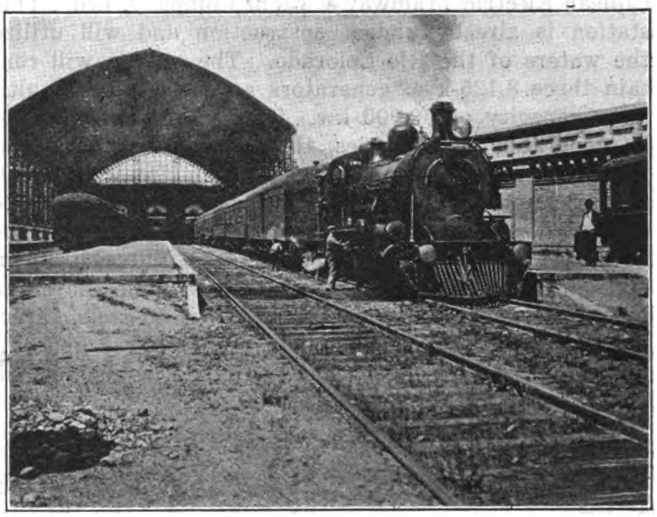
CHILE, the South American republic covering an area of nearly 290,000 sq.mi. and with a population of nearly 4,000,000, has decided to electrify her steam railroads, and, moreover, to electrify them according to American standards. The $7,000,000 contract for the electrification of the first zone of the Chilean State Railways was awarded to the Westinghouse International Company, through its South American representatives, Errazuriz Simpson & Company. This project is the most important railroad electrification undertaking in 1921 and is the largest single order for electrification equipment ever received in this country.

Chile is a long, narrow country located between the Andes Mountains and the Pacific Ocean, on the west coast of South America. It is 2,629 miles long north and south and varies from 100 to 250 miles in width. The extreme length of the country results in a variety of climatic conditions. However, in the section to be electrified at present the variation between maximum and minimum temperatures conforms to normal conditions existing in the temperate zones. The maximum temperature in the shade in the summer is from 100 to 110 deg. F. and in the sun as high as 130 to 140 deg. F., while in the winter the temperature goes as low as 20 to 25 deg. F. The rainfall in this district is relatively small. In the central and southern sections the Andes receive a heavy snowfall, making extensive water power available.

The chief products of Chile are minerals, agricultural products, live stock and lumber. Many of these products are exported and move north over the railroads. In return, coal, merchandise, machinery and food products are imported and form the bulk of the southward railroad movement. In Chile the nitrate deposits in the north rank first among the mineral deposits and supply 75 per cent of the exports. In 1913 3,000,000 tons were exported. Coal deposits rank second to those of nitrates, but in spite of this fact there is not enough coal to supply the country, and therefore considerable coal is imported. The present output of coal in Chile is 1,800,000 tons annually, while the consumption is about 2,700,000 tons, of which the railroads use 550,000 tons. Copper is also a very important mineral deposit as between 4 and 5 per cent of the world's supply comes from Chile. Iron, sulphur and gold are also mined. Other industries in Chile are farming and some fishing. The variety of climate permits the growth of a great diversity of food plants. What Chile exports to the United States is as varied in character as its imports from this country.

In import trade to Chile the United States now ranks first and Great Britain second. Published statistics of Chilean foreign trade for 1920 show imports of about $166,100,000 and exports of about $284,300,000, a total of about $450,400,000. The total wealth of Chile is estimated at $3,200,000 or almost $800 per capita.

THE SANTIAGO STATION OF THE CHILEAN STATE RAILWAYS


THE TRAIN SHED OF THE SANTIAGO STATION

The total railroad mileage of Chile is 5,200, of which about 30 per cent is privately owned, mainly for mining and industrial enterprises. The remainder of the mileage is divided into two general classes, the broad-gage lines and the narrow-gage lines. The former lines, with numerous branches, extend south from Valparaiso by way of Santiago to Paerto Montt, while the latter comprise most of the northern roads, with a few branch lines in the south.

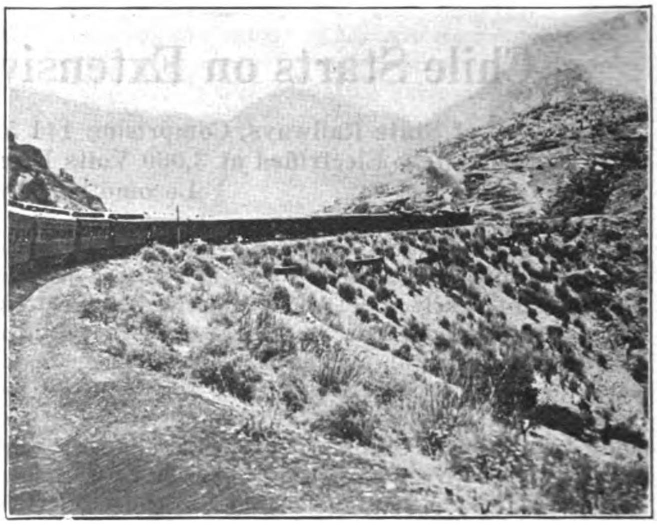
The conditions that arose during the World War brought very forcefully to the attention of the railroad management the necessity for electrifying the broad-gage lines, especially the Valparaiso-Santiago line with the Los Andes branch, where traffic was rapidly approaching the track capacity. In addition, fuel costs were excessive, while the almost limitless water power was going to waste.

In 1918 a commission was appointed to study the problem of electrifying the broad-gage lines. This commission, consisting of Rafel S. Edwards and Ricardo P. Solar, made a careful analysis of electrifications all over the world. As a result of the possible economies shown in the report of this commission, it was decided immediately to electrify the broad-gage lines beginning with the Valparaiso-Santiago and Los Andes branches, or the first zone. A loan of $10,500,000 for this purpose was authorized and was heavily oversubscribed a few hours after offering.

The contract as awarded to the Westinghouse company includes all substation, distribution and overhead equipment. It will also do the construction work.

The initial electrification will include 116 miles from Valparaiso to Santiago and 28 miles from Las Vegas to Los Andes, as shown on the accompanying map. Los Andes is the terminus of the Transandine Railroad, a narrow-gage line, while the narrow-gage Longitudinal Railroad runs north from Calera, an important station on the line to be electrified. The maximum grade in this zone is 2.25 per cent, encountered in approaching La Cumbre (the Summit) from the West. The line contains a relatively large number of curves, the maximum being 10 deg. The track gage is 5 ft. 6 in. There are six tunnels on the main line. The longest, at San Pedro, is 1,600 ft. in length. Three of the tunnels are located on the most severe grade approaching the Summit.

The 3,000-volt, direct-current system was decided upon as best suited to the conditions. Hydro-electric power will be generated at the Maitines Station of the Chilean Electric Tramway & Light Company, Ltd. This station is already under construction and will utilize the waters of the Rio Colorado. The station will contain three 8,125-kva. generators and will have an ultimate capacity of 30,000 kw. This power, which is to be generated at 50 cycles, three-phase, will be transmitted 37 miles to Santiago by a twin-circuit, 110,000-volt transmission line. This transmission line will be connected at Santiago with the system fed by the Florida hydro-electric station and the Mapocho steam station, both of which were constructed some years ago by the Germans and were designed for 50-cycle, three-phase power. The total capacity of the three generating systems at present proposed will be, when completed, approximately 120,000 kw.



Two Steam Locomotives Are Now Required for a Thirteen-Car Passenger Train

The power supply will be distributed by five substations designed to handle a train movement that is approximately 50 per cent greater than that existing in 1917, with a further provision for tripling the 1917 traffic demands if necessary. Each station will initially contain two 2,000-kw. motor-generator sets, each set consisting of a 2,800-hp. driving motor and two 1,000-kw., 1,500-volt generators connected in series. These sets will be designed to withstand a 200 per cent overload for five minutes without injury, and as an additional safeguard a flash suppressor will be included.

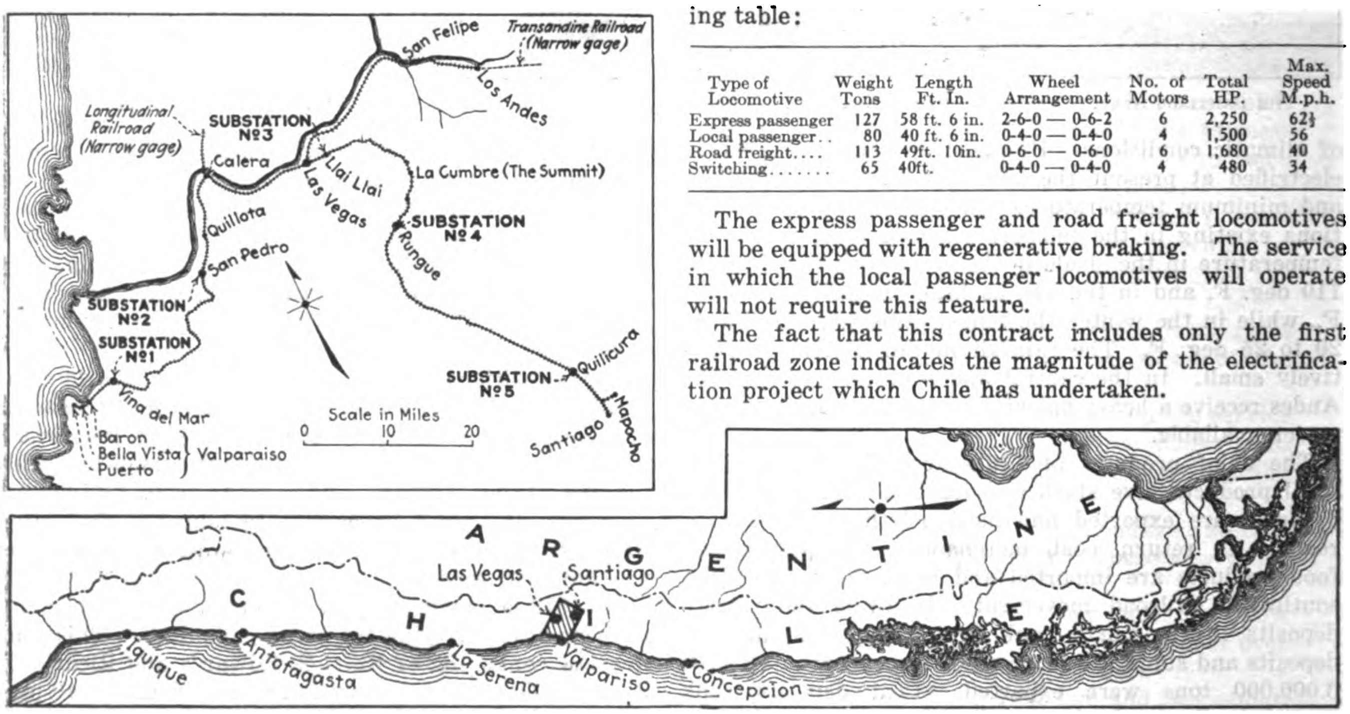
Substations Nos. 1 and 5 will receive power at 12,000 volts, while Nos. 2, 3 and 4 will receive power at 44,000 volts. Transformers and switching equipment will be of the latest design. Developed-power indicating and limiting equipment will be installed.

Thirty-nine electric locomotives are required for the initial electrification. This number includes six express passenger, eleven local passenger, fifteen road freight and seven switching locomotives. The main points of interest about these locomotives are given in the following table:

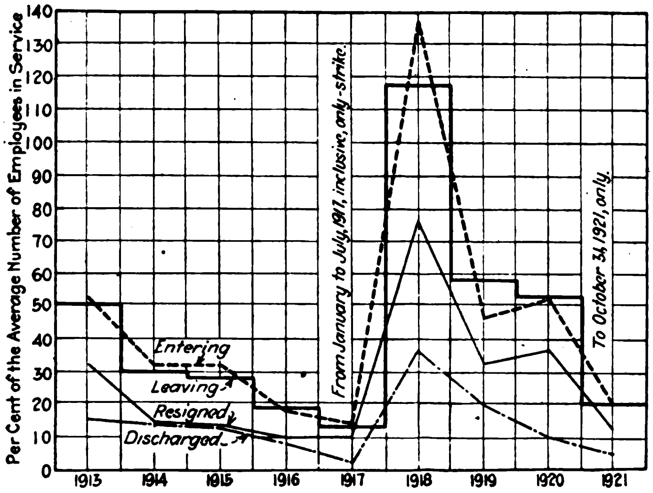
Type of Locomotive	Weight Tons	Length Ft. In.	Wheel Arrangement	No. of Motors	Total HP.	Max. Speed M.p.h.
Express passenger	127	58 ft. 6 in.	2-6-0 — 0-6-2	6	2,250	62½
Local passenger..	80	40 ft. 6 in.	0-4-0 — 0-4-0	4	1,500	56
Road freight....	113	49ft. 10in.	0-6-0 — 0-6-0	6	1,680	40
Switching.......	65	40ft.	0-4-0 — 0-4-0	4	480	34

The express passenger and road freight locomotives will be equipped with regenerative braking. The service in which the local passenger locomotives will operate will not require this feature.

The fact that this contract includes only the first railroad zone indicates the magnitude of the electrification project which Chile has undertaken.



Map of the First Zone of the Chilean State Railways to Be Electrified



PLATFORM TURNOVER STATISTICS

Another "Human Nature Study"

FINDING the right men to operate the cars and, when found, keeping them contented are railway operating problems to which the Market Street Railway, San Francisco, has given careful attention for years. So much importance has been placed on the human element that the records of every resignation or discharge are analyzed and company committees having charge of "social service" are constantly planning means of decreasing labor turnover and doing all that a company can properly do to keep the men contented. When the data on page 731 of the Oct. 22, 1921, ELECTRIC RAILWAY JOURNAL appeared the Market Street Railway supplied corresponding figures covering its system, which are given in the accompanying table and chart.

The table shows that, except for the strike period, the company has been approaching a normal labor turnover of 25 to 30 per cent of the total employed. This is believed to be an exceptionally good record. At least in part it is ascribed to the effectiveness of the company's social service activities. This work is carefully planned to avoid coddling or paternalism.

Its total cost is about $75,000 to $100,000 a year and includes hospital service, pension system, insurance up to $1,000 per employee, club rooms, low interest loans and, in general, regard for the personal welfare of employees. The men pay 50 cents per month hospital fee, but the total collections fall short of the hospital expense by $25,000 per annum, which the company pays.

The fact that the lowest labor turnover occurred just previous to the big strike of 1917 is cited by the company as proof of the fact that the strike was incited wholly by outside influences. The company does not recognize any union and the carmen are not organized as a union. Although San Francisco is a labor union stronghold, attempts that have several times been made to organize the platform men have been without any effect.

An interesting feature of this company's employment record is that the United States Army alpha tests have not proved very helpful in selecting platform men. After using these tests for a year they were discontinued largely because some of the applicants who turned out to be the very best platform men did so after failing utterly in the alpha tests. The company's records also show that the best men often break in slowly. Seven days, the average length of time for breaking in, sometimes has to be lengthened to fifteen days for the instruction of men who ultimately turn out to be the best motormen or conductors.

CAUSES OF MEN LEAVING SERVICE 1913 to 1921 (Oct. 31, Inclusive)

Resigned	1913	1914	1915	1916	1917	1918	1919	1920	1921	Total
Allowed to resign	9	7	1	5	5	15	3	0	5	50
On account of accident	8	2	2	1	1	7	3	....	1	25
Dissatisfied	22	2	15	14	34	47	17	64	14	229
Family trouble	7	4	4	1	1	7	4	2	4	34
Leaving city	65	46	43	32	22	191	140	45	21	605
Could not learn	31	17	12	13	4	21	....	8	3	109
Mental trouble	8	....	....	....	....	4	....	....	1	13
Other work	230	101	102	70	88	293	148	345	109	1,486
On account of reprimand	....	....	....	....	1	7	1	2	3	14
Sickness	24	9	9	12	9	61	37	64	27	252
Students	104	45	44	18	14	366	104	103	24	822
While suspended	25	11	8	8	2	33	17	14	6	124
Work too hard	....	1	....	....	....	10	3	....	1	16
Did not like extra list	....	....	....	....	....	2	....	....	....	2
While on leave of absence	20	3	7	8	2	23	12	....	....	75
No reason given	85	33	27	21	6	265	90	19	....	546
Did not like work	3	2	1	1	....	25	4	....	....	36
Tired of the work	1	....	....	....	....	4	2	....	....	7
By request	1	2	....	....	....	1	....	....	....	4
Miscellaneous	....	....	....	....	....	1	1	....	....	2
Dropped										
For not reporting for work	18	23	24	18	6	211	105	92	18	515
For working elsewhere	2	8	5	2	....	14	21	13	7	72
Deceased	9	17	7	14	....	24	23	16	11	121
Discharged										
Too many accidents	5	5	5	3	2	5	8	....	5	38
Collision with car	28	21	27	9	3	27	39	20	14	188
Convicted of felony	....	....	2	....	....	2	2	1	3	10
Carrying concealed weapons	....	....	....	....	....	....	....	....	1	1
Drinking	31	44	39	21	11	64	23	10	15	258
Failing to register fares	82	62	36	31	12	154	32	14	11	434
Fighting	1	2	4	1	....	6	10	4	2	30
Insolence to company official	3	....	1	....	....	4	1	4	1	14
Incompetent	30	8	12	10	3	19	8	4	1	95
Oversleeping	18	19	9	12	4	83	48	32	16	241
Reckless running	1	4	2	2	2	12	13	5	5	46
Rear end collisions	28	13	2	3	3	17	17	6	8	97
Tampering with fare boxes	....	2	....	....	....	....	1	1	1	5
Trouble with passengers	1	2	....	....	....	3	3	5	6	20
Unsatisfactory references	5	3	1	3	2	3	5	3	1	26
Refusing to work	7	9	2	3	1	21	18	12	6	79
Concealing past record	11	3	7	1	....	3	....	1	1	27
Good of the service	7	6	53	9	5	37	52	3	....	172
Services unsatisfactory	15	10	7	4	3	....	16	19	7	81
Missing fares	3	....	....	....	....	....	....	....	1	4
Insubordination	6	2	3	1	1	17	3	3	....	36
Not reporting accidents	12	9	5	....	....	1	3	7	1	38
Falsifying day card	1	....	1	....	....	....	....	....	....	2
False report against supt	1	....	....	....	....	....	....	....	....	1
Splitting switch	1	2	....	....	....	....	....	....	....	1
Turning car over	1	....	....	....	....	....	....	....	....	1
Assaulting passenger	2	1	....	....	....	....	....	1	....	4
Discourtesy to passengers	2	7	6	3	....	....	....	1	....	19
Holding out receipts	4	3	2	3	....	5	2	....	....	19
Losing control of car	1	2	....	....	....	3	4	....	....	10
Operating car without authority	1	1	....	....	....	1	3	1	....	7
Running into bumper	1	....	2	....	....	....	1	....	....	4
Unsatisfactory collections	1	....	....	....	....	....	....	....	....	1
Morally unfit	1	....	....	....	....	....	....	....	....	1
Cutting cable	1	....	1	....	....	1	....	1	....	4
Smoking on duty	1	5	1	1	....	....	....	....	....	8
Tampering with register	2	....	....	....	....	....	....	....	....	2
Selling badge	....	1	....	....	....	....	....	....	....	1
Carrying persons free	....	2	1	....	....	....	....	....	1	4
Allowing conductor to run car	....	1	....	....	....	4	1	1	....	7
Running away from passengers	....	1	....	....	....	....	6	2	....	9
Gambling on company's premises	....	1	....	....	....	3	8	....	1	13
Not turning in lost articles	....	2	1	1	....	2	1	1	....	8
Falsifying application	....	....	1	....	6	....	1	....	....	8
Derailing car	....	....	....	2	1	....	....	2	....	5
Abusing equipment	....	....	....	....	....	....	....	1	....	1
Total leaving	988	586	544	361	254	2,129	1,064	952	363	7,243
Total number employed	1,026	559	629	344	264	2,499	847	933	348	....
Average number regular employes	1,906	1,911	1,966	1,875	1,856	1,820	1,809	1,786	1,764	....

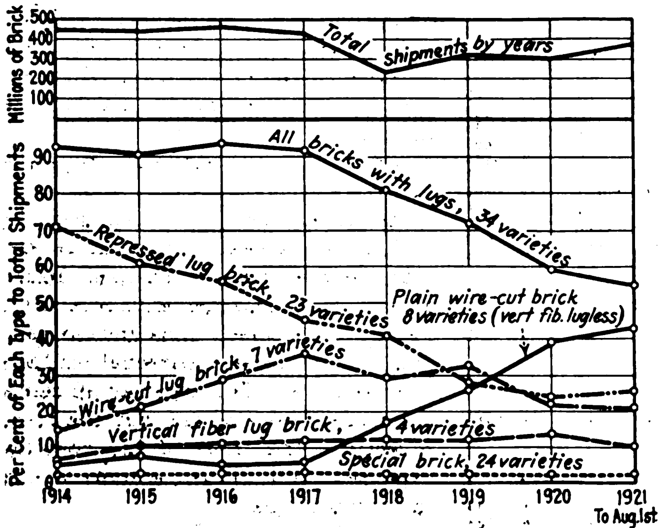
SUMMARY	1913	1914	1915	1916	1917	1918	1919	1920	1921	
Resigned	644	285	275	204	189	1,385	586	666	219	....
Dropped	20	31	29	20	6	225	126	105	25	....
Deceased	9	17	7	14	....	24	23	16	11	....
Discharged	315	253	233	123	59	497	329	165	108	....

Paving Brick Varieties Simplified

Number of Type Has Been Reduced from Sixty-six to Eleven Made in Four Standard Sizes—Electric Railway Types Have Been Classified as Specials

THE final conference on the elimination of the excess varieties of paving brick was held in Washington on Nov. 15 under the auspices of the Department of Commerce. A preliminary conference had been held on Aug. 30. Those in attendance at the recent conference were the representatives of more than forty manufacturers, as well as many public works officials and engineers representing all interested engineering societies and users of paving brick.

The National Paving Brick Manufacturers' Association presented a report of a variety survey in the vitrified paving brick industry. This report, covering a period of eight years, represented statistics gathered from 90 per cent of the plants in the United States which produced paving brick. After discussing each variety of brick in great detail, the conference decided to eliminate all but eleven of the sixty-six varieties tabulated in the report. There have been sixty-six different sizes more or less current since 1914, which are divided into five major groups as follows: Plain wire-cut brick (vertical fiber lugless), repressed-lug brick, vertical-fiber lug brick, wire-cut lug brick and special brick. The latter group has been divided into the following classes: (a) Wire-cut lug Hillside brick, (b) repressed-lug Hillside brick, (c) electric railway track brick, (d) miscellaneous special brick.



PERCENTAGE OF TOTAL SHIPMENTS FORMED BY EACH OF THE FIVE GROUPS OR CLASSIFICATIONS

The chart reproduced herewith indicates a steady fall from favor of the repressed-lug brick and a rapid gain for the plain wire-cut brick. It will also be noted that all varieties of special brick, including electric railway track brick, have never exceeded 3 per cent of the total of all kinds shipped annually. Today the percentage of electric railway brick is about 9½ per cent of all types of special brick and about 1 per cent of all brick made, which indicates the relative unimportance from the production standpoint of these latter types. Electric railway specials are those sometimes called "nose," "hump," "flangeway," and "stretcher" brick, being used at the gage lines only to form a groove or flangeway for the wheel flanges.

The conference eliminated all such special bricks from the standard list and retained only the special type known as "Hillside," which is coming into extensive use on heavy grades to provide a better foothold for horses. This size has been retained since in recent years over 95 per cent of the eight varieties of electric railway track brick used have been of the 3 x 4 x 8½-in. size. Manufacturers will continue to supply these special bricks as heretofore, but at a small premium over the standard sizes, and it will be possible for years to come to obtain by special order any of the eliminated odd sizes which may be needed for repairs. In the past the extra cost of special sizes has been loaded on to the buyers generally, but now it will be properly assessed against those who find it necessary to depart from the standard.

The standard sizes henceforth to be carried are:

Width		Depth		Length	Varieties
3½ in.	x	4 in.	x	8½ in.	6
3½	x	4	x	8½	2
3½	x	3½	x	8½	2
3½	x	3	x	8½	1

A permissible variation in length, width and depth was decided upon as follows: ⅛ in. in width or depth and ½ in. in length.

The American Electric Railway Engineering Association was represented at the conference by Francis Tingley of the way committee, who was designated by President C. S. Kimball.

Street Cars Crossing the Delaware

PRIMARILY for the accommodation of traffic that may be considered as local, a suspension bridge is about to be constructed over the Delaware River connecting Philadelphia and Camden. This will be of national interest and importance, since one of its chief purposes will be to accommodate vehicular traffic, and taken in connection with the projected vehicular tunnel, which will more closely unite points in New Jersey with New York, the Delaware River bridge will form a very important link in the system of highways from the Pacific to the Atlantic.

The eastern bank of the Delaware is to Philadelphia what eastern New Jersey is to New York City, for many thousands of persons who are employed in Philadelphia reside in Camden and its suburbs. Camden's thrifty factories also draw many workers from Philadelphia who go back and forth daily. As the only facilities for the heavy daily movement are the ferries, it is evident that the Delaware bridge is needed.

The Philadelphia-Camden structure will have, according to the engineers, the longest span of any bridge in the world, its length being 1,750 ft. center to center of the main piers. It has an overhead clearance about high water of about 135 ft. and in the center of the span an unobstructed opening for navigation is provided over a width of 800 ft. The bridge and approaches will provide a single deck carrying an unobstructed roadway for six lines of vehicles, two lines of surface cars, and two lines for rapid transit, with two 10-ft. sidewalks above the roadway.

The total cost of the structure and approaches is estimated at $28,871,000, which is divided as follows: State of Pennsylvania, $8,221,000; State of New Jersey, $12,429,000, and city of Philadelphia, $8,221,000. The financing of the project has been arranged and it is expected that the work will be rushed to completion and will be finished by 1926, in time for the sesquicentennial exposition which is in contemplation.

Reasonable Value Defined

Court of Appeals of the District of Columbia Holds that Changes in Values by the World War Must Be Considered in Rate Cases

THE obligation of a commission in a rate case to take into consideration changes in reproduction cost due to war inflation is upheld in a case recently decided by the Court of Appeals of the District of Columbia. The case was that of the Potomac Electric Power Company and the Washington Railway & Electric Company vs. the Public Utilities Commission of the District of Columbia. The valuation in question was that of the Potomac Electric Company, which the commission valued in 1914 at $10,250,000, and when it was called upon in 1917 to fix rates on the value of the property it took this figure and added to it only the actual cost of the subsequent additions. The company contended that the commission should also have taken into consideration in this rate valuation the increased value of the property, owing to the general sharp rise in general prices, but this the commission declined to do. The lower court decided in favor of the commission, but the company appealed. In the meantime, the difference between the lower and the higher rate per kilowatt-hour has been impounded by the court and amounts at the present time to approximately $2,500,000.

COURT REMANDS CASE

The Court of Appeals in its opinion first decides it has jurisdiction under the act creating the public utilities commission. It then considers the question of valuation and says, in part:

> The principal object of valuation, of course, is to provide a rate base, and the statute clearly contemplates that the commission shall ascertain the value as of "the time of said valuation," and not as of some anterior date. It has been ruled many times that there must be a fair return to a public utility "upon the reasonable value of the property at the time it is being used for the public," San Diego Land and Town Co. vs National City, 174 U. S. 739, 757; Minnesota Rate Cases, 230 U. S. 352, 434. In the present case the commission, in effect, declined to find the present value of the property because not satisfied as to how long existing conditions would continue. In assuming this position the commission must have overlooked paragraph 9 of the statute, authorizing it at any time, of its own initiative, to make a revaluation of the property of any public utility. In our view, it was the duty of the commission to have considered and given due weight to the evidence as to the then value of the property. As conditions changed and values were substantially affected, it would have been the further duty of the commission to exercise its discretion and revalue the property. The conditions existing were worldwide, and while their duration and future effect were problematical there was no immediate prospect of a return to normal conditions. It may be suggested, although the point was not raised in the opinion of the commission, that practical difficulties would have been encountered in an attempt to ascertain the increase in value of the property between July 1, 1914, and December 31, 1916. But there was substantial evidence before the commission as to the rise in values and a brief investigation would have enabled the commission to determine, with substantial accuracy, how much in fairness should be added to the earlier valuation.
>
> Much reliance was placed by the trial court upon the language of former Justice Hughes, as referee, in the case of the Brooklyn Borough Gas Company vs. Public Service Commission (July 24, 1918), but we find nothing in the report, as we read it, justifying the action of the commission here in entirely ignoring the evidence as to value at the time the finding actually was made. The contention there was that the rates should be based "upon a plant valuation simply representing a hypothetical cost of reproduction" at a time of abnormally high prices due to exceptional conditions. There is a very substantial difference between considering the present cost of reproduction as one of the essential and important elements in the determination of present value and the acceptance, as conclusive evidence of such value, of mere expert estimates of present cost of reproduction.
>
> We are of the view, therefore, that the present cost of reproduction is one of the necessary elements for consideration, along with other relevant facts, in fixing the fair and reasonable value of the property. The law deals with existing conditions and not with abstract theories.

In consequence the court held that the case must be reversed and the cause remanded for further proceedings.

A dissenting opinion was filed by Chief Justice Smyth, who declares, first, that the opinion just quoted should have instructed the commission as to how much should be added to the value of the property. He continues that in his opinion nothing more should be added, for the following reasons, among others: The increase was not due to any investment by the company, but purely from the World War; such a conclusion is more in harmony with the Brooklyn and Minnesota rate cases; finally, he considers the valuation allowed a liberal one.

Wage Reductions Average 15 per Cent

WAGE reductions during August and September of from 3 per cent to 50 per cent and averaging 14.9 per cent for over 400,000 additional workers in 259 industrial groups and establishments are shown in a special digest made by the J. L. Jacobs Company, engineers and statisticians, of Chicago. This average of 14.9 per cent compares with the average reduction of 15.9 per cent in wages for over 4,540,000 employees in 693 other establishments and group industries throughout the country reported during the first seven months.

Among the public utilities, wage reductions were reported during the last sixty days by forty-five additional organizations, most of the reductions being for street railway employees. Of these organizations, twelve reduced wages 5 per cent to 9 per cent, twenty reported reductions of from 10 per cent to 14 per cent, eight from 15 per cent to 19 per cent and five from 20 per cent to 24 per cent. Some of the larger street railways reporting reductions were in New York, Brooklyn, Boston, Denver, San Francisco, Los Angeles, Seattle, Omaha, Topeka, Council Bluffs, Mobile, Ala., Fort Wayne, and Newark, N. J.

A tabulation of average wage reductions by industries is given above.

WAGE REDUCTIONS BY INDUSTRIES FROM JANUARY TO OCTOBER, 1921

	Number Establishments or Groups	Estimated Number Employees Affected	Average Wage Reduction, per Cent
Cotton manufacturing	23	213,000	25.7
Hosiery and underwear manufacturing	8	7,000	24.3
Leather manufacturing	7	14,500	23.6
Woolen manufacturing	26	100,200	20.0
Car building and repairing	12	15,600	19.6
Iron and steel manufacturing	99*	412,800	19.2
Mining	24	128,500	19.0
Packing industry	1*	200,000	19.0
Boot and shoe manufacturing	30	49,000	18.8
Building materials manufacturing	16	6,800	18.3
Electrical manufacturing	6	75,500	18.2
Rubber goods manufacturing	13	12,500	17.9
Silk manufacturing	22	30,500	17.5
Building trades (cities)	176	477,500	17.3
Public employment	54	108,000	16.8
Men's clothing manufacturing	7*	100,000	16.7
Paper manufacturing	22	24,000	16.6
Public utilities	152	137,000	15.0
Shipbuilding	20	109,300	14.8
Express employees (railroads)	1*	50,000	12.5
Railroad employees	1*	1,829,000	12.5
Miscellaneous	232	847,000	17.0
Totals and average	952	4,947,700	16.0

* Entire group of industry included.

Subway Construction Proposed to Aid Unemployment

Unification of London's Transportation Facilities Outlined by Lord Ashfield, in Which Planned Subway Extensions Would Give Work to 20,000—Government Asked to Guarantee Interest on New Capital

LORD ASHFIELD, chairman of the London Traffic Combine, has outlined an extensive scheme for unifying London's transportation facilities and at the same time helping the unemployment problem. He estimates that the subway extensions planned for London will take two years to complete at a cost of £6,000,000. About 20,000 men will be employed who will receive from 70 to 75 per cent of the expenditure as wages. The scheme has already been submitted to the government in connection with the policy under which the government offers to guarantee the interest on capital issues, amounting in all to £25,000,000, to be devoted to works for the purpose of providing employment for British labor.

The London subways have made these proposals to the government:

1. The government to guarantee the payment of interest on the new capital issue to the subscribers, so as to make the new stock a gilt-edged security, and enable the company to obtain the money required at a lower rate of interest than it would otherwise be able.

2. The company to give an undertaking to the government that interest on the new issue would rank as a first charge on the net earnings of the underground combine, and thus guarantee the government against any liability in respect to the undertaking.

3. The government to agree to pass a bill in the present session of Parliament prohibiting other people for ten years from placing motor-omnibus services on the roads of Greater London in competition with the omnibuses of the combine (*i.e.*, London subways, buses and tramways, which are administered by one authority.

Questioned on proposal (3), Lord Ashfield says "The London General Omnibus Company operates buses on what may be termed a yearly tenure. It is free to anybody, within the police regulations, to bring omnibuses into service in London. That is really the crux of the whole position. Unless there is more security given to the company so that it may be able to earn money upon which to meet the additional burden which we are prepared to take, it will be quite impossible for us to commence these improvements."

As the traffic legislation now stands, there is always the possibility of small concerns putting buses into operation. These concerns, as Lord Ashfield puts it, "run their buses along the most select routes at the most select hours, in any fashion they like, solely with the purpose of seeing how much they can make out of it. They take no part in the transport problem. They leave it to the big company to provide services which are not remunerative and take to themselves just those services which offer the best chance of making a living. They come in feeling sure that sooner or later the big company must buy them out. It is not only the buses which are harmed by this system, the subways and tramways feel it too. The whole London transport system could be very easily upset by the introduction of a very small number of these buses."

The London Traffic Combine now has to set aside certain sums of money in order to cope with the "pirates" which, if preventive legislation were introduced, could be devoted to the furtherance of their schemes. Such legislation would not, of course, affect those motor-coach concerns that run services over long distances between London and other towns. Parliamentary powers for the subway extensions are possessed by the combine, and the schemes have already been approved by a Parliamentary committee, which is urging immediate government action.

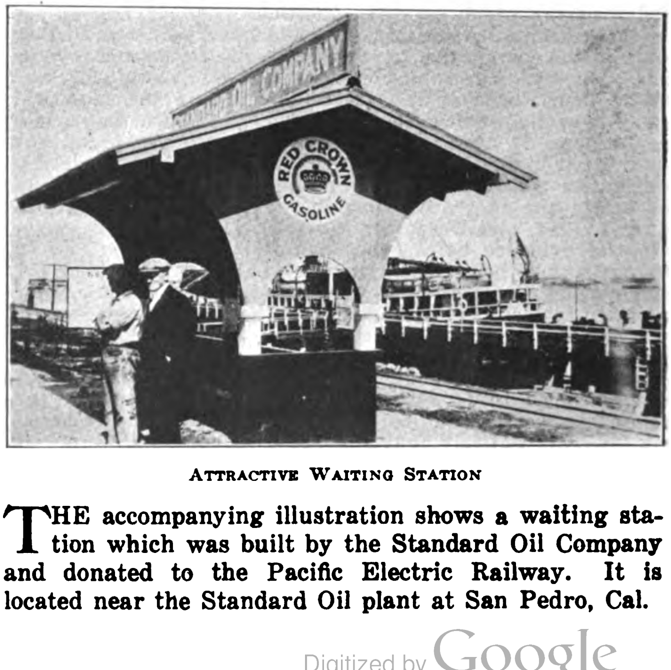
At a full meeting of London members of the House of Commons, held chiefly for the purpose of considering the unemployment problem, Lord Ashfield attended and explained the proposals outlined above. A discussion ensued, after which the following resolution was adopted:

"That this meeting of London members recognizes the importance of proceeding forthwith with the works already authorized by Parliament for the improvement and development of the underground railway system, as adding to the traffic facilities of London, relieving the present congestion, and, more especially at this time, as providing employment for several thousands of workpeople. It, therefore, approves in general the proposals which have been put before it by Lord Ashfield for this purpose, and strongly urges upon the government the need for taking immediate steps to investigate them on the distinct understanding that capital and interest are properly secured, and subject to the tramway undertakings of the various local authorities affected being protected."

Can Any One Equal This Record?

ON THE seven divisions of the Louisville & Interurban Railroad 1,440,000 cans of milk have been handled in the last three years with the loss of only one 5-gal. can and with no claims whatever. An average of 200,000 gal. of milk is handled per month, with an average haul of about 15 miles and a monthly revenue of approximately $3,000. The general claims covering all freight handled by the company during the year 1920 and thus far in 1921 have amounted to less than one-twentieth of 1 per cent of the gross revenue from freight. R. H. Wyatt, general superintendent, is credited with this fine showing.

Waiting Station as an Advertisement



ATTRACTIVE WAITING STATION

THE accompanying illustration shows a waiting station which was built by the Standard Oil Company and donated to the Pacific Electric Railway. It is located near the Standard Oil plant at San Pedro, Cal.

Kentucky Utility Men Get Together

Great Emphasis Laid on Service and on United Effort of Utilities to Inform Public and to Protect Each Other in Unfair Legislation and Court Action

UTILITY men of Kentucky gathered in Louisville on the evening of Nov. 21 to join in a memorable dinner and party as the guests of James P. Barnes, president of the Louisville Railway. This was given at Safety Hall, a unique and attractive place roughly finished off in an old shop building to serve as the meeting place of the employees of the Louisville Railway. The turkey dinner was prepared and served on the premises by employees. This was followed by a program of entertainment by trainmen which because of its originality and excellence proved to be of great interest to the 106 guests. Mr. Barnes received many congratulations upon the spirit with which the employees entered into this occasion. The party afforded a splendid opportunity for the utility operators to get better acquainted and in this respect was a most valuable contribution to the annual convention of the Kentucky Association of Public Utilities which convened the following day at the Seelbach Hotel.

President P. S. Pogue, president and general manager of the Louisville Home Telephone Company, presided. In his address he urged greater attention on the part of utility men to the work of informing the public on public utility matters, of doing the utmost to give excellence of service and in other respects to give first consideration to matters of public relations. He hoped that the association might be made a stronger instrumentality in looking after the welfare of the members and suggested that it be made a clearing house for information through the appointment of certain committees to which questions might be addressed by the member companies. He also urged the re-establishment of the association bulletin.

A UNITED FRONT NEEDED

Donald McDonald, vice-president and general manager of the Louisville Gas & Electric Company, prefaced his paper on "The Outlook for Power and Light Companies" by emphasizing the great importance of the utility business. He said that measured by service rendered, number of employees, amount of capital invested or number of security holders, it was the largest business in the country with the one exception of farming. He laid great stress upon the need for co-operation among utility companies in self-protection, commenting that any adverse decision affecting any one company should be fought by all utility companies, for any unfair decision against one would affect all sooner or later. He urged that steps be taken to inform all employees and all security holders of utilities, as well as those of manufacturers serving the utility companies, of the effect that attacks upon the public utilities have on them. He lamented the fact that the utility companies seemed to be lacking in the herd instinct to present a united front to protect themselves, and thought that if all persons directly or indirectly connected with the business were properly informed a very formidable support of what is right in the business could be mustered upon occasion.

He spoke briefly of the hardships brought upon the companies as a result of war, but said also that there had been gains resulting from the war. The service rendered by utilities has been proved to be more reliable than any other necessity. The public has learned to depend confidently upon these services. It has learned to use them more freely. The public is less antagonistic and the desire for government management has largely passed. The increasing use of the utilities brings to the fore the difficulty of financing extension of the service. He said, however, that while there is general difficulty in marketing utility securities, many shrewd people are taking advantage of the fears of others for these securities and buying them at the present low prices, feeling certain that the business is sound and that the value of these securities will enhance.

A paper on the outlook for the electric railway industry presented by Mr. Barnes appears elsewhere in abstract. Mr. Barnes was followed by M. F. Hosea, treasurer and auditor of the Indiana Telephone Association, who discussed the outlook in the telephone industry.

Harry Reid, president of the Interstate Public Service Company, Indianapolis, Ind., presided at the luncheon, at which Martin J. Insull, president of the Middle West Utilities Company and past president of the National Electric Light Association, and M. H. Aylesworth, executive secretary of the National Electric Light Association, were the speakers. Mr. Insull's talk was largely directed to the fundamental interest which the public has in the public utilities and to urging the utility men to take advantage of every possibility of placing these facts before the public. He said that for every dollar the utility companies invest in supplying their services the public spends $2 for appliances, so that it has an even greater investment in the business than do the utilities, which would be worthless if the latter ceased to function. He referred to the great work which the utilities are doing in the "back-to-the-farm movement," believing that the interurban, the telephone and electric light are rapidly making farm life more attractive and less laborious. He pointed out that the public is protected in the matter of rates by utilities commissions in most states, or, in the absence of a commission, by the business sense of the utility manager, who would only naturally reduce rates if he were making more than he was justly entitled to, because this would be simply sound business judgment. Good service is the basis of good public relations. The public only thinks of the service when it is bad, and bad service is synonymous with bad public relations. He urged the giving of good service and of letting the public know that it is getting good service.

In connection with the thought of educating the employees as one effective means of improving public relations, he urged that the education of women employees should not be overlooked. They are a good source of contact with the public, particularly with the feminine public, and they should be properly informed for this contact.

Referring to the personal reward for employment in the utility business, Mr. Insull said that this was less, for the brains and effort required, than could be secured in many other lines of business. A high rate of remuneration cannot be had in a business where all that is allowed is a fair return on the investment. The satisfaction derived from the spirit of service must form a part of the remuneration, and if one cannot get this satisfaction he should not be in the utility business.

Mr. Aylesworth urged the utility men to have faith in their own business and to get out and tell their story to the public and cease complaining. Instead of singing "Rock of Ages" we should sing "Revive Us Again" and "Bringing in the Sheaves." We must tell the story of the utilities and keep telling it, so that people will be so thoroughly informed on utility matters that no politician will dare to take a stand against the service companies. While realizing the value of the holding company in financial and engineering matters, Mr. Aylesworth took a very emphatic stand against foreign management.

SAFETY WORK A COMMON GROUND FOR EXECUTIVES AND EMPLOYEES

At the afternoon session A. Bliss McCrum, secretary of the Public Utilities Association of West Virginia, presented a paper dealing with the functions of a public utility association and also treating upon the inter-relations of companies, public and commissions. A paper on "Public Safety" was read by George H. McClain, manager of the Louisville Safety Council, in which he laid emphasis on the necessity for the whole-hearted support of the chief executive of a public utility if its accident prevention work is to meet with success and permanency. He was convinced, also, that the safety work and safety organization of a utility company afford a common ground for the executives and employees to meet on, such as cannot be gained through any other avenue. In this connection, he praised the work that is being done by the Louisville Railway, saying that he had never had the pleasure of observing a more congenial and thorough understanding between the men and the big boss than exists between Mr. Barnes and his employees, and that this is never more in evidence than at one of their safety meetings.

Richard M. Bean, president of the Louisville National Bank, spoke on the financial outlook, and significant among his remarks was the statement that he now feels just as apprehensive of large inventories of stocks as he did a year ago. He felt that deflation was by no means completed yet. One of the most encouraging signs of improvement in business conditions is the extension of credit to firms being organized in foreign countries which will sell products manufactured in the United States.

ELECTION OF OFFICERS

The following officers were elected by the association for the ensuing year: President, L. B. Herrington, vice-president Kentucky Utilities Company, Louisville, Ky.; first vice-president, John Stoll, Lexington; second vice-president, W. H. Harton, general manager Cincinnati, Newport & Covington Railway, Newport, Ky.; treasurer, P. S. Pogue, Louisville; secretary, E. F. Kelly, secretary to president Louisville

Railway. Executive Committee: Donold McDonald, J. P. Pope, A. S. Nichols and J. P. Barnes.

The members of the association were the guests of the Tafel Electric Company, for a buffet lunch and theater party in the evening after adjournment of the convention.

The Outlook for the Electric Railway Industry*

By JAMES P. BARNES
President Louisville Railway

THE utilities—by their service ye shall know them, and beyond doubt as they serve they shall be rewarded, and, as they fail to serve, condemned.

A new spirit is abroad—born of the world throes of warfare, and today the true measure of service is the Golden Rule. The service is the thing and we must seek, not so intently remuneration for, but opportunity to serve. This is not to intimate that we can serve at unremunerative rates, but rather that if we ask and grasp our opportunities for service of the broadest kind, remuneration will follow as a matter of course.

Well and comfortably to transport from home to factory, store and office an urban population is no small service to a community, but it is not the only opportunity for service. The shopper, the theater-goer, the pleasure seeker have each their claim upon the transportation service, and upon these elements, together with the units which go to make up the peak requirements of a system, will the base and rush-hour schedules be built. The obligations of courtesy and convenience in service are too well accepted to require comment.

THE BUGBEAR OF TRAFFIC CONGESTION

But is this all the city railway can do for its patrons? Is there no element of service as yet undemanded because unforeseen? Is there no means by which the plant may be made more widely useful to the community and its burdens thus incidentally distributed over a wider field of uses?

I think there is, and that the way to solution of the problem lies in the study of what is today the most troublesome of every city's problems, and which, so far from being met, is actually daily becoming more aggravated. I refer to traffic congestion.

The downtown city streets of today are no more adequate for the requirements they are called upon to meet than were the cowpaths of Colonial days adequate to become the downtown streets of New York and Boston. Relief is imperatively demanded, but by what means?

Widening of thoroughfares is impracticable because of the enormous expense involved. Yet what else will suffice?

For the sake of the practical let us for the moment be visionary. Suppose the sidewalks where now inadequate were to be widened by extension into the street, and the street to be at the same time widened by the elimination of the long line of parked vehicles which is a daily sight in every city. In every city a judicious elimination of vehicle parking would leave a maximum walk of say three blocks to any store or office building. How much real hardship would this entail to the average shopper?

The real congestion of our streets arises not from the commercial delivery vehicle so much as from the private conveyance. But is there not a way by which we of the electric railways might assist even in the elimination of the commercial vehicle from street parking?

Surely it is false economy from the viewpoint of a community that delivery facilities for its merchandise distribution be needlessly extended and reduplicated. Why should not all merchandise, with a possible few exceptions, be delivered from one vehicle? Mass distribution from business or shopping center to outlying substations and thence door delivery by suitable vehicles would save alike the streets, the machinery wear and tear and the temper of the housewife, who would receive at one delivery all the merchandising that now requires many answers to the doorbell. Visionary? Perhaps, but there is a service which the city railway with its tracks laid and its cheapest per ton-mile facilities at hand could render to the profit of itself and the economy of the community.

The future of the electric railway industry is vast and opens before us like a fairyland of opportunity. New means of transportation are within our grasp as feeders and auxiliaries. The auto truck, the auto bus and the trolley bus are all tools to our hands. Dream, visualize, anticipate and fearlessly adopt the worth-while innovations, and the future of the industry is vast indeed!

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*Abstract of paper presented at meeting of Kentucky Association of Public Utilities held at Louisville, Ky., Nov. 22, 1921.

The Relation of Rates to Service*

Commissions Should Give More Weight to the Value of the Service to the Customer When Establishing Rates

C. L. S. TINGLEY
Second Vice-president the American Railways, Philadelphia, Pa.

AFTER mature reflection on this title, I have concluded that it should be amended to read, "The Relation Between Rates and Service," and I believe the reasons for this will be obvious.

Many years ago this relation was somewhat cynically expressed by a remark attributed to a prominent railroad man as "all the traffic will bear," which was at that time interpreted by the public press as meaning the limit of extortion. But this expression, if read aright, contains the fundamental truth of the relation between rates and service, for I interpret it to mean that rate or system of rates which will produce the maximum amount of business at a profit to the service company. In this interpretation I am supported by W. C. Noyes, in his book "American Railroad Rates," where he says:

> It means charging what the shipper can afford to pay. It is rather an excuse for low rates upon cheap goods than for high rates upon dear goods. The traffic manager adopts no fixed standard but endeavors to ascertain what different classes of goods cost to produce, the demand for them and the prices at different places in order to determine what they are able to pay and whether lowering the rates will increase traffic.

This has also received judicial recognition, for in *Steenerson vs. Great Northern Railroad*, 69 Minn., the court says:

> No better rule for the government of a public commission or a court when investigating rates can be adopted than one applied by the railroads themselves; a rule which will adjust rates so as to secure the largest interchange of commodities; a rule which will stimulate and encourage and induce the movement of any commodity which can be produced in any section of the country in large quantities. Of course, such rates should not be established so low as to impose an unreasonable burden on other traffic, but should be fixed so as to have reasonable relation to the cost of production and the value of the transportation service to the purchaser and shipper.

The law of the State of New Jersey provides that the Board of Public Utility Commissioners shall have power, after hearing, upon notice, by order in writing, to fix just and reasonable rates, and after similar hearing, to fix reasonable standards, regulations, measurements or service to be furnished, and further that no public utility shall withhold or refuse any service which can reasonably be demanded and furnished, and that the board shall have power to require a public utility to establish, construct, maintain and operate any reasonable extension of its existing facilities where in the judgment of said board such extension is reasonable and practicable and will furnish sufficient business to justify the construction and maintenance of the same and where the financial condition of the said public utility reasonably warrants the original expenditure required in making and operating such extension. This principle was early recognized by the Board of Public Utility Commissioners of New Jersey, for in a decision rendered Jan. 13, 1913, in the matter of the application of Alfred Reed and Sydney L. Wright, receivers, etc., the board said:

> The Board of Public Utility Commissioners finds and determines that the present rates of fare upon the Princeton Division operated by the traction company are insufficient and do not afford a fair and reasonable return . . . It should be emphasized that the fares to be established by the board's order are largely experimental. Experience may demonstrate their sufficiency or insufficiency. It is, however, both in the interest of the traction company as well as of the traveling public that the advance in fare should not be so heavy as to tend to drive passengers to other avenues of travel

It is the established practice of the board in passing upon the question of the extension of gas, water and electric facilities to ascertain and make a determination of the cost of rendering the service, plus a return upon the capital invested, and where the figure so ascertained is in excess of the estimated income from the established tariffs of the company to require the prospective customer to guarantee for a period of five years an income which will be adequate to meet not only the cost of the service but a reasonable return on the estimated plant investment necessary to furnish the service. It seems to me that this is a clear recognition of the fact that there is a relation between the rate and the service, for if the filed tariff rates are just and reasonable and are producing a lawful return to the company upon its investment and the business offered on the proposed extension will impair such return, the question is put squarely up to the prospective customer: Is this service that you are seeking worth more than the established rates to you so that you are willing to pay an increased rate in order that you may be served?

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*Abstract of paper presented at a meeting of the New Jersey Utilities Association, held at Atlantic City, N. J., Nov. 18-19, 1921.

A study of the decisions of the commissions and courts will show that almost invariably there has been an application of this rule, although it is true that such application has been in many cases a one-sided one: that is to say, an effort on the part of the commission or court to prevent the rates becoming so high that service will be materially curtailed or diminished, rather than permit the trying out of a rate which will, theoretically at least, produce that fair rate of return to which the service company is entitled.

Many Basis for Rates

There are many relationships between rates and service. The rate on a steam road is proportional to the distance traveled, with extra charges for additional comforts; for freight, it is not only proportional to the distance hauled but also to the care required to guard and protect the property to its destination; for gas and water, it is more or less proportional to the amount consumed; for the telephone, it is proportional to the distance the message is transmitted; for electricity, it bears a relation not only to the quantity consumed but also to the number of hours it is consumed and sometimes to the hours of the day in which it is consumed.

It seems to me that this question has a very vital bearing upon many rate-making cases. It is well established, I think, that in the making of rates consideration must be given to the value of the property, its original cost, its capitalization, and all other relevant matters, and it seems to me that the value of the service to the customer is a relevant matter. If a layman may be permitted to say a word of criticism with respect to our higher courts, I would venture the suggestion that in one of the fundamental principles of rate cases they have erred, and that is in the stress which they have placed upon the reproduction new value of the property. It seems to me—with all respect—that the vital thing in cases of this character is not wholly the reproduction value of the used and useful property but the value of the reproduced service.

We are, of course, all familiar with the formula usually followed in the fixation of a rate. We ascertain the cost of producing the service (that is to say, the operating expenses), then, in great elaboration in many cases, an effort is made to ascertain the value of the property used and useful in the production of that service—almost always a contested question, and always a question upon which there can be honest difference of opinion. Then that value, so called, having been arrived at largely by compromise, a hypothetical rate of return is allowed and that is added to the operating expenses. Then that sum total is divided by the number of passengers carried, or by the kilowatt-hours sold, or the thousand cubic feet of gas sold, or the million gallons of water sold, and a figure is arrived at upon which the rate is based; and no consideration whatever is given to the value of the service to the consumer, except to see that his rate is not too high. A utility furnishing service which is vital to the life of the community (and which possibly could not be reproduced for a sum very much larger than that being charged) in many instances for a sum much smaller than the public could and would willingly pay rather than be deprived of the service, is held down to a rate based upon a theoretical cost of production. In this connection I would quote from the decision of the Supreme Court of the United States in *Knoxville vs. Water Company*:

> Regulation of utilities which perform their duties under conditions of necessary monopoly will occur with greater and greater frequency as time goes on. It is a delicate and dangerous function and ought to be exercised with a keen sense of justice on the part of the regulating body met by a frank disclosure on the part of the utility to be regulated. The courts ought not to bear the whole burden of saving property from confiscation, although they will not be found wanting when the proof is clear. The legislatures and subordinate bodies to whom the legislative power has been delegated ought to do their part. Our social system rests largely upon the sanctity of private property, and that state or community which seeks to invade it will soon discover the error in the disaster which follows. The slight gain to the consumer which he would gain from a reduction in the rates charged by the utility is as nothing compared with his share in the ruin which would be brought about by denying private property its just award, thus unsettling values and destroying confidence. On the other hand, utilities to be regulated will find it to their lasting interest to furnish freely the information upon which a just regulation can be based.

And further in this connection, I quote from a decision recently handed down by the United States District Court for the Southern District of Texas, where the learned judge says:

> It is not amiss for me to say that the council occupies a somewhat different position from that of a court, in that the council is not required to simply declare its judgment on the evidence before it, but has the right and power, as representing the public, and it should be its aim and purpose not merely to pronounce a legal judgment as to what rate would be short of confiscatory, but to arrive at and agree upon a fair rate, though said rate should be considerably in excess of the lowest rates which the courts would sustain and allow. In other words, if the company exhibits a spirit of fairness and concession, with the view of agreeing upon a fair and reasonable rate, it is clear that the council is not only authorized, but should endeavor, to meet them in that spirit.
>
> To the litigants and their council in this and similar cases before me I commend these expressions, not because of the wisdom of the author, but because they bear the sanction of the authority of the Supreme Court of the United States. . . .

There is a long line of decisions bearing on this same point. They are too numerous to quote, but I invite your attention to a few: *In Re California-Oregon Power Co.* U. F. 26, 97, 99, 150; *In Re Western State Gas & E. Co.* Appl. No. 1998, *Falk vs. Western State Gas & E. Co.* Case No. 906, Decision No. 3852, Nov. 6. 1916, California Commission; *In Re Plymouth Electric Light Co.* (N. H.) D-388, June 30, 1917; *In Re Creswell Water Co.* U-F-235. P.S.C. Or. Order No. 486, Jan. 28, 1919, Oregon Commission: *Campbell vs. Hood River Gas & E. Co.* (Or.) P.U.R. 1915D. 855; *Duluth Street R. Co. vs. Railroad Commission*, P.U.R. 1915D, 192; *Grafton County Electric Light & P. Co. vs. State*, P.U.R. 1915C, 1064; *Re Bound Brook Water Co.* (N. J.), P.U.R. 1915F, 1040;*Greer vs. Baltimore & O. R. Co.* (W.Va.), P.U.R. 1916D, 286; *Re Atchison, T. & S. F. R. Co.* (Mo.), P.U.R. 1916A, 594; *Re Colorado Springs Light, Heat & P. Co.* (Colo.), P.U.R. 1916E, 650; *Re San Diego & S. E. R. Co.* (Cal.), P.U.R. 1916C, 1; *Oklahoma Gin Co. vs. State*, P.U.R. 1916C, 22; *Bogart vs. Wisconsin Teleph. Co.* (Wis.), P.U.R. 1916C, 1020; *Re Kansas City Electric Light Co.* (Mo.), P.U.R. 1917C, 728; *Merriman vs. Luse Co.* (Or.) P.U.R. 1917F, 244; *Re Lake Hemet Water Co.* (Cal.), P.U.R. 1917A, 458; *Re Kent Water & Light Co.* (Ohio), P.U.R. 1917D, 394; *Murchie vs. St. Croix Gaslight Co.* (Me.), P.U.R. 1917B, 384; *Re New York Transfer Co.* (N. Y.), P.U.R. 1919B, 590; *Re Central Illinois Pub. Service Co.* (Ill.) P,U.R. 1919E, 910; *Buck vs. Judge* (N. Y.), P.U.R. 1919F, 458; *Re Portland R. Light & P. Co.* (Or.), P.U.R. 1919A, 513; *Re Springfield Gas & E. Co.* (Mo.), P.U.R. 1919E, 973; *Springfield City Water Co. vs. Springfield* (Mo.), P.U.R. 1919D, 853; *Moore vs. Valley R. Co.* (Pa.), P.U.R. 1919F, 493; *Wayne Title & Trust Co. vs. Wayne Sewerage Co.* (Pa.), P.U.R. 1919D, 404.

I would conclude my discussion of this question with a quotation from a paper entitled "Rate of Return," presented before the American Academy of Political and Social Science in 1914 by James E. Allison, former commissioner and chief engineer of the St. Louis Public Service Commission:

> In most of the published reports of judicial decisions or opinions and of findings of commissions there is no very clear process of mind shown by which these bodies have arrived at their conclusions as to a reasonable rate of return. In some of the court decisions and even in those of able commissions the legal rate of interest seems to have entered as a factor in determining a reasonable rate of return. There is of course no reason for this other than that it was grasped as a prop for lack of better reasoning. Because the legal rate of return in some states is 6 per cent is no reason for supposing that this circumstance would have any effect upon investors in inducing them to enter a hazardous enterprise. Generally to the legal rate of return there has been added what is called profit as a reward for risk or for exertions of the managers and creators. This process does not consider economic laws, but no doubt in many cases by such rule of thumbs an approximately correct result has been obtained.
>
> One of the most curious features in the decisions of the courts has been in assuming that while a rate of return may be too low, it is yet not confiscatory of property. This conclusion, and it seems rather well established as a principle, is to the "unlegal" mind a curiosity in logic.
>
> It can hardly be disputed that the returns create the value of the property and if the returns are admitted to be, we will say, 25 per cent below what they should be, it seems difficult to avoid a conclusion that 25 per cent of the value of the property has been destroyed to the investors, and if the ruling is the result of a rate case, 25 per cent has been confiscated to the benefit of the consumer.
>
> Throughout the whole mass of decisions of the courts on valuation and on rate of return there has been such a profound disregard for economic laws and there is such a great reverence by both the courts and the commissions for precedent even if it is a patently wrong precedent, that it is difficult to prophesy the results which will follow for the next few years. In the end the true economic laws will of course prevail but before that time there will probably be a considerable period during which new capital will hesitate to place itself under control of public regulation. Capital already in the public service will of course be injured by adherence to false precedent but it will suffer much greater injury because of the stoppage of new capital. Public service enterprises constantly need new capital because in most places the public demand for public services is constantly increasing. Whether or no the regulating bodies or the public itself will feel the curtailment of service soon enough to realize, before any great harm is done, that capital is free to stay out of public service remains yet to be seen.

Recent Happenings in Great Britain

Electrification of Suburban London Trunk Lines Probable Through Trade Facilities Act Passed to Aid Business and Unemployment

(From Our Regular Correspondent)

During part of October and November, Parliament was engaged, in a special session called for the purpose, in dealing with the problem of unemployment. The ranks of unemployed in this country at the time of writing, number in round figures about two millions. Several Acts were passed for the purpose of giving relief, for financing public works, and for encouraging the development of trade which is in a stagnant condition. One of the Acts which was passed promises to have a considerable bearing on the development of electric traction. This is the Trade Facilities Act.

ONE of the provisions of the measure is to the effect that if the Treasury is satisfied, the proceeds of any loan proposed to be raised by any Government, any public authority, or any corporation or other body of persons are to be applied towards the carrying out of any capital undertaking; that the application of the loan is calculated to promote employment in the United Kingdom; and that the Treasury may guarantee the payment of the interest and principal of the loan, provided that the aggregate capital amount of loans shall not exceed £25,000,000.

GOVERNMENT GUARANTEES MAY SPEED WORK

No guarantee will be given after the expiration of twelve months from the commencement of the Act. Sir Robert Horne, Chancellor of the Exchequer, stated in reply to a question that schemes for the electrification of the suburban portions of the trunk railways leading out of London would come within the scope of the Act. As is well known, various schemes of this kind have been held back because of the present high cost of everything. Railway companies may be induced to take advantage of the guarantee, because the Act does not specify any limit of duration of guarantees, though they must be given within twelve months.

On. Oct. 27, only a day or two after Sir Robert Horne's statement, it was publicly announced that on the invitation of the Government the London underground railway companies had submitted a scheme of railway developments in connection with the relief of unemployment. The developments in question have in past years been authorized by Parliament but have not been carried out owing to the difficulty of raising additional capital and to the high cost of construction as compared with pre-war figures.

The authorized works which have been hanging fire for several years include the enlargement of the tunnels of the City & South London Railway so as to make them of about the same diameter as those of the other "tube" railways; the construction of a connection between the City & South London Railway at Euston and the Charing Cross & Hampstead Railway at Camden Town; the extension of the latter railway by a surface line in the open country 4½ miles long, from Golden's Green terminus to Edgware; and the construction of a connecting line between the Central London Railway at Shepherd's Bush and the London & South Western Railway at Hammersmith. At present prices these works are estimated to cost £6,000,000.

All extensions will be electric railways, and they will not only improve traveling factilities, but develop areas at present lacking proper means of communication. Lord Ashfield, chairman of the underground railway companies, is of opinion that for some years the additional traffic will not warrent the investment, but that there is need for the improvements and for giving work to the unemployed. About 20,000 men will be engaged directly and a good many more indirectly. To carry the project out, the Government must guarantee the new capital—outlines proposed by the Act of Parliament—so that the required money may be raised at a lower rate of interest than if the railway companies had to do it on their own security. Lord Ashfield thinks that the scheme will not cost the Government a penny, from which it is to be inferred that the companies hope to be able to meet the lower rate of interest which the Government guarantee will make possible.

ASK LONG-TERM PROTECTION FROM OMNIBUSES

As part of their scheme, the underground railway companies asked the Government to secure their associated company (London General Omnibus Company) against "piratical" omnibus competition for ten years. In this way the buses would help to carry the cost of the railway improvements.

The underground railways scheme encountered a set-back on Nov. 7 when the Prime Minister (Mr. Lloyd George) stated, in reply to a question in the House of Commons, that the Government could not promote legislation to give protection against competition with the London General Omnibus Company's buses. Thereafter Lord Ashfield, while expressing regret at the decision, announced that he would try to work out a new scheme.

The announcement of the proposal by the London underground companies was immediately followed by speculation as to the carrying out of electrification schemes by other railway companies, especially those which already possess the legislative powers and have been waiting for better times in order to carry them out.

In accordance with his previously announced intention, Sir Eric Geddes, Minister of Transport, has resigned the office. Mr. S. Baldwin, President of the Board of Trade, stated in the House of Commons on Oct. 24 that arrangements for the future conduct of the business of the Ministry were under the consideration of the Government. Meanwhile the Ministry had been placed in charge of Mr. Arthur Neal, its Parliamentary Secretary.

The reorganization of the Ministry has been made possible by the end of the period of State control of the railways and by the passing of the Railways Act.

The original idea of the Government that the Ministry should regulate, control, and develop every means of public transportation has been largely, if tacitly, abandoned, as the public have had more than enough of bureaucratic control. A number of the highly paid expert officers of the Ministry have already resigned, but it was understood all along that their work was only temporary. The Ministry has erected its great monument in the shape of the recently passed Railways Act, and the war period of control of the railways being over, it seems likely either that the Ministry will be continued on a much reduced scale or that its functions will be transferred to another department.

TRANSPORT MINISTRY CHANGE

The Prime Minister, early in November, expressed a doubt whether if there was to be a transfer, the Board of Trade would be the most suitable department to entrust with the duties. This view is notable, because before the Ministry of Transport came into existence the Board of Trade exercised such powers of the State as then existed in regard to railways and tramways. On Nov. 8 it was officially announced that Viscount Peel had been appointed Minister of Transport. The arrangement is temporary pending the Government decision on the future of the Ministry. Viscount Peel has held various political offices and is at present Chancellor of the Duchy of Lancaster—a post which is something of a sinecure. He will not draw the salary of Minister of Transport.

Tramway undertakings are suffering from the great slump in trade in the way of a falling off in the number of passengers. Even where gross receipts show an increase, it arises from the higher fares, not from a larger number of passengers. The undertakings, however, should get a little further relief in the matter of working expense. In view of the further fall in the official index figure of the cost of living, tramway men's wages are under the sliding scale reduced a further 2s. per week as from the first full pay period in November. This makes a total reduction of 5s. per week since the sliding scale came into operation.

INSTITUTE OF TRANSPORT SATISFACTORY

Though the Institute of Transport has not been very long in existence, it has developed rapidly and has already done good work. The report of the council for the year 1920-21 shows that at the end of September last, the membership numbered 1,081, of whom 998 are resident within the United Kingdom. Special attention is being given to the educating and training of graduates and students.

At the second annual meeting of the Institute of Transport held on Oct. 17, Sir Henry Maybury, the new president, dealt with the subject of highway improvement and maintenance and with the development of railways and tramways to meet increasing needs. An era, he said, of intense activity was evidently opening in the railway world, where there was a plain determination to provide the public with facilities and attractions from which they had been weaned for several years. At the annual dinner of the Institute, Lord Ashfield and Mr. A. Neal, M.P., were principal speakers. The former forecasted great developments of railway and highway transport.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Ouster Ordinance Not in Effect

Detroit City Council Suspends Ordinance—Further Negotiations With Company Planned

The ouster ordinance which would have gone into effect on Nov. 25, forcing the Detroit (Mich.) United Railway to stop service on Fort Street and Woodward Avenue and to proceed to remove its tracks, was suspended indefinitely by the City Council and the service on Woodward and Fort lines will continue regardless of the end of the time limit. The ordinance was suspended to allow further negotiations between the company and the city.

DETAILS UNDER DISCUSSION

Details of a proposed agreement are being worked out between the Detroit United Railway and the city, and at a second conference of the members of the Street Railway Commission with company officials further steps were taken leading to an exchange of running rights over certain lines owned by the company and certain lines owned by the city.

According to Corporation Counsel Wilcox the Detroit United Railway will not be in contempt of court by the continued operation over the lines mentioned in the ouster ordinance, as the final step has not been taken by the city to compel the cessation of service. Under the Supreme Court decision, in case the company refused to comply with the city counsel's order in the ouster action, recourse might be had to a court ruling enforcing the order. No such application for a court ruling has been made by the city. The company will be allowed to operate as previous to the passage of the ouster ordinance while negotiations for the proposed agreement as to running rights are being worked out.

It has not been definitely announced as to what provisions the company and the city wish to have incorporated in the agreement, and E. J. Burdick, general manager of the Detroit United Railway, and Joseph S. Goodwin, general manager of the Detroit Municipal Railway, are preparing figures to be submitted at the next conference indicating what each party in the pact is willing to pay for operating cars over the other's lines. As soon as studies of traffic conditions on the lines involved can be made, an agreement will probably be drawn up jointly by Elliott G. Stevenson, counsel for the Detroit United Railway, and Corporation Counsel Wilcox.

MR. DOW ACTIVELY INTERESTED

The agreement for one party to compensate the other for the privilege of operating cars over the other's lines will probably be made only in event that one party finds it necessary to operate over a greater number of miles of the other party's lines than the other operates over the first party's lines.

Alex Dow was with the officials representing the Detroit United Railway at the conference. Since his becoming a director of the company Mr. Dow has sought to bring about a peaceful settlement of the differences involved in the street car question in Detroit and existing between the city and the company. The city has been represented by members of the Street Railway Commission since the temporary absence of Mayor Couzens. The Mayor will be present at the next conference but it is not generally believed that any great change will be made in the negotiations since the Mayor announced that the Commission had been given full power to deal with the company in this case.

While both parties believe that considerable progress has been made, there still remains a number of details to work out. An agreement is hoped for which will result in better and more complete service on both company and city lines than could be given without the exchange of running rights, especially after the day-to-day lines are taken over by the city. Among the details to be decided are the question of transfers between the two systems and the basis upon which charges for operating cars over the other party's lines will be made.

New Bridge Interrupts "L" Service

Replacement of the present double-deck swing bridge across the Chicago River at Wells Street, with a new double-deck bridge of the bascule type, will require interruption of the regular north-south elevated service in Chicago from 8 o'clock on the evening of Dec. 3 until the morning of Dec. 6. During these two days and three nights the old bridge will be removed and the new one, construction of which is completed except for the last steps in placing it in service, lowered into position. Heretofore, the construction of the new bridge over and around the old one, has been accompanied by only a few short delays to traffic and the complete interruption of through service for four Sundays.

All of the through north and south trains operate over this bridge, and during the interruption all north side trains will operate in and out of the stub terminal at Kinzie Street. South side trains will operate around the loop and through passengers will be transferred north or south upon walking across the Clark Street bridge, which makes a direct connection between the Clark and Lake station on the loop and the Kinzie Street stub, entrance to which is on Clark Street. The problem of handling all of the northbound traffic during a business day, augmented by the Christmas shopping already heavily under way, presents one of the most difficult traffic problems that the Elevated Lines have ever undertaken. Surface cars using the Wells Street bridge will be rerouted over other bridges or through the tunnels.

Des Moines Franchise Carried

Last-Minute Injunction Against Election Fails, but Leaves Railway Issue Beclouded

Des Moines voted overwhelmingly in favor of the new railway franchise at the election held on Nov. 28. In spite of a spirited campaign made against the measure on the part of former Corporation Counsel Byers and his cohorts, the franchise carried by vote of 16,808 to 8,877. Women played an important part in rallying to the cause of safe transportation.

In spite of this outstanding approval of the franchise by voters, the measure is still clouded by legal obstacles which must be overcome before it can become a binding contract and the Des Moines City Railway is enabled to secure financial backing to restore normal service. On Saturday, previous to the franchise vote, Judge Hume of the District Court, granted an injunction in the suit brought by Grant Van Horn, who sought to prevent the election.

The court held that the publication clause of the franchise was faulty and that proper notice had not been given in accordance with the Iowa election laws. He further ruled that the Des Moines City Council had no authority to repeal the present franchise. Judge Hume ruled that not only did the Iowa law fail to give councils authority to grant a franchise previous to the publication of the notice of the election for four weeks prior, but that such authority is expressly forbidden by law.

HOSTILE DISTRICT APPROVES GRANT

Upon the issuance of Judge Hume's order a writ of supersedeas was brought before the Iowa Supreme Court and at an informal session of the court held on Nov. 27 a stay of execution was granted from Judge Hume's order only in so far as permitting the holding of the election. The ruling was made a matter of court record on Nov. 28 so that sufficient time was given for general knowledge that the election was to be held.

The vote was approximately as large as had been forecasted previous to the issuance of the injunction. In only two precincts of forty-eight was there a majority against the franchise and in North Des Moines, the home of the leaders of the campaign against franchise, the margin in favor of the new grant was comfortably large.

On Nov. 29 F. C. Chambers, receiver of the Des Moines City Railway, issued a statement to the effect that while legal questions would not permit the railway to proceed immediately with the rehabilitation of the plant as arranged he felt that the company had a moral obligation to do everything in its power to increase service and on Nov. 30 he made further announcement that within the next fifteen days he hoped to have sufficient power equipment restored to permit of placing twenty additional cars in the service.

Acting upon the advice of three

prominent business men the City Council on Nov. 30 passed a resolution agreeing to ban buses from streets where the railway now operates, the ban to become effective as soon as the railway had placed thirty additional cars in service. At the present time there are not over thirty buses in operation.

Just what the next step will be in the legal phase of the controversy is not yet decided, but there is likelihood that the city will appeal to the Supreme Court from Judge Hume's injunction ruling.

Chicago Elevated Roads Before Commission

On its own motion, the Illinois Commerce Commission has cited the Chicago Elevated Railways to show cause why the rate of fare should not be reduced. One hearing has been held at which the companies presented a complete operating statement, as requested by the commission, for the nine months of 1921 ending Sept. 30. The statement was presented in a tabulation by months, the nine months' summary total of which is given herewith. Of the total number of ticket and cash fare passengers within Chicago, it will be noted that 67.4 per cent are ticket passengers and 32.6 per cent, cash fare passengers. The ticket rate is 8.75c. while the cash fare is 10c. After receiving the operating figures of the lines, the commission continued the case until Dec. 2, to give its accountants an opportunity to go over the company's books and check the figures presented by the company officials.

SUMMARY — CHICAGO ELEVATED RAILWAYS, INCOME ACCOUNT FOR NINE MONTHS ENDED SEPT. 30, 1921

Passenger revenue	$12,396,481
Other transportation revenue	564,954
Gross operating revenue	$12,961,435
Maintenance of way and structures	1,487,527
Maintenance of equipment	1,266,224
Power	1,178,514
Cond. transportation	5,429,364
Traffic	28,128
General and miscellaneous	628,677
Operating expenses	$10,018,434
Net operating revenue	2,943,001
Taxes (estimated accruals)	951,683
Operating income	$1,991,317
Non-operating income	75,860
Gross income	$2,067,177
Less rentals	293,227
Balance for interest, etc	$1,773,949
Interest charges	1,862,099
Net income or loss*	$88,149

* Deficit.

REVENUE PASSENGER TRAFFIC FOR NINE MONTHS ENDED SEPT. 30, 1921

8¾c. Ticket fare	86,584,202
10c. Cash fare	41,705,954
13c. Evanston ticket fare	4,203,507
17c. Evanston cash fare	289,705
7c. Evanston local fare	665,466
Miscellaneous	64,415
Total	133,513,249

The figure for the total operating expenses as presented herewith includes a monthly charge of $40,318 for replacement reserve which is distributed, $15,894 for way and structures, $15,831 for car equipment and $8,593 for power. In explaining the item entered for the monthly estimated accruals of taxes which averaged about $106,000, it was explained that the amount specified each month is $18,000 more than the tax accruals placed upon the books, which accruals were based on the taxes for 1920 but it is now evident that there will be an increase of 40 per cent or more in the rate for general taxes for 1921, and that if there should be no increase in assessed value, the general taxes for 1921 will be about $309,000 more than for 1920, necessitating the addition of $216,000 to the book accruals for this year.

$700,000 Project Suggested

Interests Connected with Cincinnati-Lawrenceburg Line Plan Six-Mile Extension

Plans for organizing the West End Terminal Railway, Cincinnati, Ohio, which will operate the proposed extension of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad from Anderson's Ferry to the Dixie Terminal on East Third Street have been completed by C. E. Hooven and Edgar Stark, receivers of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad and L. G. Van Ness, general manager of the company.

The extension will be approximately 6¾ miles. It will provide adequate railway transportation for residents of towns along the route of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad. The plans for financing the project which were devised by C. A. Hinsch, president of the Fifth-Third National Bank, provide that property holders who will be benefited by the improvement shall be given the opportunity to become stockholders in the West End Terminal Railway when it is organized by purchasing stock or bonds.

According to present estimates the cost of building the extension will be approximately $700,000.

It is proposed at the present time to build a single track railroad of standard gage using T rails and following essentially the same route as that of the West End Rapid Transit Company proposed some time ago which parallels the Big Four Railroad to State Avenue on the surface. From this point the line will be operated on an elevated steel structure across Millcreek bottoms to Mill and Third Streets, thence with surface line to the Dixie Terminal, at Third and Walnut Streets. The West End Terminal Railway will acquire and use without cost all rights-of-way contracts and arrangements heretofore made with the Big Four Railroad and with others now held by the West End Rapid Transit Company.

The Union Gas & Electric Company has already agreed to furnish the necessary electric current to operate all cars on the extension upon the same terms and conditions as it now furnishes power to the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad Company. No additional substations will be required.

The construction estimate of $700,000 does not include any cars or equipment for the new line. The necessary equipment will be provided by the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad and will be of the same standard as its present cars, but equipped with multiple unit control, so as to permit the cars to be operated singly or in trains.

As soon as possible after the organization of the West End Terminal & Railway Company, it is proposed to apply to the Cincinnati City Council for a franchise authorizing it to construct a line essentially as specified in the franchise granted to the West End Rapid Transit Company in 1914.

L. G. Van Ness, general manager of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, said that the railway contemplates obtaining a building adjoining or close to the Dixie Terminal for the Cincinnati terminus of the West End Terminal-&-Railway Company.

If the Cincinnati Traction Company abandons its Sedamsville line from Sedamsville to Anderson's Ferry as has been suggested, provision will have to be made for the terminal company to handle the people in that territory. No agreement has been reached with the traction company for this service, but it is believed a plan can be worked out that will be satisfactory to all concerned.

Mr. Van Ness has submitted a statement showing the number of passengers carried and the revenue therefrom of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad during the past three years, together with estimate of the number of passengers and revenues on the proposed extension. The statement follows:

Year Ended June 30	Number Passengers	Total Revenue	Net Revenue
1919	1,458,154	$141,054	$37,161
1920	1,681,539	156,172	51,534
1921	1,555,411	190,394	33,219
Average per year	1,565,031	$162,540	$40,638
For increased traffic	500,000	35,000	11,500
Estimated for the West End Terminal Company	1,900,000@6½	$123,500	$58,500

The estimate made by Mr. Van Ness is based on the present number of passengers carried into the city from Sedamsville by the Cincinnati Traction Company and the Big Four, no account being taken of the freight revenue nor of the increase in business that will follow from the improved service.

The requirements for interest and dividends and sinking fund on the preferred stock and bonds, assuming the improvement costs $700,000, is $49,000 annually. Thus the actual net revenue from both properties as above estimated would be fully sufficient to meet the requirements of the proposed terminal company.

The plan has been received favorable by the residents of the lower river towns and the work of carrying out the different provisions will be started immediately, Mr. Van Ness said.

Manistee Railway Forfeits Franchise

Owing to the fact that the Manistee (Mich.) Railway failed to resume operation of its cars within a stipulated period the franchise has been forfeited. The city attorney has been authorized to take the necessary legal steps to see that the action is sanctioned by the States Public Utilities Commission.

C. S. Kressler, manager of the property, who was present when the City Council authorized the forfeiture, said that the tracks would not be taken up, but they might eventually be used for transportation, "possibly a different system."

Railway service was discontinued in Manistee on Sept. 1. This suspension has been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Subpoenas Resorted To in New York

Directors of Interborough, Facing Threat of Suit to Recover $10,000,000, Decline to Appear Voluntarily in Present Transit Investigation

Directors of the Interborough Rapid Transit Company, New York, N. Y., who served on the board in the fiscal years 1917 to 1919 declined through counsel on Nov. 30 to appear voluntarily before the New York Transit Commission, in the present inquiry into the affairs of the transit companies in New York. They will be subpœnaed to appear. James L. Quackenbush, counsel for the company, made plain their reasons for declining the invitation of the commission. This was the outstanding event of the hearings held on Nov. 28, 29 and 30.

ON NOV. 28 Mr. Hedley, president and general manager of the company, was recalled by the counsel of the commission for further examination, more particularly about the company's contracts for coal. Mr. Fisher, secretary of the company, was a witness the same day. On Nov. 29 Mr. Samuelson, auditor of the New York Railways, was called and a sub-hearing was held having to do with the checking of certain vouchers of that company. Another witness on Nov. 29 was Fred W. Lindars, accountant for the commission, who testified about the range of prices of traction securities, more particularly the price movements in the Interborough-Consolidated stocks and bonds. On Nov. 30 came the dénouement over the appearance of the directors. This resulted in an adjournment until Thursday.

At the opening of the session on Nov. 30 Mr. Quackenbush said:

> The invitation of the Transit Commission to appear in person for examination has been conveyed to the gentlemen who as directors voted for the dividends declared by the Interborough Rapid Transit Company in the fiscal years 1917 to 1919.
>
> In response they beg to state that they have no disposition to question the motives of the commission or of its counsel, but they respectfully submit that the practical result of the investigation as it is now being conducted is to encourage the hostile attacks of Clarence H. Venner, a notorious speculator in law-suits and professional litigant who masquerades under the name of the Continental Securities Company, the General Investment Company and other aliases, upon the credit of the company and indirectly to aid in his efforts to bring about a receivership and wreck the company.
>
> Venner now has, in his campaign of litigation against the company, six suits pending for this purpose, and to gain advantage over other noteholders, and he threatens to commence a new one on Dec. 1, 1921 (tomorrow) against these very directors to recover $10,000,000 because of the declaration of the dividends in question. This makes it necessary for them in the interest of the properties which they are administering for themselves and others to decline to appear voluntarily as witnesses at the hearings now being conducted by the Transit Commission.
>
> The directors feel that the effort to create sentiment against the company, to minimize the value of its properties which have been honestly and efficiently managed against great obstacles and difficulties created by war conditions, particularly in the prices of labor and materials, and the unjust attacks upon the management require in justice to themselves and to the properties, that they should not voluntarily assist in rendering such efforts successful.

Mr. Quackenbush explained that none of the directors, if forced to appear, would sign any waivers of immunity.

It had, in fact, been originally planned to examine the directors on Nov. 29, and counsel for the commission had so arranged his case, but Mr. Quackenbush at the opening of that session entered a plea for the postponement of their appearance until the following day. He urged that he had been general counsel only since the death of President Theodore P. Shonts, and said the directors were entitled to have the advice of their own private counsel for any corporate action they had ordered prior to that time. In asking the postponement, Mr. Quackenbush referred to the directors as parties "who might be subject to civil liability arising out of their transactions, or might not."

Mr. Shearn, counsel for the commission, supported the plea of Mr. Quackenbush and Chairman McAneny forthwith gave the Interborough directors twenty-four hours' grace. Mr. Shearn said:

> It seems to me that in view of the situation in which these directors find themselves it is only fair that they should have the opportunity to consult with their own counsel before being examined and it is not an unreasonable request to give them the opportunity to have that consultation today and take up the examination tomorrow morning. Therefore, I interpose no objection to the adjournment, although it does disarrange my plans considerably for the day.

After Mr. Quackenbush had stated on Nov. 30 why the directors declined to appear voluntarily before the commission, Chairman McAneny explained that the commission had no knowledge prior to the present inquiry of things that had gone on in the past, and that it had no desire to embarrass the administration of the company, but that the commission was determined to use all the powers conferred in it by the State to carry out the purposes of the act creating it, purposes that had for their sole object obtaining the necessary facts and data upon which to premise an agreement for the future which would put an end to the intolerable conditions now existing upon the transit lines and make impossible the repetition of the mistakes of the past. In conclusion he said that he thought the directors of the company could less afford to suffer from the onus of not appearing than to take the consequences of any action by Mr. Venner.

Counsel Not Greatly Concerned

Mr. Shearn regarded the matter as a gross breach of faith. Still the action was immaterial. The inquiry was dictated solely by the desire to acquire the facts necessary to put through the commission's plan. Many of these facts had already been elicited, and the only additional facts that might be brought out were whether the directors were speculating in the securities of the various companies at the time the mergers and changes in corporate structure were taking place. At his behest the commission decided to compel the directors to attend for examination.

Mr. Lindars, at the session on Nov. 29, was placed on the stand and questioned in regard to the range of prices of the Interborough-Metropolitan Corporation, and its successor, the Interborough-Consolidated Corporation. He testified that the preferred stock had begun at 87 in 1906, and had dropped to 20 in the latter part of 1907. After this it rose steadily, and then made a sharp advance from 46 to 59, when the Interborough Rapid Transit changed its dividend policy in 1912.

In January, 1915, Mr. Lindars said, when the first talk of reorganization was heard the preferred rose from 55 to 85. When it was replaced by Interborough - Consolidated preferred, it started at 77 and, after fluctuations, it ended at 6.

The witness also traced the course of the common stock, showing that consolidation had raised the price but that it has since declined until the present price was a nominal one.

Meanwhile Mr. Samuelson, auditor for the receiver of the New York Railways, produced all his vouchers for April, 1921, before a sub-hearing in the board room adjoining.

Unless there is a great snowstorm this winter the New York Railways Company will be able to pay operating costs, maintenance expenses and taxes on a nickel-fare basis, Frederick T. Wood, assistant to the general manager for the receiver, testified. A big snowstorm, he said, would cut down revenue and increase expenses. Mr. Wood admitted that the service rendered by the company was not such as it should be, but charged the fault to a hand-to-mouth system made necessary by the condition of the company.

President Hedley Recalled

Mr. Hedley when recalled on Nov. 28 said that the coal bills of the company amount to more than $5,000,000 a year. Only a few companies had the facilities for furnishing coal in the quantities demanded. Coal was purchased from the Consolidation Coal Company, the Berwind-White Coal Company and the Logan Coal Company. Only about 10 per cent of the coal used was purchased in the open market.

Contracts for coal were made by the year on a sliding scale under which the company stood to gain if costs of production and distribution were reduced. The contract price for coal has been stepped down for the coming year from $7.70 to $6.95 a ton. About 770,000 tons a year are used. The fact that another similar company might be purchasing coal for less was explained by the statement by Mr. Hedley that some of the circumstances were plainly evident while he had no knowledge of others not being familiar with the particular specifications.

He next testified as to the cost of power. Mr. Hedley said that the company had the free use of his patents without the payment of a dollar for royalty, but that the directors had voted him an average of about $5,000 or $6,000 a year for the last ten or fifteen years. The use of the coasting time recorder, one of Mr. Hedley's patents, reduced expenses of the company more than $1,500,000 a year.

Mr. Hedley was asked what he meant by his previous expression to the effect that he would try to make the nickel go 'round. His answer was that inasmuch as he was reconciled to the fact that the nickel fare was all he would have to work with for some time he would continue the struggle with his assistants as aids to render the public the very best service that could be rendered under the 5-cent fare.

According to Mr. Hedley one of the most serious things that could happen to the transportation situation in the city would be a receivership for the Interborough. This would mean a separation of the elevated from the subway and the payment of thousands of 10-cent fares by the public where the present fare is 5 cents. In the event of the separation of the two lines the elevated would probably not pay the $17,000,000 spent by the Interborough for extending the elevated and would not operate cars over the extensions, but probably would pay the reasonable value of third-tracking the elevated after a period of years of litigation. In the meantime "the subway would have to carry the load, interest and sinking fund."

Mr. Fisher, the next witness, testified to the effect that although at a meeting of the board of directors of the Interborough on Dec. 26, 1917, a quarterly dividend of 5 per cent was declared calling for the payment of $1,750,000, seven days before that the company borrowed $1,000,000 from the Interborough-Consolidated Company, to which the dividend of $1,750,000 was mainly payable. Similarly twelve days before the dividend of $1,750,000 declared payable in April, 1918, had been sanctioned the company borrowed $2,500,000. During April, 1918, the company borrowed $4,000,000 and on May 28 the directors declared a quarterly dividend of 2½ per cent calling for $875,000, which was paid out July 1.

On July 16 the directors renewed the bank loans of $4,000,000 and on Aug. 27 declared another dividend of $875,000 payable on Oct. 1. Later the company arranged for short-time financing through J. P. Morgan & Company and the bankers stipulated that so long as any of the notes were outstanding the company was not to pay any dividend in excess of 10 per cent per annum unless its surplus after the payment of dividends exceeded the surplus earnings as of Sept. 1.

Mr. Fisher here explained that the dividends were all declared from surplus at a time when the surplus was considered ample. On March 20, 1919, $800,000 was borrowed from the Interborough-Consolidated by the Interborough Rapid Transit. The following day a receiver was appointed for the Interborough-Consolidated. At the demand of the receiver this money was returned. The late Mr. Shonts, then president of the Interborough, wrote Mr. Sheffield, the receiver of the Interborough-Consolidated, that the loan was legal, but Mr. Fisher understood the money was returned in deference to the wishes of the receiver.

Mr. Fisher explained that as the Interborough Rapid Transit was owned by the Interborough-Consolidated, it was to the interest of the one to see that the obligations of the other were paid. Mr. Fisher stuck to this point although Mr. Shearn for the commission sought to prove that the effect of taking $800,000 away from the Interborough-Consolidated while it was insolvent was to prevent, to that extent, the holders of the collateral trust bonds of the Interborough-Consolidated from getting any interest and to enable the holders of the Interborough bonds to get interest out of the Interborough-Consolidated money.

Mr. Shearn next questioned Mr. Fisher at length about the financial structures and the intercorporate relations of the Interborough-Metropolitan Company and the Interborough-Consolidated, the successor to the Interborough-Metropolitan Company. Mr. Fisher replied in the affirmative to the question: Then after this company which could not declare dividends unless it declared them out of capital, which was also against the law, after this company reduced its capital stock by this device below its liabilities, as it was prohibited by law, it began to distribute dividends to the holders of the preferred stock of the Interborough-Consolidated, didn't it?

Mr. Shearn declared after reading a statement dated April 26, 1915, addressed to the holders of the common stock voting trust certificates of the Interborough-Metropolitan Company by Messrs. Berwind, Belmont, Freedman, Shonts and Vanderbilt that "it would seem that the bold, admitted and declared purpose of this consolidation was to permit the declaration of dividends upon the then Interborough-Metropolitan preferred stock which afterward became Interborough-Consolidated Corporation preferred stock; and as that could not be done without reducing the capital stock of the Interborough-Metropolitan Company, the plan was adopted of accomplishing the same thing, by, in effect, changing its name and then reducing its capital stock and declaring the dividends; which it seems perfectly obvious amounted to declaring dividends out of capital at a time when the capital of the company was recognized to be some $80,000,000 to $82,000,000 impaired."

Mr. Belmont on the Stand

At the hearing on the morning of Dec. 1 several directors of the company were in attendance.

Mr. Belmont first took the stand and was asked if he would sign a waiver of immunity. At this point, in behalf of Mr. Belmont, Mr. Nicoll read a statement in which he declared that the practice which seems to have come up recently of asking witnesses to waive immunity was vicious and had no justification in law and that the directors were opposed in signing any such waiver, but they were prepared to answer any relevant questions.

Mr. Belmont then explained that while he personally might have no objection to answering questions which might be put to him he had also the interests of his company, as well as his own, to consider. He declared that nothing new had been disclosed so far and that all details were matters of public record. In his opinion, much of the loss of credit of the company in the past had been due to attacks upon it, and the directors individually have suffered heavy losses. While there may have been speculation in the stock market on securities of the company, there has been no more, he believed, than in the case of many other companies. While not intending to do so the commission had an opportunity to put the property in the worst light possible in order to carry out its announced plans to include it in the proposed reorganization.

Mr. McAneny said that the purpose of the hearing was not to injure the company, but it was essential for a proper understanding of the situation to have full knowledge of all the facts, and many facts had already been brought out affecting not only the valuation of the property but the adequacy of the revenue and the sufficiency of the service.

Moreover, knowledge about the defects in the old methods of financing were necessary to determine what to avoid in future. He thought that the directors should welcome the opportunity of explaining the reasons for following certain methods whose existence had been brought out in the hearings. The waiver requested was practically a technicality, he said, but as explained by the counsel was for his protection in asking questions.

At this point Counsel Shearn of the Commission said that no evidence had been presented at the hearings of criminal misconduct and that there was no objection to the witnesses having personal counsel present if they desired. He expressed the hope that the directors would reconsider their unwillingness to testify.

As the directors declined to sign a waiver if required to testify, Mr. McAneny dismissed them from attendance, with a statement that the commission would take some action in the matter but had not decided what course it would follow. Mr. Fisher, secretary of the company, then took the stand, and was giving testimony when this paper went to press.

Informal Vote at Saginaw

Conference on Railway Franchise Will Resume After Public Decides Between Auto and Railway

After a conference between the members of the City Council of Saginaw, Mich., and representatives of the bondholders and other creditors of the Saginaw-Bay City Railway lasting more than ten days it was agreed on Nov. 30 to submit to an informal vote, the question of whether the citizens want electric railway or motor bus service. Should the people decide in favor of the restoration of railway service, which has been suspended since early in August, the conference will be resumed.

The thirty-year franchise asked by John C. Weadock, New York, in behalf of the bondholders and other creditors, did not meet with favor by the Council. Objection was made to the length of the term of the grant, and to the provision which had been suggested that that value of the property on which to figure a return should be determined after the proposal was submitted. Minor changes were suggested by the Council, but the suggestions just noted were the rocks on which the conferees split.

Mr. Weadock insisted that appraisal by disinterested parties would be the more satisfactory way of reaching a decision on the property valuation and said that a reduction in the length of the grant to twenty-five years was the limit to which the company could go and retain power to attract new money for investment in the property. He proposed to start the operation of cars as soon as the Council would agree to eliminate the jitneys and decide on the terms of a franchise to be submitted.

After the adjournment of the conference on Nov. 30, both sides felt that something had been accomplished and when the conference reconvenes the city will have a franchise prepared on the theory of fixing the rate of fare for two years and submit this question and all others with the respect to operation, etc., to the Michigan Public Utilities Commission. Mr. Weadock has agreed to modify his franchise suggestions in some respects before the next meeting.

Wage Reduction Argument Concluded

Arguments have recently been concluded before a board of conciliation at Vancouver, B. C., as to a reduction in wages and modification of working conditions for employees of the British Columbia Electric Railway. The company notified its employees some time ago of its intention to reopen the agreement with the union and later the board of conciliation was appointed under the Canadian regulations. W. C. Ditmars was appointed chairman; A. C. McCandless represented the company and R. P. Pettipiece the men. The main objectives of the company were:

> Reduction of 15 per cent in wages. The present maximum rate of 65 cents. This would be reduced to 55 cents.
>
> Abolition of extra pay for Sunday work. Time and a half is now paid motormen and conductors herein.
>
> Substitution of monthly minimum for daily minimum. At present the company guarantees six hours work a day. It proposed a minimum of $70 a month.
>
> Abolition of spread over time. The company now pays 25 cents an hour when the spread-over exceeds ten hours.
>
> Abolition of payment for ten minutes time when making relief on the road.
>
> Abolition of double time for overtime in shops and track department barns and substitution of time-and-a-half.

The award of the conciliation is not binding on either party. It is expected to be submitted in a few days.

More Than 50 per Cent of Each Fare for Wages Alone

Bearing in mind the recent 5-cent fare order issued by the Illinois Commerce Commission, the following statement of the Chicago Surface Lines for the eight months' period ending Sept. 30, 1921, is of particular interest:

AVERAGE REVENUE PER PASSENGER AND ITS DISPOSITION

Passenger revenue		$39,505,777
Revenue passengers carried		496,615,714
Total passengers carried		886,565,990
Average fare per revenue passenger, cents		7.955
Disposition of the average fare	Per Cent	Cents
Wages	51.77	4.118
Material, power and other expenses	18.77	1.493
Taxes	3.26	0.259
Damages	3.58	0.285
55 per cent to city	5.11	0.407
Interest on bond indebtedness and loans	11.57	0.920
Sinking fund	0.42	0.034
Residue for companies	5.52	0.439
	100.00	7.955

Albany Strike Costs $3,000,000

According to the *Knickerbocker Press*, Albany, N. Y., the United Traction Company, has suffered a loss of $1,799,490 in passenger revenue from Jan. 1 to Sept. 30, 1921, and the men a wage loss of $1,000,000 due to the Albany-Troy strike which began on Jan. 29 and terminated on Nov. 22. The formal calling off of the strike was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 26. The statement from the *Press* of Nov. 27 is based on quarterly reports made to the Public Service Commission. In part it is as follows:

> In 1920 the United Traction Company earned approximately $2,402,469 for the first nine months of the year, and this year, for the first nine months, all of which were during the strike period except in January, the company earned only $575,569, a decrease of $1,402,469 for 1921 period.
>
> Transportation expenses have increased greatly, the greatest increase being in the early months of the strike. For the nine months the transportation expenses increased $223,006.
>
> The company lost between January and March $507,060 in passenger revenue, and in the same period its transporting expenses jumped $266,449. In the same period it suffered a loss of 7,842,565 passengers carried, compared with the number the year before. This is about 65 per cent.
>
> Between April and June the passenger revenue dropped $744,406 from 1920 figures, and the number of passengers carried dropped approximately the same as in the first three months under the 1920 figures. Transportation expenses increased $110,970 from last year. The revenue from July to September was $548,022 less than last year.

Wage Cut Proposed

Proposals have been made for a cut in wages for employees of the United Railways & Electric Company, Baltimore, Md. The company is not making the surplus of from $1,000,000 to $1,500,000 to which the Public Service Commission has held it is entitled. In fact, this year the balance will hardly be one-half of the $1,050,000 last year.

The proposal is to cut wages and leave the rate of fare at 7 cents, it being felt that any further advance in rates would only tend to diminish traffic. The plan to be presented to the employees will include an approximate reduction of 2 cents an hour for men on an hourly basis. It will be put up to the men, and will not go into effect until the company and the employees have conferred. Motormen, conductors, shopmen and laborers will be represented in the consultations. Officials hold that with a 30 per cent decrease in living costs, they are justified in making a 5 per cent cut in wages.

The cut of put into effect, would include officials and clerks and would save the company about $360,000 a year. The company must file application before Nov. 30, for a continuation of the 7-cent fare after this year. This provision was contained in the order granting the 7-cent rate.

Utility Owners Score Municipal Railway

The Puget Sound Light & Power Company, Seattle, Wash., has filed a petition with Judge E. E. Cushman of the Federal Court for an order compelling specific performance of the purchase contract by which the city of Seattle took over the municipal railway lines, formerly owned by the Puget Sound Traction, Light & Power Company. The attorneys for the Power Company characterize the municipal street railway as a "political football," and express doubt over payments of interest and principal on the $15,000,000 purchase price being made.

Corporation Counsel Walter F. Meier, representing the city, asked that the suit be dismissed on the ground that the city is determined to meet its obligations in good faith. The next installment of $1,500,000 is due Feb. 1, 1922. Judge Cushman took the matter under advisement, allowing ten days for the company to file a brief, and a similar period for the city to answer. A decree is not expected until late in December.

James H. Powell, appearing as attorney for the company, summed up his argument as follows:

> The public has an interest in seeing that this case is settled and the plaintiff does not want the bonds being made the football of politics any longer. Such will be the case until the matter is put to rest. While we believe that the Corporation Counsel is sincere in assuring us of the city's good faith, what is to hinder the City Council from repealing its ordinances and again resurrecting the controversy?

New Equipment Is Needed for Interurban Service

An interesting development of interurban railways as a result of motor bus competition, the ever-increasing number of patrons who ride their own automobiles and the increasing density of suburban population, is seen in Toledo in the application of J. Frank Johnson and Harry Dunn, receivers for the Toledo & Western Railroad, to the federal court here for permission to buy three new light passenger cars for use on the Toledo-Sylvania section of the interurban line.

When the road was built more than twenty years ago 30-ton cars were purchased and thirteen of these are still in service. The master mechanic has estimated that it will cost more than $10,000 to keep these operating for another year.

J. F. Johnson, who is in charge of operation, wants to purchase three light cars for a trial. He estimates the cost at about $32,000. He wants double-enders with lower steps and doors operated like city cars. He estimates that these cars would save $2,268 a year in power alone. The statement of condition indicates that the road is making most of its money by distribution of electric power to general consumers of electricity for commercial and private use rather than through the conduct of its passenger carrying business.

Through the adoption of lighter equipment Mr. Johnson hopes to be able to compete more effectively against motor buses and increase passenger revenue on that portion of the line.

Jitney and Franchise Matters Drag in Richmond

Events in Richmond, Va., make it appear unlikely that any action will be taken at this time by the City Council in regard to the jitney problem. The jitneys go through a large fan-shaped section of the west end where the householders have for years opposed the construction of an electric railway and the jitneys in reaching the business center come down Broad Street, paralleling the railway line of the Virginia Railway & Power Company from Belvidere to Ninth Street, a distance of nearly a mile. Several ordinances have been introduced in the City Council proposing some other route, including removal to Grace Street, the next thoroughfare to Broad, but no action has been taken. One of these is expected to come up in substitute form at the meeting of the Council on Dec. 15.

To meet jitney competition the Virginia Railway & Power Company has asked permission to operate a trackless trolley line over substantially the route the jitneys are now serving, but the ordinance has been referred to the street committee to be considered along with the new franchise for the company.

That committee has just now, after months of delay, secured an appropriation by the City Council of $10,000 with which to employ attorneys, engineers and accountants to advise as to valuations, etc., as a preliminary to the new franchise.

A valuation for the company of all its own property was made some time ago by Stone & Webster.

Financial and Corporate

Bondholders to Advance $1,000,000

New Orleans Company Will Purchase Additional Unit to Relieve Shortage

The junior security bondholders of the New Orleans Railway & Light Company, despite the pending litigation in the city and state courts, will advance the receiver of the company $1,000,000, according to the statement of G. M. Dahl, vice-president of the Chase National Bank, on the eve of his departure from New Orleans for New York. The money is intended for the purchase and installation of a new 20,000 kw. unit and appurtenances.

It was the intention of the security holders, upon the settlement of the company's troubles, to provide the necessary funds with which to purchase the equipment needed to relieve the present shortage of power and furnish an adequate reserve. The output of electricity, however, has nearly reached capacity with no reserve in sight, making the danger of a breakdown greater if a further connected load were taken on. With the prospect of a new unit Mr. Dahl states the receiver feels he can take the chance of increasing the load, though it is realized this relief is only partial and temporary.

The money is to be obtained from the junior security holder upon receiver's certificates, formal announcement of the issue of which is to be made by the receiver soon.

As the next step in the New Orleans situation the injunction secured by the state of Louisiana in the Civil District Court before Judge King will come up on its merits in view of the recall order of the State Supreme Court. The preliminary hearing was fixed to be held in Judge Porter Parker's division, to determine whether to dismiss the preliminary injunction and the state's application, or to make the injunction permanent.

The resolution introduced by Representative Arras in the Legislature calling for an investigation of the affairs of the New Orleans Railway & Light Company failed of passage and action upon it has been indefinitely postponed.

Commonwealth Property Makes Splendid Showing

The statement of earnings of the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., and its subsidiary companies for twelve months ended Oct. 31 shows a net income available for dividends, replacements and depreciation of $2,750,838 and a balance of $1,673,658. The balance in 1920 amounted to $832,271.

In regard to the foregoing, B. C. Cobb, vice-president and operating executive, said:

> This excellent showing is remarkable because it was made during a period when the volume of business done by the light, power and railway departments was less than that of the preceding twelve months. It is due largely to the success of the management in obtaining a stronger grip upon the operating expenses of most of the subsidiary companies and to increases in the sales of electricity and gas for commercial and domestic purposes, the additional revenue from which offset that lost by the decline in sales of industrial power.
>
> Earnings of some of the railways have not been satisfactory. The Saginaw-Bay City Railway property has not been in operation since Aug. 10. This because of the Commonwealth Company's determination that the railways operated by it must at least be self-supporting. There are signs of a more favorable sentiment on the part of local authorities and the public generally toward street railways. This is perhaps due to the experience of those cities where street railways were forced to suspend operations and to the consequent realization that if these utilities are expected to serve, they must be allowed to earn enough to pay their way. We are hopeful that the Saginaw-Bay City situation will be worked out to the satisfaction of all concerned, and I believe it will be. It is unthinkable that growing and prosperous communities like Saginaw and Bay City should be without street railway service.
>
> Favorable progress is being made by certain of Commonwealth's subsidiaries in the sale of their preferred stock to customers. More shares were sold during the month of October than in any previous month of 1921.
>
> The 1921 construction program is about finished. These expenditures have added to the operating efficiency of the properties and benefited the service rendered to the public.

Chicago "L" Earnings Unsatisfactory

For the first eight months of 1921 the Chicago Elevated Railways realized a gross revenue of $11,660,809 and net earnings of $1,611,068. This is at the rate of only 2.8 per cent on the valuation of $86,250,000 allowed by the Illinois Public Utilities Commission last year, whereas the commission held that the companies were entitled to earn a rate of 7½ per cent on this value. After deducting interest charges from the net earnings for the eight month period, there remained a deficit of $47,002. In spite of this showing, the companies have been cited to appear before the Illinois Commerce Commission to show cause why the present rates of fare should not be reduced, and the case comes up for hearing during November.

West Penn Purchases Kingwood Company

The West Penn Railways has purchased the West Virginia & Maryland Power Company of Kingwood, W. Va. This company was recently organized to supply electric service from Grafton, W. Va., eastward through Taylor and Preston counties of the state, and Garrett county, Md., and into the coal field along the upper Potomac. The sale included the plant at Grafton. To extend the service of the generating plants at Springdale and Connellsville, Pa., of the West Penn company, and the one at Windsor, W. Va., a power transmission line has been started which will run south through the Cheat River basin to Tunnelton, Rowlesburg and Newburg on the main line of the Baltimore & Ohio Railroad. A direct power transmission line is to be built from Grafton to Riversville on the Monongahela River, just below Fairmont. The power plant of the Monongahela Power & Railroad Company is located there.

New Valuations of Toronto Railway Submitted

Cooley and Drum Figure the System in 82 and 74 Per Cent Condition

Dean Cooley of Michigan University, giving evidence before the Toronto Railway arbitration board during the week ended Nov. 26, estimated the value of the system at $22,154,952, compared with the estimate of W. G. Hagenah some weeks ago at $20,032,837. He also gave a reproduction cost of $26,998,250 based on average prices of 1918, 1919 and 1920. Mr. Hagenah's estimate of reproduction was $26,110,044.

A. L. Drum, consulting engineer, Chicago, valued the system, on the basis of prevailing prices during the years 1918, 1919 and 1920, at $20,602,766. He figured that the system, when turned over to the city in September last, was in 74.75 per cent condition, compared with Mr. Hagenah's 72 per cent and Dean Cooley's 82 per cent. A second similar appraisal was submitted by Mr. Drum, on the basis of unit prices prevailing Sept. 1, 1921. This appraisal figure was $20,029,290.

The board ruled that it would be improper and useless to allow inspection of the books and records of the Toronto Railway for the purpose of ascertaining original costs save when such purchases have been of so recent a date as to bring the cost to bear on the present value. For these purposes books and records of the company since Jan. 1, 1918, are to be produced for inspection. Counsel for the company took exception to this ruling, and, after hearing argument, the board agreed to grant a stated case to be submitted to the Appellate Court in accordance with a memorandum prepared by the company's counsel, N. W. Rowell, covering the following points:

> Is the evidence of the cost of the properties turned over to the city corporation relevant to the issue?
>
> Should inspection of the books of the company be granted?
>
> Should the city be entitled to inspection of the records with regard to maintenance repairs?

So far the arbitrators have not indicated when they will bring in their finding on the basis of "actual cost plus appreciation, minus depreciation," as advocated by counsel for the city, or on the basis of "reproduction cost" which is the stand taken by counsel for the company. The chairman of the board asked counsel for both sides to waive objection to the evidence being given, but counsel would not agree to this suggestion. The board then officially changed the date upon which they would bring in their finding until March 1 next.

W. Va. Property Has Surplus

The statement of earnings of Appalachian Power Company, Princeton, W. Va., for the twelve months ended Oct. 31, 1921, shows a surplus of $77,007, against $22,638 in 1920. It was stated that this improvement was due to operating economies and substantial increases in rates. Recent financing has assisted the company in reducing its debt by $544,600. The company has already started on enlarging its power capacity. This activity is referred to elsewhere in this issue.

Tax Bill Signed

President Harding on Nov. 23 signed the bill revising the tax and revenue laws. The measure is entitled "An act to reduce and equalize taxation, to provide revenue, and for other purposes," but is generally referred to as the Tax Revision Law of 1921.

While the tax bill is admitted by its authors to be an imperfect measure, it does provide for a substantial reduction in the tax burden and greatly simplifies the administration of the law. The bill in its final form will require the payment of some $725,000,000 during the first fiscal year that it is in full operation, less than would have been raised had the law it supersedes remained in effect. The reduction will be greater when collections from the excess profits tax cease altogether.

The repeal of the transportation and so-called nuisance taxes means a reduction of $326,630,266 during the fiscal year beginning July 1, 1921. That feature of the bill alone is held by many to justify its enactment. It was stated officially at the White House and by the chairman of the finance committee that the bill is intended as a temporary measure only. The great disappointment to business is that the recommendations of the Secretary of the Treasury were not carried into effect in the matter of transferring some of the higher brackets of the income tax to the estate tax title.

In its final form the bill is expected to yield $3,216,100,000 in the fiscal year beginning July 1, 1922, and $2,611,100,000 in the fiscal year beginning July 1, 1923. For the fiscal year of 1922, the bill is expected to raise some $16,000,000 in excess of the Government's requirements.

The Senate accepted the House rate of 12½ per cent applicable to the corporation income tax. This reduction of 2½ per cent from the rate proposed by the Senate will reduce by $110,000,000 the annual tax burden on business. The lower rate is particularly advantageous to public utility companies and other corporations now earning small returns on their invested capital.

Valuation Refuted

F. D. Burpee, manager of the Ottawa (Ont.) Electric Railway, answered the Fairlie valuation of $4,119,992 of the property of the company with the following statement:

> Mr. Fairlie's report can only be considered as his opinion of the value of the Ottawa Electric Railway property, based on what he and his staff could observe on the street without access to the premises or inventories of the company. His report values all the assets without the water power at $4,580,446. The condition percentage of the rolling stock in his report is much too low. This, together with the many items that must have been assessed in a valuation made from the sidewalk, would bring his total approximately to that arrived at by Dr. Herdt and his staff in 1919. Dr. Herdt's figures were $5,211,000, without the water power.

Michigan Property Unable to Meet Expenses

Residents of Marquette, Mich., may lose the railway service furnished by the Marquette City & Presque Isle Railway. Because of lack of patronage with a corresponding decrease in revenues the possibility of suspending service becomes more probable each month.

The railway, since doing business under a court receivership, has cut down its overhead expense and has spent no money on improvements. According to a local paper, the daily minimum expense in operation of this system is $73, with revenue falling to $60.

San Francisco Purchase Near

San Francisco, Cal., may hold a special election sometime in March to decide upon the proposed purchase of the Market Street Railway properties. The Public Utilities Committee of the Board of Supervisors has recommended such action. A committee was appointed to negotiate with officials of the company.

The purchase of the properties, if made, will be on the pay-as-you-go policy, according to an amendment to the city charter, approved by the voters at the election on Nov. 2, 1920. The amendment is an enabling act, giving the city the power to purchase public utilities when necessary, and when the purchase is confirmed by the electorate, and paying for the utility out of its own revenue.

The plan of the city, should the purchase be confirmed by the voters, is to establish branch lines throughout the city where needed, and make a universal 5-cent fare with transfers, from one end of San Francisco to the other.

Segregation of Properties Is a Problem in Reorganization

Two important issues with respect to Key System reorganization are brought to a head in letters of the advisory committees representing Oakland Traction Company and Oakland Traction Consolidated security holders and Key Route second mortgage bondholders to individuals of the groups they represent. The questions are:

> Shall the note holders of Oakland Terminal (Tidelands) Company and the Oakland Railways foreclose on their holdings, thereby cutting the tidelands and the company from the reorganization plan?
>
> Shall the reorganization plan be revised to separate into two companies the Key traction system proper and the Oakland and Eastbay street railways?

Regarding the first it is the opinion of the advisory committees representing the Oakland Traction Company and the Oakland Traction Consolidated security holders, and also the Key Route second mortgage bondholders, that it would be to the interest of these security holders to have the Oakland Railways and the Oakland Terminal (tidelands) notes foreclose.

The committee's letters ask whether or not it is wished to request the organization committee to retain or eliminate the two issues. Proposal by the reorganization committee to pay the interest on the Oakland Railway notes for fifteen years at 6 per cent and on the Oakland Terminal (tidelands) notes of seven years at 6 per cent means fixed charges of $215,000 a year and is one of the reasons for the conclusion recommending foreclosure.

The decision of the advisory committees is the first to bring into the open intimations of legal action in connection with reorganization. Respecting the proposal to segregate the traction and the street railway properties the San Francisco *News* says that holders of some securities of the traction lines are understood to be of the opinion that the step would divorce these forthcoming issues from the problems of competition and franchise which may confront the street railway lines and consequently tend to stabilize the traction securities.

An extension of time has been granted for the making of deposits under the reorganization agreement.

Exchange Completes Purchase

The Interstate Public Service Company now completely owns the Hydro-Electric Light & Power Company at Connersville, Ind. The Interstate company received authority from the Public Service Commission to exchange its 7 per cent prior lien stock at equal value for $325,000 of the first preferred cumulative 6 per cent stock and $54,800 second preferred cumulative 7 per cent stock of the Hydro-Electric Light & Power Company. This gave the Interstate company entire ownership. A few days before the Interstate company received authority from the commission to take over $335,000 of common stock of the Hydro-Electric company owned by E. D. Johnston with $210,000 of its 7 per cent prior lien stock.

Zurich Reports Gain in Earnings, but Loss in Traffic

The report of the Zurich Municipal Street Railway for the calendar year of 1920 shows a falling off of traffic and reduction in car kilometers run, but owing to the higher fares charged, the receipts increased about 16 per cent. The accompanying table shows the main operations of the system.

The falling off in traffic was attributed in part to the increase in fares, but the management points out that there had been a decrease in traffic before the schedule of increased fares went into effect. The present scale, given in American money, appears in the next paragraph, the exchange being assumed for convenience as one franc equaling 20 cents; the market rate on Nov. 30, was 19 cents. The unit fare was given up after about a year's trial and the zone system was in use during the greater part of the twelve months covered by this report.

The fare for a ride in one zone was 4 cents, in two zones 6 cents and in three or more zones 8 cents. For $1 a passenger could purchase a package of eighteen tickets good for a continuous trip between any two points on the line. For the same amount he could purchase twenty-eight single zone tickets, or thirty-three workmen's tickets good between any two points on the line, but valid for transportation only before 7:45 a.m. All of these tickets are transferable. In addition, yearly passes were sold for $61, six-month passes for $31 and monthly passes, for the first month $6.40 and for each succeeding month $5.40.

STATISTICS OF ZURICH MUNICIPAL TRAMWAYS FOR 1919 AND 1920

	1919	1920
Car kilometers	13,248,782	11,772,189
Passengers carried (total)	57,658,905	47,562,187
Passengers carried per car kilometer	4.31	4.04
Receipts from passengers (total)	Fr. 10,246,629	Fr. 11,806,147
Receipts from passengers per person	Fr. 0.1796	Fr. 0.2482
Receipts from passengers per car kilometer	Fr. 77.34	Fr. 100.29

Wants to Abandon Local Lines

Because of its inability to meet expenses on its local lines the Trinidad Electric Transmission, Railway & Gas Company, Trinidad, Col., has filed an application with the State Public Utilities Commission for permission to abandon a part of its local service lines.

The plan offered by the company provides for service to the business district and the new paved district of the northside by the interurban cars. This partial abandonment plan was submitted to the City Council recently with the request that no protest be made, but no action was taken by the Council.

Shore Line Property on Paying Basis

R. W. Perkins, receiver of the Shore Line Electric Railway, Norwich, Conn., in a report to the Superior Court covering the nine months from Jan. 1 to Sept. 30, shows a net profit of $679.

The receiver also reports that under the general order to dismantle and sell the lines west of Flanders Corner, this work is proceeding and the rails are being taken up and delivered on cars about as fast as taken from the roadbed. There will be about 450 tons of the 70-lb. rails and from 1,200 to 1,300 tons of the 80 lb. rails. The rails are paid for as removed.

What a Valuation Is Not

William G. Woolfolk, a well known Chicago consulting engineer and rate expert, says:

> The lawyer has injected himself into the apparently simple matter of utility rate adjustment and brought complexity in his trail. He tries to play all over the piano. Originally he made our mortgages and other corporate papers so complicated that not even he could understand them and now he does the same thing with our rate cases. The economist revels in voluminous tables and obscure terminology in his long dissertation and monograph upon "value" before the flood, while the engineer and accountant are so immersed in the difficulties of their occupations and their conversation is so cluttered with mysterious technical expressions, nobody understands what in the world they are talking about. But for confounding the confusion the rate expert is the genius.

Mr. Woolfolk tells the story of Prof. Edward W. Bemis, for many years utiliy rate expert for the city, who was once requested during a rate case to explain his "fair value," and testified: "There is no precise definition, I think, or any agreed on statement to represent it, but there is a very clear conception of what it is not."—*Barron's.*

A Deficit of $408,428 in Louisville

For the first nine months of the present year the Louisville (Ky.) Railway has incurred a deficit of $408,428 against a deficit of $105,856 for the same period of 1920. The gross income for this period from January-September amounted $577,290 and with deductions, interest on indebtedness etc., amounting to $479,906 there remained a net income available for dividends of $97,384. The total dividend requirements of the company for this period stand at $505,812.

If the company receives an unfavorable decision from the courts in its fight for the 7-cent fare the liability up to Dec. 31, 1921, based on ticket sales from March 24 to Oct. 24 is estimated at $335,000. If this refund to the holders of the 7-cent fare receipts should be ordered the deficit of the company for 1921 will be increased to about $850,000.

Revenue of Ohio Property Improves

Employment increase at Toledo has probably helped in bettering the revenue of the Community Traction Company, Toledo, Ohio, for the month of November.

Figures for the first twenty-two days of the month indicated that November would run considerably ahead of October and furnish nearly $26,000 for the stabilizing fund and the usual payment of $17,708.33 for the sinking fund or municipal ownership fund. The gross receipts for the first twenty-two days of November as reported to Commissioner Wilfred E. Cann were $199,613, or an increase of $6,417 compared with the same days of October.

On Jan. 1, 1922 the city ownership in the lines will amount to $232,000. Interest on this amount of bonds purchased by the sinking fund commissioners will amount to $13,300 a year thereafter.

The Street Railway Commissioner has been officially notified that the $1,900,000 mortgage on the underlying property of the railway has been cancelled by the Doherty interests through their recent financing of the Toledo Edison Company.

Railway Investigation Completed

Investigation of the property and earnings of Birmingham Railway, Light & Power Company, Birmingham, Ala., by experts of the Electric Bond & Share Company has just been completed and the last of the experts has returned to New York to prepare a report on the property. According to information in Birmingham this report will form the basis of reported negotiations of the Electric Bond & Share Company for the purchase of the holdings of the American Cities Company, which now controls the stock of the Birmingham Railway, Light & Power Company, and the companies operating railway and electric lighting plants in Memphis, Little Rock, Knoxville, and Houston.

Texas Property Exceeds Authorized Return

The Dallas (Tex.) Railway during October exceeded its authorized return of 7 per cent, as provided in the franchise granted by the city in 1917 to the Strickland-Hobson interests, according to a report covering the operation of its lines for this month just filed with J. W. Everman, the Supervisor of Public Utilities. The report shows gross earnings for the month of $301,594 and total operating expenses of $213,768, leaving a total of $87,826 for authorized return and reserves.

On the present valuation of the property, the authorized return of 7 per cent amounts to $54,964 a month, and after this amount was deducted from the amount of earnings, a balance of $32,861 was left. This was passed to the reserve fund to be used in discharging the accumulated deficit in the authorized return, which amounts to nearly $1,000,000.

Financial News Notes

Baltimore Property Will Pay.—It has been officially announced that coupons No. 45 on the income bonds of the United Railways & Electric Company, Baltimore, Md., will be paid on and after Dec. 1 upon proper presentation at the office of Alexander Brown & Sons, Baltimore.

Bus Line Wants to Issue Stock.—The Mark Smith Bus Line which offers a passenger service between Aurora and Elgin, Ill., has filed an application with the State Commerce Commission for permission to sell stock. This bus project is being fought by the Aurora, Elgin & Chicago Railroad.

Realizes a Net of $535,537.—In its seven months of operation from April, 1921, the Market Street Railway, San Francisco, Cal., shows a total operating revenue of $5,502,455. Operating expenses totaled $4,173,574 and net revenue $1,328,881. The gross income of $998,104 is reduced to a net of $535,537 after subtracting bond interest and other deductions.

Revenues Fail to Cover Expenses.—The report of the city comptroller of Tacoma, Wash., on the operation of the Tacoma Municipal Street Railway during September, showed that the operating receipts failed to cover operating expenses by $1,411 and that the total deficit, including interest and other charges, was $4,675. Revenues were $6,976 and expenses $8,399.

Interborough Again Reports Deficit.—For the month of September, 1921, the Interborough Rapid Transit Company, New York, N. Y., shows a corporate deficit of $398,204 which makes the cumulative deficit for the quarter ended Sept. 30, 1921, $1,742,960 against a deficit a year ago of $1,712,135. The total income for the three months period amounted to $3,675,270 against $3,465,497 for the same period a year ago.

Sapulpa Railway to Sell Assets.—The Sapulpa (Okla.) Electric Railway has received permission from the Corporation Commission to sell its entire assets to the Oklahoma Union Railway. The operation of the road, which extends between Sapulpa and Kiefer, a distance of 8.78 miles, has not been profitable and the company is in debt. This purchase will extend the lines of the Oklahoma Union Railway, which operates an interurban line between Sapulpa and Tulsa.

Appointment of Receiver Asked—Appointment of a receiver for the Western Ohio Railway, operating an interurban line between Findlay and Troy, has been asked in Common Pleas Court at Lima, Ohio. The suit in foreclosure was filed by the Union Trust Company, Cleveland, on account of the inability of the traction company to meet interest or principal payments on its $2,500,000 first mortgage bonds now due. The line operates through Hancock, Allen, Mercer, Auglaize, Shelby and Miami Counties. It is not believed the suit will interfere with its operation.

Traffic and Transportation

Five-Cent Fare Order Restrained

Ruling of Illinois Commission Against Chicago Surface Lines Protested on the Ground that the Decision Is Confiscatory

The Chicago Surface Lines almost had a 5-cent fare on Nov. 25. As indicated briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 26 an order of the Illinois Commerce Commission fixing this rate was announced on Thanksgiving eve, allowing twenty-eight hours to prepare for the change from an 8-cent fare. The courts were closed, no federal judge was in the city and it was not until the following noon that a temporary restraining order was issued by Judge George A. Carpenter of the United States District Court. No trouble was caused by passengers on Nov. 25, and before noon of that day another order had been secured from Federal Judge Francis E. Baker requiring the companies to give a receipt for the 3 cents difference until further notice.

FURTHER developments are expected on Dec. 2 when Federal Judges Carpenter, Baker and Geiger will hear from both sides on the petition for a temporary injunction. The surface companies meanwhile are issuing ordinary transfers as rebate slips.

The order from the state commission was not unexpected, and it followed within two days after the United States Supreme Court had taken a stand which meant that the contract provisions of the 1907 ordinances were not binding on the companies as to fares or service.

COMMISSION SUGGESTS BEELER PLAN OF RE-ROUTING

To make a 5-cent fare financially possible the commission suggested adoption of the John A. Beeler plan for re-routing of cars in the downtown district; other re-routing and "turn backs" outside of this territory; cutting the accident expense of the companies in half; reduction of the permissible rate of return from 7½ to 6 per cent; trimming of the salaries of officials of the companies; discontinuance of payments into the renewal fund as required by ordinance, and opening of negotiations with the city to obtain relief from the expense of street sweeping, sprinkling and paving.

The commission refrained from mentioning a reduction in wages although this was admittedly one of the high items in the cost of operation. The only reference on this point was a statement that "it would seem the companies should take cognizance of the trend of the times in the control of the operation costs particularly in the large salaries paid to their executive staff."

The opinion declared the service rendered by the surface lines to be "grossly inadequate, inefficient, and inconvenient and in many cases dangerous," and, therefore, in the opinion of the commission, not worth more than 5 cents. The commission concluded that if the companies would "exercise reasonable diligence, prudence, efficiency and economy" a 5-cent fare would "enable them to meet their legitimate and proper operating expenses and earn a fair return upon the fair value of their property employed in the public service."

Although no evidence was introduced in the case showing comparative cost of damages in various cities, the commission expressed the opinion that this expense should be cut in half, the companies having paid out for accidents $1,844,634 during the year ended July 31, 1921. Touching on the question of rate of return, the commission found that the allowance of 7½ per cent by their predecessors was "unreasonably and unjustly high," especially as the companies had actually paid an average rate of 5.014 per cent in securing its capital. The rate was therefore fixed at 6 per cent.

An interesting question is raised by the disallowance of money for renewals because the ordinances under which the companies are operating require them to set aside 8 per cent of gross receipts for this purpose, and the bonds of some of the companies are issued under mortgages containing such provisions. Besides the amounts actually expended from this fund in the past fourteen years, there has been accumulated $11,672,599 which cannot be used except for renewal purposes. The commission says this fund can be drawn on to take care of renewals from time to time and that there shall be no further accumulations until further order of the commission. It is expected the companies would have difficulty in securing the approval of the Board of Supervising Engineers to withdraw money from this fund for current renewals, and it is likely that bondholders would threaten foreclosure.

The statement is made in the order that under modern methods the purpose of the City Council in requiring street sweeping and sprinkling has ceased to exist. As to paving of streets it says that "under the decisions of the courts in relation to municipally-owned companies and the reasoning therein evolved, it would seem that the pavement of streets was a matter of local taxation rather than a burden to be placed upon the patrons of public utilities." It was, therefore, suggested that these matters should become the subject of negotiations between the city and the companies.

By agreement with the city the question of valuation was not gone into in this proceeding, but the commission intimated that it might later on make a re-valuation and possibly discard allowances for franchise value and "going value" which were included by the previous commission.

In its petition for a restraining order the Chicago Surface Lines sets forth that the hearing before the commission was not for rate-making purposes but on the assumption that the 5-cent fare provisions of the 1907 ordinances were in full effect and binding on the companies. The basis for this claim was removed by rulings of the state and federal Supreme courts. It was also pointed out that the city based its demand for a reduction in rate of fare on the allegation that conditions which justified the 8-cent fare had changed, although no evidence in support of this was introduced.

It was shown that under present traffic conditions in Chicago a 5-cent fare would produce only $38,000,000 annually, whereas the operating expenses alone would amount to $44,000,000. The authority of the courts was invoked to prevent confiscation of the properties. Upon issuing a temporary restraining order Judge Carpenter required a $50,000 bond.

Before the city's legal representatives could make a move the following day, an attorney, Jacob L. Tenney, went before Federal Judge Baker as a fare-payer and demanded the issuance of rebate slips by the companies. Attorneys for the companies explained that such slips could not be distributed for several days. It was finally agreed that transfer slips be accepted as receipts immediately.

United Traction Asks Eight-Cent Fare

Objections to the United Traction Company, Albany, N. Y., charging an 8-cent fare in Rensselaer, Watervliet, Waterford, Cohoes, Green Island and Troy, making a uniform 8-cent fare on all of the company's lines were made on Nov. 28 on the company's application recently filed before the Public Service Commission.

In general the objections centered upon an implied question of the constitutionality of the new public service commissions law, that asking for increases in fare had become a habit with the United Traction Company and that the company had failed to live up to its franchise and service agreements.

In the application the company sets forth that it will be "unable to continue the operation of its system and pay its operating expenses and taxes," unless granted relief through the establishment of a uniform rate of fare.

Albany patrons have been paying 8 cents since late in January, when the Public Service Commission ordered an 8-cent fare in the city, a graduated rate of fare in Rensselaer and a 6-cent fare in Troy.

The proposed uniform rate would result as follows:

Albany—8-cent fare; unchanged.

Troy—Increase from 6 to 8 cents.

Albany to Troy—Increase from 14 to 16 cents.

Rensselaer—Increase within the city from 5 to 8 cents; increase from points within the city to the Plaza, Albany, from 6 to 8 cents; increase from points within the city to lines in Albany, from 7 to 8 cents.

Watervliet—Increase from 6 to 8 cents.

Cohoes—Increase from 6 to 8 cents.

The proposed increased rates of fare also contemplate the sale by the applicant for use in said zones of tickets or tokens of 8 cents transportation value, at the rate of four for 30 cents.

The applicant also asks for the establishment of a through fare of 16 cents applying between the Plaza, Albany and the terminal of its through zones in the city of Cohoes, with the privilege to passengers of using said tickets or tokens and the provision of proper transfer regulations.

Hearings Resumed in Los Angeles

Railway Estimates Increased Fare Would Increase Revenue by $1,380,000

Resumed hearings before the California Railroad Commission on the interurban service and the proposed increase in rates on lines of the Pacific Electric Railway, Los Angeles, Cal., took place on Nov. 14, 15 and 16. At the close of the hearing on Nov. 16 all the evidence and reports bearing on the Pacific Electric lines within Los Angeles were in the hands of the commission, but the status of the local lines in smaller cities will be determined according to the order of the commission by conferences between the cities, engineers of the commission and officials of the railway.

These meetings will determine the question of jitney service being eliminated in these cities and the question of abandonment by the company of certain non-paying lines in the small towns outside of Los Angeles. Reports as to the results of these meetings will be filed before the commission. The matter of the 20 per cent increase in passenger rates first came before the commission at a hearing at Los Angeles on Oct. 11, 12 and 13 and was reviewed in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 22, page 756. After the three-day hearing the matter was then put over until Nov. 14 to give protestants of the increase in rates sufficient time to prepare their briefs and studies of the report of the affairs of the company as filed by Chief Engineer Richard Sachse of the commission.

The commission granted an emergency increase in rates to the company in July, 1920, to tide the company over the abnormal period of high prices of material and labor. The company now finds this increase insufficient and requests 20 per cent increase, which it is claimed is required to give an 8 per cent return on its valuation as fixed by the commission.

The company filed an estimate of additional revenue to be derived from the requested fare increase. This statement in part is as follows:

> Estimated net increase in passenger revenue $510,000, on local street car fares from the company's Los Angeles operated lines by establishing two 6-cent zones in Los Angeles, the rate to be 6 cents in each zone.
>
> Also, the estimate would realize a net increase of $50,000 by discontinuing transfers in Pasadena except that two forms of sixty-ride commutation tickets be provided for the Los Angeles-Pasadena interurban lines, one good to Colorado Street and Fair Oaks Avenue only and the other to include transfers to and from local lines. Under past arrangement, the company be allowed transfer privileges between its local lines and interurban lines in Pasadena regardless of distance of travel within the city of Pasadena.
>
> The total net increase would be $1,380,000, and in a majority of these estimated increases allowance is made for deflection in travel due to increase proposed.

The Motor Transit Company, the largest motor bus operating concern in the state, then entered the hearing and filed a brief, stating that while it offered considerable competition with the Pacific Electric, it did not see why it should be dragged into the hearing. Its statement pointed out that the lowest commutation fare was 1½c. a mile, while the lowest offered by the Pacific Electric is 0.9 of a cent. On one-way fares the motor bus line offers a fare of 2½c. a mile, while the fare of the Pacific Electric is 3⅒c.

The motor carriers objected virtually to all points in Engineer Sachse's report bearing on their service, especially regarding Mr. Sachse's idea of a fair rate of taxation. It has been pointed out that some of the motor bus lines are taking away from $200 to $300 worth of business a day from the railway. The motor companies wanted Mr. Sachse to define the idea outlined in his report of what he termed unfair competition, and he finally put it fairly clearly that he would not recommend shutting down long distance bus service, but jitney competition in small towns was unfair to the railway line.

One of the main contestants in the hearing was the city of Los Angeles opposing the proposed zone system and increase of fares on local city lines operated by the Pacific Electric. The city's brief especially covered the Hollywood district service and demanded faster service to this locality, stipulating that the number of cars operated be greatly augmented; that 2 and 3 car trains be run at frequent intervals, instead of the present single cars operated; that new cars be modern, for multiple operation and latest safety devices; that quick-loading platforms be provided at terminals; that a tunnel be constructed westerly out of the company's present Hill Street terminal in the city, the tunnel requiring a capital expenditure of $2,300,000, and that the district served by this improvement should bear its proportionate share of the cost of the tunnel, which will offer more rapid service and a short cut to the Hollywood territory.

It is recommended by the Board of Public Utilities that a policy be established by the State Railroad Commission looking to the establishment of motor bus or trackless trolley "feeders" with transfer privileges for such sections of Los Angeles as can support such service, where, from financial considerations, car line extensions are not possible. This recommendation will also be made by the board in connection with the rehearing of the Los Angeles Railway Corporation's application for an increase in fares, which hearing is fixed for Jan. 17, 1922.

City Withdraws Objection to Fare Increase

The City of Raleigh, N. C., has withdrawn its objections to the petition of the Carolina Power & Light Company for increased fares. By a unanimous vote the Board of City Commissions decided this issue on Nov. 23, "to the end that the matter may be decided on its merits by the Corporation Commission uninfluenced by the views of the members of this board."

The petition of the company for an 8-cent fare has been before the Corporation Commission for more than a year. The city successfully opposed the increase last December. In June of this year the company renewed its request, but some weeks ago the commission indefinitely postponed the issuance of an order. Recently the company requested the city to withdraw its objections.

The company in its petition has provided for tickets at the rate of 7½ cents. This fare controversy in Raleigh has been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Wants Court to Pass Lawfulness of State Department

The action of the State Department of Public Works at Olympia in requiring the Sound Transit Company, operating stages between Seattle and Roosevelt Heights, to abide by the city ordinances after the buses pass inside the corporate limits, was attacked at Olympia recently by the company in the Superior Court of Thurston County. Morris B. Sachs, associated with W. B. Crawford as counsel for the company, obtained an order from Superior Judge John M. Wilson, citing Director E. V. Kuykendall and other members of the State Department of Public Works to certify fully its records and files in the case of the Sound Transit Company's application for a review by the court on Dec. 6, or show cause why it declines to do so.

In its application for the writ of review, the company asks the court to pass upon reasonableness and lawfulness of the department's limitation which puts the jitney operation under the city ordinances inside the corporate limits. This action will carry the jitney legislation from the office of the city legal department to the office of the state attorney general, who will be required to represent the State Department of Public Works.

The disputed clause in the Sound Transit Company's certificate of public necessity and convenience was that upon which Superior Judge A. W. Frater of King County recently denied the jitney interests a temporary injunction brought to restrain the city from arresting Seattle jitney drivers of the company who operate without permits from the City Council.

This certificate recited that it "is subject to the ordinances of the said city now in effect, or which may hereafter become effective, governing the operation of motor vehicles on the streets of said city."

The Thurston County court action, according to city officials, will decide whether the State Department of Public Works has the right under the law of 1921 affecting motor transportation companies to grant permits to jitney lines in conflict with the laws of municipalities. Officials of the city also state that the pending litigation will have no effect on the status of the Cowen Park jitney buses.

Houston to Try 5-Cent Fare

Twenty tickets will be sold for $1 in Houston, Tex., by the Houston Electric Company, after Jan. 1, and children between the ages of five and twelve years will be carried for 3 cents. These prices will prevail for a test period of four months, to be changed thereafter if the company proves it operated at a loss. Municipal authorities forced this settlement of the traction difficulties there. Where tickets are not purchased the fare will be 6 cents.

Asks Elimination of Fare Zone

Elimination of one of the four fares now charged on cars operating between Wilmington, Del., and Chester, Pa., on the Wilmington & Philadelphia Traction Company, is asked in a petition to the company which was signed by 700 residents along the route. The fare now collected at the state line is the one the passengers wish dropped.

No More Reduced Fares Likely in Connecticut

Municipalities desiring to have the 5-cent fare tried in their respective communities will get no relief from the Connecticut Public Utilities before next January, if at that time, it is reported.

The Commission has let it be known that it was most essential that the present tests or experiments now being carried out in Bridgeport and Norwalk be allowed to proceed without risking new complications. This decision will curtail the cities of Hartford and New Haven in any plans they have at present seeking a fare reduction. Petitions had already been drawn up and were to be presented to the Public Utilities Commission for an assignment for a hearing.

The Commission in its recent Bridgeport decision declared emphatically for the district system, indicating that it was for the best interests of the respective population centers to have the Connecticut Company lines handled by districts as far as fares and accounting were concerned and the Commission has gone on record in favor of the district system which would provide a reasonable fare for the short haul rider. Furthermore, the Commission has declared that each district would be decided on its merits.

Following the Commission's decision ordering a 5-cent fare trial period in Bridgeport, Waterbury, New Haven and Hartford officials let it be known that they would petition for a trial of the 5-cent fare. New Haven's Corporation Counsel, however, decided to ascertain the Commission's attitude as to the desirability of instituting a test of the 5-cent fare in that city and wrote the Commission. In reply the Commission, through Secretary H. S. Billings, sent the following to Corporation Counsel Bennett:

> "While very sympathetic to the present desire and needs of the public of New Haven and other localities with regard to lower trolley fares, this Commission is of the opinion at the present time that in view of the limited revenues now being received by the street railway company it would be unwise to inaugurate reduced fares in New Haven or elsewhere pending the outcome of the Bridgeport and Norwalk experiments. While probably not controlling, the results of those tests would naturally have a material bearing on any decision of this commission with reference to reductions in other territories."

The Common Council of the City of Hartford at a meeting on Nov. 28 voted to present such a petition to the Commission. No date has yet been set for a hearing.

The Norwalk test period went into effect November 6 and the Bridgeport trial became effective Nov. 20. Each test is to last 90 days.

Settlement Near in San Antonio

An amicable fare reduction from 8 cents to 6 cents in San Antonia, Tex., seems indicated in the action of W. B. Tuttle, vice-president and general manager of the Public Service Company, who has presented the matter to the board of directors in New York. The ordinance establishing 6-cent fares, which was to have been introduced for consideration of the commission, has been withheld, pending the judgment of the board.

Negotiations have been carried on for some time past for a 6-cent fare. On this point the city was insistent. It refused recently to accept a 7-cent cash fare with a three-for-20-cent ticket system, and has stood ready to enforce the 6-cent fare by municipal ordinance. A considerable reduction in gas and electric rates has already been agreed upon by city officials and the heads of the company.

The first concerted action was taken on Nov. 7, when a petition asking for a reduction was presented to the City Commission. Since then the Public Service Company, in an endeavor to inform the public of its stand and to settle the question of reduction peaceably, has issued a formal statement in which it emphasizes the 7 per cent agreement with the city. This, it points out, was for one year only, and was lived up to by the company, in spite of the company's protest at the time that 7 per cent was not a fair rate of return.

Authorization for Thirty Buses Given

On recommendation of Carl H. Reeves, Superintendent of Utilities, the Seattle City Council has issued a permit for thirty jitney buses to operate on the Tenth Avenue Northeast and Cowen Park routes as feeders to the Eastlake Avenue car lines. In granting the permit, the Council acted under the terms of a recent ordinance which authorizes jitney service by permit from the Council to feeder lines doing business on a fifty-fifty basis with the city railway system. The fare on both routes will be 10 cents, of which half goes to the bus operator, and half to the railway fund, exchange of transfer to be made only at East Fortieth Street and Tenth Avenue Northeast.

In the meantime, Mayor Hugh M. Caldwell has authorized full service on these routes by jitney operators whose applications for permits have not as yet been acted upon by the City Council. He reiterated his belief that the people of North Cowen Park should not be deprived of the transportation they have had for years until the city gives them an adequate substitute therefor.

Safety Car Ordinance Contested

In reply to the city ordinance against the use of one-man cars in Syracuse, N. Y., the New York State Railways has petitioned the Public Service Commission for authority to continue their operation. The city must now prove, at a hearing which will probably soon be ordered, that one-man cars are unsafe and uncomfortable.

In the ordinance which prohibited their use the danger and discomfort of passengers were emphasized, and the city will maintain that the cars used in Syracuse are incapable of being safely operated by one man, though one-man cars elsewhere are in safe use. The Syracuse cars are of the double-control type, and the city contends that two men are required to watch the traffic and to care for passengers and the controller. The company may claim that the city ordinance is a breach of faith, inasmuch as the city agreed to one-man car operation when the fare was placed at the present level. To operate at the present level, the company said it would have to practise certain economies, and cutting the operators by the use of these cars was such an economy.

Transportation News Notes

Ordinance Repeal Before Voters.—Sacramento, Cal., will vote on the question of repealing the ordinance forbidding the operation of one-man cars, on Dec. 21.

Bus License Is $200 Yearly.—Bus operators in Ironwood, Mich., will continue to pay $100 every six months as a license fee. An ordinance reducing the fee to $100 a year failed of passage by the City Council recently.

Akron Bus Service Postponed.—The Northern Ohio Traction & Light Company, Akron, Ohio, will not begin operation of buses until after the first of the year. The buses will run from the end of car lines on a transfer system.

New Bus Extensions Planned.—Further extension of motorbus lines into the lower counties of New Jersey is now being planned by companies that already have lines running to the principal towns in Gloucester and Camden counties. One of the proposed new routes will be between Camden and Bridgeton.

Wants to Extend Suspension Order.—The San Francisco-Oakland Terminal Railways, Oakland, Cal., has applied for a ten-year extension of the order suspending operation and maintenance of certain track at El Cerrito. The track extends for ¾ of a mile. Permission to suspend operation for five years was granted by the Commission in 1916.

Needs Ten-Cent Fare.—The Missoula (Mont.) Street Railway recently filed a petition with the State Railroad Commission asking for a 10-cent fare with tickets at 6¼ cents. The present cash fare is 8 cents. The city of Helena, Mont., recently went to a 10-cent fare and authorization was given a few months ago for a 10-cent fare in Butte.

Bus Line Authorized.—The California Railroad Commission recently granted permission to J. B. Stimson to operate an automobile passenger service between Maywood and Huntington Park. The Pacific Electric Railway, Los Angeles, Cal., opposed the permit. The applicants succeeded in satisfying the commission that by making connection with the Los Angeles Railway the joint fare would be 11 cents, with transfer privileges to any part of the city, while the Pacific Electric Railway fare from Maywood without transfer is 13 cents.

Municipalities May Run Buses.—West Orange and South Orange may co-operate to provide bus service through the two cities if the request to the Public Service Railway for more cars on the Montrose trolley line is unsuccessful. The matter will then be taken up with the Utilities Board. The company, in answer to a previous petition for more cars on the line, said that traffic was not heavy enough to demand more trips. The two municipalities will also petition that one-man cars built for that purpose be placed in operation instead of the converted two-man car now in use.

Personal Mention

M. S. Raush, Claim Agent in Milwaukee, Retires

M. S. Raush, for the past twenty-three years claim agent for the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has announced his retirement from the service of the company. Mr. Raush came to the company in 1898, when the claim department was a one-man affair. Now it is a matter of some twenty men in Milwaukee with a branch office in Racine. During this period traffic on the streets of Milwaukee and the suburban communities served by the company has increased manyfold, increasing the risks of street travel and liability of accident in proportion. In 1898 the automobile was scarcely known, whereas now it is the greatest factor in street traffic and street accidents.

The company has announced the appointment of C. L. Young as successor to Mr. Raush. Mr. Young was for twenty years associated with the Chicago & Northwestern Line, a steam road. He brings to his new position a wide experience in claim adjustment work and is well known among claim adjusters throughout the West.

Newspaper Man Heads Iowa Committee on Utility Publicity

Joe Carmichael, veteran Davenport, Iowa, newspaper man, city editor of the *Daily Times* for the past eighteen years and for the last eight months advertising manager of that publication, has been selected to head the Iowa Committee on Public Utility Information, with headquarters at Des Moines. This newly organized bureau will cooperate with the Iowa Section of the American Electric Railway Association, the American Gas Association and the American Electric Light Assocation. It will collect authoritative data on the industry and will disseminate it impartially. By this means, it is believed, the public will secure an adequate idea of the fundamentals and economics of the utility industry. It will give both the public and the utility industry unbiased information in regard to the great industry.

Camden Editor Once a Conductor

Once a conductor—now an editor. This is the change in the life of Frank Sheridan, now the editor of the Camden (N. J.) *Daily Courier*, a large and successful paper. According to Mr. Sheridan, conductor-ing is the best possible training for the editorial chair.

Mr. Sheridan maintains that the situations he had to handle while a conductor in Camden on the Public Service Railway fitted him to handle the unexpected happenings of a newspaper office. Meeting the public daily, he came to know it in its every mood, and caring for hundreds of men and women in good humor or in bad gave Mr. Sheridan a rigorous training in divining what the public wants. Speed for the grouchy, friendliness for the affable, silence for the austere, and service for all were offered by the conductor. These things he has translated into newspaper terms, with the result that he appeals successfully to an increasing number of subscribers, gives the public the service it demands and keeps the paper moving forward.

The uncanny ability to judge with almost certain precision what each subscriber wants is not, as the public seems to believe, a heaven-bestowed gift, according to Mr. Sheridan, but is the result of the very prosaic and constant work of seeing that the passenger paid a fare and was satisfied with his ride.

M. W. Birkenbach, auditor of the Jackson (Miss.) Public Service Company, has recently accepted the appointment as head of the accounting section of the Mississippi Division of the National Electric Light Association. Mr. Birkenbach is known as one of the best accountants in that state and the honor is well placed.

Harry C. Abell, formerly vice-president and engineer of the American Light & Traction Company, New York, and a member of the banking firm of Emerson McMillin & Company, New York, has been elected a vice-president of the Electric Bond & Share Company. Mr. Abell is at present treasurer of the National Electric Light Association, in the activities of which he has taken an active interest for a number of years.

Preston W. Arkwright, president of the Georgia Railway & Power Company, Atlanta, Ga., urged merchants to create a favorable public attitude toward public utilities, in a speech made recently in Atlanta. Public influence on the Railroad Commission would result in a more lenient attitude toward the utility companies, which could then more readily expand to meet the needs of developing industries, according to Mr. Arkwright. The result would be great municipal growth. Mr. Arkwright urged merchants to attend hearings of the commission as representatives of the people.

R. D. Jarvis has succeeded Harold Bailey-Stokes as chief accountant to Commissioner Wilfred E. Cann at Toledo, Ohio. Mr. Jarvis has been an accountant in Toledo for some time. Mr. Bailey-Stokes, who received his appointment to the Community Traction Company in February of this year, at the time it took over the operation of the Toledo Railways & Light Company, is an engineer and an expert street railway accountant. Although not a native Englishman, Mr. Bailey-Stokes has returned to England, the country where he was educated and where he lived for a number of years. He is a veteran of the Boer war and enlisted in the British army at the beginning of the late war, in which he was wounded.

Frank J. Lonergan for fifteen years chief trial lawyer of the Portland Railway, Light & Power Company in damage actions, and Lou Wagner, twelve years associated with the street railway as special agent and attorney, have broken their connections with the company and engaged in private law practice in Portland. Mr. Lonergan, who has gained an enviable reputation as a trial lawyer, is a graduate of Notre Dame. He practiced law in Oregon City with Franklin T. Griffith, president of the Portland Railway, Light & Power Company, and since coming to Portland has been associated with the firm of Griffith, Leiter & Allen. Mr. Lonergan was the author of the paper "Genteel Faker" which was abstracted on page 874 of the ELECTRIC RAILWAY JOURNAL for Nov. 12.

Harry Reid, president of the Interstate Public Service Company, Indianapolis, Ind., is one of the incorporators of the Indiana Hydro-Electric Power Company by means of which it is planned to establish five electric power plants along the Tippecanoe River in northern Indiana. The plans which were filed with the Uublic Service Commission ask authority to issue $1,250,000 in gold bonds and to issue $1,125,000 of common stock. The first power plant and dam of the company is to be erected at Norway, White County. When completed the plant will be operated by the Interstate Public Service Company, one of the largest operating companies of railway and electric properties in Indiana. Mr. Reid will be vice-president and general manager of the new company. The other two incorporators are Ira E. Guthrie and John A. Shafer.

Obituary

Charles E. Lenhart, fifty-three years old, superintendent of the London, Ontario & Port Stanley Electric Railway, Ont., is dead in London. He formerly was a trolley conductor in Reading, Pa., and study in night schools brought him rapid promotions on railways in England and Canada. At one time he was master mechanic at Allentown for the Lehigh Valley Transit Company.

Frank C. Peck, aged forty-three, who has for fifteen years been connected with the Philadelphia sales department of the Electric Service Supplies Company, died on Nov. 12. Mr. Peck was well known among electric railway men and others connected with the industry in the Eastern section and was greatly admired by all of his customers and business associates. In his earlier days he was a partner in the firm of Peck & Stiles, contractors in Scranton, Pa., and later was connected with the Delaware & Hudson Railroad, which position he left to become connected with the Electric Service Supplies Company.

James M. Dickie, thirty-five years old, auditor of the American Public Service Companies at Abilene, Tex., which included the street railway lines of that city, died at Dallas last week. Mr. Dickie was born in Aberdeen, Scotland, and was educated at the Aberdeen University. He was a public accountant of Scotland and served various British syndicates in Africa, India, Egypt and other British possessions. At the time of his death he was chairman of the accounting section of Southwestern division of the National Electric Light Association and was also treasurer for some time of the Southwestern Electrical & Gas Association.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Electric Railway Equipment in India

Business Still Largely Controlled by British—American Equipment Is Considered Most Satisfactory

Some comments on market conditions for electric railway equipment in India are given in *Commerce Reports* for Nov. 21. Statistics given indicate that there are several important electric systems in India and Ceylon. These are owned in the majority of cases by private companies and operated in connection with the electric lighting systems. In most instances they were promoted and backed in their earlier days by British manufacturers of electric railway equipment, and as a result the British have naturally retained much of the business from these systems even to the present day. The fact that many of the operating men in India are former employees of British manufacturers tends strongly to hold the business in England.

SOME STATISTICS OF ELECTRIC RAILWAYS OPERATING IN INDIA AND CEYLON

City	Population	Operating Company	Track Length Miles, d = double s = single	Track Gage	Line Voltage	Rolling Stock S.T. = Single truck D.T. = double truck T = trailers M = motor cars
Bombay	979,000	Bombay Electric Supply & Tramways Company	21.3 s. 42.6 d.	4 ft. 8½ in.	550	50 S.T.M. 100 D.T.M. 71 T.
Calcutta	1,222,000	Calcutta Tramways Company	35 d.	4 ft. 8½ in.	500	267 M. 245 T.
Colombo	211,000	Colombo Electric Tramways & Light Company	8 d.	3 ft. 6 in.	550	44 M.
Delhi	233,000	Delhi Electric Tramways & Light Company	9.46 s.	3 ft. 3⅜ in.	500	24 M.
Madras	518,600	Madras Electric Tramway, Ltd	10 s. 5 d.	3 ft. 3⅜ in.	500	33 S.T.M. 48 D.T.M. 16 T.
Mandalay	138,000	Burmah Electric Tramway & Light Company	7 d.	3 ft. 6 in.	500	24 M.
Rangoon	293,300	Rangoon Electric Tramway & Supply Company, Ltd.	10.63 d. 3.30 s	4 ft. 8½ in.	550	58 S.T.M. 19 D.T.M.

The accompanying table gives some statistics concerning the electric railways of India and Ceylon. The cities of Calcutta, Bombay and Rangoon have standard-gage tracks, but other cities have narrow gage. The trolley voltage is 500 volts generally, with three systems operating at 550 volts. The cars are largely open, single-truck, two-motor types, though double-truck cars are common on the larger systems and are generally replacing the smaller cars throughout the country as these are worn out. No double-deck cars are used in India. Control is partly single end and partly double end, with electric brakes in addition to band-brake control in most cases. The use of trailers is common, even during the non-rush hours.

According to the usual British practice, car wheels are in nearly every case equipped with tires, the few solid wheels having been brought in during the war when it was not possible to get the other type. The overhead system is mainly cross-span construction with steel poles and round trolley wire. Some figure-eight section trolley is used and there is a fair amount of center-pole construction in some of the cities, although increasing traffic difficulties in the larger cities are bringing about the gradual elimination of the latter type of construction.

The Brush Company and Dick-Kerr of England, British manufacturers most active in promoting and backing the installation of electric systems in India, have naturally taken the bulk of business in past years. As the holdings of these manufacturers decreased and buying became less restricted American companies began to take many of the car equipment orders and are now regularly receiving a considerable portion of this class of business. The International General Electric Company has sales organizations in both Calcutta and Bombay. An interesting commentary on the performance of American equipment is shown by the opinions of the men about the carhouses of the various tramways. They stated that American motors are operating more satisfactorily under the high-temperature conditions of India than those of British make. The ventilation of the former is superior, and they are in general more rugged, which results in lower maintenance costs. The satisfactory performance of these railway motors under such operating conditions will no doubt strengthen their position in India, and it may be expected that an increasing amount of business will be done in this class of apparatus.

The native motormen who are employed in India are not very careful or efficient in handling their cars. Many do not understand much about the operation of a car beyond the ordinary routine of working the controller handle and brake.

With the decrease in the financial interests of British manufacturers in Indian electric railway systems has come also the greater use of American-made trucks. These have generally been able to compete both in price and quality with trucks of any other nationality, and there is no reason why they should not continue to participate in such business as is open without restrictions.

Car bodies were originally shipped out from England to the Indian market, but for some years it has been the practice to have these built locally. Teak is used mainly for their construction, and hardware, seat fittings and electric accessories are from England in most instances. Owing to the exigencies of the war period many of these parts were made up in the tramway shops, the native mechanics being now accustomed to turn their hand to making a great variety of appliances. Trolley poles and stands are secured from England, but trolley wheels are now made in the local shops.

OVERHEAD CONSTRUCTION

Heavy sectional tubular-steel poles are used practically everywhere in India for trolley supports. These are usually of British manufacture, American poles being little used in this field. The trolley wire is usually round, hard-drawn copper, phosphor bronze being used to a small extent. With the exception of small amounts imported from the United States during the war period, this copper has invariably come from England.

There does not seem to be much immediate chance for American manufacturers of overhead construction materials in the Indian field, as the operators in most instances show a strong preference for British goods wherever possible and much of the buying is done in London by requisition on the headquarters of the company.

In the construction of trolley lines special protection must be given wherever telephone and telegraph leads run above or across these lines. This is done by using poles about 3 ft. longer than otherwise, dropping the trolley span wire down that distance from the top of the pole and stringing another span wire across from the two pole tops, from which two guard wires are suspended over each trolley wire, these being 16-in. centers at a distance of 24 in. from the trolley wire and, of course, grounded.

Electrical Sheet Prices Firm in Unsteady Steel Market

Pipe and tubular goods seem to be the most favored of iron and steel products at the present time, and they are barely holding their own. Steel sheets are sagging consistently, though it was only a little over a month ago that a number of independent sheet makers notified their customers of a five-dollar-per-ton increase in sheet prices which brought quotations to 3.25 cents on black, 2.75 cents on blue annealed and 4.25 cents on galvanized on Oct. 15. These quotations endured for some time, but in the last two weeks weakness has developed, and sheets may now be obtained from several sources for

2.75, 2.25 and 3.75 cents for black, blue annealed and galvanized respectively.

Production of sheets is still fairly high, some mills running as high as 80 to 85 per cent of capacity, though the general average for steel products is only around 50 per cent. The output of electrical sheet still remains low, however, and producers have their stocks well ahead of demand. Buying is considerably better than a month ago. Then even inquiries were somewhat scarce. Transformer manufacturers are coming into the market more boldly, and one producer is said to have obtained several good orders for electrical sheet from this source. Motor manufacturers apparently are out of the electrical sheet market, though it is felt that the movement of popular-size motors will encourage them to come into the market for raw materials soon. The prices of electrical sheet have not been affected either by the recent increases in ordinary sheets.

Swiss Railway Electrification Pushes Hydro-Electric Development

The development of water power, in spite of the present high cost of installation, according to a commercial and industrial handbook on Switzerland issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce, is being pushed as never before in Switzerland. The most important part of this work is being carried on by the government in connection with the electrification of the federal railways, and a number of important installations are now under construction or contract. The first important stage of the general electrification program was nearing completion at the end of 1920. For furnishing the electrical energy two large installations are being made. The first is the Ritom works on the south side of the Gotthard tunnel in the Canton Tessin, which utilizes the water of the Ritom Lake.

The program of electrification on which the government is now launched foresees the electrification of practically the entire federal system of some 1,750 miles within a period of twenty years, and the total cost of the work is estimated at more than a billion francs. The average amount of power required for the entire system is estimated at 200,000 hp., with a maximum of 600,000 hp. Considerable progress has been made on the electrification of the so-called secondary lines, which are for the most part privately owned, but further development is being impeded by the lack of financial resources, which the federal railways are better able to command.

One of the articles which the railway authorities have had the greatest difficulty in obtaining in satisfactory quality and quantity for electrification purposes is heavy porcelain insulators for high-tension use. Insulators of the kind specified by the railway engineers are not obtainable in Switzerland. Switches for outdoor use in high-tension transmission lines along the right-of-way are also in demand, as difficulty has been experienced in obtaining proper apparatus of this kind from the domestic market. Inquiries for information in connection with this work should be made to the management at Berne (Direction des Chemins de Fer Federaux).

Rolling Stock

Hydro-Electric Power Commission, Ontario, Canada, has ordered twenty-five safety cars, eighteen of which are for the Hydro-Electric Railways, Essex division, and seven for the Guelph Radial Railway. A motor of higher rating than the standard safety-car motor will be used to meet more severe operating conditions than prevail elsewhere.

Toledo & Western Railroad, Toledo, Ohio, will buy three light passenger cars if the federal court grants the necessary permission to J. Frank Johnson and Harry Dunn, receivers for the property. These cars are intended to be used on the Toledo-Sylvania section of the interurban line. The cars will be double-enders with low steps and doors operated like those of cars in urban service.

Track and Roadway

Indiana Service Corporation, Fort Wayne, Ind., has just placed in operation its new line on Third Street. It will be operated in connection with the Pontiac Street line.

Pine Bluff (Ark.) Company will start at once rebuilding its East Second Avenue car line. This work will cost approximately $10,000. New ties and new 70 or 80 lb. rails will be laid from State Street to the terminus at the Cotton Belt shop, a distance of 1 mile.

Interborough Rapid Transit Company, New York, N. Y., will complete its Queens subway extension in about four years. The Transit Commission recently announced the awarding of the contract for $3,867,138 to the Powers-Kennedy Company, the successful bidder.

Dallas (Tex.) Railway will not extend its line just now out Haskell Avenue to serve the new North Dallas High School. This extension was recently requested by the Board of Education. Mr. Meriwether said that all extensions and improvements have been suspended pending settlement of the St. Paul Street cut-off question. He said further that the extension would add materially to the cost of operation.

Buffalo, N. Y. Reports are in circulation in traction circles that an attempt is being made in Buffalo to organize a company to provide traction facilities between Buffalo and Wellsville via the abandoned route of the Buffalo & Susquehanna Railway. The line was abandoned during the war and the tracks and equipment were sold to the French government. The right-of-way is owned by Charles A. Finnegan of Buffalo. The proposed line would reach a large section between Buffalo and Wellsville not now served by any railroad.

Olympia Light & Power Company, Olympia, Wash., within the next two months will replace the present fishplates on 3 miles of open track with continuous rail joints made by the Rail Joint Company, New York, N. Y. The cost of this improvement will be approximately $2,000. The six-hole 25-in. plates, which were especially made to the template of the rails in place, have already been received. With the replacement of the old plates the existing low joints will be raised and the track put in first-class condition.

Terrell, Tex.—Citizens of Terrell recently celebrated the breaking of dirt on that end of the line in the construction of the Dallas-Terrell Interurban line which is being built by the Strickland interests of Dallas. This is one of the interurban lines of 30 miles or more in length which the Strickland interests were committed to build under the terms of the franchise covering the operation of the street car lines in Dallas granted to Messrs. Strickland and Hobson in 1917. J. B. Moreland of Terrell has been granted the contract for grading the line from Terrell to Lawrence and is going forward with the work as fast as possible. He reports that the hardness of the ground tends to delay work, as not sufficient rain to soften the ground has fallen since June. The entire line is expected to be completed and in operation by the end of 1922.

Northwestern Elevated Railroad, Chicago, plans to improve the northwest corner of Wilson Avenue and Broadway, Chicago, partly underneath the structure, with a fine new station for the joint use of the elevated line and the Chicago, North Shore & Milwaukee Railroad. The property is now occupied by a stucco frame building arranged for the use of a number of small shops. This will be replaced with a permanent structure extending the entire block along Broadway and providing a new entrance at the north end of the block to the elevated platform known as Wilson Avenue station. The cost of the improvement will be roughly $100,000. The Wilson Avenue district is the largest outlying business center in Chicago.

Power Houses, Shops and Buildings

Appalachian Power Company, Princeton, W. Va., has started the construction of an addition to its steam plant at Glen Lyn, Va. The work will be completed about June 1, 1922, and will increase the kw. capacity to 38,750, the present capacity being 25,000 kw.

Southern Power Company, Charlotte, N. C., has announced plans for two new hydro-electric plants. This undertaking will cost more than $10,000,000. The plants will have a maximum capacity of 80,000 hp. and 60,000 hp. respectively.

Trade Notes

National Street Car Corporation, Ltd., Toronto, Can., in its report for the eighteen months ended June 30, 1921, shows a gross manufacturing profit of $602,927 and net profits of $422,674. The company was organized in 1919.

Square D Company, Detroit, Mich. manufacturers of inclosed safety switches, has opened a district sales office at St. Louis in the International Life Building. J. D. Utley is the office manager and W. S. Hermann is the district sales manager.

P. G. McConnell, formerly a department manager of the Belden Manufacturing Company, resigned on Oct. 31, 1921, to enter the manufacturing field for himself. He will specialize in the manufacture of automobile timer sets, attachments and special cords and connectors at 426 South Clinton Street, Chicago, doing business as the McConnell Cable & Specialties Company.

Rail Welding & Bonding Company is now located in its new factory and office building at 1615-20 Collamer Road, East Cleveland, Ohio. The building is a modern one-story structure which provides abundant natural light in all parts. In addition to the factory and offices, a metallurgical laboratory occupies a section of the building, which is well equipped for development work. Every means have been employed to make the new plant modern in every respect.

R. W. Levenhagen, vice-president of the Glidden Company, Chicago, has recently assumed direct charge of the sales policies and sales activities of the organization which now includes the two new products, Ripolin and Anaconda white lead. Mr. Levenhagen has for many years directed sales work for the Sherwin-Williams Company, the Detroit White Lead Works and the Martin Senour Company. He is well qualified to take these new responsibilities in addition to the duties he assumed when he was appointed vice-president of the company.

T. Charles Brown, formerly with the Electric Service Supplies Company, New York, and recently with the National Conduit & Cable Company, is now associated with the American Jobbers' Supply Company, Woolworth Building, New York, and will specialize on the product of the Porcelain Insulator Corporation, Lima, N. Y. This company manufactures "Pinco" insulators, a new development in the insulator field by men who have been associated in the manufacture of wet process porcelain insulators for about twenty years. The American Jobbers' Supply Company has the sale of "Pinco" insulators in the East. Mr. Brown is to be engaged in the sale of material to which he had devoted practically all his time since 1910.

New Advertising Literature

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., now has available for distribution its new bulletin No. 1119 on "Steam Turbine and Alternator Units." This publication, however, covers only high-pressure, single-cylinder units ranging in size from 5,000 kw. to 15,000 kw., operating at speeds of 1,500 or 1,800 r.p.m.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

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To Indianapolis for the Midyear Conference

IT IS indeed a fitting tribute to President Robert I. Todd that the association has decided to hold the midyear conference in Indianapolis. As a matter of fact it appears that no other city was considered or even proposed.

The decision is wise from another viewpoint, for Indianapolis is the center of a large interurban railway activity; in fact, more interurbans radiate from there than from any other one point, and the program for the meeting contemplates a substantial treatment of the problems of this part of the industry. It is a typical mid-Western city, easy of access to all electric railway men. It has accommodations which are ample and it can be assured that the dinner in all its aspects will not only satisfy but please.

Another point as to this midyear conference. It is going to be a real conference on the live questions of the day. Those who attend—and a record attendance is predicted—must come prepared not to listen to speeches, but to take part in active discussion of the subjects before the meeting.

Remember the date—Tuesday, Feb. 28. Headquarters will be at the Claypool Hotel.

The Tax Exempt Bond Given Another Blow

ONE of the many admirable features of President Harding's message to Congress on Tuesday of this week was the telling blow delivered against the tax exempt bond. "I think," said President Harding, "our tax problems, the tendency of wealth to seek non-taxable investment and the menacing increase of public debt—federal, state and municipal—all justify a proposal to change the constitution so as to end the issue of non-taxable bonds." Senator Smoot and Representative McFadden already have proposed such an amendment in the two houses of Congress.

The President does well to call the attention of Congress and the public at large to the uncontrollable drain upon the available capital of the country this class of security is causing. The income tax is apparently here to stay and properly so. This makes it all the more necessary to remove any obstacles from the proper levying of the income tax, not only in the interest of equity between individuals but for the even greater purpose of providing for the general good of all.

Some tax experts hold that a constitutional amendment is not necessary to effect a change in the law as the provision of the federal constitution which is supposed to exempt municipal, county and state bonds has never been officially construed to have that effect by the United States Supreme Court. Whether this view is correct or not the effect of the exemption now made is undoubtedly injurious. To use President Harding's own words: "The drift of wealth into non-taxable securities is hindering the flow of large capital to our industries, manufacturing, agricultural and carrying, until we are discouraging the very activities which make our wealth." This is particularly and poignantly true in the public utility field with its regulated and limited rate of return.

As has been urged in these columns before, the electric railway industry has a peculiar interest in this problem. Railway men should take every possible legitimate step to bring the matter forcibly to the attention of senators and representatives by individual effort. It is sound business for the nation, and it will assist railways directly in the search for new capital.

How the Pass System Differentiates the Passengers

THE pass system as employed at Youngstown, Racine and some other cities is such a novel departure from previous methods of fare collection that its effects are now only beginning to be understood. Considerable has been published in regard to methods of its installation, basis of charge and effect on riding, but there are other points in connection with it which as yet have hardly been discussed.

Under the customary flat-fare system of this country the street railway's contact with the patron is so fleeting that practically nothing is known of his habits unless a traffic survey is deliberately made for that purpose. In a general way, it is known that weather, degree of employment, amusement and shopping activities have a bearing on the ups and downs of the travel, but there are no simple bases for figuring how much each class of riders, such as holiday, short-haul, off-peak and rush, is affected by different factors. Foreign distance-fare roads are much more fortunate in this respect as their returns tell them the fluctuations in traffic according to fare paid by each class of rider. Also where, as in London, a special low rate is granted for off-peak hours (10 a.m. to 4 p.m.) still further data of value are obtained by the management on the travel habits of its customers.

An equally interesting differentiation of passengers is being furnished by the operation of unlimited-ride weekly passes. In Racine, where this pass has been in use since August, 1919, sufficient evidence has accumulated to prove that pass purchasers are the most dependable class of riders. In late months the revenue from cash and token riders has dropped 25 per cent or more, in comparison with the same months of the year before. On the other hand, the revenue from the pass riders has shown increases as high as 10 per cent. From this it is fair to assume that the average pass purchaser is a more provident or prosperous type than the other passengers; also that a part of his riding is compulsory. He does not have to take the four rides a day, which he actually averages, but he does have to take more than sixteen rides a week to come out even on his pass. If it is assumed that two of the four rides per day are taken in the rush hours the other two rides necessarily come during off-peak periods, when the company would prefer to supply them.

Further differentiation is afforded by the operation of the pass at Youngstown, Ohio. Within a period of seven weeks the pass sales have increased 50 per cent. During this time there was only one noteworthy setback in sales despite much greater fluctuations in the sales of cash and ticket transportation. This was during election week. It seems that when a holiday comes early in the week 2 to 3 per cent of the pass buyers reckon that they will save by buying their rides at retail that week. On the other hand, the earnings from the other classes of passengers went up during the very same week, as these classes may have been increased by election excitement, holiday games, good weather, etc. In general, however, the revenue from the pass riders is the most dependable from week to week and month to month. A pass buyer has paid for his transportation for a week in advance and therefore is more inclined to ride on each and every occasion, and to use the cars only. If he does stay home the railway loses nothing. This is not the case where people buy one car or jitney ride at a time.

When the pass became effective at Youngstown, it was found that the chief inroads were in the sales of tickets at six for 50 cents or at 8⅓ cents each. The number of 9-cent cash-fare riders was affected so little by the pass that after a few weeks there were as many cash riders as in the weeks just preceding the pass. About one-third of the ticket riders seemed to have become pass riders, but owing to the general increase in the business of the Youngstown Municipal Railway the ticket sales after a few weeks were only one-sixth below the old figures. In the meantime, the pass was building up a new source of revenue that is now about one-fourth of the total gross.

Naturally, the recapture of riders who had been using the jitneys makes it impossible to say what proportion of each class of the present riders was originally car or originally jitney. Probably a certain number of jitney riders went directly from cash-fare jitney to pass-fare car. It is also probable that the number of cash-fare and ticket riders has been increased by the fact that a person accompanying a passholder, as in going to a theater, would also use the cars and make a one-time payment for riding on the same. Nevertheless, there is one outstanding deduction, namely, that despite the extremely liberal rate for the pass ($1.25 a week) about one-half of the original pre-pass clientele should continue as cash-fare customers. Improvidence or poverty cannot account for much of this. What is far more probable is that many of these riders are so situated that they do not have to use the cars regularly twice a day.

From this it would seem clear that in any large city there are a great many people so close to their work that they do not have to ride unless they choose to. When some occasional town-edge affair like a football game occurs a number of these people are attracted out of their usual orbit and become riders. They are also the people who change from walking to riding when the weather is disagreeable. If business from this special element is to be increased the attraction must lie in a short-haul fare rather than in a pass. The principle of good business is not only to make a reduction to the wholesale purchaser who buys more than he actually needs but also to provide an inducement for that class which ordinarily has no need for transportation service.

Expenditures for Publicity Fully Justified

SEVERAL times recently expenditures made by electric railways for advertising and publicity purposes have come under public scrutiny. The concern just at this time is not with the question of whether these particular expenditures were ill advised or not commensurate with the results attained, but rather with the general policy back of such expenditures. Advertising and publicity are generally accepted as proper charges to doing business in all lines of merchandising, and in the electric railway business they are as much a part of the expense for developing traffic as the printing of time-tables, the maintenance of comfortable cars or a great many other ways of gaining passengers which come to mind. Money, of course, can be unwisely spent in advertising, but that is true also in the other ways mentioned.

All publicity, whether for more traffic or higher fares or to stimulate good will, is special pleading in the sense that it is an effort to sell at a profit something which the advertiser possesses or to acquire something he wishes to gain. While there may be some reason in specific instances to question the total of expenditures for publicity by electric railways, there can be no question about the right of any company to go before the public direct with the story of how much riders are getting in return for the fare they pay and how well their interests are being look after by the company they patronize. The expenditure is also a proper one that has for its purpose controverting statements made publicly that serve only to vilify a company and destroy good will which the company is constantly seeking to keep and to increase. Who, for instance, would be rash enough to attempt to place a monetary value on the output of the creator and perpetrator, if you will, of Phœbe Snow? And who would say, whatever the cost may be to the Lackawanna Railroad of its advertising, that the expense of the company in this connection is not a merited one! The good will of the public is no less important to a railway than it is to the store selling general merchandise. Nowhere does the purchaser get more for his money than he does in buying electric railway transportation.

Exchange Not the Only Ruling Factor in Export

WITH the low exchange rate existing abroad a considerable handicap must be overcome by our manufacturers in export trade. In the countries where the low exchange rate exists, the apparent cost of American manufactures seems increased in direct proportion with the rate of exchange between that country and America. In countries with a more nearly equal exchange, manufacturers here are brought into direct competition with those in the low exchange countries. It has been said that the chief advantages on which the manufacturers of this country must rely are ingenuity and low cost due to mass production.

Fortunately for the home manufacturers of the electric railway equipment, both of these factors are present in that industry. There is no country in the world which at all approaches the United States in miles of track or number of electric cars in operation. The manufacturers of essential maintenance parts used in electric railway service can therefore be conducted in this country on a scale far beyond that possible in any other. The same condition naturally stimulates the improvement of equipment. The market is so large that inventive genius is encouraged. Another incitement to improved equipment is the readiness with which American operators will discard what they have if the savings from the new machinery are sufficient to amortize the scrapped parts within a reasonable time.

For these reasons export business in electric railway lines is not so hopeless as the rate of exchange would suggest. As the need for railway equipment throughout the world grows, this country should supply a goodly part of that required.

The Motor Bus for Owl Service

THAT motor buses for complementary and supplementary service in connection with electric railway lines are a practical proposition seems to be pretty well demonstrated by this time. That being the case, it is worth while examining all possible ways in which the buses, once secured and placed in service, may be used to the maximum advantage. One way which is suggested is that they be used for all-night service. The furnishing of owl service has proved to be a pretty burdensome problem for many electric railway companies, and a service which they have usually given grudgingly or through the enforcement of statutory requirement.

It would seem that right here is a virgin field for the motor bus. Of course in some cities this has been the cream of business for the taxicab, but there seems to be no reason why buses that are used for feeder service during the daylight hours should stay in the garage all night when they might well be used to advantage on the streets. This done, the power plant could be shut down completely in these hours, with a material saving in expenses. The elimination of four or five hours of boiler-room labor and engine-room watches will figure out a pretty neat sum. Furthermore it would give an opportunity for repair work and overhauling around the plant, which with twenty-four-hour operation is done under considerable handicap, if at all. Emergency line crews need not be kept on duty, and probably other opportunities for savings would be worked out.

There are some companies in places where all-night service is not required which do close down entirely for several hours, with very material advantage to themselves in reduction of costs. They find no difficulty in arranging their car inspection and minor repair work around the carhouses to conform to the hours when the power is off.

Perhaps this possibility will appeal more strongly to the smaller traction companies than to the larger ones. In the very big cities conditions are more complex and the volume of traffic, even in the early hours, is of goodly proportions. But for transportation companies in the moderate-sized and smaller cities this idea of bus operation is well worth considering. An investigation of this proposal as a "way out" of the burden of owl service is suggested to those companies already operating buses, or considering them for the immediate future. An example of such an instance of bus operation is given in the ELECTRIC RAILWAY JOURNAL, July 9, 1921, page 51.

Lessons Learned by Des Moines Citizens

VOTING two to one for the new franchise, the people of Des Moines have confirmed the action of the City Council in accepting a service-at-cost contract and have thereby re-established electric railway service. This action came as the result of an eighty-four-day experience without the street cars, during which the people got their fill of 5-cent jitney transportation and came to realize that there had been more sincerity than selfishness in the efforts made by the Des Moines City Railway to secure terms from the city authorities under which it could somehow avoid cessation of service. It was a hard lesson for Des Moines, for merchants and other business men were becoming desperate at the loss of trade resulting from the terrible inadequacy, discomfort, indecency and hazard of the service provided by the jitneys. All classes of people earnestly avoided any activity that involved a ride on a so-called bus, and the business of the city dwindled correspondingly. But the suffering, inconvenience and financial loss to the people and city may not have been in vain if the lesson learned is remembered and the railway is thus permitted to go forward and to give and develop its service to the people free from the vicious limitations imposed by constant political abuse.

Three things in particular were brought home to Des Moines citizens as the result of this famous eighty-four-day period. First, they became convinced that they had to have electric railway service; second, that they had to pay for it, and, third, that they would have to deal with the present company.

The buses failed signally to provide adequate, regular or convenient service. The bus men were long on promises as to what they would do if given a franchise and the City Council was anxious to give such a franchise upon reasonable assurance of financial strength equal to the undertaking. But the bus men were unable to coax any substantial amount of capital into their hands with the 5-cent fare limitation, and no responsible interests came forward with a proposition to take the job at a 5-cent fare. Consequently there was no bus transportation undertaking on a scale which the situation demanded. Rather, for a traffic requiring at least 500 buses, there were only a hundred or less buses of all kinds and descriptions driven by individual owners trying to cope with the situation. Even though they had schedules and routes somewhat systematized through an association, the service was hopelessly inadequate. The people were thus convinced that they must have the street cars back.

Previous to the shutdown a general feeling had prevailed that the company was bluffing in its statements, but when the threatened shutdown actually became a painful reality this feeling was quite dispelled. After a few weeks the people were finally convinced that the electric railway could not go on indefinitely giving service for less than cost and that if service were to be had it must be paid for.

Lastly, after considerable dickering, the officials and the public in general found out that no one else could be induced to come in and give transportation service under any terms. Therefore it became evident that, because the present company had its investment at stake, not only could the best proposition be obtained from it, but that it was the only possible agency through which to secure any reliable proposition to supply any kind of continuous transportation.

Railways' Financial Cycle Has Come

Robert I. Todd, President American Electric Railway Association, Is Full of Optimism Over the Electric Railway Outlook—Points to Substantial Status of Industry—Says Public Generally Recognizes Necessity of Railways—Spirit of Co-operation Exists on Both Sides—Discusses Outstanding Problems Now Requiring Attention—The Bus the Largest Unsolved or Undetermined Question

An interview with President Robert I. Todd
by Harold V. Bozell

Robert I. Todd, President American Electric Railway Association—at His Work Desk in His Office at Indianapolis, the Interurban Center

"If there is one point that I would stress above others in my analysis of present-day conditions of the electric railway industry it is that the railways' financial cycle has come around again and that we have good reason today to be optimistic in our predictions for the future of the industry." President Robert I. Todd was very much in earnest when he said these words during the course of a most interesting and inspiring discussion of the electric railway industry which the writer enjoyed having with him recently. And the words were not false to his manner, either. It was easy to sense his optimism and actually to see his confidence, even though our discussion centered around the most pressing problems still before the industry, and even though he recognized that he was undertaking the burdens of leadership of the industry as he commenced his term of office as president of the association.

But President Todd is a man who does not flinch from problems; rather he approaches them in a quiet, determined manner, bound to find the right solution to each one in as quick and efficient a way as possible. He is willing and anxious to discuss his problems with others and obtain the best advice there is, but having decided on the best method of procedure, he goes ahead without quibbling. There is nothing spectacular about Mr. Todd, but there is a sincerity, a thoroughness, a perseverance about him which gives confidence to one in contemplating the result of the coming year's work under the direction of this quiet leader. He has reason to be optimistic in his outlook of the work of the association this year. It was just after the October meeting of the executive committee that our discussion reported below occurred, and that meeting was enough to put confidence in any incoming president. Past-president Gadsden worked well—perhaps better than he knew—when he insisted before the reorganization committee upon the cardinal principle of monthly meetings of the executive committee so that there would be real active management of the association's affairs by its selected officers. President Todd was more than pleased, as would have been every member of the industry had he been there, at the manner in which the new executive committee is undertaking its responsibilities and starting the year's work, if that meeting of the executive committee proves a typical example. President Todd feels the encouragement of an active working executive committee with its various sub-committees and special committees. The recorded results of the coming year will, of course, prove the value of the administration. But if a prediction may be permitted, it is that the association will receive tangible and practical benefit during the present administration from the new form of management under President Todd's direction.

But this is supposed to be a tale of President Todd's opinion of the industry, not mine of him. Continuing his discussion of the general situation, he said:

"The industry in general is through what might be called its period of tribulation. People do recognize that the electric railway is necessary. They believe in railways as a necessity. The work which the industry has done since the close of the hearings of the Federal Electric Railways Commission in telling the public the story of the railways has had a real effect and there is everywhere evidence that electric railway problems are better appreciated by the public as a whole.

"At the same time there has been an awakening on the part of railway men themselves to some of the shortcomings, not so much of their operations as of their relations to the public, their former reticence occasioned by their absorption with operating problems and a more or less thoughtless assumption that the public knew more than it did about railway operation.

"There is certainly everywhere today a very evident desire on the part of railway men to do what the public wants done in the way of furnishing transportation. This is true not only from an operating standpoint but from a public policy and financial standpoint. In other words, there are signs all over of the public and the railway operator 'getting together' for their mutual good.

"The industry is substantially sound. It has come through trying days and even now, in what is probably the bottom of the valley of depression after the war, it is in much better condition than most general industries, and there is every sign of continued improvement everywhere in the industry. It has *proved* itself a most essential industry.

"Only last week I was talking with a leading banker dealing with public utility securities who called my attention to the difference in market value of many millions of dollars' worth of railway securities now compared with two or three months ago and I was surprised, to put it mildly, to note the substantial increase. I was assured by this banker that this was no sudden rise, no peak, in a curve of prices, but a point on what was apparently a gradually rising curve. It was he who called my attention to the fact I have just told you, namely, that the utility—the railway—financial cycle had come around again."

HE OUTLINES BUS SITUATION

President Todd in his analysis or discussion of the more pressing or outstanding problems before the industry today debated a while between the bus and labor and finally said: "I think the bus proposition, perhaps, presents the biggest problem to the transportation industry today. We don't know yet exactly how to tackle the problem. It is really a knotty one. Every one is interested in it, the railways, the public, the commissions—yet it is a most difficult proposition to discuss intelligently because we lack so much information and because there are so many tender spots where unrestricted competition and other factors have caused such an irritation that an intelligent, quiet study cannot be made."

"It is true there are tender spots," I interjected, "but how can anything be accomplished if we do not talk—if some intelligent effort is not made to relieve the tender spots, How, in your estimation, is the problem to be settled. I am thinking now of those areas in which, or contiguous to those in which, railways operate. Should independent operators start up in co-operation and co-ordination with railways? Should all competition be crushed and the bus banned from consideration? Should the railways take up the bus and use it experimentally to find its proper sphere?"

"The last, by all means. In such areas, certainly, it seems to me, the railways should take whatever responsibility should properly exist for bus development to supplement or complement their existing services if such supplementary or complementary service is desirable in the interest of the best transportation for the community. This, of course, does not mean that every railway should use the bus. It merely means that my own belief is that if there is any place in a community for bus service—and in many communities I think there is such a need—it should be the railways that should undertake that development, for they are the transportation experts of the community. From a business standpoint they handle the transportation business of the community and so should, as a matter of good business, undertake to provide and sell all the transportation to a community. The very fact that railways are today more and more doing this is indicative both of the legitimate sphere of the bus in certain areas and of the farsightedness and good business judgment of those railways which develop the bus themselves, when it is needed in their community, thus retaining both their transportation monopoly of the community and the good will and the confidence of the public."

"What about areas where there is no rail development? Do you not see an opportunity for a real bus transportation service there?"

"There are certainly some areas where no right thinking railway man would ever try to build a rail system, but where highway transportation would probably pay, though usually on a much higher fare basis than is possible by rail transportation in most communities. On the other hand, there are examples such as the Shore Line community in Connecticut where bus service does not seem to retain any stability even after the cessation of service by rail. In other words, the fact that rail transportation did not pay is a pretty fair indication that the situation should be carefully examined to see if bus transportation will pay. However, in small communities and in many interurban services on the increasing network of highways, there is probably a legitimate opportunity for independent bus operation to give an organized transportation service. I have naturally not analyzed situations like that. My study has pertained principally to electric railways, to the transportation problems of urban communities and heavy interurban traffic and to the relation of bus transportation to them.

"In some of these smaller communities, where the question is the adoption of the bus or the retracking of the rail system, there is a real serious problem at the present time, but there is no doubt of the fact in my mind that bus operation cannot be substituted for rail operation on good existing track no matter how light the traffic.

"In new undertakings I understand that the claim is made that it takes five dollars investment for one dollar gross earnings on rail as compared with one dollar investment for a dollar in earnings with the bus. This latter ratio seems very doubtful, but this is one aspect of the situation which must be considered. If it is a commercial proposition, it must be taken up.

"But this much I do want to emphasize again—that we haven't enough data upon which to base any judgment as yet. We must not—and no one else should—base any judgment on a comparison of illegitimate, unregulated, untaxed bus service with organized, responsible continuous rail service. The full facts, compared on equivalent responsibilities for service, taxes, claims, etc., must be first obtained. This, of course, I think the railways are interested in and anxious to do."

CONFIDENCE CREATED BY DIRECT DEALING WITH EMPLOYEES

Turning from his discussion of the bus, President Todd took up a topic which is really more interesting and absorbing to him and upon which he has done a great deal of thinking, namely, the labor problem of the electric railway.

"I have indicated that possibly the bus is the biggest problem which confronts the industry, but I believe the labor problem is perhaps the most serious with which we have to deal, particularly with reference to wages and to the improvement of the economic status of the employees, and also with reference to stabilization of relations between the employees and employers.

"As to the former, much as we desire it for the employees, it is impossible for most electric railways to operate on wages which were established by the War Labor Board and the Amalgamated Association. I feel very strongly that motormen and conductors should receive wages as high as it is possible for the industry to bear, but I doubt if in normal times it will be possible to make it seem fair to the public to pay motormen and conductors wages equivalent to those received by machinists and other skilled workmen who spend three to five years learning their trades so long as the public sees motormen learning how to 'operate cars' within one or two weeks. Not that I think that one or two weeks is a period in which a motorman and conductor can become a skilled motorman or a skilled conductor, but there is a difference in training which cannot be entirely overlooked. I would like very much to take a different view of this situation, but since the wages must come out of fares we must realize that the public is not yet, at least, willing to pay the motorman and conductor a scale comparable to the skilled mechanic. If by united action of railway employers and employees the public mind can be changed in this respect, and the public be willing to pay such a rate of fare as will make high wage scales possible, this would be an end greatly to be desired.

"We cannot forget that the labor cost is the major part of the cost of furnishing transportation which must be paid for by the public out of fares—and in that way only. But, as I said before, the public does not now take kindly to paying skilled mechanic wages to motormen and conductors.

"If only the wage question could be once satisfactorily settled most other difficulties between operators and labor would automatically disappear."

"What, if anything, in the way of bettered economic status will come to street railway labor out of the readjustment period we are passing through?"

"Frankly, I don't know. The men are now getting 116 per cent more wages than in 1913, according to A. S. Richey's index number for November, though not that much in buying power perhaps. But I believe that the present economic cycle will end with railway labor having a purchasing power of perhaps 25 to 50 per cent above its 1913-14 status. In other words, the general level of cost of living will, I believe, be lower than the general level of railway labor wages when we have finally settled down again economically. The only way we can maintain this is from the growth in travel and revenue which must compensate for the increased pay to labor. The fact that the railway industry generally throughout the country, and the public as well, has got away from the basic 5-cent fare as a requirement is a factor in this. The industry has certainly suffered financially the past five or six years, but is now getting back to a normal basis. Materials are going down and other factors of expense are going down and there should be sufficient added increase to carry the added cost of labor's increase."

"The other angle to this labor question, as you have mentioned, is that of the relation between employer and employee? How do you think that will adjust itself in the railway field?"

"In anything I say on that question I would surely want it understood that it is only my personal opinion. That opinion is, quite shortly stated, that I favor what is known as the American plan or the individual contract method of direct negotiation and dealing between employee and employer. Through such mutual relationship it is possible to create the greatest confidence and most satisfactory conditions on both sides. To point to the extreme of the opposite kind of arrangement there are some situations of which I know in which the owners tell me that the labor situation is intolerable; the wage is so high that they cannot even pay operating expenses. They are no longer operating their properties, they say. The labor unions are doing it.

"My conclusion on this subject has been reached not from antagonism but from long extended observation and sincere conviction. I am convinced that the best results in the operation of electric railways cannot be secured under domination by any organization such as the Amalgamated, first, for the community; second, for the men; third, for the company itself. The Amalgamated organization may be actuated by what it believes to be its desire to provide for the men an adequate wage and satisfactory working conditions; I am for that, wholeheartedly, but I differ, however, on the best method by which I think the object we all really desire may be obtained.

"The Amalgamated has been a strong, forceful body with intelligent leadership for the purposes it wished to accomplish. We all know the history of its growth, how railway by railway the employees have been added. With a strong, organized body, individual properties could be added one by one and nothing else could be expected. On the other hand, the railways are not welded together like the Amalgamated and there should be thorough study of the problem by the individual railways for the purpose of bringing about better and closer labor relations between railway operators and their employees."

"To be more specific, what exactly do you mean by the individual contract and what has been your own experience under it?"

"The contract, I think, should provide that there should be no lockout on the part of the company and no strike or interruption of the service on the part of the employees, and if there should be any difficulties upon which agreement cannot be reached they should be referred to the Public Service Commission as a board of arbitration. This seems a just and sensible American way to deal with men, and intelligent employers are more anxious than any one else for satisfactory labor relations, as they realize the best business results can be obtained only by having satisfied and loyal employees. I am sure the general public would support such a plan and it will ultimately prove most beneficial to the employees.

"From our own experience I think our men are among the most contented employees in the country. We have a reasonable wage scale, considering the general living conditions—and cost of living—around Indianapolis. No outside organizer wholly unfamiliar with local conditions comes in to try to solve things better solved at home. Without such outside influence the men interpret things for themselves and deal directly on a fair and manly basis with their employers."

"How do you deal with grievances?"

"The men have the right to come direct to the superintendent or to the president. In Indianapolis we have four carhouses and at each house there is a system of selection or voting for trustees, four from each house for a term of one year. If any man thinks that he is not properly disciplined he has the right to select three men, one from each carhouse except his own, who, with the superintendent and the assistant superintendent, vote on the case and their decision is final. You see that the men themselves have the majority vote as there are three men from the other houses and the company is only represented by the superintendent and the assistant superintendent. With the exception of two or three cases, all such appeals have been decided in favor of the company; that is, the fairness and justice of the company's action has been recognized and sustained. The men have an organization, but they devote it to beneficial purposes only, to provide sick and death benefits."

"Is there any provision for the men to discuss questions as a group or to be represented as a group?"

"Naturally the men can appoint committees to take general problems up with the company. If the question of wages comes up, for example, they select a committee and come in and talk things over."

"Of course there is one other part of this subject in which labor is particularly interested, and that is working conditions and security of employment."

"Perfectly true and rightly so. As to the former, I do not believe that the eight-hour day is feasible in railway work. The railway business is one in which its own working conditions must be analyzed and the answer made to fit the requirements of the case. I think a logical basis—the best for the men themselves—is nine or ten hours of work with a maximum spread, which even in so-called split runs will not exceed sixteen hours. This must naturally be arranged on a basis of providing satisfactory working relations, working conditions, surroundings and atmosphere, but as to the actual schedule, I very strongly believe that an eight-hour day is an economic impossibility.

"But the other point is frequently overlooked in discussing electric railway labor, namely, the continuity and stability of employment. The electric railway is a public necessity; it must furnish continuous service which cannot vary much in amount; it therefore provides continuous employment. The employee who performs his duties with reasonable efficiency is assured his position. He counts on that, purchases his home and is assured that even depressions which cause so many ups and downs elsewhere will not deprive him of his job. The large number of satisfied employees who have been with the various railways in this country for years and years is an earnest of this thought.

"I shall not leave this subject without paying a tribute to the railway employees, organized and unorganized, for the intelligent manner in which they have met the necessary readjustments of the past few months. In many cases they have approached the problem as real partners in the business."

GOOD SALESMANSHIP IMPLIES GOOD UNDERSTANDING WITH PUBLIC

Our conversation then turned from this absorbing human problem, which is today an outstanding one in all industries, to the subject which was the keynote, or at least the ever-present topic of conversation, at the recent convention—salesmanship in transportation.

"I am afraid my thoughts are of little value on this subject," said Mr. Todd. "It seems to me that the plan outlined by Mr. Goodwin in the ELECTRIC RAILWAY JOURNAL (see issue of Sept. 24, page 466), though, is the way to introduce salesmanship into the industry. That is, on most properties, as I see it, the president or general manager or some vice-president should personally be or embody the sales manager—should instill salesmanship and a commercial aspect of the business.

"But the best salesmanship of all, and I recognize this as a part of Mr. Goodwin's idea, is to have a clear understanding with the public—to have a frank and open dealing with the public on problems of the railway. And it is due the public that there should be such a close and frank understanding."

"How about financial reconstruction?"

"The way many people talk of that appeals to me as being a dream of Utopia. I don't think that there is any one more in favor of the principles outlined by Mr. Frothingham at the Atlantic City convention of a general reorganization and plan of refinancing for all companies, but outside of going through a receivership and reorganization or through that rare thing, a voluntary reorganization, I don't see how we can arrive at the end desired. Speaking of our own city company, we reorganized voluntarily, although we could not get the ratio of stocks to bonds as we desired to have it. There is no question but that where possible it is the right policy to clarify the financial structure. The ideal condition for a property to be in, as I conceive it, is to have its outstanding capitalization divided 50 per cent bonds and 50 per cent stock.

VOLUNTARY REDUCTION OF CAPITAL DIFFICULT

"There are so many complications in many of the companies that a voluntary reorganization is very difficult to bring about and receiverships and reorganizations under them are usually not good for the industry and are expensive for the individual property and to the general public. But there is no doubt that it is a serious question and one upon which the individual company can work to advantage, knowing that any improvement in financial structure will be a strong factor in creating a great improvement in public relations."

"What are you going to do in cases where the valuation is very much less than the capitalization and you wish to reduce the latter?"

"Usually I do not think a reduction can be effected except when there are just a few security holders and they will accept the reduced face value of their holdings. The public must remember that present capitalizations were made in good faith and according to accepted principles, and further that it is valuation and not capitalization upon which we earn. It is, however, desirable, from a public policy standpoint, when it is found that capitalization considerably exceeds physical value, to effect a reduction if practicable. But take some of the larger companies where there are thousands of security holders. It is a physical impossibility to get consent to a reduction in the capitalization.

"I don't know what the answer is unless just to let properties work themselves out. If a railway gets in a situation where it is desirable to reduce its capitalization to its value or adjust capitalization and value, one possible way to do it is to declare no dividends for a few years and put what should fairly be paid in dividends into the property so that the value will eventually work up to the capitalization. Meanwhile, of course, there is no return on the property paid out in dividends, but eventually the best interests of the stockholder may be served and he is no loser. If there is no receivership and if there is no voluntary reorganization this is the only way that I see."

MUNICIPAL OWNERSHIP LARGELY A DEAD ISSUE

"Do you see any tendency toward municipal ownership?"

"As a matter of fact, as I view it, the tendency is the other way. Municipal ownership at present is a dead issue in most cities. Municipalities are educated and enlightened. A few years ago the situation was different, and I think the result is largely attributable to the experience under government operation of the railroads. Personally, I think that the general public agrees with the views expressed by almost every investigating body, and with the opinion of railway operators themselves, that private operation under intelligent regulation provides the best service in the end."

"It has been said, you know, that the fiscal policy of the government, with the graduated income tax and with the continued supply of tax exempt government and municipal bonds, would drive the public to have to supply the additional capital necessary for utilities to grow and thus force municipal ownership. Have you any opinion on that? Do you think such a result is likely from that course?"

"No, I don't. It seems to me that should municipalities go into the transportation business the money rate would go up for them, for the investor will appreciate that the municipalities are rather stretching their credit for such purposes.

"There is another angle to this, of course, and that is that there is a feeling that the tax exempt feature of municipal securities may soon be removed. There are some who express the opinion that this feature may be determined to be retroactive; in other words, that present municipal securities may be taxed, and of course present purchasers take the chance on that. But on the whole, I think that the situation will soon change so that the damage now being done by the tax exempt municipal securities will be minimized or largely eliminated."

PRESENT COAL SITUATION AN OUTRAGE

"What else looms up before you as an outstanding problem for the industry?"

"Well, the coal question, which is one that I am most deeply interested in. The present situation seems to me to be an outrage. The utility companies, as well as the general public, are entitled to have a *continuous* and *dependable* supply of coal at a fair price without being continuously subjected to the dangers and interruptions of coal supply or to periods of exorbitant prices, no matter how caused. We in Indiana live right on top of the question and perhaps get more interested in it than those who are farther from the actual production of the coal.

"But it is a question of real importance to the entire industry because the price of coal has such a material effect on the power cost and therefore the car fare and because the continuity of supply affects our continuity of service or forces us to make larger expenditures to maintain adequate coal reserves.

"Of course, I recognize that the coal industry has a labor problem of its own of no small proportions. It has been sufficiently aired in the newspapers, however, so that I need not discuss it. But when a 1912 price of $1.15 per ton delivered is compared with a 1921 price of $4.05 per ton delivered there is enough to indicate a serious interest in this problem by railways.

"To many utility properties in the Midwest it would be their salvation if they could secure their coal at a fair cost of mining and profit to the producer, this on account of the large quantities of coal which must necessarily be used in the production of power.

"I am very hopeful with reference to the most recent developments in straightening out the coal situation. If this is cleared up it will mean something to the coal bill of the electric railways, but it will have a broader significance to industry as a whole which should be very beneficial."

From the nature of Mr. Todd's discussion thus far it is apparent that he is not one to "dodge the issue." These are all debatable subjects which Mr. Todd analyzes and upon which he presents his own views for what they are worth to the industry in its grappling with the problems before it.

Our talk soon turned toward what the American Electric Railway Association as an organization could do to assist in some of these problems.

"The association can certainly do a great deal to bring out the correct analysis of the trackless trolley and the bus. I also think that it can as an organization do something of value on the question of wages and labor."

"Do you think this latter is a question which it is advisable for the association to deal with?"

ASSOCIATION SHOULD STUDY FARE QUESTION

"Yes, I think it is. Certainly some fundamentals might be uncovered by study. I do not propose to suggest this as a topic for the association at this time. I realize that there are divergent views on the subject and I don't know if it is possible for the association to tackle it at all, but how are we ever going to find out if it is possible unless some one does study it with the expectation of finding some solution of the problem?"

"How about the subject of fares? Is not this so-called period of deflation an excellent time for the industry to make an intelligent study of modification of city fare schemes, if any are possible in the various areas, as a means of adjusting fares to public policy, if such a figure of speech is allowable?"

"I think this is a subject on which the association should do some very useful work. I think we must get down to basic facts, and in my own judgment we must get down to a low basic fare for short rides. I think it is extremely important that we keep the short rider, and we cannot keep him, at least in Indianapolis, with a high basic fare. My own judgment is that we must work out some sort of a low basic fare with an added fare for increments or zones, as they may be called. This means real work, and the association might in some way aid in the solution of the problem as its various aspects are presented in different localities."

"What do you think of the unlimited ride ticket, or the pass, as it is called, as a factor in this situation?"

"A doubtful experiment. To me it seems a step backward to the days of flat rates for incandescent lamps or flat unmetered gas rates. In both these cases lamps were burned continuously. Of course, I may think differently after we have more experience with it in various cities, but that's the way I look at it now.

Perhaps I look at things principally from a standpoint of Indianapolis, but I think that we should have started with a central zone for a short rider, with an added charge for additional distance traveled or service rendered. On our interurban property we used to have 5-cent fare zones, now we have 3 cents per mile and each rider pays for exactly the mileage that he travels. This seems more logical and it appears worth while to attempt to work out something with similar logic for cities if it is possible for us to do so."

"What will the public opinion of the average American city and its flat fare policy or philosophy have on this question?"

"I don't know. I think, though, that we are coming some time to a form of measured service. I don't know how it is going to be done and for that very reason the question needs study and analysis. I know in our own community we presented a zone system with a low base fare with 2-cent increments and the commission indicated that it was scientifically correct, but that the community had been built up on a 5-cent flat fare basis and didn't want to change.

"There must be a good deal of educational work done with the public on this, but some of it has been done in some places. I might say that I favor, so far as I understand it, what is being done in Boston, namely, as prices come down leave 10 cents for the long haul and reduce short riders to 5 cents. That, of course, is not actually done universally in Boston, but the principle to a certain degree is applied there and that appeals to me as a possible way to start the plan, or at least as one way to apply the principle I have in mind of a differentiation between the fare for a long rider and the fare for a short rider."

"What else do you have in mind that the association will do during the coming year, or can do effectively at this time?"

"I think the association, as I find it now, is doing a fine work. It will be very valuable to continue the consideration of such questions as were outlined by Mr. Frothingham. There is a growing realization of many of the points which he brought out, but the work is by no means ended. While some realize the situation, others are less serious in their contemplation of the financial problems. It appears to me that we must work toward a 50 per cent stock ownership of our properties as the most healthy one for the properties themselves and the best for the interests of the public. The greater portion of this that can be owned in the community, naturally, the better, thus giving the individual rider a personal interest in the welfare of the company."

"By the way, what do you think about complete publicity on the question of finances and all financial statements?"

PUBLICITY AND PUBLIC RELATIONS

"If the public were all financial experts I think the plan would be excellent. But on the whole, the people generally get financial statements all mixed up and, from my observation, complete publicity of matters which are so technical in some ways as to be beyond the grasp of the average intelligence, or at least beyond the grasp of a cursory reading which the average person gives it, usually does more harm than good. Theoretically, I am for it. Practically, until the reading public is in general better educated to understand financial statements, I doubt its wisdom, except that simple statements and interviews should be given the press from time to time, keeping the public generally informed as to the problems confronting the company and its financial conditions.

"But, as I said earlier, the public on this and other railway matters has been educated to so great a degree compared to the situation a few years ago that one grows conservatively optimistic as he studies the future. So many of our general problems are so intimately connected with public relations, and these, on the whole, have improved so much recently that the future, while not looking 'rosy,' at least appears to promise really substantial economic success.

"We speak of the railways as 'coming back'—they are back if they ever really went away. There have been troublesome times. It has been difficult at times to overcome the inertia to get public approval for necessary fare increases. But, as evidenced by the universal expression of public utility commissioners, there is now a real desire on the part of the public to give the railways an opportunity to rehabilitate themselves in order to give better service to the public. The commissioners have given voice to their realization of the necessity of continuing at least present fare levels for a period sufficient to allow the railways to build up their resources so that they may restore operation to its previous efficiency, or rather improve it to meet the 1922 model.

"I would be rash to predict a rate of growth or a rate of increase of traffic comparable to that of fifteen years ago. Our problems now are principally operating and conservative expansion of rail service. But we all recognize the necessity of maintaining our operating equipment, such as cars, overhead, track, car supplies, etc., so that our product, transportation, is of the highest quality and most salable, and so that our profits may be realizable and not imaginary.

"As stated in the beginning, I am convinced that the clouds which have lowered upon our industry are gradually being dispelled and that there is a better appreciation on the part of the public of the indispensable factor which electric railway service is in their daily lives and activities."

Six Years of Trackless Trolleys

IN A RECENT issue of *Elektrische Kraftbetriebe und Bahnen*, Max Schiemann, one of the pioneers in trackless trolleys, gives some facts about a line started near Hamburg in 1911 and operated successfully until 1917. It then had to be abandoned on account of the conditions brought about by the war. The run was about 1½ miles and the cars weighed about 7,000 lb. including a live load of twelve seated and ten standing passengers. The wheels had solid rubber tires and were driven by one 15-hp. motor with worm drive. The trolley was pivoted on the roof of the car in such a manner as to give a range through 360 degrees, permitting the car to deviate as much as 10 ft. from its route. On week days a half hour schedule with one car was maintained, on Sundays two cars ran every 15 minutes. Each car traveled on the average 75 miles daily. A pay-as-you-enter fare system was in use.

The author admits that a trackless car requires on the level from two to three times more power per ton, depending on the kind of surface operated over, but claims that this is compensated for by the two to three times smaller weight. He also says that at normal conditions the first cost of an electric railway is about three times that of a trackless system.

Trolley Buses Recommended for Seattle Municipal Lines

Railway Superintendent, After Country-Wide Investigation, Advocates Trolley Buses in Place of Motor Buses for Complementary Feeder Service

DECLARING that trolley buses would be efficient, satisfactory and economical in outlying districts, D. W. Henderson, superintendent of the Seattle (Wash.) Municipal Railway, recommends that the city purchase and try out a number of these vehicles. He proposes to operate them as feeders to existing rail lines, so as to provide service in such districts as Beacon Hill, Cowen Park, Thirty-fifth Avenue S.W., Tenth Avenue N.E., and Fifth Avenue N.E. and Woodland Park Avenue north of the Green Lake line. The trolley bus on these routes, he claims, would be more efficient, more satisfactory to the public and to the railway division than the present gasoline buses now being used. A much less investment would be required than if rails were laid and street cars bought to take care of these outlying districts.

These were the outstanding features of the report to Mayor Hugh M. Caldwell of Seattle made by Mr. Henderson, who made an extended trip to Eastern cities to study first hand permanent as well as experimental installations of trolley buses. He also pointed out that the cost of operating this type of vehicle in Richmond and Norfolk was much lower than that of either the motor bus or the trolley car in Seattle and that it was the consensus of opinion of railway men in Eastern cities that the trolley bus has its place in the street car transportation field as a feeder.

TABLE I—ESTIMATED ANNUAL EARNINGS AND EXPENSES GRACE STREET "TROLLIBUS" ROUTE—RICHMOND, VA.

	Unit	(Cash Fare—No transfer) 7-Cents	6-Cents	5-Cents
Length of line	Miles	3.36	3.36	3.36
Bus-miles operated		444,312	444,312	444,312
Estimated passenger traffic*		2,221,560	2,221,560	2,221,560
Gross revenue		$155,509	$133,294	$111,078
Operating expenses	15 cents per bus-mile	$66,647	$66,647	$66,647
Depreciation reserve	2 cents per bus-mile	8,886	8,886	8,886
Total cost of operation		$75,533	$75,533	$75,533
Net earnings		$79,976	$57,761	$35,545
Estimated investment				
Overhead line construction and twelve trolley buses		$130,000	$130,000	$130,000

* Based on Birney car operation of five passengers per car-mile.

For the most part the report consists of a detailed description of the experimental trolley buses at Detroit built by the Trackless Transportation Corporation and the Packard Motor Car Company and also the one at Philadelphia, built by The J. G. Brill Company. Mention is also made of the installations on Staten Island, New York, as well as the experimental lines in Richmond and Norfolk. Descriptions as to the equipment and operation of all these installations as outlined in the report have appeared more completely from time to time in the columns of the ELECTRIC RAILWAY JOURNAL.

TABLE II—OPERATING STATISTICS OF "TROLLIBUS" IN RICHMOND, VA.

Period July 12 to July 31, Inclusive, 1921

	Unit	Actual	Per Bus-Mile	Per Bus-Hour
Length of route	Miles	0.69		
Headway	Minutes	.10		
Seating capacity	Passengers	30		
Standing capacity	Passengers	15		
Bus-hours operated	Bus-hours	284		
Bus-miles operated	Bus-miles	2,363		
Schedule speed	M.p.h.	8.32		8.32
Passengers carried	Total	44,394	14.5	156
Power consumption*	Kw.-hr.	2,448	1.04	
Operating Costs			(Cents)	
Maintenance overhead lines			(a) 0.80	
Maintenance buildings			(a) 0.06	
Maintenance of Equipment				
Bus equipment and shop expenses		$33.56	(b) 1.42	
Tire renewals			(a) 1.00	
Cleaning, inspection, etc		23.39	(b) 0.99	
Cost of power at 6.5 cents per kw.-hr		$15.91	(b) 0.67	
Wages of operators	52½ cents per hour	148.39	(b) 6.28	
General and Miscellaneous Expenses				
General expenses			(a) 1.06	
Damages and legal expenses			(a) 0.92	
Total			13.20	

* Equipment one 25-hp. G. E. 258 motor. No heaters; two 5-light circuits.
(a) Estimated, no charges to date. (b) All costs to date charged.

In commenting on the method followed in mounting the equipment on the two vehicles in Detroit, Mr. Henderson contended that the location of the motors would not prove satisfactory for the reason that the water would run from the hood into the motors. Also the motors were not properly protected underneath from the water of the street. Comment was made of the type of current collector used in each installation and Mr. Henderson seemed to realize that here lies the success or failure of the trolley bus. The rolling contacts as used on the Imperial and Packard vehicles would be rather hard to keep on the wires, he said, when passing under overhead special work. The sliding contacts used by the Atlas buses on Staten Island were also unsatisfactory. The swivel sliding-shoe collector on the Brill rail-less car was, in his judgment, the most practical at this time.

The report contains operating statistics—Tables I and II—of the experimental trolley bus operation in Richmond as furnished by C. B. Buchanan, formerly vice-president and general manager of the operating company, as well as estimated revenues for a specific route under three different rates of fare. Interesting estimates as to the cost of building overhead trolley lines per mile of route using either span or bracket construc-

TABLE III—ESTIMATED COST PER MILE OF ROUTE FOR OVERHEAD TROLLEY CONSTRUCTION FOR "TROLLIBUS" OPERATION AS OF JULY, 1921

Unit	Span Construction—30-Ft. Poles						Bracket Construction—35-Ft. Poles					
	Iron Poles		Concrete Poles		Wood Poles		Iron Poles		Concrete Poles		Wood Poles	
	Double Route	Single Route	Double Route	Single Route	Double Route	Single Route	Double Route	Single Route	Double Route	Single Route	Double Route	Single Route
Poles per city block	6	6	6	6	6	6	3	3	3	3	3	3
Spans or brackets per mile	50	50	50	50	50	50	50	50	50	50	50	50
Cost of Materials												
Poles	$4,000	$4,000	$3,000	$3,000	$1,000	$1,000	$2,250	$2,250	$2,250	$2,000	$1,100	$850
Galvanized span wire—$\frac{7}{16}$-in. diameter	100	100	100	100	100	100	100	100	100	100	50	50
Line materials	400	200	400	200	400	200	400	200	400	200	400	200
Paving blocks	2,000	2,000	2,000	2,000	500	500	1,000	1,000	1,000	1,000	250	250
Labor	1,600	1,400	1,800	1,600	1,200	1,000	1,100	900	1,200	1,000	900	800
Miscellaneous expense	1,000	1,000	1,000	1,000	800	800	850	850	850	850	750	750
	$9,100	$8,700	$8,300	$7,900	$4,000	$3,600	$5,950	$5,300	$5,800	$5,150	$3,450	$2,900
Phono-electric 00 trolley wire at 23 cents per lb	2,000	1,000	2,000	1,000	2,000	1,000	2,000	1,000	2,000	1,000	2,000	1,000
Ordinary 00 trolley wire at 15 cents per lb	1,300	650	1,300	650	1,300	650	1,300	650	1,300	650	1,300	650
Total cost with Phono trolley	$11,100	$9,700	$10,300	$8,900	$6,000	$4,600	$7,950	$6,300	$7,800	$6,150	$5,450	$3,900
Total cost with copper trolley	10,400	9,350	9,600	8,550	5,300	4,250	7,250	5,950	7,100	5,800	4,750	3,550

tion on iron, concrete or wood poles is given in Table III. The cost of operating trolley cars and motor buses in Seattle is considerably in excess of the figures presented by Mr. Buchanan. These costs are 28.56 cents per car-mile for the trolley cars and 19.93 cents for motor buses as against trolley bus costs of 16.37 cents in Norfolk, Va., and 13.20 cents in Richmond, Va., per bus-mile. From these figures it is readily seen that the expense of operating the trolley bus is much lower than that of the motor bus or the trolley car.

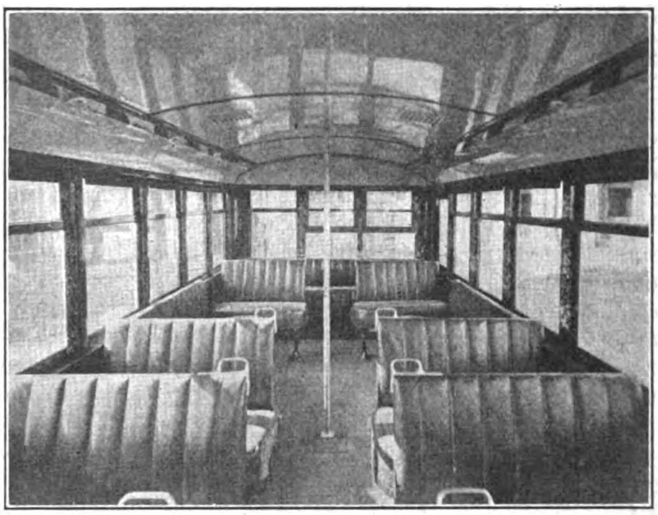
The consensus of opinion, Mr. Henderson says, of all the railway managers with whom he talked at Atlantic City at the recent convention of the American Electric Railway Association was that the trolley bus had its place in the street car field as a feeder. On account of the much smaller investment for installation than that of the street car, and but very little more than that of the gasoline motor bus, the trolley bus as a feeder will be the coming means of transportation in outlying districts. When traffic becomes greater than can be handled by the trolley bus the poles and wires can be incorporated as a part of the rail system that would have to be installed.

Following are the conclusions which Mr. Henderson presented before the City Council and Mayor of Seattle:

"My recommendation would be that if the Mayor and City Council can see their way clear without any legal entanglements to secure some of these buses and give them a try out, I am satisfied that they would prove satisfactory. And, if there are any legal entanglements whereby the city could not purchase these buses at the present time, I would recommend that the matter be put to the vote of the people at the next general election to decide whether or not they would give the city government the authority to go ahead and purchase buses as part of the street railway system; that is, for the railway to have the right to operate cars or buses."

A "Trackless-Trollicar" Is the Latest

St. Louis Car Company Has Utilized Its Car Building Experience in the Design and Construction of the Most Recent Rail-less Vehicle

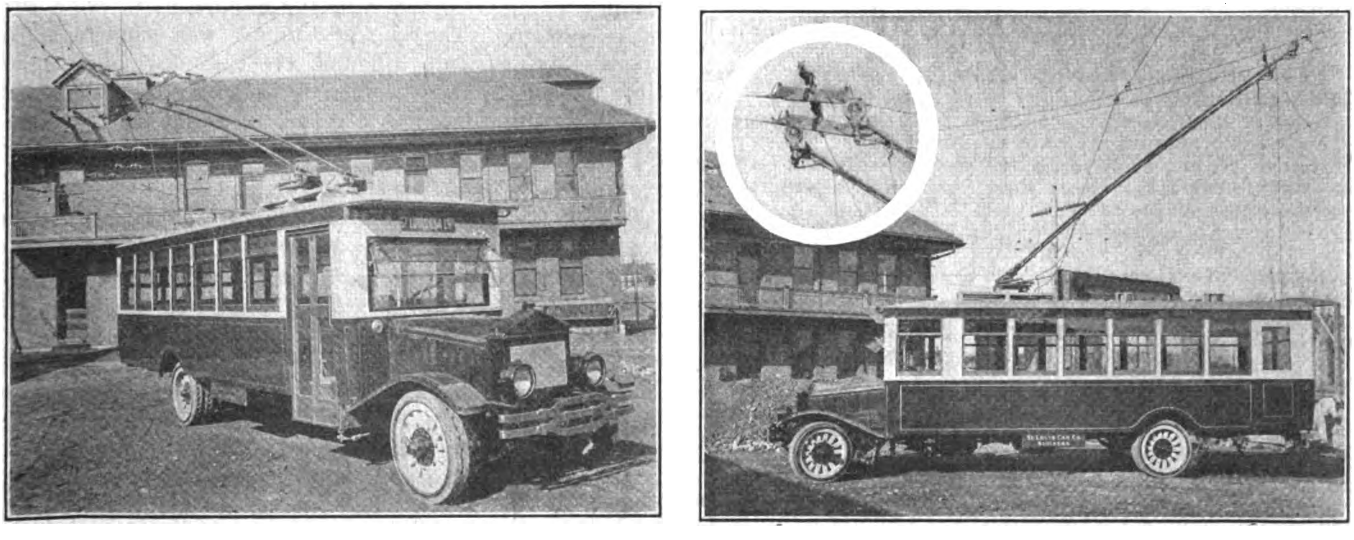


LONGITUDINAL SEATS ARE PLACED OVER WHEELHOUSES

THE fifth trolley bus to make its appearance is now being tested in Detroit, Mich. It is a twenty-nine-passenger vehicle weighing approximately 10,500 lb., designed and manufactured by the St. Louis Car Company. The car body, which is permanently attached to the chassis, has been standardized, while the chassis itself, as far as motive power is concerned, is convertible so that the bus may be used as a trackless trolley or adapted to be driven by a gasolene motor. By adopting underslung spring suspension on both front and rear axles it has been possible to overcome the fault common to so many rail-less vehicles of having too high a floor level. The distance above the roadway of the car floor of this machine has been kept to 30 in.

The step has been placed at a height of 17 in. above the street, but ordinarily the distance will be but a few inches, since most passengers will enter from the sidewalk level. No drop platforms were necessary with this low body level. The entrance and exit at the front are controlled by means of the manually operated folding door located in the customary position at the front right-hand corner. The door operates in the stationary step well and folds inward toward the front when open. When shut it entirely incloses the step. An emergency hinged door swinging toward the front will be located either at the center of the rear end of the car or at the rear right-hand corner, according to the desires of the purchaser. The body is electrically illuminated and heated. The upper part of the sash is stationary, while the lower part can be raised to the level of the vision line, a distance of about 50 in. above the floor level.

The motive power consists of two 25-hp., 600-volt motors of either Westinghouse or General Electric make.



TWO VIEWS OF THE UNDERSLUNG, LONG WHEELBASE ST. LOUIS "TROLLICAR." INSERT SHOWS THE PAIR OF SWIVELED TROLLEY WHEELS

The motor units, connected in tandem, are mounted underneath the chassis approximately half way between the front and rear axles. A full universal joint connects the two motors as well as the rear motor with the drive shaft. A worm gear is used to transmit the torque to the rear axle. The control equipment, rheostats, switches, etc., are mounted underneath the hood as was done with the Packard trolley bus, which was adapted from a gasoline truck. The control equipment consists of a pedal-operated master controller connected to a motor-control sequence switch, which automatically operates the magnetic line breaker and rheostat switches. The master controller is arranged to provide two running speeds through action of the pedal, making it unnecessary for the operator to notch up the controller.

Current collection is accomplished with two standard trolley poles and two trolley wheels held in specially devised harps. Each pole is mounted separately on regulation trolley bases. In place of two poles a single pole with a sliding shoe mounted on a specially designed harp with the pole supported on a single regulation trolley base can be furnished.

GENERAL DIMENSIONS OF ST. LOUIS "TRACKLESS TROLLICAR"

Length over all	26 ft.	
Wheelbase	16 ft.	2 in.
Length of body	21 ft.	6 in.
Width over all	7 ft.	6 in.
Width inside	6 ft.	11⅝ in.
Tread of rear wheels	5 ft.	4 in.
Tread of front wheels	5 ft.	10 in.
Height of floor at entrance	2 ft.	6 in.
Height of first step	1 ft.	5 in.
Height of step to floor	1 ft.	1 in.
Height from floor to ceiling at center	6 ft.	4⅞ in.
Height from roadway to top of roof	9 ft.	3 in.
Post spacing	2 ft.	4½ in.
Seat spacing	2 ft.	4½ in.
Width of aisle	1 ft.	6 in.

The electric equipment of the St. Louis trackless trolley car includes the following: Two motors, one master controller, one sequence switch, one magnetic switch group, one rheostat, one complete current electric unit, one main fuse, one reverser and one double-pole magnetic line switch, with overhead relay, cable and necessary details.

The general dimensions of the trackless trolley car are as shown in the accompanying table.

EQUIPMENT DETAILS

Motors: Two 25-hp. Westinghouse or General Electric.

Control: Pedal series-parallel type with auto-magnetic switches.

Steering Gear: Ross screw and nut type with 22-in. wheel.

Wheels: Artillery.

Tires: Firestone cushion—Front, 34 x 6 single. Rear, 34 x 5 dual.

Brakes: Service brakes on both front and rear wheels. Emergency brakes on rear wheels only.

Axles: Front, drop forge "I" section with ball-bearing steering knuckle spindles. Rear, worm-drive mounted on ball bearings. Gear ratio 6¼ to 1.

Springs: Compensated semi-elliptic. Front 3 in. x 42 in.; rear 3 in. x 56 in.

Propeller Shaft: Spicer double universal between motors and on drive shaft.

Headlights: Two standard incandescent lights mounted on frame.

Windshield: Smith "Rain Vision" or other approved make.

Bumper: Biflex type.

Passenger Signal: Type "B" push buttons mounted on molding over center of each window space, wired in connection with Faraday high-voltage car signal buzzer installed at front of car.

Curtains: At each side window, of double-faced O'Bannon hair cloth, mounted on all metal rollers and equipped with automatic bottom holding fixtures.

Draw Hooks: Provided front and rear for towing.

Main Lighting Circuit: Two circuits of five lights each within the trolley car body and one additional circuit consisting of two headlights, one steplight, one dashlight and one tail-light.

Emergency Lighting Circuit: Consisting of two sidelights, two lights within the trolley car body, one tail-light connected with accumulator in series, with main lighting circuit and arranged so that these auxiliary lights automatically cut in in case of failure of trolley circuit.

Fare Box: Support for fare box furnished and installed at front entrance; box to be supplied by purchaser.

Gong: One 10-in. alarm gong electrically operated from power circuit by means of "Handy Ring" mounted under steering wheel.

Heaters: Eight electric heaters arranged in two circuits to be provided with necessary cut-outs and fuses.

Seats: Eight stationary cross seats, two longitudinal seats over wheel house, one rear longitudinal seat full width of body. Seat cushions ventilated spring type. Backs padded type. All upholstered and covered with imitation leather.

Signs: One illuminated destination sign mounted at center over windshield.

Tail and Marker Lights: One combination line and battery tail lamp mounted on chassis frame at rear. Two clear marker lights mounted in front dash.

Ventilators: Four Peerless ventilators installed on roof.

Inside Finish: Doors, sash, moldings, etc., of soft yellow poplar of mahogany finish.

Trackless Trolleys for the Italian Army

ACCORDING to a recent article in *Elektrische Kraftbetriebe und Bahnen* the scarcity of coal in Italy during the war compelled the military authorities there to do everything they could to relieve the railroads of unnecessary transportation of freight and men, and to utilize more than ever the country's abundant water powers. First, an attempt was made to use electric storage battery trucks, but the great weight of the batteries made their efficient operation under the conditions impossible.

Better results were achieved with trackless trolley lines, of which seven, aggregating 135 miles in length, were installed, for the most part in mountainous districts. Particulars of a typical line, that between Primolano and Enego, follow:

The line was 7½ miles in length. The average grade was 6 per cent, and the maximum was 11 per cent. There were many sharp turns on the line and radii as short as 16½ ft. The two trolley wires were suspended 18 ft. above the road on wooden poles, set in concrete. The overhead line was divided into sections about 1¼ miles long, each with a horn-gap lightning arrester. Two substations of 60 and 90 kw. fed from a 30,000-volt trunk line supplied 500 volts direct-current to the overhead system. The power supply was sufficient to operate five cars up hill and five cars down hill at a time. Each car was driven by a 10 to 15-hp. motor. On the termination of hostilities all of these lines were abandoned.

Test of Sprague Train Control System

ARRANGEMENTS have been made between the New York Central Railroad and the Sprague Safety Control & Signal Corporation for an extended test of the auxiliary train control of that company to be conducted on one of the tracks on the electric division of the New York Central Railroad between Ossining and Tarrytown. The control system is of the magnetic type and has been developed by Frank J. Sprague. It is expected that the test will be begun within the next month or six weeks. The system is adapted to both steam and electric locomotives.

Trackless Trolleys at Work Abroad*

In This Article the Results on the Two Most Recent Installations, Tees-side and York, Are Presented, Together with Some General Data and Notes on the Over-Running Trackless Trolley of the Vienna Municipal Tramways

BY WALTER JACKSON
Consultant, Mount Vernon, N. Y.

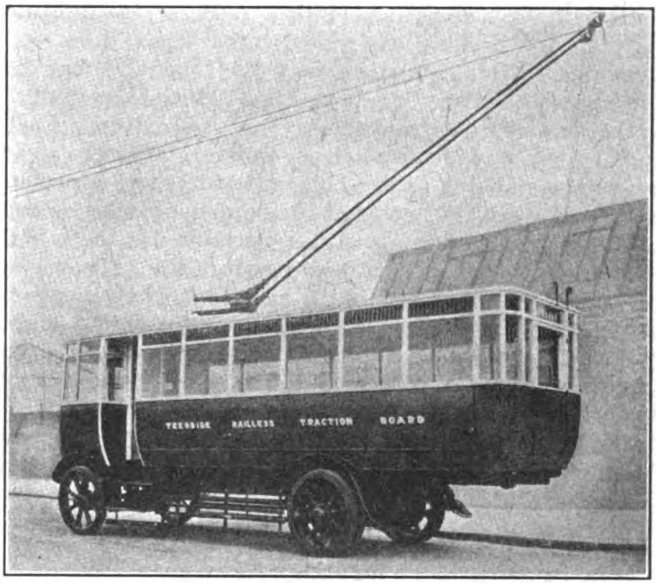
THE trackless trolley system known as the Tees-side Rail-less Traction Board is of outstanding interest because it is the only all rail-less installation and second because it is new throughout, as service was only established on Nov. 8, 1919.

At the time decision had to be made with regard to the method of propulsion the rail was held to be hopeless for the density of traffic to be served. This was due to the fact that the cost per single track-mile for paved track had risen to £12,500 to £15,000 exclusive of loops or sidings. The gasoline bus was also suffering from rapidly rising prices for fuel, namely, 50 cents per gallon and more. On the other hand, electricity was available at the low cost of 1.5 cents (0.75d.) per kilowatt-hour for ten years with an option of another five years. This meant a saving of 8 to 9 cents per mile on the fuel bill, and this difference alone offered an overwhelming reason for choosing electric operation.

The general traffic situation also tended to favor trolley bus operation, inasmuch as there was available but one important highway, 35 ft. wide, to connect the towns of this iron-working district. The question therefore of a possible shift of traffic in the future did not enter. The 45,000 population served is concentrated for the most part in a number of small industrial towns, viz., North Ormesby, Middlesbrough, Cargo Fleet, South Bank, Grangetown, Normanby, etc. But few of the population live in the open country intervening. Thus, while there are seventeen request stops in the 3.5 miles between North Ormesby and Grangetown, the actual stops average but two per mile. The usual free running speed is 13.5 m.p.h., and the schedule speed, with twenty-eight-seat buses averaging 9.9 passengers boarded per bus-mile, is 7 m.p.h.

POWER AND LINE

The Tees-side rail-less line is 5.1 miles in length, all four-wire construction using No. 000 SWG (British) hard-drawn copper trolley wires. Triple insulation is used between the positive and negative wires. Double insulation is maintained between the positive and negative wires. Double insulation is maintained between the positive wire and the poles and but single insulation between the negative wire and the poles. The negative wires are on the outside to save insulation. Suspension is from concrete-set tubular steel poles and bracket arms. The poles vary in weight according to the strains imposed, light on tangents, medium on easy curves, heavy on sharp curves and terminal loops. Section insulators are installed every half mile. At these insulators the positive wires are connected to pole switch boxes by means of an insulated cable carried inside the pole, thus permitting half-mile sections of the positive wire to be cut out if desired. Tangent trolley ears are 18 in. and curve ears are 24 in. long. Overhead guard wires are installed throughout and are connected to the negative wires according to the usual Board of Trade specifications. Indeed, all overhead construction conforms to these national regulations, aside from the extra insulation demanded by the use of the double trolley.



NEW DOUBLE-TROLLEY TRACKLESS BUS AT TEES-SIDE

Drawings on page 1029 show the two forms of terminal loops—the symmetrical one at Normanby, where there is ample turning space, and the asymmetrical one at Grangetown, where the buses turn in a cross-roads intersection. The one junction on the system (at South Bank) is also shown.

Tests conducted on the best setting of trolley base positions, under the direction of J. B. Parker, general manager Tees-side system, and N. Clough, director of Clough, Smith & Company, London, who built the overhead line, show that the base should be placed over the center of the wheelbase. This location showed superiority in keeping the poles on the wire as compared to setting the base further forward. This base location will be standard on all future buses, including the thirty-six-seat bus now being built.

Power at 550 volts direct current is supplied from the plant of the Cleveland Iron & Steel Works, which is about 0.25 mile from South Bank on the way to Grangetown. To maintain favorable voltage conditions, the trolley wires are supplemented by bare copper feeder cables of 0.2 sq.in. cross section for part of the run. As noted, the cost of power is but 1.5 cents (¾d.) per kilowatt-hour. The total power requirements per bus-mile operated, including office and carhouse lighting, but no bus heating, runs from but 1.39 to 1.41 kilowatt-hour. The maximum grade, which is macadam paved, is 5 per cent, but this is only a few hundred feet long. A variety of paving exists such as stone setts or block between South Bank and North Ormesby, wood block in

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*This is the second of two articles summarizing some of the author's observations in Europe during the past spring and summer.

Middlesbrough, brick at Cargo Fleet and tar macadam in poor condition elsewhere. The block paving is rather hard on solid tire usage, while if smooth paving were used throughout the energy consumption, including carhouse and office lighting, would drop to 1 kw.-hr. per bus-mile for the present buses.

TEES-SIDE EXPERIENCE FAVORS ONE-MOTOR DRIVE

The first equipment comprised ten twenty-eight-seat single-deck buses, each with two 23-hp. motors with series-parallel control and with a reverser which could be used for braking assistance rather than for emergencies. In this equipment both the controller and the steering wheel are hand-operated, which appeared a rather awkward arrangement for the driver. Each motor drives one rear wheel through a worm gear reduction and live axle. This calls for short propeller shafts between the motors and the driving wheels, and as their universal joints are in constant use there is a strong tendency for them to work out of line. The buses weigh 10,080 lb. empty, but a load of forty passengers is not uncommon. The seating capacity of twenty-eight is based on the official government allowance of 16 in. per passenger. A reduction in the seating capacity to twenty-six means a saving of £12 per year per bus in taxes. The general seating plan is cross seats for most of the space, with longitudinal seats in the corners. Much care is taken with regard to insulation for the protection of passengers. Three-ply rubber hose protects the trolley poles against short circuits, and wooden instead of metal stanchions are used inside the bus body.

These buses have two sets of brakes. The service brakes, which are operated either by foot or hand, work on the rear wheels, while the emergency brakes, which are operated by pedal only, are applied to the propeller shafts. Easy riding was sought by suspending the bodies on long springs, supplemented by auxiliary springs that function when the bus has a full load. In future buses still longer springs are to be used to better the present suspension, aside from the fact that the bus is to be longer. The rear springs will not be fixed with shackles but are to slide in housings. It is also planned to interpose 1½ in. rubber blocks between the chassis and body to reduce vibration and thus minimize the chafing of the body against the chassis.

The second group of buses ordered consisted of six twenty-eight-seaters weighing 9,968 lb. with but one GE-258 25-hp. motor and electric foot control. These buses have the control drum itself within the driver's seat and the resistors on the platform. The motor and worm shafts are in a direct horizontal line with the propeller shaft. The universal joints come into play only upon the deflection of the front and back axle springs instead of being in constant operation, thereby reducing driving friction. Apparently this was responsible for the drop in average energy consumption from 1.41 to 1.39 kw.-hr. after the six single motored buses were added. However, if a schedule speed of 10.5 m.p.h. over the 3.12 mile route, with an average of three stops to the mile, is to be maintained, at least a 40-hp. capacity motor is required. The average length of stops is eleven seconds and a five-minute lay-over at the end of the run is embodied in the schedule.

On the first ten buses the positive and negative trolley bases are mounted separately. On the six later buses, however, they are mounted on the same vertical pin, thereby reducing weight and increasing the reach of the poles, which are 18 ft. long. Heretofore 17-ft. poles had been used. These lengths are for the Board of Trade trolley-wire height of 21 ft. A spring tension of 30 to 35 lb. is used in the trolley base to allow a possible maximum speed of 20 m.p.h. without dewirement. The collectors on both types of bus are 4½ in. Parker patent, spring-cushioned, non-fouling wheels which can swivel all the way round. Rings below the sockets allow the trolley poles to be drawn down with bamboo rods to the level of the trolley standards. With the center-base arrangement it is possible to make a clean reverse by jockeying the vehicle around while maintaining contact successively with the two sets of trolley wires in succession. The poles did not leave the wire until the bus was more than 12 ft. off center, whereas the usual deviation for a stop at the curb is from 8 to 10 ft.

In the latest type bus, designed by Mr. Parker in co-operation with Mr. Clough, put into operation late this year, the seating capacity has been raised to thirty-six. The illustration shows this bus to be of front-entrance and exit type so that eventual one-man operation is possible, although the traffic is unusually heavy. This bus has the 18-ft. positive and negative trolley poles mounted on a single base and revolving from one center. This base is mounted centrally over the wheelbase. This amidship position reduces to a minimum the movement transmitted to the base in the steering of the vehicle. The two standards are fitted with ball bearings that allow equal freedom of the trolley poles in both directions.

The bus body has twelve cross-seats for twenty-four passengers, with a rear-end seat for five passengers and with two front longitudinal seats, the one opposite the entrance seating five and the one alongside the entrance seating two. Besides the sliding door at the front, there is an emergency door in the rear. The body is 25 ft. 4 in. over all with 180 in. wheelbase and 8 ft. overhang. Except that the wheelbase is lengthened 6 in. and the position of the starting rod changed to allow a wide front door, the chassis is practically the same as the standard Starter Squire gas-driven unit. This avoidance of a special chassis is expected to play a large part in reducing the maintenance cost of buses of this design. The unusually long springs used, combined with substantial body construction, are reported by Mr. Parker as meeting all his expectations as to absence of rattle and vibration. He writes that the new bus rides like a motor car and that it has caused quite a sensation among the Tees-side patrons.

The tires are known as the Dunlop "super-resilient" type, being a compromise between the pneumatic and ordinary solid kinds. Their estimated cost of upkeep varies from ¾d. (1½ cents) to 1d. (2 cents) per mile compared with 3d. (6 cents) for a pneumatic tire good only for 10,000 miles and still in the doubtful stage for vehicles of this capacity.

There is but one 35-hp. motor of Brush type. The drive has metal instead of fabric universals, experience having proved that when a fabric joint becomes distorted through strain the propeller shaft begins to whip. The controller is of the foot-operated type with rheostatic braking for forward and reverse. This gives the vehicle hand, foot and electric brakes. The foot-operated controller is not only less awkward than hand control, but also allows the driver to have both hands free for steering. A watt-hour meter and speedometer are installed as an aid to economical and careful driving. Illumination is furnished by ten 16-cp. 110-volt lamps.

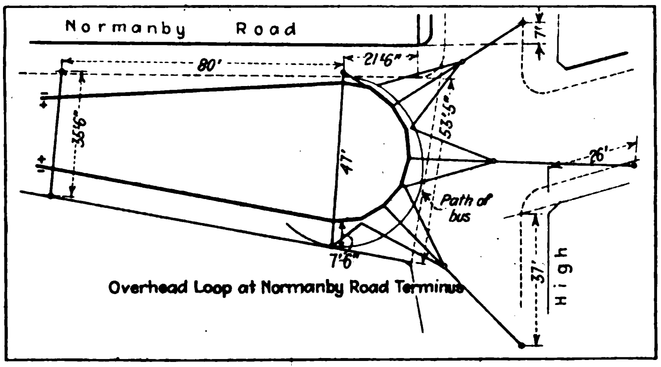
A 60-amp.-hr. battery takes care of the two head and tail lights in case the trolley supply is interrupted.

The estimated weight, empty, of the new bus is 11,200 lb. and with thirty-two passengers, 15,688 lb. Its energy consumption is placed as 1.25 kw.-hr. per mile, inclusive of line losses, but exclusive of the lighting of the bus-house and offices.

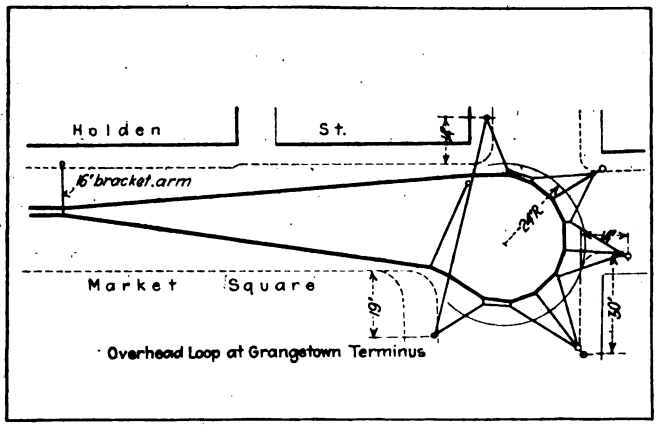
The Tees-side "Property and Assets" account, exclusive of £2,558 stores, for the year ended March 31, 1920, shows a total of £71,430 made up as follows:

Permanent way (bridge)	£14,034
Electrical equipment of line	13,572
Land	2,752
Buildings and fixtures	6,428
Workshop tools and sundry plant	585
Cars (trackless buses)	28,823
Other rolling stock	486
Miscellaneous equipment	551
Office furniture	99
Parliamentary expenses	3,655
Preliminary expenses	545
	£71,430

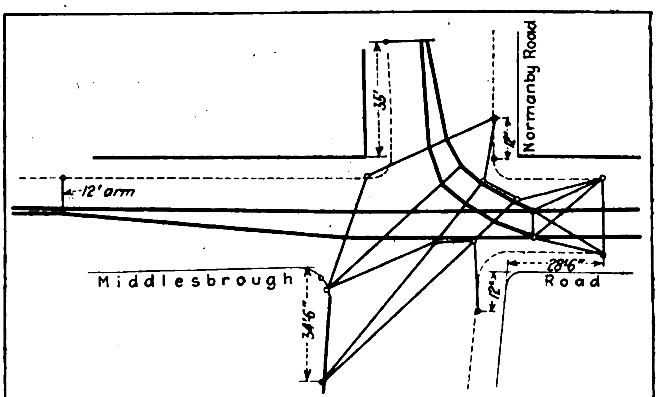
Although the Tees-side installation is but two years old appreciable improvement has been made not only in the method of drive and current collection but also in body mounting to decrease vibration. Attention has also been given to improved lighting and ventilation. As customary in Great Britain heating is not a factor.



Overhead Loop at Normanby Road Terminus



Overhead Loop at Grangetown Terminus



Arrangement of Overhead Wires at Single Junction

TYPES OF OVERHEAD CONSTRUCTION AT LOOPS AND JUNCTIONS

In presenting the costs for the first full year ended March 31, 1921 (Table I), it is but fair to mention that when Mr. Parker came to the property July 31, 1920, or after nine months operation, he found that no provision had been made for regular inspection and maintenance of the vehicles. Two-thirds of the buses were laid up and no tools were on hand with which to make repairs. This fact should be taken into consideration when noting that repairs and maintenance of buses cost 11.33 cents (5.66d.) per mile.

So far as the electrical equipment is concerned, there has been no trouble of any kind that could not have been prevented by ordinary inspection. Buses are now inspected every week and as little work as possible is done at night. Once a month each bus is in for three days, following a one-day guidance overhaul the week before. Rear axles, broken through crystallization, come high, especially as the type used on the present buses is not standard with a quantity output manufacturer. Nightly examination and tightening of tie rods is one preventive. The management also hopes to anneal such axles every year in accordance with the practice of the London General Omnibus Company. One of the principal reasons for adopting a gasoline chassis for future vehicles is to be able to purchase replacement parts on a more reasonable basis than is possible when every detail is special.

With reference to the upkeep and depreciation of future rail-less vehicles, Mr. Parker anticipates that general repairs and maintenance will work out to about 2.5d. to 3d. (5 to 6 cents) per mile. As to depreciation, the income tax authorities have allowed a seven-year basis for all the trackless trolley vehicles as against their five-year allowance for gasoline motor buses. Mr. Parker rightly points out that stated mileage would be a better guide. He considers 30,000 miles per annum or 210,000 miles in seven years a fair performance. If 200,000 miles be taken as the basis for the life of vehicles costing £2,000 each, the depreciation allowance per mile would be 2.4d. (4.8 cents). If the latest type proves capable of 400,000 miles, the writing-off cost would be reduced to 1.2d. (2.4 cents) per mile.

In connection with the table of operating costs, it should be explained also that the buses have both a motorman and a conductor, which fact brings the platform expense to 13.26 cents (6.63d.) an hour. The motorman receives 33 cents and the conductor 31 cents an hour with free uniforms and a week's holiday with pay. One-man operation would, of course, make a substantial saving, cutting the total operating expenses from 36.78 cents (18.39d.) to say 30 cents.

As at Leeds and Bradford, the cost of maintaining the overhead line is an insignificant item, hardly more than 1 cent per mile. The entire staff for maintaining the line, sixteen buses and one tower wagon, comprises four machinists, four electricians, including the foreman, one overhead man, two laborers, four washers, one oiler and one controller and trolley head boy—a total of seventeen, or one man per vehicle, counting in the tower wagon. Briefly, the cost situation is as follows:

The principal future savings are, first, in platform expense through one-man operation or larger buses; second, through lower maintenance charges obtainable through technical improvements and the purchase of replacement parts on a quantity production basis.

TABLE I—OPERATING DATA TEES-SIDE RAIL-LESS TRACTION SYSTEM — YEAR ENDED MARCH 31, 1921

Revenue from Operation	In Pence per Bus-Mile	
Traffic revenue	19.64	
Expense of operation:		
Traffic expenses:		
Wages of motormen and conductors	6.63	
Cleaning and oiling buses	0.61	
Fuel, light and water for depot	0.05	
Ticket check (including inspection and tickets)	1.09	
Uniforms	0.02	
Miscellaneous	0.19	8.59
General expenses:		
Salaries of general officers and staff	0.82	
Rents (*)	0.00	
Rates and taxes	0.70	
Printing and stationery	0.23	
Fuel, light and water for offices	0.01	
Accident insurance and compensation	0.20	
Fire and other insurance	0.09	
Miscellaneous	0.27	2.31
General repairs and maintenance:		
Electrical equipment of line	0.52	
Buildings and fixtures	0.08	
Workshop tools and sundry plant	0.17	
Trackless cars, chassis and body	5.66	6.43
Power expenses:		
Cost of current	1.06	1.06
Total		18.39

* Nominal rents of £1 1s. 2d. only.

TEES-SIDE TRAFFIC COMPARATIVELY HEAVY

The earnings and expenses shown in Table I were obtained in operating 364,798 bus-miles and carrying 3,614,857 passengers, which gives the high density of 9.9 passengers boarded per bus-mile with a twenty-eight-seat vehicle. About one-half of these passengers were carried at the 2d. minimum, the remainder being divided among 1d. and 3d. tickets and workmen's reduced rate round-trip tickets costing up to 4d. The earnings per bus-mile were 19.645d. or 39.29 cents. This left only 1.25d. to be carried to net revenue account, a situation which could have been remedied if the Parliamentary legislation relating to fare increases had not overlooked the existence of an all-trackless system. The total traffic revenue was £29,860.

Thus the Tees-side was obliged to continue the fare of 2d. initial rate and 1d. per mile thereafter, with workmen's fares as low as ½d. per mile. This handicap was overcome in part by a rearrangement of stages whereby the shortest stage is at the heaviest loading point, North Ormesby. Although this stage is only 1,050 ft. long, few people undertake to walk to the boundary of the next zone as this would deprive them of a seat during the heavy hours. The result is that for the 2 miles between South Bank and North Ormesby the fare is now 3d. instead of 2d. The average fare per mile is 0.875d. (1.75 cents) and per passenger, 1.96d. (3.9 cents).

On the whole, the Tees-side system is meeting the transportation requirements as desired. Fog and sleet have each been responsible for one interruption to service, but otherwise operation has proceeded smoothly. In the beginning the schedule of the buses was 6.5 m.p.h., but now 7 to 8 m.p.h. is readily obtainable. Improvement in the reliability of the service is shown by increases in earnings and traffic during the more recent months, accompanied by reduction in energy consumption through insistence upon coasting to stops wherever possible. Taking every point into consideration, the Tees-side system, with either relief in fares or a reduction in working expenses, will be able in the future to stand forth as a conspicuous example of all-trackless operation.

BUS OPERATION AT YORK

On Dec. 22, 1920, the York Corporation Tramways opened a 1.25-mile trackless trolley route which runs as such all the way from the Market Square (Parliament Street) to Heworth (Stockton Lane), a suburb with some new housing development. The management had already had some experience with self-propelled vehicles and had concluded that the storage-battery kind was too slow and gasoline too costly. The deciding factor in this instance in choosing rail-less operation was, stated J. W. Hame, then general manager, the great saving possible in power inasmuch as the lighting department was prepared to sell electricity at 1¾d. (3.5 cents) per kilowatt-hour. While this was more than double the Tees-side rate of ¾d. (1.5 cents), it still compared favorably with the 1920 British price of gasoline, which varied between 80 cents and $1 or more per imperial gallon (277¼ cu.in. against the American gallon of 231 cu.in.). Prices are decidedly different today, the August, 1921, quotations being almost 50 per cent of the prices a year earlier.

Aside from the great saving in power, based on the highest gasoline figures, Mr. Hame expected lower maintenance costs in the driving mechanism; also a simpler store-keeping system, inasmuch as the control, motors and trolley collectors were of the railway type. There was also but one class of maintenance men, a desirable consummation on a property with but thirty-eight cars and 14.5 miles of single track. From the public's viewpoint trackless trolley buses were preferable because of greater cleanliness and quietness of operation.

York, although a compact city of 82,500 population, is a good city in which to get lost. It is one of the few places in England that has clung tenaciously to the picturesque characteristics of the municipalities of the Middle Ages, such as fortification walls and narrow streets and lanes. The route of the trackless trolley is typical of the older thoroughfares, being so narrow that there are places where span suspension from building rosettes is used instead of sidewalk poles. The trolley wires are from 21 ft. to 24 ft. above the ground. The cost of the overhead system was placed at £3,688 for 1¼ miles or £2,950 per mile.

The capital expenditure included four buses at an estimated cost of £8,000. Total investment for the quarter ended March 31, 1921, shows £12,541. This sum includes expenditures of £605 for street work and other changes necessary to permit trackless operation; £71 for carhouse changes, and £260 for alterations in the position of telephone and telegraph circuits. While the anticipated cost of the buses was £2,000 each, the actual cost approximated £2,400 each, due in part to faults in construction, the correction of which was to be charged against the contractor. These cost figures indicate that prices of buses are fairly comparable on both sides of the water. It would seem, though, the British makes would cost a little more if they were built as sturdily and upholstered as comfortably as the American types, even if some allowance is made for recent drastic cuts in the prices of British type chassis.

These trolley buses were built for one-man operation, as was the case with the York battery and gasoline buses. They seat twenty-four passengers on side and end longitudinal seats. Transverse seats are impracticable due to the narrowness of the bus, which is but 75 in. The body is of wood. The vibrations of the body in operation disclosed defects which have made it necessary to reinforce the sills with T-iron the full length, in addition to roof reinforcing irons on the car lines. Two stanchions were also added, the object being to stiffen the roof, which was of ⅜ in. board, enough to prevent it from obvious bobbing up and down.

Noiseless operation, a thoroughly commendable advantage of trackless trolleys, did not obtain because of the rattling of the small ventilator sash due to the use of what the Britisher calls "penny bazaar" fixtures. When these sashes were held tight running was practically noiseless. This rattle was being corrected by the use of stronger fixtures.

The chassis frame is of pressed steel and laminated springs are used. The front axle is a solid steel frame. The worm and sector steering gear is inclosed in a dust-proof casing. Propulsion power is furnished by two 23-hp. series-parallel control motors, each motor driving one of the rear wheels by means of worm gearing, no differential being used. The rear axle is fitted with roller and ball bearings. The weight of the vehicle, which is 11,200 lb. (light), is taken by the axle casing. Hand and foot service brakes are provided on the rear wheels and a foot emergency brake on the motor shafts. The wheels are of hollow-spoke, cast-steel road type with single solid tires on the front and dual solid tires on the rear. The cam-controlled current collectors allow for a deviation of some 15 to 17 ft. on each side of the wires. They appeared entirely suitable for the conditions on this route since the run of 1¼ miles is made in ten minutes, yielding a schedule speed of 7.5 m.p.h., exclusive of layovers.

Table II covers 9,402 bus-miles operation for three months ended March 31, 1921, showing the cost of the principal items:

TABLE II — RESULTS OF TROLLEY BUS OPERATION YORK CORPORATION TRAMWAYS, THREE MONTHS ENDED MARCH 31, 1921

	Actual £	Actual s.	Per Bus-Mile d.
Revenues	696	15	17.79
Cost of operation:			
Platform wages	159	15	4.10
Power	114	4	2.90
Maintenance of vehicles	90	4	2.30
Line repairs	3	2	0.08
Way-leaves (rosettes, etc.)	9	5	0.23
Licenses, etc	48	0	1.22
Miscellaneous	27	2	0.70
Total	£451	12	11.53

The platform wages are based upon the payment of 21⅝d. per hour (43.25 cents); power upon a charge of 1.75d. (3.5 cents) per kilowatt-hour; license charges include registration fees and road maintenance; line repairs is the sum of repairs to overhead wires and cost of way-leave privileges in connection with the rosette type of suspension. It will be noted that inspection, management, office and other general charges of the character detailed in the Bradford accounts (See ELECTRIC RAILWAY JOURNAL for Nov. 12, 1921, page 860) have not been definitely prorated against the trackless service. On a small system, naturally, such general charges per mile operated must be higher than on a system like Bradford, which ran 387,543 trolley bus-miles in the fiscal year ended March 31, 1921. Assuming that the Bradford general costs were applied to York, we would have to add a number of accounts like the following:

	Pence per Bus-Mile
Superintendence	0.043
Wages of other traffic employees	0.311
Ticket check	0.441
Salaries of general officers and staff	0.454
Store expenses	0.076
Rates and taxes	0.409
Total	1.734

This does not exhaust the list, but enough prorating accounts are given to indicate that the actual operating expenses were at least 12.5d. (25 cents per mile) for three twenty-four-seat, one-man vehicles within the first three or four months of operation. The actual maintenance of these brand new buses, it will be noted, was 2.3d. (4.6 cents).

Total over-all costs available since March 31, 1921, show 18d. (36 cents) from one source and from another source 19d. (38 cents) per mile. These cover all operating charges, taxes, overhead, depreciation, etc. On the basis of 6 per cent interest on the capital expenditure of £12,541, the fixed charges alone work out at 4.8d. (9.6 cents) per mile operated. This is a heavy burden to carry because the long headways of fifteen (a.m.) and thirty minutes (p.m.) yielded only 9,402 miles in three months operation or a little more than 100 miles a day. In this case, one must conclude that a similar service at present gasoline costs and motor bus chassis prices would preferably be straight gasoline. Something like this seems to be in the mind of the York Tramways Committee, which in October, 1921, appointed a sub-committee to report as to the cost of running omnibuses and trackless trolley vehicles before it decides on a proposed service to Clifton. This situation shows how viewpoints as to the desirability of the trolley bus or gasoline bus are bound to shift as the price of power fluctuates.

NOTES ON VIENNA'S CARRIAGE COLLECTOR SYSTEM

The trackless trolley route of the Vienna Municipal Tramways is of the over-running type. The installation comprises a 2-km. (1.24-mile) route between Pötsleindorf, a Vienna suburb, to Salmannsdorf. This route was opened in October, 1908. The original Stoll buses have been in use ever since.

As regards the question of bus drive, it is pertinent to note that hub-mounted direct-drive motors have not proved satisfactory for anything but undesirably low speeds. Roadway conditions lately have not been good for this style of drive. Less than one-third of the run (about 600 meters) is well paved, the rest being macadam in poor shape. In the future buses will have chain drives. This drive if kept thoroughly lubricated and encased in a steel housing is expected to be noiseless.

There are but five regular stops in this 1.25-mile run. The trip is made in twelve minutes, giving the low speed of but 6.25 m.p.h. between terminals. There is no occasion for hurry, however, as the shortest headway is fifteen minutes. At other times the buses are run on hourly headways. The buses seat sixteen and stand eight passengers, yet nine or ten passengers per bus-mile have not been uncommon in recent years. This must have led to crowding at times. However, no one needs to be told that the Viennese management has been and still is struggling with unparalleled difficulties. Car windows had to be patched with odds and ends of glass. Even wooden tires were used as a war-time expedient. The enlargement of wheel sizes caused thereby led to the overheating of the two 10-hp., 600-volt motors per bus. Nothing daunted, Ludwig Spängler, general manager, made the motors stand up under their heavier work by equipping them for self-ventilation. These buses are 6 meters (23.6 ft.) long, and because of the narrow roadways, only 1.7 meters (80.4 in.) wide. They weigh about 3,200 kg. (7,040 lb.). The new ones are expected to be of like weight, the wooden body alone weighing 1,000 kg. (2,204 lb.). Their estimated life is figured at ten years.

The Vienna Municipal Tramways may also lay claim to having been the first to adapt the gasoline type chassis to trolley bus operation, an old one being employed to that end. The resistors are mounted under the hood.

So far as current collection is concerned, no serious difficulties have arisen at the moderate speeds in vogue. The overhead entrance switches are much more complicated than the like structures for the under-running trolley. The only branch-off on the line is at the bus-house. Here wheel and chain drives on poles are provided to permit the connecting structure to be shifted as a unit in order to leave the main line unbroken. The wheels on the over-running collector carriage have a side play of about 0.75 in. each. Because of roadway and grade conditions, no buses are operated in very bad weather. Each bus is provided at the rear with two diagonal rods or struts which can be let onto the ground as a safety measure when the bus stops on a grade.

While the bus fleet numbers four, it is customary to run only two buses daily and three on Sundays and holidays. About 750 passengers are carried daily. Fares in July, 1921, were 15 kroner on Sundays and holidays and 8 kroner on week-days. Commuters who possess an identification card with photograph, as vouched for by the local police, pay only 3 kroner. At current rates of exchange these fares were but sorry fractions of a cent. Any cost figures translated into dollars at the present fluctuating rate of exchange would serve no useful purpose for comparative costs.

So far as Austria is concerned, the trackless trolley should prosper there once the great hydro-electric possibilities of the republic have been developed.

Telephoning from a Moving Car

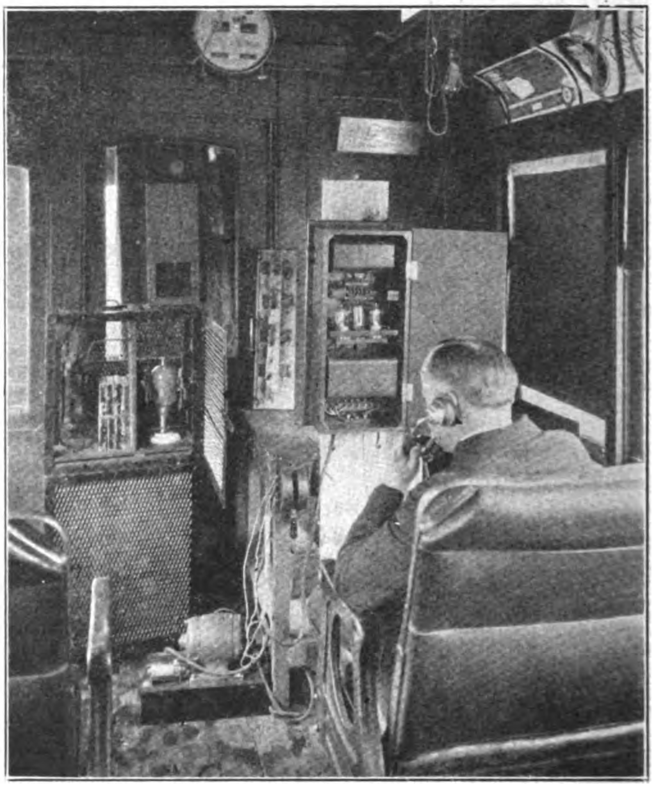
The "Carrier Current" Communication System Is Demonstrated by Telephoning from One of the Schenectady Railway's Cars to a Substation Three Miles Distant

A DEMONSTRATION of what is known as the "carrier current" system of communication was given at Schenectady on Dec. 1. These tests were the culmination of development work extending over a period of ten years, followed by practical tests made on the Chicago, Milwaukee & St. Paul Railroad, where communication was effected up to 60 miles.

The system makes use of a second current superimposed on the same trolley wire which supplies current to operate the electric car. This "carrier current," which is generated at higher frequency than the power supply, serves to transmit messages along the wire from which it is picked up at any convenient point and made to energize a telephone instrument. The demonstration took place on the Schenectady Railway, 5 miles from the city, and was arranged by the railway department of the General Electric Company, which is interested in the development of the new system.

From the moving electric car the railway men were enabled to talk successfully with a substation on the line several miles distant and also to listen to conversation from the operator in the station. The second feature of the demonstration was listening to the conversation of the substation attendant at a waiting room 2 miles from the substation, the messages being transmitted over the trolley wire and amplified in the waiting room by a loud-speaking telephone instrument.

The demonstration was designed primarily to show the application of the system to communication on electric railways, especially as regards expediting train operation. The apparatus used for carrier current communication is small and simple of operation. It consists essentially of vacuum tubes used as oscillators, rectifiers and detectors, making up a telephone equipment equaling in sensitiveness and simplicity the most modern apparatus.



TELEPHONING FROM CAR TO SUBSTATION

Among the participants in the tests at Schenectady were members of the radio committee of the American Railway Association, headed by J. D. Jones, chairman and superintendent of telegraph and signals Pennsylvania Railroad, Eastern region.

Commenting on the tests, W. B. Potter, engineer of the railway and traction department of the General Electric Company, said: "These tests at Schenectady and on the Chicago, Milwaukee & St. Paul Railroad indicate the early perfection of a practical telephone system, utilizing the power wires as a conductor, which will provide for the usual call and telephone communication between different cars or trains. This system is equally applicable to communication between the train dispatcher and the trains in operation under his direction. This is an important development which we feel sure will contribute materially to the facility and safety of railway operation."

Features of Des Moines Franchise

The Twenty-five Year Grant Has a Sliding Scale for Rates of Fare and Return on Investment—The Operating Deficit Is to Be Taken from Revenue

A FRANCHISE of the service-at-cost type has been accepted by the Des Moines (Iowa) City Railway. It was approved by the City Council on Oct. 24 and passed upon favorably by the people at a special election on Nov. 28. The franchise is now to be tested in the State Supreme Court to verify some question as to its legality under the Iowa laws and thereafter will presumably be the contract under which the company will operate in future. It is expected that a decision of the Supreme Court may be had before the end of January. The action of the City Council and voters rescinded a twenty-five-year franchise entered into late in 1915, which provided for a fixed 5-cent fare and had other features which proved to be impossible to carry out.

The new service-at-cost franchise is granted for a term of twenty-five years. It permits the operation of interurban cars over the streets and the sale of power to interurban companies by the Des Moines City Railway. The haulage of freight, baggage, mail, express, etc., over the city tracks is authorized, provided that freight cars will not be permitted to stop on a street crossing or to stand on a public street for any purpose except such as may be necessary in the operation of trains. The handling of such freight and express cars must not delay the operation of passenger cars, and no such car is to be allowed to stand on any track or siding located in the public streets for more than one hour without the consent of the department of public safety. These restrictions, however, do not apply between the hours of 1 a.m. and 5 a.m.

In regard to the extension of lines, the contract provides that extensions must be made upon petition in writing to the City Council by a majority of the adult residents of the district to be served, when this body, after due investigation, shall have passed a resolution declaring that the extension is a proper and necessary one to be made by the company. It is stipulated, however, that the City Council must find in its study that the returns of the company will be sufficient to pay at least the cost of operating the cars over the extension, including the ordinary maintenance of track, cars and overhead, together with a reasonable depreciation upon the cost of the extension and the equipment used, and all reserves provided for later in the contract. Having satisfied itself that this is the case, the Council may direct the extension to be made and the company is then required within a reasonable time to build the line at its own expense. But if the company and city cannot agree that the extension can be made under these conditions, then the question of whether or not the line shall be extended shall be submitted to arbitration and the award of the board of arbitration is binding on both parties.

On the subject of paving and maintaining paving of streets, the franchise reads that "Whenever the city shall grade, pave, gravel or macadamize any street, and so long as the statutes of the state of Iowa do not authorize another or different method therefor, the company, under the conditions in this ordinance contained, shall grade, pave, gravel or macadamize such portion of said streets between the rails of its track and 1 ft. outside thereof." The same requirement as to repaving is made conditional upon the present statutes of Iowa. The company is required to sweep, clean and sprinkle the portion of the street used by the company only where the need for cleaning results from construction work, sanding rails, etc. But it must remove snow and ice.

In regard to the motive power that may be used, the contract mentions the use of electricity, applied either by overhead or underground trolley, "or any other modern and improved system, or by any other modern and improved motive power, except steam locomotives; provided, however, before any motive power other than electricity may be used, consent and permission therefor shall be first granted by the city."

A "city supervisor" of track stations is to be elected by the City Council to hold office at the pleasure of this body and with a salary which shall not exceed $5,000 per year at any time. This is fixed by the City Council and paid by the company. The company is to provide and pay for his office, office fixtures, stationery and clerical help, but the cost of clerical help shall not exceed $100 per month to begin with, but this may be increased in the same ratio as the gross receipts of the company increase. The company is also to select a person to be known as the "company supervisor" and these two supervisors shall determine what acts shall be done and orders made affecting the quality and quantity of service, fixing of schedules, routes and terminals, the character and equipment of cars, the places at which they shall be stopped for passengers and other similar operating questions.

Any differences arising between the company and the city in regard to any provisions of the ordinance or the rights and power reserved to and conferred upon the company or the city, or if the two supervisors fail to agree upon any question, over which they have supervision, then either the city or the company may require that these questions be submitted to arbitration. It is agreed that the individuals comprising the board of railroad commissioners of Iowa shall constitute the board of arbitration, and if this board fails or refuses to act as arbitrators, then it is agreed that the board shall consist of three disinterested persons who must be non-residents of Des Moines and appointed by joint action of the chief justice and the two associate justices of the Iowa Supreme Court.

SCALE OF FARES AND RETURNS

The initial rate of fare is to be 8 cents cash with ten tickets for 80 cents. The contract provides that this may be adjusted either up or down in half-cent increments as shown in the accompanying table, which also shows the rate of return to be allowed on common stock. Children between the ages of six and twelve years are to be carried for one-half fare and high and grade school pupils actually on their way to and from school may ride on special tickets sold to them at the school for 2½ cents each. A charge of double the cash fare in force may be made on owl cars as the company is not obliged to accept tickets for passage on such cars. Once a rate of fare is placed in effect it must remain in effect for a minimum of thirty days.

Fare	Dividend on Common Stock
9 cents cash, 10 tickets 90 cents	0 per cent
9 cents cash, 10 tickets 85 cents	0 per cent
8 cents cash, 10 tickets 80 cents*	0 per cent
8 cents cash, 10 tickets 75 cents	0 per cent
7 cents cash, 10 tickets 70 cents	3 per cent
7 cents cash, 10 tickets 65 cents	3 per cent
6 cents cash, 10 tickets 60 cents	4½ per cent
6 cents cash, 10 tickets 55 cents	4½ per cent
5 cents cash, 10 tickets 50 cents	6 per cent
5 cents cash, 10 tickets 45 cents	6 per cent
5 cents cash, 10 tickets 40 cents	7 per cent
5 cents cash, 10 tickets 35 cents	7 per cent

* Present rate.

The initial rate of fare of 8 cents cash and ten tickets for 80 cents is to continue in force until there has been accumulated in the "fare adjustment fund" the sum of $150,000. Thereafter the rate of fare shall be changed to the next higher step whenever the balance in this fund shall be lower than $100,000. The next lower step shall be put into effect when the amount in the fare adjustment fund is $200,000. A notice of five days must be made before any change in the rate shall become effective. The maximum and minimum figures already noted are to continue as long as the number of passengers carried annually by the company is 30,000,000 or less.

When the annual number of passengers is between 30,000,000 and 40,000,000, the fund is to vary between the limits of $133,333 and $266,666; for between 40,000,000 and 50,000,000 annual passengers, the fund is to vary between the limits of $166,666 and $333,333; 50,000,000 to 60,000,000 passengers, $200,000 and $400,000; 60,000,000 and 70,000,000 passengers, $233,333 and $466,666; 70,000,000 and 80,000,000 passengers, $266,666 and $533,333; 80,000,000 and 90,000,000 passengers, $300,000 and $600,000, and thereafter if there are further increases in the number of passengers carried in any fiscal year, the same progression of maximum and minimum amounts will be carried out.

The company is to be entitled to earn dividends on its common stock now issued and outstanding and on such common stock as may be issued to retire the first stock now issued and on common stock that may be issued to provide funds for extensions, improvements, or betterments as noted in the above table.

For the purpose of determining the basis upon which the rate of fare is to be established, it is agreed that the gross income of the company shall include income from all sources. Operating and all deductions from gross income shall be in accordance with good accounting practice as prescribed by the American Electric Railway Accountants' Association and the company shall at all times be entitled to earn net earnings (gross income less operating expenses and taxes of all kinds) sufficient to pay the following seven items:

1. The interest on its bonded indebtedness as of Oct. 1, 1921, and on notes now issued and to be issued and now consisting of $4,651,000 of 5 per cent general and refunding bonds and $1,309,709 of 7 per cent notes, issued and to be issued.

2. The interest on any additional interest-bearing indebtedness similar to that listed under (1) that may be created subsequent to Oct. 1, 1921.

3. Dividends at the rate of 7 per cent per annum on any or all preferred stock which may at any time be outstanding, of which there is now $250,000 outstanding and $1,100,000 of debentures to be converted into preferred stock, and such other preferred stock as may be issued as authorized.

4. Credit to a common stock dividend reserve account to the extent permitted to be earned under the terms of the section relating to the rate of dividend on common stock.

5. An amount which is to be accumulated in equal monthly installments during the first five years after this ordinance shall become effective to offset the operating deficit existing at the date of taking effect of this franchise. The accumulated amount thereof as of Oct. 1, 1921, was $572,737.

6. Fifty thousand dollars of working capital which shall be accumulated before any amount shall be set aside for the fare adjustment funds, or before any reduction in the rate of fare first above established shall become effective, and shall be in addition to stores and supplies aggregating approximately $240,000 in value, which represents the value of the stores and supplies on hand Oct. 1, 1921.

7. Any other amounts arising after Oct. 1, 1921, properly deductible from net earnings. All above accumulations are to be considered as an expense in connection with the establishment of the rate of fare.

After all of the reductions provided for in these seven sections have been made from net earnings, debits or credits are to be made to the fare adjustment fund.

The company agrees to secure a fund of $100,000 within thirty days after the adoption of the ordinance for the purpose of making additions, betterments, and improvements or in construction work in so far as the cost is properly chargeable to the capital account. The company is to be permitted to execute its notes for this amount which will bear interest at the current rates and are to be retired when the company is able to issue and sell securities as provided by the ordinance. It is also agreed that the city will not require the company to make improvements or additions during the first year after the adoption of the ordinance requiring expenditures in excess of this $100,000. Similarly, the company agrees during the second and third years of the franchise, to provide and spend an additional $100,000 each year, provided it is unable to issue and sell securities and provided that all of the items provided by the ordinance are earned. It is also agreed that if these conditions prevail, the city will not press the company to spend in excess of $100,000 chargeable to capital account.

In connection with the sale of securities, the expense of the sale of stock or of the sale and discount on bonds or notes now outstanding or to be issued shall be amortized out of the earnings of the company in equal monthly amounts during the life of such securities. On the matter of depreciation, the contract is indefinite, the provision being that "the company shall charge as a part of the expense of said business and set up a depreciation reserve sufficient to cover replacement, obsolescence and renewals of the property of the company, and installations necessary to maintain such property . . . provided that the reserve shall be apportioned and used 50 per cent for way and structures, 25 per cent for equipment and 25 per cent for power. It is also stipulated that the company shall not be required to make any expenditures in excess of the amounts thus provided."

An interesting clause in the contract is that relating to corporate existence which provides that "the company and each successor corporation . . . shall remain and shall be an Iowa corporation and it shall maintain its principal office in the city of Des Moines and shall not remove such principal office or any of the books of the company, records, accounts, contracts or original vouchers of receipts and expenditures beyond the limits of the said city, and shall maintain such principal office within such city so long as the company continues operating any part of the street railways mentioned and provided for in this ordinance under the provisions hereof, and the provisions of this section shall apply to all the company's lessees, successors and assigns."

One section of the contract contains provision whereby the company waives all rights and claims except those allowed by this ordinance, agrees to pay all interest due on any bonds secured by lien on the property existing Aug. 1, 1921, and to pay thereafter all such interest on bonds as it becomes due, with the condition that upon failure to pay such interest resulting in the foreclosure of the liens, the rights of the company under the ordinance are thereby forfeited. This section also stipulates that the company is to cause all foreclosure suits now pending against the city or the company to be dismissed without cost to the city, and the company is to pay its bond in the amount of $54,000 which fell due April 1, 1921. It is also to pay or refund on other bonds now outstanding, secured by lien upon the property, at or before maturity, none of which bonds mature later than the year 1936.

The franchise gives the city the right, during the time of the franchise, to purchase and take over free and clear of all liens and incumbrances the entire street railway system upon giving six months notice. If the company and city cannot agree on the purchase price, the latter is to be determined by a court of competent jurisdiction.

DISPOSITION OF COMPETITIVE BUSES

Immediately upon the acceptance of the franchise, the city agreed to cancel all licenses issued for the operation of jitney buses engaged in carrying passengers on any street on which street cars are operated. The city also agrees that it will not permit any jitney bus operation on streets occupied by cars under the franchise, provided, however, that jitneys may be licensed to cross such streets at right angles with the car line and in addition may travel over such space as far as it is necessary to cross bridges. It is further provided that the buses may have a terminus in the business district and that for the purpose of going to and from this terminus the buses may travel over such portion only of the prohibited streets as is necessary to connect directly with the licensed route of the buses on streets on which there are no street car lines.

French Railway Strike Ended

REPORTS to the Department of Commerce recently told of the termination of the street railway strike in Calais, France. Service was suspended entirely during two weeks. The company finally granted the demands of the employees for an increase of 50 centimes per day, for two days vacation per month with full pay and for the establishment of a joint committee with power to pass finally on all differences between the street railway management and its employees. The joint committee is to be made up of representatives of the employer, the employees and the street railway committee of the City Council.

Car and Bus Speeds in Chicago

Comparison of Car Speeds Operating Through Tunnels and Over Bridges Was Presented in Chicago Fare Hearing—Also Data on Speeds of Buses and Cars in the Loop District

SOME rather interesting speed comparisons were brought out in the hearings of the Chicago Surface Lines before the Illinois Commerce Commission in connection with the recent fare case. The special engineer for the city, George W. Jackson, had recommended in his proposed plan of speeding up service the taking of cars from the tunnels and routing them over bridges. The company therefore introduced the following evidence to indicate the relative speed of cars in tunnels and over bridges. For the Clark Street bridge and La Salle Street tunnel the observations were made on Oct. 15, and the distance over which the cars were timed in each case was taken between Randolph and Illinois Streets. For the Madison Street and Adams Street bridges and the Washington Street and Van Buren Street tunnels the observations were made on Oct. 18 and the distance covered was between Franklin and Clinton Streets in each case. The results of the observations follow:

CAR SPEEDS OVER BRIDGES VS. THROUGH TUNNELS

Clark Street Bridge		La Salle Street Tunnel	
11:35 a.m. to 12:55 p.m.		11:36 a.m. to 1 p.m.	
Cars	Minutes	Cars	Minutes
73	336.00	122	241.00
Average time per car,	4.603	...	1.975
Madison Street Bridge		Washington Street Tunnel	
1:30 p.m. to 4:00 p.m.		1:36 p.m. to 4:00 p.m.	
Cars	Minutes	Cars	Minutes
264	715.75	137	231.00
Average time per car,	2.711	...	1.686
Adams Street Bridge		Van Buren Street Tunnel	
1:58 p.m. to 4:02 p.m.		1:44 p.m. to 4:00 p.m.	
Cars	Minutes	Cars	Minutes
103	221.75	199	304.75
Average time per car,	2.153	...	1.531

Another study was made to show the speed of cars in the Loop district, as bounded by the river on the north, Wabash Avenue on the East, Harrison Street on the South and the river on the West. The cars on Dearborn Street from Harrison Street to Polk Street were also included and all lay-overs at stub terminals in the Loop were included. The observations were made on Oct. 12, 1921, from 4:30 p.m. to 10:30 p.m. The system average schedule speed based on schedule running time between terminals and excluding lay-over time was given as 10.64 m.p.h. The Loop data follow:

SPEED OF CARS IN LOOP DISTRICT, CHICAGO

Hour	Car-Miles	Car-Hours	Average Speed M.p.h.
4:30 p.m. to 5:00 p.m.	520.31	107.70	4.83
5:00 p.m. to 5:30 p.m.	595.62	120.76	4.93
5:30 p.m. to 6:00 p.m.	511.47	91.75	5.57
6:00 p.m. to 6:30 p.m.	389.15	54.85	7.09
6:30 p.m. to 7:00 p.m.	331.43	44.27	7.49
7:00 p.m. to 7:30 p.m.	316.74	40.34	7.85
7:30 p.m. to 8:00 p.m.	312.48	43.47	7.19
8:00 p.m. to 8:30 p.m.	305.03	43.52	7.01
8:30 p.m. to 9:00 p.m.	279.95	37.08	7.55
9:00 p.m. to 9:30 p.m.	211.86	29.87	7.09
9:30 p.m. to 10:00 p.m.	206.73	28.50	7.25
10:00 p.m. to 10:30 p.m.	154.32	20.72	7.45
	4,135.09	662.83	6.24

For the sake of comparison some observations were made of the operating speeds of the Chicago Motor Bus Company's buses. These observations were divided into three groups, covering speeds from the north terminals into the loop to the points at which the buses are turned back; in the downtown district, and outside of the Loop district. These data are presented herewith in three tables. The observations were made on Oct. 19 and 20, 1921.

Limited observations of the motor bus service given by the Depot Motor Bus Company, operating between Carson, Pirie, Scott & Company's store on State Street and the Northwestern and Union stations on the west side, showed that these buses operate at an average speed of 5.85 m.p.h. The distance is 0.78 mile each way.

SUMMARY OF SPEED AND STOPS OF CHICAGO MOTOR BUS COMPANY'S BUSES, OUTLYING AND LOOP DISTRICTS COMBINED

Bus-hours	8.11
Mileage	86.66
Stops	284
Duration of stops—seconds	3,335
Average running speed	10.70 m.p.h.
Average number of stops	3.28 per mile
Average time per stop	11.74 seconds

SPEED AND STOPS OF CHICAGO MOTOR BUS COMPANY'S BUSES, LOOP DISTRICT ALONE

Turned West in Loop	Hour	Mileage	Time, Minutes	No. of Stops	me of Stops, Seconds	Average Speed, m.p.h.
Jackson....	9:10 a.m. to 9:25 a.m.	1.824	15.50	13	228	7.06
Madison...	11:16 a.m. to 11:27 a.m.	1.229	11.50	11	186	6.42
Monroe....	1:35 p.m. to 1:53 p.m.	1.473	18.00	17	326	4.91
Monroe....	3:43 p.m. to 4:00 p.m.	1.473	17.00	15	336	5.20
Monroe....	5:24 p.m. to 5:43 p.m.	1.473	19.25	18	448	4.59
Jackson....	7:33 p.m. to 7:48 p.m.	1.824	14.75	15	164	7.41
Total		9.296	96.00	89	1,688	....

Average: Speed .... 5.81 m.p.h.
Stops per mile .... 9.57 m.p.h.
Duration of stop .... 18.96 seconds

SPEED AND STOPS OF CHICAGO MOTOR BUS COMPANY'S BUSES, OUTLYING DISTRICTS ALONE

North Terminal	Dir't'n.	Hour	Times, Min.	Mileage	No. of Stops	Time of Stops, Seconds	Average Speed, m.p.h.
Devon Ave...	NB	9:25 a.m. to 10:01 a.m.	36.00	8.45	4	32	14.09
Devon Ave...	SB	10:25 a.m. to 11:16 a.m.	50.50	8.45	30	301	10.03
Wilson Ave...	NB	11:27 a.m. to 11:53 a.m.	25.50	5.96	19	105	14.01
Devon Ave...	SB	12:51 p.m. to 1:35 p.m.	43.50	8.45	30	255	11.60
E.B. Hotel...	NB	1:53 p.m. to 2:25 p.m.	32.50	6.90	11	76	11.65
Devon Ave...	SB	3:00 p.m. to 3:43 p.m.	43.00	8.45	18	232	11.78
Edg. B. Hotel.	NB	4:01 p.m. to 4:35 p.m.	34.00	6.90	3	46	12.16
Edg. B. Hotel.	SB	4:49 p.m. to 5:24 p.m.	35.00	6.90	18	129	11.82
Devon Ave...	NB	5:43 p.m. to 6:28 p.m.	45.25	8.45	39	298	11.20
Devon Ave...	SB	6:48 p.m. to 7:33 p.m.	45.25	8.45	23	173	11.20
Total			390.50	77.36	195	1,647 sec.	

Average: Speed .... 11.87 m.p.h.
Stops per mile .... 2.54 m.p.h.
Duration of stop .... 8.45 seconds

Front Drive Trolley Bus

A RECENT issue of the *Electric Railway & Tramway Journal* of London contains a description of a front-drive trackless trolley bus recently built for use in Leeds, England. This bus is in two parts, somewhat like the Chicago type of gasoline bus, the forward part carrying the motor and the two driving wheels and the rear part the body of the bus and the two trailing wheels. The two portions are attached to each other by six bolts only, so that the front portion, or tractor, can be very easily detached. This is considered an important point where a company desires to keep a number of trolley buses in constant service, as it is only necessary to have one or two spare front parts which can be slipped into place whenever required. As there is no part of the motive equipment or driving mechanism under the car body, the floor of the bus can be kept very low. Actually in the bus built for Leeds the car floor is only 14 in. above the surface of the ground. Thus the center of gravity is low and the factor of safety for a double-deck vehicle running on an ordinary road surface is correspondingly increased.

The drive is provided by two 25-hp. motors, hung in the regular railway manner and each geared to one-half of the axle. Brakes are applied to all four wheels.

Letters to the Editors

"Bus Transportation" Approved

Important Railway Managers Recognize a Field for Buses in Urban and Interurban Transportation and Welcome Establishment of Bus Paper by McGraw-Hill Co.

THE policy of the publishers of the ELECTRIC RAILWAY JOURNAL in deciding to start a bus paper has met with the hearty approval of all of those electric railway executives who have expressed themselves on the subject. In answer to a request for opinions on this a number of replies have been received. From these quotations a few are printed below, with the permission of the writers.

OPINIONS ON "BUS TRANSPORTATION"

Henry G. Bradlee, of Stone & Webster, Inc., Boston, Mass., writes:

"I have read with great interest the editorial in the ELECTRIC RAILWAY JOURNAL for Oct. 29 and have been intending to write to you offering my congratulations on this new step that you are taking. It meets with my hearty approval.

"We need a responsible publication that will set forth the facts and keep us all posted on development in the field of bus transportation. I am sure that no one can handle this as well as the McGraw organization.

"I have only one suggestion to make, namely, that you have constantly in mind the desirability of ultimately combining as a single publication the ELECTRIC RAILWAY JOURNAL and the new BUS TRANSPORTATION, adopting at that time a new title for the combined magazine which will indicate in some way that it covers broadly all branches of urban and suburban transportation. The temporary publication of BUS TRANSPORTATION as a supplement is no doubt wise, but I do think that this should be temporary and that eventually the two should be again combined.

"In your editorial of Oct. 29 you say:

> "All of the studies which have been made and data which have been collected tend only the more firmly to fix the idea that the best transportation for the community can be obtained only by the co-ordination of the various transportation facilities and not by indiscriminate competition.

"This is exactly the thought I have in mind in making my suggestion that ultimately the two magazines should be combined as one. I think we should from every standpoint try to convey the idea to the public that satisfactory public service can be obtained only through a single co-ordinated system whether this operate on rails, on rubber tires, or part on each. The street railway companies should do this in the conduct of their business, and you, I think, could help by ultimately treating in your publications all forms of urban transportation as a single problem.

"A few weeks ago we held a convention in Boston of the district and local managers from all of our properties. In a talk that I made at this convention I referred briefly to the street railway problem, and I think you will be interested in what I said on this subject, a copy of which is inclosed. While I had not read your editorial at the time, our thoughts are clearly running along the same general lines.

"As I see it, the constructive thing that we should do at the present time is to emphasize in every possible way and bring constantly before the public the fact that urban transportation in whatever its form must be conducted as a unified system to give public satisfaction, and that any new developments along transportation lines should be brought into use as a continuation of those now in existence rather than as a separate and independent proposition. This you can do through your publications, we through our operating efforts in the field and through any public statements that we may make.

"Again my congratulations to you and my best wishes for success in the new enterprise."

MR. BRADLEE'S REMARKS ON BUSES TO LOCAL AND DISTRICT MANAGERS

The street railway is the real problem, a problem concerning which people are sometimes very pessimistic. I want to give you this thought. We always speak of ourselves as being in the street railway business and usually have in mind only the electric railway. When some other form of urban transportation is suggested a shiver runs down our spine and we wonder whether we are to be driven from the field. Let us change our point of view and, in the future, let us always say: We are in the transportation business. True, we are at present operating electric railways, but our business is to furnish transportation. The method may change from time to time, but if it does we are prepared to meet the situation; if any new and more efficient methods are devised we are prepared to adopt them and continue our service to the public.

Personally I believe that we are going to operate electric railways for the next twenty-five years and then for an indefinite period after that. There is nothing in sight as far as I can see to take the place of the urban electric railway except in small communities or in outlying districts of larger communities. I think we may to advantage use other forms of transportation to supplement our street railway except in small communities or in outlying districts travel is light. When the traffic increases, electric railway service will be substituted. In all cases the backbone of our system will continue to be the electric railway. But suppose I am wrong. Suppose, for example, the electricity is to be superseded by some other form of power. Still I believe we will operate on tracks because I believe that is the only way that adequate service can be given in an urban center. We will simply change over our motors or our rolling stock and use the new source of power, whatever this may be. But suppose I am wrong again. Suppose that tracks have outlived their usefulness and are to be abandoned. Still I would say: We are in the transportation business and we should furnish service in whatever way is most efficient, whether it be by motor cars, by trolley buses or by aeroplanes. I say this because I am satisfied that there must always be some systematic and co-ordinated method of urban transportation. The people must be carried back and forth between their homes, their business and their places of amusement. That is a necessary feature of our modern life that cannot be done away with. It must take place in some form. To have that service satisfactory and economical it must, in my judgment, be conducted by some single organized system. Competition in public service has been shown repeatedly to be extravagant and wasteful. In the early days there was competition between horse car lines and later between electric railways, but this was economically unsound and gradually disappeared. As I told you a few minutes ago, we bought eleven street railways in the city of Seattle and we combined them into a single efficient property. We bought them because eleven street railway properties could not exist in Seattle and properly serve the public. What has been true of horse car lines and of electric railways will be true of any future method of transportation. Good service and efficient operation will compel a unified system.

Then take that other bugaboo, municipal ownership. We have just seen how the government came out with the steam railroads. You know and I know that municipalities in a democracy can never successfully operate street railways. There may be sporadic attempts as there are now in Seattle and a few other cities, but this will pass. Sooner or later these properties will return to private operation as did the Philadelphia municipal gas plant. Already the difficulties of these cities are becoming known, and today it would be pretty difficult to sell a street railway to a city. Most cities do not want them at any price.

Our problem then is to keep abreast of the times, to be familiar with every improvement in the art of transportation and to apply these improvements to our properties whenever this will produce better service or more efficient operation.

If we are open-minded and alive to our possibilities, if instead of fearing improvements we are quick to seize and apply them to our own use and the service of the public, we need have no anxiety for the future."

From Harry Reid, president Interstate Public Service Company, Indianapolis, Ind.

"I wish it [BUS TRANSPORTATION] every success and trust that its policy will be such that there could be no cause for complaint by any of the patrons of the ELECTRIC RAILWAY JOURNAL and I am sure that this would be the case."

From J. W. Welsh, executive secretary American Electric Railway Association:

"I am very much interested in noticing the announcement in the ELECTRIC RAILWAY JOURNAL for Oct. 29 relating to your institution of the BUS TRANSPORTATION.

"I think this is a very forward looking step, and I wish to extend to you my best wishes for success in this new undertaking."

From Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad, Chicago, Ill.

"I see absolutely no objection to your starting a bus journal; in fact, I think it is decidedly to the advantage of the electric railway industry. The sooner the companies realize that they will have to use, in part, the bus as a medium of transportation in order to take care of the needs of certain districts not served by electric railways the better it will be for the industry."

From J. H. Hanna, vice-president Capital Traction Company, Washington, D. C.

"I was very glad to see the announcement in the ELECTRIC RAILWAY JOURNAL regarding its new publication, BUS TRANSPORTATION. There can be no doubt in my mind that trackless transportation of passengers in cities and suburbs is a factor which must be given careful consideration in the future. It is important that electric railway operators get information on which they can rely regarding the operation of existing lines and the possibility of establishing others. Your publication should help in filling that requirement."

From P. H. Gadsden, vice-president United Gas Improvement Company, Philadelphia, Pa.

"I was very much interested in the editorial of Oct. 29 regarding your new publication, BUS TRANSPORTATION. I believe the treatment of this subject in the way you suggest will be very helpful.

"The auto bus, in my judgment, is destined to play an increasingly important part in urban transportation as time goes on. Whether it shall be as a competitor of street railways, or as an auxiliary, will depend largely upon our attitude toward the subject. In order that we may make no mistake in such a highly important matter we must keep ourselves thoroughly informed. The ELECTRIC RAILWAY JOURNAL, through its BUS TRANSPORTATION publication, is in the very best position to keep the electric railway industry informed of the development of this special form of transportation. Your treatment of the subject from the standpoint of transportation requirements of the various communities will greatly aid in arriving at a proper conclusion."

How to Keep Cars on Time

Representatives from the Transportation and Equipment Departments of New England Companies Give Their Views at Club Meeting Held in Boston

THE meeting of the New England Street Railway Club on the afternoon of Dec. 1 was devoted to the question of how to keep the cars on time. Abstracts of the two papers presented on the subject appear below.

Troubles of Keeping Cars on Time

By HOWARD F. WHITNEY
Assistant to the President Springfield (Mass.) Street Railway

I SHALL confine my remarks in this paper to those delays outside of schedule making which I believe we can help to reduce.

In Massachusetts, Section 84 of the revised laws says that "whoever willfully obstructs a street railway company in the legal use of a railway track, or delays the passing of cars thereon, or abets in such obstruction or delay, shall be punished by a fine of not more than $500 or by imprisonment for not more than three months." I know of several cases on our own properties where cars were willfully delayed, and a case which recently came to my attention is probably typical of others. A truck broke down on a single-track line, and the driver of the truck refused to allow the crew or the inspector, who later arrived on the scene, to move the truck until the proper repair part arrived from a nearby town and was duly installed, when the truck moved off the track under its own power. In this case the company considered itself fortunate in collecting from the owner of the truck one-half of the cost of the delay, but I do not think that we would have received that much if the car that was delayed had not been carrying the U. S. mail. I do not believe in the policy of looking for a fight, but a few cases of willfully delaying cars, taken into court, would give the public a wholesome lesson in the rights of the street railway, and if we insist on these rights, we shall win the respect of our various communities.

There has seemed to me a tendency in recent years for street railway operating officials, instead of riding on the cars themselves and obtaining first-hand knowledge of the conditions, to step into their automobiles at their homes and either be driven to the office by a chauffeur or to drive themselves, avoiding the car tracks near their home so that they will not have to pass up their friends waiting on the corner for a street car.

I have heard one official say that he drove to work in his machine to avoid the constant criticism to which he was subjected while a passenger on the car. The public, upon whom we depend for a living, should not get the idea that we cannot use our own cars to go to and from our office because they are too slow, even if some little time is taken —wasted perhaps you may think—in using the street car. I believe that every street railway official should use the cars as much as possible. I have seen a great many times in the "People's Forum"—and you undoubtedly have also seen them—letters signed "Strap Hanger," etc., stating that if the street railway officials rode on their own cars, they might occasionally get some first-hand knowledge of the conditions. Suppose that you had deposited your savings in a certain bank and found upon investigation that the president, vice-president, secretary, treasurer and most of the other officials of the bank deposited their money in a bank across the street. Would you not be afraid that there was something radically wrong with the bank and that you had better withdraw your funds and deposit them in the bank across the street? It is exactly the same with our patrons on the street cars. If they find that the street cars are too slow and too crowded for the officials of the company, why aren't they too slow and too crowded for the passengers?

The automobile is probably the cause of more delays than any other one thing, and the congestion caused by the automobile on our downtown streets is becoming a great problem not only to the street railway companies but to the city government as well. I believe that every street railway company should endeavor to have ordinances passed by the various city governments to stop the parking of automobiles on the main streets, especially during the rush hours. This may meet with stiff opposition from the merchants on the main streets, but when it is known that from recent traffic surveys in various cities it has developed that the automobile averaged only 1.9 persons to each machine, while our cars, especially during the rush hours, will average well up towards 100 people, it would seem as if the city officials could be made to see that the greatest good to the largest number lies in giving the street car the right of way. This, however, will never be done unless the street railway company itself brings it to the attention of the city government.

The city government should also stop the practice of allowing left-hand turns by automobiles on our main streets. All traffic should be routed straight across or by right-hand turn, and the street railway company should do its share to relieve the congestion by rerouting some of its own lines.

The Massachusetts Legislature, a year or two ago, passed the so-called 8-ft. law. This law has been very beneficial in making it easier for our patrons to reach the car, but it has also materially increased the congestion, especially where the streets are narrow and automobiles are parked at the curb, as it has forced the automobile onto our tracks so that after one car has stopped at a white pole the second car cannot get anywhere near the stopping place because of the automobiles lined up behind the street car.

A better way would be to have the city prohibit the parking of automobiles within 75 ft. in front of a white pole, and then by means of iron stanchions and light chains rope off a loading area 4 or 5 ft. from the track, and have the rule enforced that automobiles are always to go to the right of the roped-off space. This will permit the automobiles to keep moving while the car is being loaded and allow the second car to come up behind the first car and load at the same time. We find in Springfield that the 8-ft. law has practically eliminated the usefulness of the two-car stop, because of the congestion of automobiles on the track. If the roped-off area which I mentioned could be used, the two-car stop will again be of great advantage to us.

Another cause of many delays are poor track conditions. As rapidly as the companies get onto their feet again, we should spend our money in rehabilitating the tracks. In fact, good track will permit of higher schedule speeds and stop many of our delays.

DELAYS IN LOADING

The odd unit of fare is another cause for delay, as a great many people have to make change, and with the prepayment car—which has come to stay—the car is forced to stand until a large number of people have received their change. However, some things can be done to help in this. In remodeling old cars for prepayment cars we have placed the fare box in such a position that, with the usual crowd standing on the back platform, it is next to impossible for passengers to get by the box. Would it not be well to widen out the aisle so that access to the body of the car is not blocked by the box and the heavy iron stanchions which go to hold it in place? We should do all that we can to accelerate entrance into the car.

Today our business is surrounded with so much machinery that on some of our cars it is next to impossible to get onto the car. We force our passengers to climb a flight of stairs, crowd by folding doors which never open quite to their full width, and then crowd through a narrow passageway usually blocked by men and boys standing on the back platform. We ask them to have a nickel and one or two pennies ready to pay their fare, and then wonder why our cars are delayed.

The delays in loading may in some measure be relieved by street collectors which are being used quite extensively in various parts of the country. These street collectors could very materially assist the loading at congested points, especially on the one-man cars, if the car was equipped with some device by which the street collector could open the rear door. This, of course, would have to be so connected that the operator could not start the car until the rear door was closed.

During the war an extensive drive was made for the reduction in number of white poles or stopping points, but I find on our own properties that the white poles are gradually creeping back until in a few years the condition will be as bad as it was before the war. Where we are confronted with jitney competition, of course, the tendency is to stop at every street corner. These white poles, however, should be kept to a minimum, if we are to increase our schedule speed and stop delays.

I have tried to show that the delays of which we complain are not entirely beyond our control. I realize that a great many delays are due to the public. but while we are appealing to the public to help us keep our cars on time we should do all in our power to obtain the same object. Let us, as far as possible, clean our own house first and then go to the public and say that we have done all that we can and ask for their support.

Keeping Cars on Time

By W. C. Bolt

Superintendent Rolling Stock and Shops,
Eastern Massachusetts Street Railway,
Boston, Mass.

AN ELECTRIC railway may be likened to any other manufacturing and sales organization. The motormen and conductors represent the sales organization, and the rolling stock employees represent the manufacturing organization. There must be close cooperation between these two departments or the service will not be adequate and cars will not be on time.

Our electric car of today is a very much different piece of machinery than the electric car of early street railway days. The first electric vehicle comprised a simple car body with open platforms, hand brakes, two simple motors and contactors. Contrast this equipment, if you please, with the highly complicated modern electric railway car of today—a car equipped with folding doors, folding steps, door engines, electric signals, electric buzzers, illuminated signs, electric heaters, heat control, electric or pneumatic contactors, control and motor switches, emergency valves, engineer's valves, pneumatic sanding equipment, and a great many other details.

Maintenance Often Complicated by Variety of Equipment

The maintenance of cars is often complicated by the variety of equipment in use on each property. It is not at all uncommon for a large street railway to have between ten and fifteen types of motors in active service at the same time. A similar condition exists with practically every other principal unit. With this diversity of equipment it becomes very necessary for the rolling stock department to be in a position to be able to prepare specifications for new cars and to recommend the service to which each type of car is best adapted. It was not until the advent of the safety car that an attempt was made to use a standard car and construct schedules to fit the car, rather than to construct a car to fit the schedules.

The second and most important function of the rolling stock department is that of maintaining car equipment in a high degree of reliability. The gage by which the efficiency of the department is generally measured is the record of cars removed from service, or number of "car pull-ins."

Adequate car inspection becomes the most important means by which these can be reduced. On the Eastern Massachusetts Street Railway cars are thoroughly inspected about every 1,000 car-miles and are overhauled at approximately 30,000 car-miles, or its equivalent in kilowatt-hour energy consumption, where cars are equipped with automatic recording meters.

Full Complement of Snow-Fighting Equipment Necessary

To keep cars on time during the winter months every property must be equipped with a full complement of snow-fighting equipment. The investment in snow-fighting equipment becomes an obligation to enable passenger car equipment to perform its proper function and for the electric railway to give proper service to the public. Another important factor in keeping cars on time as viewed from the rolling stock department is to have the established line voltage uniformly maintained to prevent undue injury to motors, resistances, etc. Bad track, bad joints and broken special trackwork are all serious interferences in maintaining schedules. The bad results on the condition of rolling stock equipment through low line voltage, bad track conditions, I do not believe, are sufficiently realized by many operating managers.

Abuse of equipment on the part of operators and motormen is always one of the reasons given by rolling stock maintenance men for equipment failures and can be eliminated only by means of a thorough system of follow up and check. All of this in the ultimate analysis is a matter of discipline. If cars are reasonably well maintained by the rolling stock organization and schedules have been properly constructed, equipment failures will be materially less when cars are kept on time.

American Association News

Four Committees Meet at Indianapolis

President Todd's Home Town Scene of Association Activities for One Day—Executive Committee Decides to Hold Midyear Conference in Indianapolis on Feb. 28.

THE American Electric Railway Association is forging ahead rapidly in its business with the monthly meetings of the executive committee. At Indianapolis on last Friday, Dec. 2, the executive committee put into practice the policy of holding some meetings away from New York and some of the other committees followed suit, meeting in Indianapolis on the same day.

Executive Committee Meeting

The executive committee held an active session in President Todd's office on Friday morning. As was contemplated in the revised constitution, there was a large number of committee reports to present to the executive committee for its information for it to take action on.

One of the most important reports considered at this meeting was that of the subjects and meetings committee presented by its chairman, C. D. Emmons. As a result of this report and of that of the special dinner committee presented by its chairman, Harry Reid, it was decided by the executive committee to hold the mid-year conference at the Claypool Hotel, Indianapolis, Ind., on Tuesday, Feb. 28, 1922.

The subject and meetings committee presented a tentative program which provided for consideration of some of the most important subjects before the industry at this time. This program was approved by the executive committee with instructions to the subjects and meetings committee to make final plans along those lines. One important feature of the subjects and meetings committee report was the provision for plenty of time for active discussion. The subjects chosen were such as would lend themselves to discussion in the meeting.

The special dinner committee reported that it had made satisfactory arrangements with the Claypool Hotel for a meeting hall for the morning and afternoon sessions and for a real Indiana dinner in the evening. The management of the Claypool Hotel had promised to warn all other people away from it on Feb. 27, 28 and March 1, so that the association would have full sway for the conference.

The special dinner committee announced the appointment of H. J. Kenfield as chairman of its sub-committee on transportation, M. B. Lambert chairman of its sub-committee on publicity, and S. W. Greenland as chairman of its sub-committee on reception.

As the result of the report and recommendation of the finance committee submitted by J. G. Barry, one of its members, the committee was authorized by the executive committee to engage Arthur Andersen & Company as auditors of the association's books.

A progress report of the membership committee, presented by its chairman, F. R. Coates, was read. It was recommended by the executive committee that the membership committee and the committee on co-operation with state and sectional associations work together in bringing to the attention of the railways scattered over the country the advantages of membership in the association.

A report was heard from the special committee on co-operation with manufacturers, presented by its chairman, E. F. Wickwire, and the plans approved for enlisting the more active education of manufacturers' employees as to their relation to the electric railway industry.

Report of Publicity Committee

A report of the publicity committee was received, presented to the executive committee by Labert St. Clair, of the advertising section. Attention was called to the new publicity section in *Aera*, to the co-operation between the advertising section and the various state public utility information committees, and to the activity of the advertising section in connection with various local situations which have a national importance.

Some tentative plans for the future were submitted. A sub-committee to pass on all proposed advertising copy was appointed. The members of this committee are: J. N. Shannahan, chairman; B. G. Collier, vice-chairman; P. H. Gadsden and L. S. Storrs.

Upon recommendation of the publicity committee, the executive committee approved the plans: to prepare an article or statement to be submitted to the executive committee setting forth an interpretation of the attitude of the association on the motor bus; to assist in the formation of state committees on public utilities information in states where they do not now exist; and to notify companies of its readiness to review proposed national public utility publicity campaigns for which financial assistance is asked.

Formal approval was given to the admission of the following associate members, Class 1: Stone & Webster, Boston, Mass.; Day & Zimmerman, Philadelphia, and H. L. Doherty & Company, New York.

The names of some two railway companies and nine manufacturer companies who indicated desire to resign from the association were referred to the membership committee.

The committee referred the question of payment of expenses of special representatives of the association and affiliated associations when traveling on necessary work for the association—not including committee meetings of the association—to the finance committee for recommendation.

Progress reports were also heard from the public policy committee and the national relations committees.

Those present at the meeting were: Robert I. Todd, president; C. D. Emmons and F. R. Coates, vice-presidents; L. H. Palmer, president affiliated association; H. E. Chubbuck and W. H. Sawyer, operator members at large; C. R. Ellicott, J. G. Barry, and L. E. Gould, manufacturer members at large; A. N. Brady and C. L. Henry, past-presidents; and J. W. Welsh, executive secretary.

Special Dinner Committee Meeting

A meeting of the special dinner committee was held in the office of Harry Reid, chairman, on the morning of Friday, Dec. 2, in Indianapolis. Various details of the arrangements for the dinner on Feb. 28 were discussed and a report drawn up for presentation to the executive committee. The special dinner committee has been given the duty of providing all entertainment for the evening and something out of the ordinary is promised, but naturally plans will not be revealed until Feb. 28.

The following members, the total committee membership, were in attendance: Harry Reid, chairman; L. E. Gould, E. C. Faber, S. W. Greenland, and M. B. Lambert.

Meeting of the Committee on Co-operation of Manufacturers

A meeting of the special committee to enlist the co-operation of manufacturers in spreading electric railway information to their own employees and through them to the general public was held at the Claypool Hotel, Indianapolis, on Friday morning, Dec. 2.

It was brought out by this committee that there is a real opportunity to put into play the ideas expressed by Mr. Wickwire at the October convention and the committee took very definite plans to enlist the various manufacturers in this work. This committee also had its full membership present: E. F. Wickwire, chairman; E. C. Faber, Frank Gale, P. N. Jones, and J. C. McQuiston.

Meeting of the Committee on Membership

The meeting of the membership committee was held in President Todd's office on Friday afternoon, Dec. 2.

A complete survey of the present membership of the association was made and particular attention was paid to the analysis of individual membership situations on account of the modified provisions of the constitution as well as to the new classes of membership created, namely the three divisions of associate members.

Some new and vigorous methods of placing the advantages of membership before the various classes of individuals and companies who are eligible for membership were discussed and definite plans made by the committee to carry them into execution. The committee has set certain definite goals for itself this year and non-member companies of the association, both operating and manufacturing, may expect to hear from the membership committee with telling arguments.

At the close of the meeting one member remarked that most membership committee meetings of most associations were perfunctory and ended about where they started; but that this meeting of the membership committee of this association had been the most instructive of any he had ever attended.

Members of the committee in attendance were: F. R. Coates, chairman; L. E. Gould, P. N. Jones, M. B. Lambert, E. F. Wickwire, and Frank Gale for E. P. Waller, and H. V. Bozell for H. H. Norris.

President Todd Entertains at Dinner

President Todd entertained the combined personnel of all committees meeting at Indianapolis on Friday, Dec. 2, at a wonderful Indiana chicken dinner out in the country. He ran his special car No. 600, into the terminal so that the party had exceptionally fine transportation out to the farm house of local renown for its chicken dinners. Everyone in attendance authorized the statement that if this was a sample of Indiana culinary art, there could be no better place selected for the mid-year dinner.

Traffic & Transportation Committees Appointed

PRESIDENT PALMER of the T. & T. Association has announced the appointment of the following committees. The personnel named indicates the committees in so far as they have been appointed.

Committee on Merchandising Transportation

E. M. Walker, chairman, Terre Haute Traction & Light Company, Terre Haute, Ind.
G. H. Clifford, sponsor, Northern Texas Traction Company, Fort Worth, Tex.
Edward Dana, sponsor, Boston Elevated Railway, Boston, Mass.
W. R. Alberger, San Francisco-Oakland Terminal Railway, Oakland, Cal.
W. H. Boyce, Beaver Valley Traction Company, Beaver Valley, Pa.
Victor S. Curtis, The Connecticut Company, New Haven, Conn.
F. C. Lewis, Boston & Worcester Street Railway, Framingham, Mass.
V. L. Lloyd, Cleveland Railway, Cleveland, Ohio.
A. Stuart Pratt, Stone & Webster Management Corporation, Boston, Mass.
Samuel Riddle, Louisville Railway, Louisville, Ky.
F. W. Shappert, Chicago, North Shore & Milwaukee Railway, Chicago, Ill.
K. A. Simmon, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.
J. B. Stewart, Jr., Youngstown Municipal Railway, Youngstown, Ohio.
S. L. Vaughan, Grand Rapids, Grand Haven, & Muskegon Railway Company, Grand Rapids, Mich.
H. B. Weatherwax, United Traction Company, Albany, N. Y.

Committee on One-Man Car Operation

C. E. Morgan, chairman, Brooklyn City Railroad, Brooklyn, N. Y.
J. V. Sullivan, sponsor, Chicago Surface Lines, Chicago, Ill.
F. G. Buffe, Kansas City Railways, Kansas City, Mo.
S. W. Greenland, Indiana Service Corporation, Fort Wayne, Ind.
R. B. Hull, Conestoga Traction Company, Lancaster, Pa.
C. W. Kellogg, Stone & Webster, Boston, Mass.
Dudley Montgomery, Madison Railways, Madison, Mo.
D. A. Scanlon, Northern Ohio Traction & Light Company, Akron, Ohio.

Committee on Personnel and Training

J. E. Wayne, chairman, York Railways, York, Pa.
Arthur Gaboury, sponsor, Montreal Tramway Company, Montreal, Canada.
J. K. Punderford, sponsor, Connecticut Company, New Haven, Conn.
F. L. Butler, Georgia Railway & Power Company, Atlanta, Ga.
Edward M. Graham, Bangor Railway & Electric, Bangor, Me.
Dr. John Leeming, Chicago Surface Lines, Chicago, Ill.
A. P. Norris, Rochester & Syracuse Railroad, Newark, N. J.
H. H. Norris, ELECTRIC RAILWAY JOURNAL, New York City.
Dr. Arthur J. Rowland, Employees Mutual Benefit Association, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

Committee on Traffic Regulations

Herbert B. Flowers, chairman, United Railways & Electric Company of Baltimore, Baltimore, Md.
T. C. Cherry, sponsor, Rochester & Syracuse Railroad, Newark, N. J.
H. O. Butler, United Railways of St. Louis, St. Louis, Mo.
F. R. Cogswell, Pittsburgh Railways, Pittsburgh, Pa.
F. P. Edinger, Chicago Surface Lines. Chicago, Ill.
W. H. Maltbie, Baltimore, Md.
Fielder Sanders, Street Railroad Commissioner, Cleveland, Ohio.
Paul E. Wilson, Cleveland Railway, Cleveland, Ohio.

Committee on Safety Work

W. H. Boyce, chairman, Pittsburgh & Beaver Street Railway, New Brighton, Pa.
J. R. Blackhall, Chicago & Joliet Electric Railway, Joliet, Ill.
D. E. Parsons, East St. Louis & Suburban Railway, East St. Louis, Ill.
R. M. Reade, Quebec Railway, Light & Power Company, Quebec, Canada.
E. D. Reed, Chattanooga Railway & Light Company, Chattanooga, Tenn.
C. B. Scott, Chicago Edison Company, Chicago, Ill.
G. T. Seely, Pennsylvania-Ohio Electric Company, Youngstown, Ohio.
Claude C. Van Aucken, *Electric Traction*, Chicago, Ill.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

City and Company Agree

Operating Arrangement Perfected by the City of Detroit and Detroit United Railway

Negotiations between the Detroit (Mich.) United Railway and officials of the city of Detroit have resulted in an agreement which will give the city a unified railway system with a universal transfer. Although the company had stated that it would not agree to the transfer arrangement, the city's demands in this respect were finally met and passengers will be granted transfers between Detroit United Railway and city cars on all lines.

WOODWARD AVENUE CASE SETTLED

Another agreement reached at the conference between representatives of the company and city officials provides for the operating of cars of the municipal railway on Woodward Avenue, Fort Street and the Hamilton, Trumbull and Fourteenth lines on a day-to-day rental basis. For the privilege of operating over the company's tracks the city will pay 20 cents per car-mile. The company will pay on the same basis for operating over the municipal lines. The city will pay for operating over 69 miles of Detroit United Railway tracks while the company will operate over approximately 35 miles of city lines, including the 29 miles of Detroit United Railway lines to be taken over by the city according to the day-to-day agreement under which they were built.

Negotiations will be continued for the lease of the Detroit United Railway's entire city system on a day-to-day rental basis. The proposal to lease the lines was made by Mayor Couzens as it is desired to have the complete system operated under city control until a purchase plan can be submitted to the people. The Mayor's proposal to lease the lines with a view to ultimately purchasing them is the first serious discussion along that line since 1919 when the purchase proposition was voted down.

DAY-TO-DAY LEASE

No details as to the rental to be allowed the company or the price to be paid for the lines have been disclosed. The lease under which the city proposes to take over the entire system will be on a day-to-day basis subject to termination at any time by the City Council. In 1919 the company offered to sell the complete system to the city for $31,500,000. The plan to purchase at that price was voted down.

Under the present arrangements the city will operate cars over more than 150 miles of tracks and will have connections at both the east and west sides of the city as well as a route to the down-town section. It was announced following the last conference that there would be no change at present in the conditions of transfer arrangements. The Detroit United Railway will continue to collect the 1-cent charge for each transfer and the city will issue transfers on the same basis. When transfers are issued from one system to the other the 6 cents resulting from the 5-cent fare and 1-cent transfer charge will be divided equally between the company and the city. Traffic on Fort Street and Woodward Avenue, the two lines from which the people voted to oust the Detroit United Railway, will be divided by operating alternately company cars and city cars. No interruption of service is to be made while the details are being completed and the company has announced that the transfer arrangements will be effective on Dec. 12.

PETER WITT CARS TO BE USED

The city plans to use the 128 cars taken over under the day-to-day agreement to match up with the company's cars on Fort Street and Woodward Avenue. It is not intended to use the one-man safety type cars on lines where the Detroit United Railway is operating large cars, but the Peter Witt type cars now in the possession of the city will be used. The even division of traffic on Fort Street and Woodward Avenue, two of the important lines, is expected to increase the city's car revenue materially.

The unified operation of all lines will give the city a very satisfactory railway service it is believed by city officials, in view of the fact that the municipal lines will be connected with the Detroit United Railway system and these lines supply railway facilities to sections of the city which were previously without railway service. Considerable new territory is tapped by the municipal lines.

The meeting on Dec. 1 which evidently ended the controversy was practically without friction between the two parties. The conference was held behind closed doors. On two occasions the negotiations were interrupted while one of the parties withdrew to confer privately. The company was represented at the conference by Allan F. Edwards, vice-president, Alex Dow and Jere C. Hutchins, directors; Elliott G. Stevenson, chief counsel; E. J. Burdick, general manager. The city officials present besides Mayor James Couzens were: G. O. Ellis and H. H. Esselstyn, members of the Street Railway Commission; Ross Schram, secretary of the commission; Clarence E. Wilcox, Corporation Counsel and Joseph S. Goodwin, general manager of the Detroit Municipal Railway.

No definite date has been set for further conferences and it is not anticipated that the details of the proposition to lease the complete system will be worked out for some time.

Paterson Has Ambitions!—The City Plan Commission of Paterson, N. J., has invited the cities of New York and New Jersey to a conference on Dec. 15 to consider a unified transportation plan for both states. The proposals include additional tubes under the East and Hudson rivers, electrification of all passenger lines and an interstate through-routing plan which will take New Jersey trains to Westchester and Long Island and vice versa.

$2,000,000 for Improvements

Expert Retained by City of Seattle Sees Great Need for Large Improvements

Peter Witt, retained by the Council of Seattle, Wash., as a consulting expert, has proposed to that body that a conference be entered into with the former owners of what is now the Seattle Municipal Railway who at present are holders of bonds of the city that would lead to a virtual rewriting of the contract under which the city took over the road. He favors deferring for ten years the payment of the purchase installments so as to give time for the absorption of $2,000,000, which he considers should be spent on the lines to improve them.

Mr. Witt's formal report has not yet been presented. He made a preliminary statement, however, to the Council recently which is accepted as showing the trend that his formal report will take. He is quoted in part as follows:

> I have come to definite conclusions as to certain things that I shall deal at length with in my written report. I have asked, however, for this privilege of coming before you now that we may benefit by an oral discussion.
>
> I have taken the position that it can't be any of my business how the city took over this property from its former private owners, or how its previous arrangements for payment have been made. Personally, I can't see why the car rider should pay for this property, and I feel that all any street car rider should be forced to pay for when he contributes to the fare box should be the maintenance, the overhead and the operating expenses. Under the provisions of your contract, however, you are decreeing that the car rider shall pay.
>
> As your street car situation appears, it anticipates that all future capital outlay charges shall be met by issuance of utility bonds. Presumably, it is going to be impossible to sell any more bonds against this property.
>
> But your property has to have new money. It must have replacements—not only ordinary replacements but extraordinary replacements—before it can ever be possible to bring about better service at less cost.
>
> I am going to recommend the expenditure of several million dollars immediately for new equipment. For instance, there is only one place for many of the large, heavy cars—the junk pile.
>
> Money must be raised some way to meet these necessary replacements. The only way that I see is for the city of Seattle to have a conference with the owners of the bonds and arrange for the replacement of the old bonds with new bonds. The new bonds should be issued for a longer period, say twenty-five years, and for at least ten years there should be no payment on principal required. In these ten years the replacement costs can be repaid from the earnings.
>
> The principal of $15,000,000 should not be written off at the rate of $1,000,000 a year for the last fifteen years. The payment should provide for a lower amount in the early years and a larger amount in the later years, so that your property should have time to rehabilitate itself, and should be paid for in the end by the much increased population your city is destined to have.

Councilman Fitzgerald, chairman of the finance committee, in discussing Witt's remarks, said:

> Personally, I think Witt did the wise thing to take this matter up now. We can talk it all over, call the Mayor into our conferences and maybe we can get somewhere and accomplish something that will actually relieve our situation.

Mayor Caldwell declined to comment

on the Witt report. He is reported to have said:

> Witt is hired by the Council and is reporting to it. I will let the Council do all the commenting on it.

The finance committee, consisting of five of the nine members of the Council, approved the plan suggested by Mr. Witt and by a unanimous vote directed the Corporation Counsel to draft a resolution, authorizing the city law department to negotiate with the holders of the securities. When the matter was about to come before the Council meeting, Councilman Fitzgerald announced that it had not been introduced, and it was abruptly dropped, due, it is believed, to the storm of protest from the public at the proposed invasion of the general fund of the city.

DEFERRED PAYMENT PLAN BROACHED IN SEPTEMBER

Corporation Counsel Walter F. Meier, in an opinion on the proposed plan, said:

> At the time when a bill was proposed in the last session of the State Legislature authorizing cities to refund utility bonds, I was of the opinion that under existing statutes it is doubtful whether such bonds can be refunded with anything but general obligation bonds, and I think it is still doubtful, there having been no change in the statutes.

The plan to defer payments on the city's $15,000,000 debt to the Stone & Webster interests was first broached by Mr. Fitzgerald last September, in connection with the movement to reduce fares on the railway. Subsequently Mr. Witt was engaged to survey the railway system, and his first recommendation was that the city negotiate with the bondholders for the purpose of obtaining their consent to the deferred payment idea.

When asked the probable effect of the proposed payment refunds upon fares, Mr. Witt replied:

> Carfare cannot interest me. It was always dependable upon the cost of service. * * * Of necessity, the rate of fare is always involved in any transportation question. It has been the great problem for several years all over the country. Personally I am utterly opposed to the plan making the car rider buy this property. Better than 1 cent of every fare paid this last year has gone not for service, but for payment of the debt. * * *
>
> This property must have some changes, and I don't see how you can get the money unless the payments on the principal are deferred. It was a most unusual situation in which this property was acquired. I never heard of such a purchase, but however that may be, this other money must be obtained. The city of course would not be asking the bondholders to do anything that would hurt them, because it would greatly improve the property. I can't see any chance of anyone purchasing any more bonds on the utility on account of the large first lien, and I understand there is no chance of issuing general bonds. The property which is worn out should be replaced by the car rider—the car rider has worn it out and the car rider should repay.

Pay of Interurban Men Reduced

The wage dispute between the East St. Louis & Suburban Railway, East St. Louis, Ill., and its employees, members of the Amalgamated Association, has been settled by the board of arbitration. Men employed on the interurban were reduced from 60 to 57½ cents an hour. The old scale had been in effect seven months in 1920 and up to April 30, 1921. Although all three arbitrators signed the award, the one chosen by the company submitted a separate opinion in which he stated:

> In my opinion the award reflects the opinion of a layman who has become unduly impressed with the importance, in the scale of crafts, of the position of motormen and conductors on electric interurban railways.

Approximately $2,500 back pay will be paid the fifty employees affected, on account of the award being 6½ cents an hour more than has been paid the men since Aug. 1. At that time W. H. Sawyer, president of the company, agreed to reimburse the men if they got a larger award. The decision is retroactive to May 1, of this year, but up to August the men were paid 60 cents. Since August the pay has been 51 cents an hour.

Trackless Trolley Proposal Contemplates Local Ownership

At a recent meeting of the board of directors of the Virginia Railway & Power Company, Richmond, Va., it was decided to organize the Richmond Trackless Trolley Company and to set about at once putting in a line of buses along a route suggested in an application made to the Council.

This route will require ten buses to operate on a five-minute schedule and will necessitate the purchase of twelve buses—two for spares to insure continuity of service. To accomplish this, the company says, will require an investment of approximately $150,000.

Since it is not possible for the company in its present status to finance this plan it has been proposed:

1. To organize the Richmond Trackless Trolley Company with capital stock of $150,000—$75,000 of 8 per cent preferred stock (preferred as to both dividends and assets), and $75,000 of common stock.
2. To offer the preferred stock locally to investors, the officers of the Virginia Railway & Power Company being authorized to use treasury assets to borrow $75,000 with which to subscribe to the common stock of the Richmond Trackless Trolley Company.

The ability of the company to make this loan and to interest local investors is, of course, predicated upon the Council's offering a contract that will secure the investment and insure an adequate return thereon.

The offer of the company is for a complete line of transportation from Ninth and Grace Streets westward through the smooth-paved residential district where adequate and reliable transportation is greatly needed.

The application of the company for the right to operate under the plan just outlined was filed with the Council on Oct. 3. At that time the company said to the Council:

> Assuming that you can offer a contract which the Virginia Railway & Power Company can use as a basis for the loan and on which the public is willing to invest in the preferred stock, the buses, we understand, can be secured in ninety days and the overhead construction can be done while the buses are being constructed, so that no long time should elapse after the necessary and satisfactory action by the Council before the service can be available to the public.

The entire proposal has been explained to the public recently by means of advertisements inserted in the daily newspapers. As indicated in the ELECTRIC RAILWAY JOURNAL for Dec. 3, page 1005, the application of the company for trackless trolley rights has been referred to the street committee of the Council to be considered along with the new blanket franchise for the company itself.

Mr. Maloney Seeks Sources of Original Information

Commissioner Paul Maloney of the Department of Public Utilities of New Orleans, La., has addressed letters of inquiry to the executive heads of two hundred cities in the United States, Canada, the British Isles and Australia, asking for information regarding the operation of their public utilities. The questionnaires are intended to furnish him with knowledge regarding electric railways, gas, electric light and power, motor and telephones, of other communities under any and all conditions.

He is especially anxious to secure data as to the rate of fares which obtain in each city, the issuance of transfers whether free or charged for, the character of the service, whether good, bad or indifferent; also the prevailing rates charged for gas, electric light and power; water and telephone for residential and commercial purposes and the service tendered, as it is Mr. Maloney's belief that low rates or low fares do not necessarily imply good public service or successful operation.

The questionnaire also includes general matters such as the earnings of the utilities and whether same are satisfactory to the investor; whether existing rates have been determined or are still open for adjustment; does the city or state exercise rate making powers; whether the utilities in communities where they are public owned, are operated at a profit.

These are the problems which Mr. Maloney since assuming the office of Commissioner of Public Utilities at New Orleans has encountered and has had to solve, in the pending utilities tangle of the New Orleans Railway & Light Company. He feels that the information will be of great assistance to him in dealing with the matter intelligently and permitting him to profit from the experience of other communities.

French Railways to Be Electrified and Reorganized

According to a cable received at the Department of Commerce recently from Economist Consul Westcott at Paris, plans and estimates are in preparation for the electrification of 5,000 miles of French railways. It is also under consideration to have the six main line railways of France rehabilitated and reorganized under a single agreement with the State.

The bill under the provisions of which it is intended this work shall be carried out provides for pooling of net revenues into a common fund, from which any deficits of weaker lines will be paid: Maintenance of this fund at a specific figure, after an initial contribution by the State, by periodic advances or reductions of tariffs, as required: Fixing of maximum rates by the government, and the layout of a broad policy, in which the government will exercise a supervisory control for operation of the roads.

A supreme council, in which the operating companies, the government and the people will be represented, will formulate the future policies of the roads. Actual administration and operation will be by the corporations. The State guarantees operating expenses, bonded indebtedness and preferred dividends, the corporations to raise the capital for the necessary improvements and extensions.

Brooklyn Officials Sign Waivers

Testimony Helpful to Commission Given by Officials of Brooklyn Company—President Williams on Stand

Timothy S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company since 1903, took the witness stand before the Transit Commission on Dec. 7, for a long examination about company finances and particularly the 1917 dividends. He unhesitatingly signed a waiver of immunity. Nicholas F. Brady, chairman of the directorate of the company, joined President Williams in signing the waivers. In presenting these documents the Transit Commission followed its policy established with the Interborough Rapid Transit Company directors, who, however, declined last week to sign and were not examined.

MR. WILLIAMS put much of the blame for B. R. T. receivership on the city's failure to finish dual system construction on time. He denied that the 1917 dividends—the last paid by his company—had any material effect on the corporation's financial troubles the next year, when Lindley M. Garrison became receiver.

At the afternoon session Mr. Williams was questioned about the alleged over-capitalization of the Brooklyn Rapid Transit. He said that the total capitalization was $144,385,159.37, and asserted that "every dollar of stock issued and every dollar of bonds issued represents an actual cash investment at par." Mr. Williams was glad to have an opportunity to dispute the charge that Brooklyn Rapid Transit securities were "watered."

"Looking back on it now," asked Mr. Shearn, counsel to the commission, of Mr. Williams, "wouldn't you frankly say that it was a grave mistake to have followed the policy of declaring dividends during a year (1917) when your expenses were mounting and when you were confronted with a receivership if you could not market these $57,000,000 in notes maturing in July, 1918?"

"Not in the light of the information before us at that time," replied the Brooklyn Rapid Transit president. "I am frank to say that personally I would not have changed my attitude in the slightest. The mistake we made, for which we are to be criticised, if we are criticised at all, is in the fact that in 1902 when we created our $150,000,000 refunding mortgage we limited the rate of interest to 4 per cent. At that time we thought it was wise to do so."

Mr. Williams went on to explain that it was intended to refund all existing mortgage loans and to provide a continuous source of funds for capital expenditures. The mortgage was made on the advice and with the assistance of such well known financiers as E. H. Harriman, Norman B. Ream, Governor Flower, A. N. Brady and H. H. Porter.

Mr. Williams said that the Brooklyn Rapid Transit had difficulty in marketing the 4 per cent, bonds with consequent financial difficulties which culminated after other developments in receivership. The witness said most railroads have to make back loans even when they are in good condition. He said he did not know of any road in the country "unless it is some particularly rich railroad company—and I don't know of such nowadays—that carries a sufficient working capital for all needs."

Asserting that he considered obligations to investors "equally sacred with obligation to your employees or to the public so far as extending facilities are concerned," the witness said, "we might have stopped the extension and improvement of our facilities. That undoubtedly would have been a public disadvantage, but inasmuch as we were attempting to develop a system so that it would be a service to the public and a profit to its security holders, why we tried to please both sets of people at the same time."

After explaining that refusal of the War Finance Corporation to help the company in 1918 also hurried the B. R. T. receivership, Mr. Williams said he believed "if we had shown on our books an accumulating surplus of from $5,000,000 to $6,000,000 a year never expended except for capital purposes, the banking community would have been rather suspicious of our bookkeeping. There have been companies in the past showing large surpluses, and bankers who depended on these book surpluses have been sadly fooled."

COMMISSION PLAN CRITICISED

During the course of his examination President Williams read into the record a long statement in which he offered many suggestions for the modification of the tentative plan of the commission for the reorganization of the traction lines and practically presented an alternative plan. Limitations of space prevent more than this reference to the statement at this time, but it is proposed to publish an outline of his remarks in the issue for Dec. 17.

Howard Abel, comptroller of the Brooklyn Rapid Transit Company, was examined on Dec. 6. He testified with respect to the earnings of the company for the six months ending Dec. 31, 1916. He said that although the gross revenue of the period increased $832,224, the net result was that there was $585,849 less income available for dividends. This showing was due to the largely increased amounts charged for taxes and interest, taxes showing an increase of $391,206, or 45.72 per cent, and interest showing an increase of $441,312.

Notwithstanding these additional burdens, the net income of the system for dividends was more than $500,000 in excess of the dividend requirement at the rate of 6 per cent per annum for this period. Mr. Shearn, for the commission, sought to show that about this time the excess of bills payable by the Brooklyn Rapid Transit Company to subsidiary companies over the bills receivable from those companies was $5,678,805. At this time however the treasurer's statement of cash balance of the system on deposit was $1,260,900. On Feb. 25, 1918, the executive committee adopted a resolution to the effect that although the company's net profits justified a declaration of the usual dividend payable on April 1 the committee believed that in view of the maturity on July 1 of that year of $57,735,000 of secured gold notes, issued for rapid transit purposes, it would be wise to withhold action on the dividend. The directors approved this recommendation. The last dividend was declared Dec. 1917, payable on Jan. 1, 1918. On the last day of that year the road was thrown into the hands of Lindley Garrison as receiver.

Judge Shearn read in evidence a circular signed by Chairman Brady and President Williams dated Jan 31, 1919, showing that during the twenty years which ended with the last fiscal year the net profits of the system from operation were $51,043,824, of which $29,022,334 was distributed to stockholders in dividends. Practically all the remaining $22,021,490 had gone back into substantial property improvements.

Before leaving the matters connected with the Interborough Rapid Transit Company counsel for the New York Transit Commission on Dec. 6 called as a witness James R. Sheffield, receiver of the Interborough Consolidated Corporation, the successor to the Interborough Metropolitan Company. He corroborated the statement brought in previous testimony that $800,000 had been transferred from the Interborough Consolidated Corporation to the use of the Interborough Rapid Transit Company on March 20, 1919, the day before he had been appointed receiver.

Mr. Sheffield doubted the legality of the transaction, but as at that time he was only a receiver in bankruptcy, he had very limited powers. As soon as he became trustee in bankruptcy, however, he referred the matter to his counsel who after considering the matter advised him that in their opinion the transaction was illegal and he should take steps to recover the money.

This he did and the late Mr. Shonts, president of the Interborough Rapid Transit, replied by letter that it was the opinion of counsel for that company that the loan was in all respects legal and proper. On the representation of Mr. Shonts that the $800,000 could not be paid at once, the situation that confronted Mr. Sheffield, he said, was either to begin an action to recover or to accept the equivalent of the $800,000 in proper collateral. Some of the bondholders were opposed to pressing suit.

Finally a petition was presented to the court by the receiver in which he stated all of the essential facts. The court instructed Mr. Sheffield to refrain from instituting proceedings to test the legality of the transaction. An agreement was made, however, that the money should be paid back on or before Dec. 1, 1919. On Nov. 8, 1919, Mr. Sheffield received principal and interest to the amount of $248,000 to apply to the indebtedness. On Nov. 29, he received the sum of $605,875, being the payment of the $800,000 in full with interest.

That fulfilled all the obligations under which that agreement was drawn with the exception of the payment of the $500,000 which had been borrowed in 1918, and that amount was paid on Dec. 22, when he received $502,395, thus closing out the transaction.

A few days after receiving this payment, the Interborough Consolidated Company loaned $1,000,000 to the Interborough Rapid Transit Company. This was done on order from the court after a conference of all the interests involved. Counsel Cook said it was a hectic New Year's eve. As he recalled it it was Dec. 31 when the order was received from the court. According to

Mr. Cook it was a question of a receivership or a Happy New York.

Memoranda made by J. P. Morgan & Company, and Lee Higginson & Company of Boston, advising the Interborough Rapid Transit Company greatly to reduce its dividends in order to meet charges, were introduced as evidence in the hearing on Thursday morning. Mr. Ficher, secretary of the company, presented the data as the first witness of the day.

The first of the data presented was a letter dated July 6, 1917, from E. A. Hallowell, of Lee Higginson & Company, to A. M. Anderson, of J. P. Morgan & Co., which contained statistics showing how much the Interborough Company was running behind and the recommendation that "it is advisable for the Interborough Rapid Transit Company to reduce its dividends to meet the interest charges." The letter continued, "It seems a certainty that this dividend must be suspended sooner or later."

In a memorandum dated Aug. 1, 1917, from Mr. Anderson to the Interborough Company, the former pointed out that the liability of the company under the contract with the city for construction was limited to some $58,000,000, but that the company's liability for equipment was unlimited. A final estimate had placed it at $44,000,000 which was an increase of $23,000,000 over preliminary estimates. Other figures proved that for a period of years the actual gross earnings had been much less than the estimated earnings. Particularly was this true of 1915, and the memorandum stated that in all probability there would be a larger divergence in the coming years. It further recommended that the dividend rate be reduced to 10 per cent, the amount needed to pay interest on Interborough Consolidated Company's 4½s.

In reply, the Interborough brought out certain errors made in estimating, which swelled the estimate and reduced the actual operating figures. For example, revenue from the elevated lines was included in the estimate for 1913, whereas the new elevated lines were not put in operation during that year.

Mr. Garrison, the next witness after Mr. Fisher, in reply to Judge Shearn's question to "describe the break-up of the system since your appointment," said that the company was suffering from several troubles. The war affected the labor market through the infiltration of incompetent men, prices increased out of all proportion, and the contract with the city made operation so expensive that the property could not be run economically. Mr. Garrison then continued with a history of changes in transfer systems on subway and surface lines and the discontinuance of operation of certain lines.

Saginaw Votes in Favor of Buses

At a special election on Dec. 7 the voters of Saginaw, Mich., rejected the proposal for the return of street cars and decided in favor of motor buses by a majority of 869. Less than half of the registered vote was cast. Buses received 6,028; electric cars 5,159. Although this was an advisory vote, it is believed that the Council will proceed to have a motor bus system established in Saginaw, and there will probably be no further conference at this time with representatives of the bondholders of the Saginaw-Bay City Railway, which ceased operations on Aug. 10.

New Franchise Proposal Made in Houston

The Houston (Tex.) Traction Company has made a new proposal to the City Commission in the franchise and fare controversy. It has proposed to the city that the fixed valuation and guaranteed net earnings, on which the company won its fight in the Federal Court, be abandoned and that in return the city grant a franchise extension to which is added a guarantee to spend $1,200,000 in extensions and improvements.

The franchise fight has waxed warm in the City Council meeting, some members apparently being in favor of giving the company a fare that will yield an adequate return. At the last meeting Tax Commissioner H. A. Halverton charged that "somewhere, somehow, somebody is trying to kill the railway, and if such is the case, let him be frank enough to speak up." Mr. Halverton's charge went unchallenged.

In the informal negotiations looking to the submission of new franchise proposals representatives of the company told Mayor O. F. Holcombe that the new plan with the contemplated improvements would add something like 700 men to the company's pay roll. They also told the Mayor that efficient service in Houston is one of the chief aims of the traction officials.

Labor and Tax Problems Discussed by President Harding

The matters of greatest interest to electric railway executives touched upon by President Harding in his message to Congress were the reiteration by him of the right of labor to organize and the need for ending all issues of non-taxable bonds. President Harding said:

> The right of labor to organize is just as fundamental and necessary as is the right of capital to organize. The right of labor to negotiate, to deal with and solve its particular problems in an organized way, through its chosen agents, is just as essential as is the right of capital to organize, to maintain corporations, to limit the liabilities of stockholders.
>
> As we have great bodies of law carefully regulating the organization and operations of industrial and financial corporations, as we have treaties and compacts among nations which look to the settlement of differences without the necessity of conflict in arms, so we might well have plans of conference, of common counsel, of mediation, arbitration and judicial determination in controversies between labor and capital. To accomplish this would involve the necessity to develop a thoroughgoing code of practice in dealing with such affairs. It might be well to set forth frankly the superior interest of the community as a whole to either the labor group or the capital group. With rights, privileges of immunities and modes of organization thus carefully defined, it should be possible to set up judicial or quasi judicial tribunals for the consideration and determination of all disputes which menace the public welfare.
>
> I think our tax problems, the tendency of wealth to seek non-taxable investment and the menacing increase of public debt, federal, state and municipal, all justify a proposal to change the Constitution so as to end the issue of non-taxable bonds. No action can change the status of the many billions outstanding, but we can guard against future encouragement of capital's paralysis, while a halt in the growth of public indebtedness would be beneficial throughout our whole land.
>
> Such a change in the Constitution must be very thoroughly considered before submission. There ought to be known what influence it will have on the inevitable refunding of our vast national debt, how it will operate on the necessary refunding of State and municipal debt, how the advantages of nation over state and municipal, or the contrary, may be avoided. Clearly the states would not ratify to their own apparent disadvantage. I suggest the consideration because the drift of wealth into non-taxable securities is hindering the flow of large capital to our industries, manufacturing, agricultural and carrying, until we are discouraging the very activities which make our wealth.

Cities Co-operate to Retain Service

Community committee meetings, composed of representatives from Elgin, Aurora, Batavia, St. Charles, Dundee and other Illinois cities touched by the Aurora, Elgin & Chicago Railway have been held during the past few weeks to ascertain if the communities themselves could not find a way to keep cars of the railway company in operation. If not, the company may be ordered by the court to discontinue its service. The controversy between the railway company, which seeks an order to discontinue service on Fox River valley interurban and the city lines of Aurora and Elgin, and the cities which would be affected, has been noted previously in the ELECTRIC RAILWAY JOURNAL.

Related to these meetings are several important developments. First, Elgin voted on Nov. 26 to adopt the "home-rule" policy whereby the city itself will regulate utility rates. The legality of the election has since been attacked by Attorney General Brundage, but city officials declare the Council will act on rates as soon as the company asks for a franchise. Second, Elgin may have one-man cars. This much is the expressed opinion of Mayor Arwin E. Price, formed after a conference in Elgin with officials of the company. Third, there is little possibility that railway service will be discontinued on the Aurora-Elgin lines, according to the announcement of Attorney Alschuler, representing the receiver for the company. Fourth, a uniform franchise for all the cities and the company is the plan proposed by Judge Evan Evans.

The community committee meetings were the result of Judge Evans suggestion that the communities themselves try to settle the problem. A uniform franchise has been considered almost impossible to conclude, since many Aurora streets need paving, and Elgin streets do not, with a few exceptions. The city administration of Aurora, however, has announced through its counsel that it would waive the future paving assessments providing the company gave lower fares; paid up its past obligations of $5,000 for its share of the cost of paving Lincoln Way and South River Street, and other indebtedness, making a total of $25,000; and cut down salaries now paid to the management of the road.

A sub-committee composed of representatives of the various communities concerned, investigating the financial affairs of the company, preparatory to working out some agreement as to a franchise found that Elgin lines had been operated at a small profit, but that the interurban lines of the Fox River division had operated at a loss.

Home-rule in Elgin now gives that city the right to govern rates. It formerly possessed only the right to govern on what streets the railway could operate. Now the commerce commission will act only in case the city and traction officials fail to agree on a schedule of fares rates. The Commerce Commission promulgated the home-rule provisions about five months ago, and Elgin is the first city to adopt them.

Financial and Corporate

$20,602,766 Estimated Value Toronto Railway

Item of $1,558,574 Included As Cost of Bringing Bare Property Into Going Concern

Testifying before the board of arbitration in Toronto, Ont., on Nov. 25, A. L. Drum, consulting engineer. Chicago, said he had made an appraisal of the property of the Toronto Railway and found the value on the basis of cost to reproduce new less depreciation as of Sept. 1, 1921, to be $20,602,766. This valuation is on the basis of applying average unit prices for the three years from Aug. 31, 1918, to Sept. 1, 1921, to the quantity inventory as of Aug. 31, 1921. A second similar appraisal was submitted by Mr. Drum on the basis of unit prices prevailing Sept. 1, 1921. The following table gives a comparison of the two appraisals:

	Three Year Average Aug., 1918, to Aug., 1921, Inclusive	Sept. 1, 1921	Sept. 1, 1921 per Cent of Three-Year Average
Land	$1,655,484	$1,655,484	100.00
Track	2,782,823	2,728,692	98.05
Bridges and subways	94,922	94,922	100.00
Electrical distribution system	1,566,246	1,385,024	88.43
Rolling stock	5,928,309	5,742,407	96.86
Power station equipment	570,145	554,971	97.33
Substation equipment	1,335,254	1,310,170	98.12
Shop tools and miscellaneous equipment	344,642	309,844	89.90
Buildings	1,834,768	1,864,542	101.62
Furniture and fixtures	53,750	45,687	85.00
Contingencies and omissions	288,324	278,827	96.71
Engineering and superintendence	592,940	575,610	97.08
Administration, organization and legal expense	674,800	674,800	100.00
Taxes during construction	151,600	151,600	100.00
Interest during construction	1,170,185	1,142,063	97.60
Total	$19,044,192	$18,514,643	97.22
Cost of placing the physical property in operation	1,558,574	1,514,647	97.19
Total physical property	$20,602,766	$20,029,290	97.22

The appraisal of the property was made in accordance with the special act of the Canadian Parliament enacted in 1891, and under which the city of Toronto took over the property of the Toronto Railway on Sept. 1, 1921. The valuation clause in the statute, which covers the basis of the appraisal, is as follows:

> In determining such value the rights and privileges granted by the said agreement and the revenue, profits and dividends being or likely to be derived from the enterprise are not to be taken into consideration, but the arbitrators are to consider only the actual value of the actual and tangible property, plant, equipments and works connected with and necessary to the operation of the railways, which is not to include any land, property or rights acquired or used in connection with the said street railway, and which do not actually form a part of the said street railway undertaking necessary to the carrying on of the same.
>
> In arriving at such value the arbitrators are to consider and award only the value of the said several particulars to the city at the time of the arbitration, having regard to the requirements of a railway of the best kind and system then in operation and applicable to the said city.

In determining the actual value of the physical property to the city, Mr. Drum found the present value on the basis of depreciating the existing physical property from the standpoint of existing depreciation due to wear and use, giving due regard to age and remaining economical service and life of the several component parts of the property. To the value of the bare physical property, Mr. Drum added $1,558,574 as an estimate of the actual cost of placing the physical property in operation, which he contended is an element of cost that is encountered in creating a street railway system and bringing the bare physical property into an efficient, operating and going concern. This cost includes the cost of creating and training the existing operating organization of the company.

The basis used for determining this estimate was that a fair measure of such cost is an estimate of the loss of interest that would accrue on the cost of the property during the period of time that would be necessary to bring the property to an efficient, operating going concern; that is, the development period of the property. Such loss would be equivalent to a loss of interest averaging 2 per cent per year for the three-year development period, this being the period estimated to elapse between the beginning of operation and the time when the business will earn operating expenses and taxes and a fair return on the cost of the property.

Reorganization Details Being Worked Out

Plans are expected to be announced before the beginning of the new year for the reorganization of the Springfield Terminal Railway & Power Company, Springfield, Ohio. The property has already been sold, but the committee in charge of the proposed reorganization has not progressed far enough, however, to be able to submit a reorganization plan. The representatives of the bondholders are confident that the property can be made to show an earning capacity ample to pay the principal and interest on the proposed bond issue from the outset with possibilities of a much greater earning power in the course of a little time.

The desire now is so to reorganize the line as to prevent ultimate loss to any of the bondholders. The holders of the first mortgage 6 per cent serial gold bonds of the company are represented by a protective committee consisting of R. F. Hyney and Guy L. Emerson of Hyney, Emerson & Company, Chicago, and Edward A. Farmer and S. M. Sorrey, with Guy M. Walker as counsel. The depositary is the Ft. Dearborn Trust & Savings Bank, Chicago, Ill.

Stock Dividend Refused

Michigan Commission Declines to Accept Cooley Appraisal As Conclusive Proof of Utility's Value

The Public Utilities Commission of Michigan, in an order issued on Dec. 2, denied permission to the Detroit United Railway to issue a stock dividend of $334,000, "with which to regain the confidence of its stockholders." The opinion was written by William W. Potter and concurred in by the other members of the commission. It denied the company's contention that the appraisal and audit recently completed by Dean Mortimer E. Cooley of the University of Michigan had been recognized by the State.

Officers of the company who appeared before the commission asked permission to issue the stock from the company's unissued securities, pointing out that the company has $35,281,000 in bonds, $4,748,000 in notes and $5,375,000 in stock outstanding, and that the company has properties of a book value of $62,400,000 and of an appraised value considerably in excess of this.

It appears that the figure of $62,400,000 for the property was set by Dean Cooley at an expense to the company of $300,000. An officer of the company is reported to have said before the commission that "we assume that the State would not cause us to spend $300,000 for an appraisal and then not be bound by the appraisal." Mr. Potter, for the commission, retorted that this was precisely the claim he thought the commission would make, whereas, he said, "the record will show that the appraisal was made at the request of the company and not the commission. The commission said:

> The commission having gone further than it should at the request of the Detroit United Railway to accommodate it, the petitioner now alleges that this commssion put the company to an expense of $300,000 in making this inventory and appraisal; that the appraisal is the commission's appraisal, made on behalf of the State; that this commission is bound by it, and that without proof of its accuracy it is sufficient in and of itself to establish a prima facie case of its own correctness.
>
> ... An appraisal made at the petitioner's request, at its own expense, for its own purposes, by men of its own selection, without any proceeding pending before the commission, in pursuance of an order made without jurisdiction, has no such standing as a public document as to make it, of itself evidence of anything. ...
>
> I think the Cooley appraisal a private document and entitled to no force as evidence until its correctness and accuracy are proved.
>
> Representatives of this commission are engaged in the inventory, appraisal, audit and study of the interurban properties of the Detroit United Railway, in pursuance of Public Acts 115, 1921. When this shall be done, if petitioner is entitled to the order requested, one should issue.

It is set forth in the opinion that with Detroit United Railway stock not now earning a sufficient sum to pay cash dividends, and "its stock selling on the market at from 60 cents to 70 cents on the dollar, to issue more stock now without increasing its assets would normally tend to further depreciate its stock."

The cases of the Bay City-Saginaw Railway, now in bankruptcy, and the Muskegon Traction & Lighting Company, which recently asked for permission to cease service, are cited in the opinion as ample evidence that an electric railway company should not be permitted to declare a stock dividend "because some time in its prosperous past it invested surplus earnings in property."

Money Cheap Under Service-at-Cost

Montreal Tramways Floats $1,750,000 Loan to Net 6.5 Per Cent to Pay for Improvements

The Montreal (Que.) Tramways has just floated through Harris, Forbes & Company, New York, N. Y., an issue of $1,750,000 of 5 per cent first and refunding mortgage gold bonds to pay for improvements authorized and made during the year ended June 30, 1921. The offering price was 83½ and interest, yielding about 6.50 per cent. According to the bankers, this was the first time in several years that an offering of street railway bonds has been made in any considerable sum. The issue is non-callable before 1941 except in full. All of the bonds were subscribed before the public offering.

It is understood that competition for the issue was keen among the bankers, showing that in instances where existing fares are capable of producing sufficient revenue to meet the conditions of operation the electric railways can secure loans on terms as favorable as any other class of borrowers. It is true, of course, that interest rates have been declining steadily for some time now, but the success of the railway in placing the new loan is attributed largely to the element of stability which the service-at-cost grant of the company lends to its earnings and to the fact that the tramway has been able materially to cut the cost of operation since the termination of the last fiscal year. In the first place, materials have declined in cost and then the company has been able to utilize more hydro-electric power at a figure very much lower than steam power can be generated.

During its last fiscal year the company paid 10 per cent on its common stock in addition to paying a deferred dividend of 5 per cent. At the present market price the yield on the common stock is only 7 per cent, but by some Montreal brokers the stock is considered an investment with possibilities of considerable further appreciation in price, particularly in view of prospective future "rights."

The bankers reported earnings of the company for the year ended Oct. 31, 1921, as follows:

Gross earnings	$11,784,965
Operating expenses, taxes and maintenance	9,058,208
Net earnings	$2,726,757
Annual interest charges on all bonds outstanding	1,051,533
Balance	$1,675,224

The service-at-cost franchise under which the company holds the exclusive right until 1953 is unique in that fares must be so adjusted as to produce revenue sufficient to meet (1) operating expenses and taxes; (2) maintenance and renewals; (3) 6 per cent per annum on a capital value of $36,286,295 as established by a valuation based on reproduction cost new, less depreciation using 1917 prices; (4) 7 per cent on addition capital supplied during the war and for a fixed period after the termination of hostilities; (5) 6 per cent on working capital; (6) 0.5 per cent of $36,286,295 capital value per annum ($181,431) to cover expenses incurred in providing additional capital; (7) rental of $500,000 per annum during the life of the contract for the city for the use of the streets but payable only when earned after all prior charges.

The conditions worked out as follows for the fiscal year ended June 30, 1921, on a basis of $11,773,005 gross earnings:

Revenues:		
Allowance from contract	$2,355,970	
Other revenue	55,359	
Gross revenue		$2,411,329
Less the following expenses:		
Interest on bonds	$1,082,418	
Interest on debentures	850,313	
Other expenses	17,540	
Total expenses		$1,950,272
Net income available for dividends		$461,057
Dividends paid (10 per cent on $3,891,310 common stock)		389,131
Surplus for year		$71,925
Surplus for year June 30, 1920		941,175
Total profit and loss surplus		$1,013,100

From this surplus the company has paid the quarterly dividend of 2½ per cent due the quarter ended March 31, 1919, which leaves now outstanding only a 5 per cent deferred dividend to meet all dividend payments in full.

This ability to pay deferred dividends demonstrates the value of the new franchise from the credit point of view and although these deferred dividends were paid from the profit and loss surplus nevertheless they were made possible only by the assurance that the recurring annual dividends would automatically be met by franchise allowances which also provided for the continuing the excellent physical operating condition of the property.

Among improvements to be paid from the proceeds of the sale of $1,750,000 bonds is the new Cote substation.

Consolidation of Charleston Lines Planned

The executives of the Charleston (W. Va.) Interurban Railway and the Charleston & Dunbar Traction Company are of the opinion that the systems can be operated more efficiently and effectively by consolidation under one management and have petitioned the State Public Service Commission to permit the companies to merge under revised rates and schedules to go into effect after January. The Charleston Interurban recently effected a lease of the Charleston & Dunbar Traction Company.

The combined organizations propose:

1. To lease all lines of the Charleston Dunbar Traction Company to the Charleston Interurban for an unnamed period of years, these lines to be operated by the interurban as a part of its own system.
2. To abandon tracks of the Charleston & Dunbar line on Pennsylvania Avenue and on Roane Street.
3. To connect the Kanawah Valley Traction Company's tracks on Virginia Street, business district, and the Summers Street line of the new consolidation, so that cars may be sent in a continuous loop from the east to west side of Elk River.
4. To operate city cars east of Capitol Street in three loops, one going east as far as Smith Street, the middle loop turning at Ruffner Avenue, and the other and third loop extending to Duffy Street. Revised schedules to go into effect in the city.
5. To raise the rate of fare on all Charleston & Dunbar lines from 6 cents to 7 cents, in conformity with the 7-cent rate on the interurban lines.

Cleveland Deficit Reduced

Improved Business Conditions There Reflected in Railway Company's October Statement

Signs of improved business conditions in Cleveland, Ohio, are indicated in the October report of the Cleveland Railway. On Sept. 1 the deficit in the company's interest fund, which is the fare barometer, was $206,158. During September this deficit was decreased by $10,165, while in October the deficit was reduced to $23,785, making the deficit in the fund on Nov. 1 $172,207, a net reduction of more than $33,000 in two months.

In addition to this indication that the bottom has been touched in the general business depression in Cleveland, the Cleveland Railway's directors learned that $43,094 was added in September and $80,777 added in October to the company's operating reserve as surpluses, making the total in the operating reserve $415,235.

Since, under the Cleveland plan of operation, all the accruals in the various funds must be transferred to the interest fund at the end of the ordinance year, March 1, there is now a prospective balance in the interest fund, anticipating the transfer to be made, of $230,000.

That the balance in this fund will be considerably greater before March 1 is foreseen from the fact that the operating allowance of the company has been in excess of expenditures each month, due to the reduction in the wage scale of operatives and other economies affected by the company.

No prediction is being made at the offices of the company or by the city street railway commissioner as to when any change may be made in the rate of fare, but in both quarters it is felt that the worst effects of the general industrial depression are over.

This is further evidenced in the traffic figures for October. During this month 32,740,409 riders were carried, as against 38,726,694 in October, 1920, a decrease of 15.46 per cent. The decrease in the preceding month had been 17.56 per cent.

The street railway committee of the City Council was scheduled to meet on Dec. 5 to consider increasing the company's allowance from 10 cents a carmile to a figure that will extinguish an accumulated deficit of close to $700,000 and at the same time provide for necessary improvements.

The Council at its last meeting authorized the company to take more than $200,000 from earnings for the purpose of writing off obsolete tracks in the downtown section and obsolete equipment at the West Twenty-fifth Street battery house, abandoned since the company began purchsaing most of its power.

Reorganization Plan Declared Effective.—Notice has been given that the plan of reorganization for the Monterey Railway, Light & Power Company, Monterey, Mexico, has become effective and binding on the holders of the 5 per cent first mortgage debenture stock. Holders of the debenture stock are called upon to deposit the certificates for their stock at the office of the British Empire Trust Company, Ltd., London, for exchange for new securities which will be issued in accordance with the reorganization plan.

New Company Formed to Operate Shore Line

The report that a new company has been formed to operate the Shore Line Electric Railway from New Haven through Saybrook and Chester, Conn., has been officially confirmed. The Shore Line Traction Company has been incorporated and will take over all the assets of the old operating company, the Shore Line Electric Railway, in the territory to be served. Under present plans service will be maintained from 6 a. m. to 10 p. m. on a one-hour schedule. Ford, Bacon & Davis, New York, N. Y., will superintend all operations.

In their report the engineers estimate that it will require at least four months and possibly longer to restore the road to a successful operating basis. The work of rehabilitation of the line, which has not been in operation for two years, involves the installation of new power house equipment, the overhauling of all rolling stock and the cleaning and repairing of track and working equipment.

The cost of this work has been estimated at approximately $900,000. To secure the capital the company has provided a $1,000,000 issue of first mortgage 7 per cent gold bonds, with a thirty-year maturity. The capitalization of the new company is less than half that of the old. The latter earned all its fixed charges and carried a substantial amount of surplus during favorable years. With a substantial reduction in the burden imposed on the company in the form of fixed charges, the success of the line is said to be practically assured.

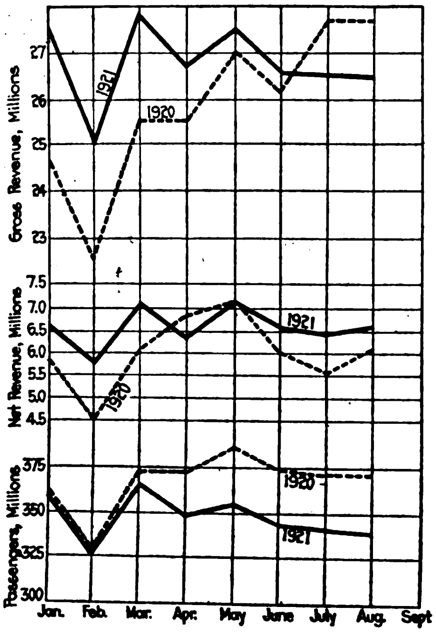
The net revenue from operations it has been estimated will exceed $110,000 a year. This affords a liberal margin of safety for the interest requirements of $63,000 of the bonds to be outstanding. A large part of the bond issue has already been subscribed by individuals and corporations whose homes or business properties will be served by the line.

Lines Seek Partial Abandonment.—The San Jose (Cal.) Railroads have petitioned the State Railroad Commission for permission to abandon the Santa Clara line running from the Southern Pacific depot at Santa Clara to the south town limits known as the depot line. The Peninsula Railway, operating suburban lines in Santa Clara County, wants to abandon service on part of its Naglee Park line.

$5,000,000 Gain in Net Operating Revenue

Although the operating expenses of a group of electric railways, whose earnings represent approximately 25 per cent of the total earnings of the industry, shows an increase of about $800,000 for the first nine months of 1921 over the corresponding period of last year, the net operating revenue during that time totals about $8,000,000 more. The table below compiled by the American Electric Railway Association, includes the reports from 72 companies for the group of the first eight months and 62 for the ninth month. When these figures are totaled it is revealed that the operating ratio for 1921 has fallen from 76.7 to 75.5.

The accompanying chart will serve to picture the trend of the electric railway industry in regard to the number of passengers carried, operating and net operating revenue.



A GRAPHIC PICTURE OF BUSINESS AND EARNINGS OF REPRESENTATIVE ELECTRIC RAILWAYS

Reorganization of United Railways Investment Company Considered

Plans relative to a reorganization of the United Railways Investment Company, Jersey City, N. J., are being considered and an attempt made to bring the interests of the company together in such a way that the accumulated dividends on the preferred stock may be liquidated.

These dividends now amount to 75 per cent, for no payments have been made on the outstanding $16,000,000 of 5 per cent cumulative preferred stock since 1907. United Railways Investment has $20,400,000 common stock outstanding also. The company owns 58 per cent of the $42,943,000 common stock of the Philadelphia Company, which derives its income almost wholly from dividends.

San Francisco Asks Price on Market Street Railway

The Board of Supervisors of San Francisco, Cal., on Dec. 6 decided to request the Market Street Railway to name terms and conditions upon which it will turn over its railway system to the city to be operated in conjunction with the present municipal railway system. A charter amendment adopted a year ago permits the city to take over the public utility and pay for it out of the earnings of the utility. In case a price can be agreed upon, it is not proposed to issue bonds for the purchase, but to take over the properties on the pay-as-you-go plan.

The purchase is being urged by the Chamber of Commerce, Civic League of Improvement Clubs, Building Trades Council, Downtown Association and other organizations.

If an agreement is reached as to the price to be paid, the matter would still have to be submitted to popular vote in September.

City Engineer O'Shaughnessy estimated the value of the company's railway system at $40,000,000. The Railroad Commission's valuation is about $41,500,000. The company itself has placed the figure at $51,800,000.

Some of the company's most important franchises expire in about ten years, while others continue for twenty-five years.

COMPARISON OF OPERATING REVENUE, OPERATING EXPENSES, PASSENGER REVENUE AND REVENUE PASSENGERS OF SEVENTY-TWO ELECTRIC RAILWAYS MONTH BY MONTH FOR THE FIRST NINE MONTHS OF 1921 AND 1920

	January		Per Cent	February		Per Cent	March		Per Cent
	1921	1920	Increase	1921	1920	Increase	1921	1920	Increase
Operating revenue	$27,581,198	$24,712,598	11.6	$25,046,916	$22,498,452	11.3	$27,940,298	$25,500,359	9.6
Operating expenses	21,009,454	18,846,047	11.5	19,307,654	17,990,835	7.3	20,849,874	19,294,557	8.1
Net operating revenue	6,571,744	5,866,551	12.0	5,739.262	4,507,617	27.3	7,090.424	6,205,802	14.3
Operating ratio	76.2%	76.1%	0.1	77.2%	80.0%	3.5 (d)	74.6%	75.6%	1.3 (d)
Passenger revenue	$26,735,211	$23,876,612	12.0	$24,229,453	$21,718,302	11.6	$27,078,330	$24,632,467	10.0
Revenue passengers	361,546,245	362,229,993	0.2 (d)	327,076,392	328,782,242	0.5 (d)	365,493,508	373.081,771	2.0 (d)

	April		Per Cent	May		Per Cent	June		Per Cent
	1921	1920	Increase	1921	1920	Increase	1921	1920	Increase
Operating revenue	$26,743,454	$25,627,551	4.4	$27,424,197	$27,021,052	1.5	$26,590,202	$26,169,820	1.6
Operating expenses	20,075,345	18,781,559	6.9	20,274,181	19,802,057	2.4	20,006,325	20,162,854	0.8 (d)
Net operating revenue	6,668.109	6,845,992	2.9(d)	7,150,016	7,218,995	1.0(d)	6,583.877	6,006.966	9.6
Operating ratio	75.2%	73.4%	2.5	74.2%	73.4%	1.1	75.2%	77.2%	2.6 (d)
Passenger revenue	$25,889,883	$24,709,943	4.8	$26,557,004	$25,986,203	2.2	$25,607,552	$25,183,835	1.7
Revenue passengers	349,781,601	373,598,840	6.4 (d)	356,876,091	387,099,601	7.8 (d)	344,775,722	374,406,617	7.8 (d)

	July		Per Cent	August		Per Cent	*September		Per Cent
	1921	1920	Increase	1921	1920	Increase	1921	1920	Increase
Operating revenue	$26,510,903	$27,655,426	4.1 (d)	$26,363,501	$27,727,414	4.9 (d)	$23,617,527	$25,139,793	6.1 (d)
Operating expenses	20,088,668	22,055,726	8.9 (d)	19,800,524	21,584,202	8.2 (d)	17,583,710	19,646,307	10.5 (d)
Net operating revenue	6,422,235	5,599.700	14.7	6,562,977	6,144,212	6.8	6,033,817	5,493,486	9.8
Operating ratio	75.8%	79.8%	5.0 (d)	75.0%	78.0%	3.9 (d)	74.6%	78.2%	4.6 (d)
Passenger revenue	$25,564,568	$26,628,025	4.0 (d)	$25,401,494	$26,696,993	4.9 (d)	$21,267,213	$22,593,767	5.9 (d)
Revenue passengers	342,403,463	372,586,593	8.1 (d)	338,984,874	372,063,589	8.9 (d)	303,516,114	333,601,903	9.1 (d)

(a) Only sixty-two companies are represented in the summary for September. (d) Decrease.

Merger Petition Renewed

The Indiana Electric Corporation has filed with the Public Service Commission an amended petition for the consolidation of seven public utility companies in the State, three of which companies the corporation now owns. The petition sets out that "the fair aggregate value of the properties of the utility companies described is not less than $18,500,000." The petition also asks authority for the corporation to issue $5,500,000 in bonds, $3,000,000 in common stock and $1,500,000 in preferred stock. The service commission set Dec. 14 for the first hearing on the new petition.

The property valuation of the companies, as set out in the petition, is $250,000 higher than the valuation of the properties as set out in the former petition of several months ago, which was denied by the service commission.

The corporation in the first petition proposed to have outstanding approximately $21,000,000 in securities. In the amended petition the corporation proposes to cut this figure to $18,500,000, an amount equal to that placed in the petition on the valuation of the property, or a reduction of approximately $2,500,000 from the former figure.

The new petition requests authority to issue $3,000,000 in common stock, a reduction of $1,000,000 as requested in the former petition. In the old petition authority was asked to issue $750,000 in notes, due one year after issue, but the new petition does not ask authority to issue any notes. In the amended petition authority was asked to issue preferred stock of the par value of $1,500,000, which is a reduction of $350,000 from the amount fixed in the former petition. Figures covering the valuation of several of the companies also are slightly changed.

The companies which the corporation plans to consolidate are the Merchants Heat & Light Company, Indianapolis; the Elkhart Gas & Fuel Company and the Valparaiso Lighting Company, which are now owned by the corporation, and the Indiana Railways & Light Company, Kokomo; the Wabash Valley Electric Company, the Putnam Electric Company and the Caluga Electric Company.

The Public Service Commission on Sept. 13 declined to authorize the merger of the companies on the first petition of the corporation, holding that the property valuation of the utility companies was not sufficient to warrant the issuance of the securities for which permission was asked. The new petition also requests that the commission set aside its order on the former petition.

Service Suspension Allowed

The Muskegon Light & Traction Company, Muskegon, Mich., is authorized to discontinue service on Dec. 30, if jitney competition is not eliminated by that time. The order was issued by the Public Utilities Commission on Nov. 20 and requested that within thirty days Muskegon and Muskegon Heights should hold an election to decide on the question of jitney elimination.

Following this decision, officials of both cities set Dec. 14 as the date for the election. If the electors vote to retain electric railway in service city officials must terminate bus lines which compete with the railway. In case the vote is in favor of jitney service, the traction company may cease operation on Dec. 30.

The railway claims that it can operate only at a loss with bus competition, but could be successful without it. Both city officials and the company are said to be satisfied with the decision of the commission.

Defunct Line May Be Operated

Gasoline cars may be operated over the Plymouth-Norwalk line of the Sandusky, Norwalk & Mansfield Electric Railway, Norwalk, Ohio. This is the latest development since the purchase of the road by the Wilkoff Company, Youngstown, Ohio, as reported in the ELECTRIC RAILWAY JOURNAL for Nov. 26, 1921. The new owners will wait five weeks before junking the road, to give the stockholders and patrons an opportunity to decide whether they shall buy and operate it.

Chances for operating the road are considered better than for some time, for the present owners will sell any part of the road and junk what they do not sell. If the stockholders decide to operate the road with gasoline cars they would purchase only the road bed, track and ties. The present owners would then junk the equipment not needed for the operation of gasoline cars. While the court had custody, the road had to be sold in its entirety, but now that it is owned by private interests, the advocates of gasoline cars may have some success, it is said.

Financial News Notes

Detroit United to Pay Bonds.—Fifty thousand dollars of first mortgage 5 per cent gold bonds of the Detroit (Mich.) Railway, due on Dec. 1 will be paid at the office of the People's State Bank, Detroit, Mich.

Stockholders' Meeting Postponed.—The meeting of stockholders of the Interborough Rapid Transit Company, New York, N. Y., which was scheduled for Nov. 29, has been postponed until Dec. 29.

Receiver for Line in Pennsylvania.—Walter C. Graeff has been appointed receiver of the Ephrata & Lebanon Street Railway, Lebanon, Pa., operated by the Ephrata & Lebanon Traction Company.

Seeks to Issue Stock—The West End Street Railway, Boston Mass., has petitioned the Massachusetts Department of Public Utilities for permission to issue $2,700,000 of thirty-year 7 per cent bonds to refund a similar amount maturing Feb. 1, 1922.

Paving Assessment Upheld. — The Supreme Court of North Carolina has affirmed the right of Durham to collect $102,942 from the Durham Public Service Company as its part in the pavement of Main Street, on which the company has a street railway line.

Abandonment Authorized. — Permission has been granted to the Hopatcong Shore Railroad by the Board of Public Utility Commissioners to abandon its line and to sell its property and assets. The corporation was organized in 1911, but discontinued service on Sept. 7, 1917. The line provided passenger service between the Morris County Traction Company's terminus at Landing and Bertrand's Island, Lake Hopatcong, a distance of approximately 2 miles. In its petition the company set forth an operating loss of about $5,000 from 1911 to 1917, exclusive of any return on either stock or bonds.

Maturing Bonds Extended. — Announcement has been made by Dillon, Read & Company, New York, N. Y., that the $5,000,000 first consolidated mortgage bonds of the Minneapolis (Minn.) Street Railway, issued jointly with the Minneapolis, Lyndale & Minnetonka Railway, and which mature Jan. 15, 1922, have been extended to Jan. 15, 1925, with interest at the rate of 7 per cent from Jan. 15, 1922. They will be secured by the original lien. Bondholders are offered the privilege of extending their bonds to Jan. 15, 1925, bond for bond, with the payment to them of $10 for each bond.

May Resume Interest Payments.—The improved financial condition of the Third Avenue Railway, which, according to the last statement of the treasurer, had $1,770,871 in cash and $1,419,000 in Liberty bonds and United States certificates of indebtedness, led President Huff to state that, if normal improvement continues, the resumption of interest payments on the company's adjustment income bonds might be started within the next few months. It is the policy of the company to keep a large surplus on hand to meet such conditions as arose last winter when the interest on underlying bonds could not be paid by the current earnings.

Stock Issued for Power Plants.—The Indiana Public Service Commission issued an order recently approving the issuance of $4,500,000 of common stock and $1,250,000 of bonds by the Indiana Hydro-Electric Company to finance construction of electric power plants to utilize water power of the Tippecanoe River in northern Indiana. The company is to issue $1,125,000 of stock at once to finance the construction of the first unit at Norway, near Monticello, county seat of White County. The company is backed by Eastern capitalists and by the Insull interests. Governor McCray has instructed R. Lieber, director of the state department of conservation, to make an investigation of the plans of the company.

Court Fixes Status of Bonds.—Federal Judge Mayer has answered the request for advice made by counsel for the Guaranty Trust Company, trustee of the first mortgage of the New York (N. Y.) Railways, as to what property of the defendant was covered by the mortgage. This information was needed in the foreclosure proceedings instituted by the trustee. Judge Mayer found that the most valuable assets of the company, the franchises and equipment, together with odd items, were subject to the lien and then, summarizing the various properties owned by the railways, said the property, consisting of stock of the various companies in the system, should be held for the benefit of the general creditors. Judge Mayer said his opinion on the various properties at this time could be considered only as advisory because of the many other undetermined questions that must be answered before a final decree was entered.

Traffic and Transportation

Fare Increases Denied

California Commission Says Further Advances at San Jose Would Drive Business to Autos

Expressing its belief that increased fares would reduce earnings by driving travel to the automobile, the Railroad Commission of California on Nov. 30 denied the applications of the San Jose Railroads and the Peninsular Railway for 10-cent fares in San Jose and Palo Alto. The companies also proposed a 7-cent token fare when five are bought at one time. Both lines desire to increase school children's commutation fares and to make a number of minor adjustments. The present city fare is 6 cents. The Peninsular Railway did not ask any increase in its interurban fares or freight rates.

Both lines are owned by the Southern Pacific Company. San Jose Railroads operates local service in the city of San Jose, the town of Santa Clara and in unincorporated parts of Santa Clara county. The Peninsular Railway operates electric interurban service, passenger and freight, between San Jose, Palo Alto and Los Gatos. Local service is also given in San Jose on the Naglee Park Line and between Palo Alto and Stanford University.

The commission recommended to the **San Jose Railroads** that it put into effect service and other recommendations, made by the engineering department of the commission after a survey, and expressed the belief that the revenues of the road would continue to increase with the growth of the community. The company claimed a net loss of $89,432 for the nine months ending Sept. 30, 1920, but it was pointed out by the commission that this interest on a funded debt of $2,423,000 issued against a historical reproduction cost of $1,523,933.

The commission proceeded to point out that applicant's so-called financial requirements are not a proper basis for computing rates, adding, that the company under existing rates is making a substantial operating income. In referring to the future prospects of the road the commission said:

> While there has been no apparent increase in business this is, no doubt, a temporary condition. San Jose has a good record of growth in population, with no indication that such growth has been arrested. The number of passengers and revenues should increase; operating expenses because of declining costs of labor and materials should decrease. The estimated net income of over $84,000 is greater than that of any year except 1913 and 1914, before the general use of the private automobile. Returns in the future, then, should be greater and not less than 5.55 per cent.

In the case of the Peninsular Company the commission pointed out that the Palo Alto city lines which are operated separately from the interurban system are earning 8 per cent on the company's own valuation and with economies a return of 9.5 per cent is possible. The commission declared that patrons of the line between Palo Alto and Stanford University should not be compelled to pay a higher rate in order to enable the company to make a small increase in its net return on the investment of its entire system.

The commission declared that it could not subscribe to the doctrine advanced by the railroads that they had a right to assume the risk of loss of business through increased fares. On this point the commission said:

> When rates are too high, they not only retard and reduce the earnings of the carrier but result in loss to the traveling public, who either go without the service entirely or turn to the other channels of travel. In a situation of this kind it becomes the duty of this commission to deny increases in fares which we believe would have the effect of further reducing passenger earnings by driving travel to the automobiles.

United Railways Asks Fare Extension

Continuation of the 7-cent fare is asked in a petition of the United Railways & Electric Company, Baltimore, Md., filed with the Public Service Commission on Nov. 29. The order for a 7-cent fare will expire on Dec. 31, and the company asks for its extension until the order "shall be further modified, extended or repealed."

The rulings of the commission in 1919 state that the company's rate should be such as to yield a net surplus not exceeding $1,500,000 and not less than $1,000,000. The company points out that its net income for the ten months ended Oct. 31 was $475,445 which would indicate a net balance to surplus for the entire year of 1921 of $609,870. This amount is $1,045,772 less than one-half its fixed charges for that year and $390,130 less than the minimum of $1,000,000 allowed by the commission, based on the fixed charges of 1919.

The decline in passenger traffic is laid to the recent depression in business. Revenue passengers for October of this year showed a 10 per cent decline as compared with those of October, 1920.

Commission Against 10-Cent Fare

The Interstate Commerce Commission in decision of Nov. 3, 1921, just published, holds that the 10-cent passenger fare between Louisville, Ky., and New Albany, Ind., on the lines of the Louisville & Northern Railway & Lighting Company, was unreasonable and that the 10-cent rate for the future will be "unreasonable to the extent it exceeds or may exceed 10 cents per passenger for a single trip and a commutation fare of 9 cents per passenger upon the purchase of not exceeding twelve tickets."

The case was called to the attention of the Commerce Commission by the complaints filed by the city of New Albany on Dec. 17 and 18, 1920. At that time the defendant corporation operated two separate and distinct division of interurban electric railway, but since the hearing, the Interstate Public Service Company, an Indiana corporation, has acquired all the rights and property of the defendant company. In March, 1919, the fare was increased from 5 to 7 cents between Louisville and New Albany, and in 1920, a 10-cent cash fare was instituted and no commutation tickets were sold. The total distance of the route was 4.76 miles.

Routing for Kansas City, Kan., Before the Court

After many meetings and many delays it now appears that the original routing suggested by John A. Beeler for the Kansas City Railways will be adopted for use in Kansas City, Kan., with slight modifications. The whole matter is now before the courts as the result of the rejection by the Board of City Commissioners of Kansas City, Kan., on Nov. 3 of all four plans of rerouting presented from time to time during the last several months by the Kansas City Railways. At that time Francis M. Wilson, one of the receivers, said:

> I cannot say what we will do now, but it is a general practice for the receivers to ask the advice of the court when they have proceeded as far as they can along any one certain line and failed to obtain results. We very likely will ask the advice of the court in the matter, as we have done all that we can do. We tried earnestly to adjust the matter to the satisfaction of all parties concerned and to give to Kansas City, Kan., the same high-grade service we are giving to Kansas City, Mo., obtaining desired economies at the same time. It is apparent from the vote of the commissioners we have failed.

Later Mr. Wilson carried the case to the court. A hearing was held before Judge Kimbrough Stone in the federal court at Kansas City, Mo., on Nov. 25. F. G. Buffe, general manager of the railways, answering a question as to which plan the company preferred, produced the revised Beeler proposal, decided on by the company on Nov. 23. He said that the Beeler plan, with some modification, would allow the company to put into effect some of the economies it has desired to put into practice and still give the people first class service. Mr. Buffe explained the Beeler plan would save the company $147,000 a year.

It was declared by both Mr. Buffe and Mr. Fennell, the traffic manager for the company, that operation of a modified Beeler plan in Kansas City would eliminate about thirty cars a day. Their explanation was that cars would be transferred from points where the travel was light and pressed into service where travel justified. Both insisted no cars would be transferred to relieve Kansas City, Mo., traffic.

Throughout the hearing Judge Stone indicated the liveliest interest in the points raised and gave particular attention to the matter of checks and suggested turnbacks and changes in routes, all plans therefore being discussed. He said:

> In the last analysis, rerouting of the street cars, if done at all, must be by the balance of two factors, one of which is proper service of the public and the other economies in the operation of the property.

Judge Stone questioned officials of the railway closely relative to routes, character of travel over them and of comparative importance of localities, residential and business, as relating to both Kansas City, Kan., and Kansas City, Mo., showing especial interest in theories advanced as to possibility of a greater and more rapid growth for Kansas City, Kan., along lines suggested under the original Beeler plan.

Favors Bus Franchise — Geneva (N. Y.) Chamber of Commerce recently adopted resolutions favoring a franchise permit by the Common Council to the Geneva and Auburn bus line. The proposed line is to operate between Geneva and Waterloo.

Argument Completed in Chicago Case

Burden of Proof in Fare Reduction Proceeding Placed on Illinois Commerce Commission—Wage Question Injected in Hearing

The 8-cent fare still prevails on the Chicago Surface Lines, and hopes of immediate dissolution of the injunction writ against the restoration of a 5-cent fare did not look bright at the close of arguments in the United States District Court on Dec. 2. Attorneys for the companies, the commission, the city and the Attorney General spent the day in presenting their side of the case before Federal Judges Baker, Carpenter and Page. They were told to file briefs by Dec. 8, after which the matter would be taken under advisement.

THE judges announced early in the proceedings that the only point of interest to them was the question of the sufficiency of the 5-cent fare and they cut short the city's legal representative whenever he attempted to wander into other phases of the situation.

Judge Baker presided. He made the caustic comment at the close that if the city and state were really solicitous of the interests of the car-riding public the city would forego "levying a tax" by having the companies collect 55 per cent of the net earnings. "Street car fares," he said, "should be the rate which would enable the company to pay its operating costs and leave an honest return on a fair valuation. That is the total amount passengers should be required to pay."

Judge Baker said that, in addition to this, Chicago is putting on a special and discriminatory tax and requiring the companies to collect it for them. If Chicago wants this extra money it should collect from the proprietors of stores, not from the clerks in the stores and other riders who do not enjoy the use of private automobiles.

Another pointed comment was made by Judge Baker on the matter of rate of return. "Why should not the companies be held to the 5 per cent limit of return fixed by the ordinances?" inquired Attorney Cleveland for the city. "Because the United States Constitution says nothing about 5 per cent," answered the court. Attorney Cleveland had also made reference to the overcrowding of cars and its possible result in damage claims against the companies.

The commission had evidently taken this point of view in declaring that the present payments of the companies for damages were extravagant and should be cut in half. "The burden is on you to point out facts," said Judge Baker; "not to make nebulous statements. Where in the record is there a figure to show that the claim department paid more than ought to be paid by a prudently, efficiently managed claim department?" The city lawyer was silent on this subject.

Attorneys for the company, however, had taken advantage of the suggestion by filing an affidavit from Joseph V. Sullivan, assistant to the president, showing that the commission had come to this conclusion without any evidence, whereas figures which he produced showed the Chicago companies were paying out less than other large properties both in per cent of gross earnings and in cost per 1,000 passengers carried.

By the court's ruling, the positions of the city and the companies were reversed. By the companies' flat challenge to the city to prove a single finding by the commission which was based on evidence, the court held that the burden of proof had been shifted to the city. An unusual event during the hearing was the appearance of Frank L. Smith, chairman of the commission, whose order was under review. He insisted on explaining the reasons for the order.

Mr. Smith stated that the commission in arriving at its decision considered not only whether a fair return on capital was to be allowed, but whether a rate of return for improvident management should continue to be maintained. The judges made it plain that all they were interested in was whether the 5-cent rate was confiscatory, not whether the 8-cent fare was excessive, and that the commission should have shown in dollars and cents how savings could be made sufficient to offset the loss of $23,000,000 in revenue which would follow a reduction of 3 cents in the rate per passenger.

Attorney H. E. Wood, for the commission, cited some of the data which the commission had in mind to make up this total, but all he presented at the hearing amounted to about $10,000,000, which included about $5,000,000 allowed each year for renewals.

The court said that apparently the commission wanted the companies to experiment with a 5-cent fare while endeavoring to reduce costs. "Evidently," said Judge Baker, "because you believed the companies committed misfeasance under their contracts and because they violated service orders of the commission, they were to be punished by rate less than compensatory."

While the temporary order of the court continues in force, transfers are being issued as rebate slips. It is said that not a great proportion of riders insist on getting a final transfer to be held for this purpose.

Throughout the hearings before the Illinois Commerce Commission, the city's representatives and the commissioners refused to be led into a suggestion that wages of employees of the Surface Lines be reduced. They, therefore, had difficulty in making a showing before the federal court as to how a large saving could be made.

A few days after arguments had been concluded one of the newspapers announced apparently with authority that the commission contemplated a direct cut of $5,176,000 in wages when it entered the order. The total possible savings considered by the commission, according to the newspaper in question, were listed as follows:

Savings	Amount
"Layover" time	$1,740,000
Official and other salaries	1,014,000
Maintenance	451,000
Materials	900,000
Renewals	4,853,000
Damages	1,000,000
Rerouting, new cars, wages	6,177,000
	$16,135,000

It was made plain by the federal judges that the city lawyers would have to show from the record that such savings could be made. It developed during the hearing that the city and the commission were not in agreement on several of these items.

Advance of New Jersey Case Asked

The Supreme Court of the United States has taken under advisement the motion of Attorney General Thomas F. McCran and the Board of Public Utility Commissioners of New Jersey to expedite the argument on the appeal of the commission from the 8-cent fare recently granted to the Public Service Railway by the special statutory court.

The motion of Mr. McCran was filed with the clerk of the court on Dec. 6. Frank Bergen, general counsel of Public Service Railway, in reply, filed a memorandum, which stated that the railway was as anxious for an early determination as the utilities board, but it would ask the court, in disposing of the motion, to allow a reasonable time to prepare for the argument. Mr. Bergen said this could not be characterized as opposition to Mr. McCran's motion to advance, but merely an insistence that the cause be not unduly rushed.

In his brief on the motion Mr. McCran first sets out the facts of the controversy between the Public Service and the Utilities Board, up to and including the action of Judge Rellstab at Trenton in naming former Judge Haight to take testimony and to make a report to adjudge whether the preliminary injunction ordering the 8-cent fare to be put into effect shall be made permanent.

Reduce Service to Lessen Deficit

The Columbia Railway, Gas & Electric Company, Columbia, S. C., which during the first ten months of 1921 suffered an operating loss of $91,000, has petitioned the City Council to discontinue service on Gadsden and Richland Streets, which connect Elmwood and Main by way of the Governor's mansion.

Officials of the company, in advertisements in the daily papers, have set forth the problem the company faces, and have asked for the co-operation of the citizens in solving the financial difficulty. This the company hopes to do without resorting to increasing the fare to 10 cents. F. H. Knox, president of the Columbia company, said that the installation of one-man cars would hardly relieve the situation because of the heavy expenditure, and that the company hoped to avoid a drastic reduction in wages of the employees.

All the lines of the company showed a loss in October.

Railway Wants Permanent Fare Settled

The Duluth (Minn.) Street Railway has petitioned the State Railroad & Warehouse Commission to set a date on a hearing for a permanent fare. Engineers for the city and the company have completed their valuations.

The actual valuation and a fair rate of return will probably be argued at length. Under the law passed last winter, the permanent fare must allow the company a fair return on its valuation.

Monthly Pass for Joliet

Ten-Cent Cash Fare Retained but Lower Rate Authorized for Regular Riders

The present 10-cent cash fare of the Chicago & Joliet Electric Railway in Joliet, Ill., is to be reduced for the regular patron by the addition of a monthly pass selling for 75 cents which will entitle the holder to ride upon paying a 5-cent cash fare. There will be no advantage in the monthly pass to anyone who rides only sixteen times a month, but if a person rides fifty times in a month, the average rate of fare will be 6.5 cents and 5.75 cents if 100 rides are taken in a month.

J. R. Blackhall, general manager, applied for this reduced rate of fare for the regular riders on the morning of Dec. 1 and the Illinois Commerce Commission heard the case and entered an order approving the same day. Mr. Blackhall estimates that with an increase in traffic of 5 per cent over that of 1921 on the Joliet city lines, and with the probability that 25 per cent of the total fares will be on the ticket plan and resulting in an average fare of 7 cents, which is conservative, the revenue of the company from transportation will be reduced approximately $50,000 as compared to 1921.

Mr. Blackhall comments that notwithstanding a large deficit from operation of the property this year, he felt that some concession would have to be made to the regular riders on account of the reductions in wages of from 10 to 25 per cent that have been made in the past several months. If the gross earnings from operation for 1922 are approximately the same as for 1921, it will require a reduction of $100,000 in the pay roll and $100,000 in all other operating expenses to make it possible to earn the fixed charges.

The contract with the organized employees of the company was entered into July 1, 1921, and expires this Dec. 31. A reduction of 5 cents an hour was made on July 1 and it is now proposed to make a further reduction by Jan. 1. A 20 per cent reduction in wages would be necessary in order to effect a reduction of $100,000 for the year in the payroll expense.

New Routing and Fare Collections in Effect

During the negotiations for the service-at-cost franchise in Youngstown, Ohio, the City Council, acting upon the advice of its street railway expert, decided that all railway lines in the city should terminate at the Public Square, thereby dividing the city, so far as electric railway service was concerned, into four distinct sections, namely, north, south, east and west.

This method of operation was continued until Nov. 27, 1921. On that date the Youngstown Municipal Railway, operating the lines in Youngstown, placed in service twelve additional Birney one-man safety cars and routed three of the lines operating on the west side of the city through to the easterly section of the city.

Prior to that date the fares had been collected on the inbound trips as the passengers entered the car and on the outbound trips as the passengers left the car. This method of fare collection was very simple and easily understood by the public, but when the cars were through-routed it became necessary to devise a new system of fare collection. It was suggested that a trial be made of the "pay-as-you-leave" system on through-routed cars, and after considerable investigation and discussion this system was placed in effect and is working out satisfactorily.

Commission Ends Long Time Litigation

The Pennsylvania Public Service Commission recently handed down a decision establishing a 7-cent fare for the Reading Transit & Light Company in Reading, Pa. The order also allows eight tickets for 50 cents. Patrons in Reading have been fighting for a 5-cent fare.

The commission at the same time upheld the 9-cent rate on the Norristown division, dismissing the complaints of residents of the Twenty-first Ward.

Asks Reduced Fare Schedule

The Empire State Railroad Corporation, operating between Auburn and Syracuse, N. Y., whose rates of fare are fixed by an order of the Public Service Commission which runs out on Dec. 31 of this year, has filed a new schedule of rates with the commission, asking that the new schedule go into effect on one day's notice.

In its new schedule so filed it asks for a reduction in its city fares from 8 cents to 7 cents and in fares from Auburn to Owasco Lake of from 10 cents to 7 cents. The order requested by the company will be granted by the commission this week. This is not a general reduction in fares but a change in the fare schedule.

More Passengers at Five Cents, but Greater Operating Loss

With an increase of more than 100,000 passenger fares, there was a decrease of $6,470 in receipts on the lines of the Bridgeport division of the Connecticut Company in the first week of the 5-cent fare with transfers.

The report sent to the Public Utilities Commission by L. S. Storrs, president of the company, is as follows:

> The following is a statement of the operating results of the Bridgeport Division for the week ending Nov. 26, being the first week under the fare test as compared with revenue on like days for the preceding week in which at flat 10-cent fare was charged, this covering the entire revenue of the Bridgeport Division.

5-Cent Fare		10-Cent Fare	
Nov. 20	$3,570	Nov. 13	$4,479
Nov. 21	$4,800	Nov. 14	$5,903
Nov. 22	$4.847	Nov. 15	$5,490
Nov. 23	$5,266	Nov. 16	$5,722
Nov. 24	$3,761	Nov. 17	$5,641
Nov. 25	$4,998	Nov. 18	$5,568
Nov. 26	$5,554	Nov. 19	$6,455

> During the periods we carried a total of 406,659 5-cent passengers and 125,672 10-cent passengers.
>
> Of course, it is impossible to compare the number of passengers carried, for during the 10-cent fare period every individual riding within the 10-cent fare area within the city of Bridgeport was counted as a single passenger, whereas under the present scheme it is quite possible that many of the individuals are counted twice by reason of the fact that they have crossed the fare limit in the center of the city.
>
> You will note that the revenues show a decrease of $6,461 over the revenues obtained for the preceding week, and as revenues heretofore obtained have been insufficient to pay operating costs, the result of this first week's test is materially greater losses sustained by the operation of the street car service in this community.

Court Divided on Jitneys

New Jersey Tribunal Split on Question of Property Rights of Electric Railway

The refusal of the Court of Chancery to restrain the operation of jitneys in New Jersey in three test cases brought by the Public Service Railway was upheld by the Court of Errors and Appeals on Dec. 2 by a divided vote of seven to seven.

In refusing the injunction sought by the railway Vice-Chancellor Griffin held that the Public Service Railway, not having an exclusive right in the streets, had no standing to ask for injunctive relief. The unusual situation of an affirmance of that ruling by an equally divided court precludes any majority opinion by the Court of Errors.

JUDGE MINTURN EXPLAINS

Justice Minturn, however, who voted to reverse, filed an opinion concurred in by Chief Justice Gummere, Justice Bergen, Justice Katzenbach, Judge Heppenheimer, Judge Williams and Judge Gardiner, all of whom voted with him. The Minturn opinion expressed the view that the company occupies a legal status, entitling it to present its grievances to a court of law or equity and obtain a hearing. Judge Minturn said:

> It is not contended that as against the state under its reserve power other forms and methods of transportation may not be inaugurated and utilized as progress and public necessity may require. But such a contention cannot be revoked by a mere trespasser (the jitneur), whose hands are soiled with usurpation, and who, in defiance of the provisions of the law recognizing and regulating his business, raises this question against a legitimate State agency.

The impression seems to have gained ground rapidly with the public that the decision settled the question as to the right of the buses to operate in the public streets without having secured a franchise under the limited franchise act. What the Court of Errors passed upon was not the rights of jitneys, but whether the Public Service Railway, because of its franchise to do business, had the right to challenge the jitneys in the courts.

The fact is that the application of the Public Service Railway for an injunction against certain jitney owners on the ground that they were operating illegally and were competing against the railway came before Vice-Chancellor Griffin originally. He merely reached the decision that the Public Service Railway had no standing in court—that is, that the company had no property right involved that warranted it in asking for the injunction. No other legal question that had been raised in the litigation was passed upon by the vice-chancellor.

VERDICT A NEGATIVE VICTORY

In this connection it is explained:

> The one question that came before the Court of Errors on appeal was whether the vice chancellor's decision as to the right of the Public Service Railway to seek an injunction was correct. It was on this question that the fourteen members of the state court of last resort who voted were evenly divided. One-half of them believed that the railway had a property right that was necessary to sustain the injunction proceedings, and the other half took the opposite view.
>
> Unless there should be a request for a reargument of the case, these proceedings are at an end, and if the legal points raised are to be decided some new method of bringing them before the courts must be tried. As the case now stands, the railway has suffered a defeat, while the jitneys have won a negative victory that may later be reversed.

New Bus Line Operates in Toledo

Does Not Parallel Railway Lines, but Other Companies in Direct Competition

A new bus line began service in Toledo, Ohio, on Nov. 28, operating on streets not served by trolleys. Six owners form the operating company, which will provide six-minute service from 5 o'clock in the morning till midnight. The route to be covered extends from Detroit and Bancroft Streets to Detroit and Buckingham, to Junction, Belmont, Ontario, Monroe, Superior, Adams, Summit, Monroe and return. At several points the route crosses car tracks. Those in the operating company are H. A. Schmuhl, C. F. Daine, Ralph Streeter, Burdell Taylor, Otto Steve and John Andrews.

Before the new bus service was installed sixty-five buses were operating in Toledo. They quite generally duplicate trolley service and follow almost the identical routes. Buses charge a 5-cent fare and give no transfers, while the electric railway charges 7 cents and gives transfers for 1 cent. Interurban buses are also competing strongly with the electric railways, radiating from the city.

The Toledo Bus Transportation Company was recently organized to unite a number of bus drivers. Busmen have thrown their equipment into the company and received stock in the company equivalent to the value of the equipment they contributed. Operation has been directed from central offices and revenues and expenses managed centrally.

The Monroe-Lincoln-Bancroft route of this company serves a community which is only partially taken care of by the electric railways. It has been successful from the start. It was fostered in the beginning by real estate interests. The success of this route has led officials of the Toledo Bus Transportation Company to declare that they do not intend a warfare with the electric railways, but rather would seek to develop new routes of their own.

City and electric railway officials estimate that the buses which do operate on streets where there are railway lines carry approximately 15,000 passengers daily and divert $30,000 a month from the revenues of the railways.

The new passenger bus of the Ace Motor Bus Company, Newark, Ohio, is now in operation between Toledo and Sylvania and in direct competition with the Toledo & Western Railroad. The receivers for the electric railway reported in the federal court that the inroads of the buses had reduced their gross receipts about 30 per cent.

The Commissioner of Street Railways, Wilfred E. Cann, has appealed to the city administration several times to enforce the bus regulations, which he claims are violated every day and by most of the bus drivers. Only two or three violations have been reported by the police.

It is generally believed that the new administration is more favorable to limited competition between the two methods of transportation. Mayor Schreiber, the outgoing Mayor, fought the traction interests through ten years of connection with the city government, and it is felt that his leniency has made possible the infractions of the ordinances against overloading, schedules and routes.

The buses used are not uniform. Many are converted from truck chassis while a few are modern, newly built buses.

Bus Advertising Centralized

In northern New York State all motor bus advertising is taken care of by one company. This company, the Rochester (N. Y.) Bus Line Advertising Corporation, has exclusive advertising privileges for a period of years in all motor buses operated in intervening territories from Niagara Falls and Buffalo, on the north and west to Watertown and Binghamton on the south and east. The buses in this territory are being equipped with advertising sign racks so as to carry the standard size street car advertising card. The company reports that it will soon start solicitation for advertising to fill these places and that it will not only attempt to sell to the merchants in the town through which the buses run, but will go after national advertising. Information on hand indicates that this company can reach 102 different towns by means of its advertising service.

Motor Buses in Columbus, Ohio

The Ohio Motor Bus Company, with offices at 30 North Water Street, Columbus, Ohio, operates a bus line between Columbus and Westerville, a village about 15 miles northeast of the city. Three buses are in operation and they have been successful from the start. The president of the company is T. C. Robinson and R. E. McCullom is general manager.

Another route is operated on East Broad Street, Columbus, connecting the business center with Bexley, a suburb. Four buses are operated on this line and an 11-minute headway is maintained. It is understood that at first the buses were not financially successful, but in October, 1921, they had become able to earn the cost of service. The buses were manufactured by the American Motor Truck Company, Newark. They are known as the "Aces." The bodies are built by the same concern, but have been especially designed for use in the Buckeye capital and have a capacity of 30 passengers without crowding. The entrance is at the front opposite the driver, who collects the fare.

After a service of six weeks the four buses on East Broad Street were carrying about 60,000 passengers per month. The Westerville line, which charges 20 cents each way, or 18 cents when tickets are brought, is somewhat cheaper than the traction line operating over the same route. The fares on the East Broad Street line are 5 cents straight to Franklin Park and 10 cents to Bexley or intermediate points.

The Columbus Coach Company, another Columbus concern, on Sept. 23 started a twelve-minute service on Bryden Road. This route is about 3 miles long and serves streets not covered by electric railway routes. The same type of buses is used on this line as that used by the Ohio Motor Bus Company. The fare is 5 cents. John B. Gager is general manager of the Columbus Coach Company, which is a partnership.

These two motor bus concerns maintain a large garage and service station at 564 East Mound Street, where the buses of the two companies are stored.

Restricted Bus Service Discussed

Los Angeles Hearing to Settle Dispute between Pacific Electric and Interurban Lines

Curtailment of the interurban service of motor transport companies which have competed stiffly with the Pacific Electric Railway, Los Angeles, Cal., will be discussed by officials of the affected cities and the railway and engineers of the California Railroad Commission. The conferences were arranged for at the hearing before the California State Railroad Commission at Los Angeles, Nov. 14, 15 16.

The Pacific Electric Railway claims that 60 per cent of the business developed by the bus lines in competitive territory takes $2,000,000 annually from the railway.

At the hearing the commission's engineers presented a report recommending that the Pacific Electric supplement the present trolley service with motor transportation, and in some cases substitute motor service entirely. The company made known its intention to institute such service in more or less new territory or as extensions of present trolley routes and as feeders to existing rail lines. In some cases it will amount to giving additional service to people now using rail lines but who go some distance to reach them.

The report of the commission's engineer, Richard Sachse, stated that it would be impossible to dispense with service on electric lines running between the outlying cities. Traffic would block a fleet of motors during rush hours and delay the schedule. Moreover, it was brought out that the greater carrying capacity of the large type of electric interurban car, the quicker service possible in getting out of the cities on a private right-of-way and the better facilities of permanent terminals favor the continuation of the electric lines.

A further argument brought against the motor bus was that it was of doubtful economic service because of the small investment and the lack of standardization of buses.

Mr. Sachse stated that municipalities wishing to keep the Pacific Electric alive must decide at an early date to what extent they are willing to curtail motor transportation activities.

Motor carriers claimed in their protest filed with the commission that they were unfairly represented by the commission in its engineers' report and stated to the commission that when bus lines give a service that electric lines cannot give or when they come into competition with electric lines and give lower rates than the electric carrier they should not be interfered with by any governing body.

The commission does not have jurisdiction over jitney operation in any particular city, but it does have control over autos doing intercity business and has been trying to figure out for some time how best to deal with the intercity lines. There were in existence, before the law regarding auto stage service in the State went into effect, nineteen buses running between Sawtelle, Santa Monica and Venice in competition with the electric railways. These were automatically left in business, but persons since then establishing bus service between cities have had to obtain certificates from the commission.

Buses Operated by Toronto Transportation Commission

The Toronto Transportation Commission, which on Sept. 1, 1921, took over the entire transportation system of the Toronto (Ont.) Railway, has begun to operate vehicles other than those which run on rails. A motor bus line has already been opened up in the northeastern part of the city over Hummberside Avenue on which eight buses will be necessary to take care of the traffic.

The commission announces also that it has placed an order for four Packard-Brill trolley buses using Westinghouse Electric equipment throughout. The route over which these vehicles will be operated is approximately 1.25 miles long and extends from Yonge Street, North Toronto, where connection is made with the Metropolitan Division of the Toronto & York Radial Railway, east through Merton Street and thence north out Pleasant Road as far as Eglington Avenue, east.

This route is over a newly bound macadam road and will serve a territory not otherwise reached. Free transfer arrangements are to be made with trolleys so it will be possible to ride over any part of the whole system of the Toronto Transportation Commission upon payment of a single fare. Temporary housing facilities are being built on Merton Avenue.

Poughkeepsie to Improve Bus Terminal Service

The Retail Merchants' Association at Poughkeepsie, N. Y. is considering plans for improving the bus terminal service in the city by the enlargement of the waiting room and the addition of all needful services and conveniences. The plan is to move the present waiting room back into an addition which is now being erected and to fit up the basement underneath to form a part of the general waiting rooms. The terminal is located on New Market Street and Main.

The bus companies are to co-operate by assuming a part of the necessary expense of fitting up the new station and maintaining it, and an agreement will probably be established by which the buses may line up at the curb underneath a shed or coping where passengers boarding or alighting from the buses will be protected from the weather. The directors of the Chamber of Commerce have approved the general plan.

Bus Company Files Objections to Ordinance

Action against the city of South Bend, Ind., to restrain it from putting into force a city ordinance passed on Oct. 24, naming certain streets preferential traffic streets, was filed by the Elkhart & South Bend Bus Company in Circuit Court recently. The suit also asks that the new ordinance be declared null and void.

The complaint holds that the ordinance is discriminatory in that it provides that certain streets over which electric railways operate shall be preferential traffic streets and that taxis, jitney buses and other buses operating within the limits of the city may use the streets, but that the interurban bus company is barred therefrom.

The suit also sets out that a license fee of $500 is unreasonable.

No 5-Cent Fare for Lowell

Lowell, Mass. need not expect a 5-cent fare, though Fall River now rides twenty times for $1. This is the attitude of Homer Loring, chairman of the trustees of the Eastern Massachusetts Street Railway, which was expressed in a letter to Mayor Perry D. Thompson of Lowell. The deficit of $82,329 for the period from Jan. 1, 1920, to Nov. 1, 1920, will not permit a fare reduction in Lowell, but Fall River, with a surplus of $62,865 for the same period, could stand it, Mr. Loring said.

Transportation News Notes

Jitneys Charge Six Cents.—A 6-cent fare on jitneys operating in Houston, Tex., became effective on Nov. 21. This was the first step in the plans of the city to improve transportation facilities. A 5-cent fare is now charged by the Houston Electric Company with twenty tickets for $1. This change was referred to in the ELECTRIC RAILWAY JOURNAL for Dec. 3.

Separate Bus and Trolley Routes.—Except in minor instances, bus routes will not duplicate trolley routes in Decatur, Ill., according to the recent announcement of the City Council. Final announcement of the streets on which buses may operate will soon be made, and thereafter the Commerce Commission will probably issue certificates of convenience, it is said.

Wants Approval for Buses.—An application has been filed with the Common Council of Syracuse, N. Y., by C. R. Winslow for approval of seven different auto lines. Mr. Winslow proposes to establish bus lines at once from Oswego to Syracuse, Watertown to Syracuse, Rome to Syracuse, Ithaca to Syracuse, Geneva to Syracuse, Norwich to Syracuse and Cato to Syracuse.

Bus Travel Increases.—Buses in Camden, N. J., carried 59,040 more passengers in October than in September, according to figures obtained from City Treasurer George A. Frey. Reports showed jitneys carried 446,717 persons in September and 505,757 during the month of October. Members of the Camden County Bus Association are elated over the increase in patronage on their buses.

Red Versus White.—The State Road Commission of West Virginia, has taken under consideration the application of Toney Alloy and Walter Moore, of Beckley, for a license to operate a line of buses between Beckley and Thurmond to be known as the Red Star line. Their application was contested by counsel for J. Queensberry and Walter Holliday, who are operating a line of buses between the same points under the name of the White Star line.

Fourth Bus Line Started in Hartford.—The Connecticut Company, New Haven, Conn., beginning Sunday, Nov. 27, at Hartford started another bus line, making the fourth such service to serve the city. The new line is from Barnard Park, the south central part of the city, to the Connecticut Institute for the Blind. It is a two-hour schedule most of the day, buses leaving the institute at 6.30 a.m., 8.30 a.m. and then every two hours until 6 p.m.

Lower Fares in Effect.—Reduction of passenger fares amounting to 40 per cent effective after five o'clock in the evenings was put into effect on the line of the Indiana Railways & Light Company, Kokomo, Ind., about Dec. 1. Under this reduction fares will be based on a rate of 1.8 cents per mile and will be good only on round trip tickets. The purpose of putting this reduction into effect is to stimulate evening traffic and will benefit farmers and many others.

Railway Complains of Bus Operation.—The Southern Pennsylvania Traction Company, Chester, Pa., has protested before Public Service Commissioner Benn against the granting of certificates of convenience for the operation of buses in the company's territory. An official of the company stated that there were fifty-two jitneys operating in Chester which took about $120 a day from the railway. The matter will be referred to the commission.

Buses Serve as Feeders.—The Twin City Rapid Transit Company, Minneapolis, Minn., has decided to try out motor bus transportation as feeders to its railway system. The first bus began on Nov. 7 to serve suburban communities, with one fare and transfer service to electric lines. The company also has promised to try out a new type of motor bus running on paved streets without rails on any street which the Minneapolis City Council may designate.

Steam Line Adopts Motor Bus.—A new type of motor bus which runs on rails, self propelled, has been tried out by the Northern Pacific Railway on its branch between St. Paul, Minn., and White Bear Lake, a distance of about fifteen miles, with some twenty officials of northwest railroads as passengers. The experiment was highly successful and the White Bear road was selected because of its steep, winding grades. The bus is designed for branch lines and suburban traffic.

New Ticket Scheme in Effect.—Beginning Dec. 3, the Tacoma Railway & Power Company, Tacoma, Wash., placed on sale twelve car tickets for $1, in place of the present rate of twenty-five for $2. City Attorney Charles Dennis is investigating to find out if the State Public Works Department at Olympia authorized the change with slight boost in fares. The company announced the new ticket sale in a large display "ad," urging the public to "use the street car and save money."

Washington Bus Routes Granted.—Two motor bus companies in Washington, D. C., have been granted permission to open new routes by the Public Utilities Commission. The Washington Rapid Transit Company, by the grant, will operate from Union Station to Sheridan Circle on Massachusetts Avenue, and the Northern Virginia Motor Transportation Company will run buses from Fairfax, Va., to Twelfth and C Streets, over the chain bridge and through Georgetown. The latter can carry only passengers who intend to cross the District line. The Rapid Transit Company's route was changed to compete less with the existing electric railways.

Rerouting Deferred.—The Wisconsin Railroad Commission has issued an order granting the Milwaukee Electric Railway & Light Company an extension of time of ninety days to effect the rerouting in the Milwaukee down-town district of the Vliet and Third Street lines. This rerouting was to have gone into effect on Dec. 1, 1921. At the same time the commission announced that similar rerouting of the Walnut Street line will be postponed until the commission has had an opportunity to pass upon the application of the Milwaukee Safety Commission for a reconsideration of the commission's order in so far as it affects the routing of the Walnut Street line. The postponement in the case of the Vliet and Third Street lines was due to the inability of the company to get special work by Dec. 1. The original order of the commission was reported in the ELECTRIC RAILWAY JOURNAL of Oct. 22, page 757.

Fare Reduction Offered in San Antonio.—Fares in San Antonio, Tex., will be reduced from 8 cents to 6 cents under proposals made to the City Commission by the Public Service Company, which owns and operates the railway lines. The acceptance of the proposal by the city brings a settlement to a controversy that has been in progress between the city and the company over fares for several years. The company went into Federal court seeking relief from what it termed confiscatory fare regulation, and won its case. The 8-cent fare was the result. Since that time the city has been seeking by various means to force a reduction, and litigation on the part of the city to bring about the desired fare cut was in prospect. The company's proposal is contingent on the city stopping the operation of jitney buses in all parts of the city except to Camp Travis, which is not served by the railway. It is expected the reduction will become effective early in 1922.

City Prevented from Running Buses.—On the ground that it was to the best interests of the city to have only one transportation system, the Legislature of British Columbia on Nov. 26 refused permission to the city of Vancouver to operate motor buses. It was asserted by members that two transportation systems would be a calamity. Other members said that competition in city transportation would lead to the chaotic conditions there had been in Seattle. The leader of the opposition, W. J. Bowser, charged the members of the government party with playing the game of the British Columbia Electric Railway as this would give that company a perpetual monopoly, but Attorney-General Farris replied that the private bills committee lost interest in the city's petition when the rumor became current that the city did not really wish to enter into competition, but merely to hold its power over the head of the electric railway as a club. Another member asked the house to consider the effect on the credit of the province if the city were allowed to step in over the head of the electric railway. The city's petition was prompted by the railway refusing the demand of the residents of West Broadway for a railway line. The company has offered a motor bus service in connection with its railway system, provided the city will pave the street, an expenditure the city is not likely to incur at present.

Personal Mention

Mr. Brendel Promoted on Michigan United Railways

Wallace W. Brendel has been appointed superintendent of the Northern and Southern divisions of the Michigan United Railways, Jackson, Mich. Mr. Brendel assumed the position made vacant a short time ago by the resignation of Dean McLaughlin, who accepted a position with Ohio Brass Company.

Mr. Brendel's connection with the Michigan United Railways began in June, 1916, when he was appointed train dispatcher on the Northwestern division at Holland, Mich. He continued in this capacity for a year and a half, when he was made chief train dispatcher of the Southern Division at Battle Creek, Mich. It was from this latter position that he was promoted about a month ago to superintendent of the Northern and Southern divisions, which are composed of the interurban lines operating between Jackson, Battle Creek and Kalamazoo, and Jackson, Lansing and Owosso.

Before his connection with the Michigan United Railways in 1916 he was for several years in the service of the Union Traction Company of Indiana as train dispatcher. Mr. Brendel entered the service of that company in 1905 as a motorman.

Frank Adair a Division Superintendent

Frank Adair, Lebanon, Ind., has been appointed superintendent of the Ben-Hur division of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., succeeding H. H. Arnold, who held the position for four years, recently resigning to accept another position. The appointment became effective Nov. 30. Mr. Adair has appointed Fay Caldwell of Lebanon as chief train dispatcher on the division. Mr. Adair will retain his residence there, but Mr. Caldwell has removed to Indianapolis.

Mr. Adair's appointment is a deserved promotion. He has been connected with the Northwestern division since its organization. Previous to that he was an operator with the Western Union Telegraph Company. He held the position of chief train dispatcher for several years, until he resigned to take charge of the live stock traffic department, which he will continue to manage, with E. G. Crane and R. R. Rogers as assistants.

C. Coxon has been promoted from meter superintendent of the Albany Southern Railroad to the position of chief engineer.

J. B. Webber, former treasurer of the Kankakee & Urbana Traction Company, Urbana, Ill., has been made secretary of the company, while his position as treasurer is now filled by U. G. Fowler.

E. F. Herrick, mechanical engineer, and Frank Miller, master mechanic, are no longer connected with the Chatauqua Traction Company, Jamestown, N. Y. J. Alson has been appointed chief engineer and C. F. Cole has been appointed electrical engineer.

E. W. Alexander, general manager of the Charleston & Dunbar Traction Company, Charleston, W. Va., has offered his resignation, effective Dec. 10. He will assume the position of general manager of the Tygart's Valley Traction Company, Grafton, W. Va.

William M. Crowe has been elected secretary of the Springfield Railway Companies, Springfield, Mass., following the resignation of F. P. McIntyre. This company controls the Springfield Street Railway, and is in turn controlled by the New England Investment and Security Company.

Charles K. Bowen, assistant engineer of the Pacific Electric Railway, Los Angeles, Cal., has been appointed special engineer of the Southern Pacific Railroad of Mexico. He will be associated with H. B. Titcomb, vice-president of the Pacific Electric Railway until he was recently made president of the Southern Pacific of Mexico. Mr. Bowen took up his duties with the chief engineer of the latter road on Dec. 5.

Obituary

Henry J. Davies Dead

Eminent Authority on Accounting Was Prominent in Solution of Cleveland's Traction Problem

Henry J. Davies, for thirty years connected with the electric railway transportation system in Cleveland, died Sunday afternoon, Dec. 4, in St. John's Hospital, where he had been confined for two weeks.

Mr. Davies' death will shock electric railway executives throughout the country as there are few men in the industry who did not have his acquaintanceship, due to his lengthy service with the American Electric Railway Association. Mr. Davies was one of the founders of the American Electric Railway Accountants' Association and served in the year 1902-03 as president of that body. A tireless and conscientious worker, Mr. Davies' name was always to be found on one of the important committees of the A. E. R. A. He was probably the most eminent authority on the subject of insurance risks in the railway industry.

In Cleveland he was, throughout his railway career, a dominant figure in assisting to supply this city with electric railway transportation. Much of the Tayler grant that ended ten years of street car warfare in Cleveland and which was the first service-at-cost franchise in the country was the work of his genius. He was the author of a monograph of the accounting features in this grant.

Mr. Davies was sixty-two years old at the time of his death. Born near Toronto, Canada, on July 26, 1859, he became a resident of Cleveland four years later when his family moved to that city. After being educated in the common schools of Cleveland he became a shorthand reporter and for a number of years was an expert court reporter.

In 1889 Mr. Davies entered the electric railway business when he became private secretary to the late Tom L. Johnson, who was subsequently to be elected Mayor of Cleveland and to wage a bitter fight for a 3-cent fare in Cleveland. In January, 1890, Mr. Davies was elected secretary of the old Brooklyn & South Side Railway, Cleveland, Ohio. Two years later he was one of the hardest workers in arranging for the eleventh annual convention of the American Electric Railway Association, which was held in Cleveland that year.

The Brooklyn & South Side Street Railway was the first Cleveland railway to electrify and Mr. Davies took a leading part in promoting this electrification. In 1893, when the Broadway & Newburgh line, then operated by the late Horace Andrews and John J. Stanley; the East Cleveland Railway, owned by Dr. A. Everett and the Brooklyn line were merged into the Cleveland Electric Railway. Mr. Davies became secretary of the new company.

Between 1899 and 1901 Mr. Davies was not engaged in the electric railway business, which was during the period when the Stanley and Andrews interests were out of the active operation of Cleveland lines. In 1901 he returned as secretary of the Cleveland Railway. As such he prepared much of the company's case in the negotiations that led up to the final settlement of the electric railway fight in Cleveland.

HENRY J. DAVIES

Mr. Davies was a contributor of a number of articles to the ELECTRIC RAILWAY JOURNAL on accounting and financial subjects.

E. F. Schaaf, superintendent of transportation Northwestern Elevated Railroad, Chicago, died of double pneumonia Nov. 13. He had been with the elevated railroads for nearly thirty years, entering the service first in 1895 on the Oak Park Elevated Railroad when the motive power was being changed from steam to electricity. He was transferred to the Northwestern "L" in the spring of 1900, about two months before this road was placed in operation. He was shop foreman and in charge of the mechanical work until 1903, when he was made inspector of motive power. In 1906 he was given the additional duties of roadmaster and in 1909 became trainmaster as well. He was made superintendent of transportation upon the installation of unified operation of the various elevated companies in 1913.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Resistor Deliveries Back to Normal Basis

Current buying of resistance grids on the part of electric traction companies is quite different from what it was at about this time last year. Manufacturers now have a fair supply on hand and deliveries are no longer a question of innumerable delays in the receiving of raw material by the manufacturers and of numerous interruptions in the various stages of production. The output of the different manufacturers is on a more normal basis since they no longer must contend with the difficulty in obtaining grey iron for castings. An analysis of individual orders placed by electric railways will reveal, it is stated, that traction companies, as has been their custom in the last few years, are placing orders which follow requirements very closely. In spite of small and numerous orders the aggregate demand is quite large.

Railway stocks of reserve grids are said to be low and even with cold weather at hand when the breakage and burnouts of resistors is very large, railway purchasing agents feel that the improved raw material, manufacturing and transportation conditions make it unnecessary to take the precautions required last year to prevent a possible shortage. It is quite probable that the actual requirements this winter will not be different from those of last year though apparently the more evenly distributed buying this year give the appearance of slack buying.

Prices, it is pointed out, are from 10 to 15 per cent lower than they were a year ago. This reduction of course follows from declines in raw material, labor, etc., all along the line. A portion of this reduction, some claim, can be attributed to a reduction in breakage losses in the process of manufacture. This breakage has always constituted an excessive overhead and is one toward the reduction of which efforts have been continuously directed.

Spanish Electrification Contract for General Electric

A contract for the electrification of 40 miles of the Spanish Northern Railway is announced by the Sociedad Iberica de Constructiones Electricas, Madrid, Spain. one of the associated companies of the International General Electric Company, Inc., New York. This initial order constitutes the most recent and one of the largest European railway electrification projects now under development.

The Spanish Northern electrification will employ the high-voltage direct-current system, which has been adopted in Europe as standard for the railways also of Great Britain, France and Holland.

The equipment to be supplied by the Sociedad Iberica de Constructiones Electricas will consist of six 78-ton (metric), six-motor locomotives, two complete substations, each comprising two, 1,500-kw., three-unit motor-generator sets, transformers and switchgear and the material necessary for line construction.

The first electrification project of the Spanish Northern comprises about 40 miles of the Leon-Gijon line, running through the mountains between Ujo and Busdongo. Although this is a single-track line, traffic is extremely heavy, as it is a link between the mining district and the northern seaboard through a mountainous region with many tunnels, considerable grades and severe climatic conditions.

The electric locomotives on order will be for freight service. They are of the following dimensions:

Length over bumpers	46 ft.
Height	13 ft. 11 in.
Width of cab	9 ft. 8 in.
Rigid wheelbase	11 ft. 6 in.
Maximum wheelbase	35 ft.

The locomotives, arranged for regenerative braking, will operate at 3,000 volts. The locomotive speed at continuous rating is 35 km. per hour. Pantograph collectors, having a double contact shoe, which is a type similar to those on the Chicago, Milwaukee & St. Paul Railroad locomotives, will be used.

Country Rapidly Making Economic Progress

While the United States just at this time is experiencing a seasonal slump, the country is making economic progress and is much better off than at this time a year ago. Business is improving gradually and is being built on a sound basis. Europe is better off than at any time since the armistice, with one broad reservation—fiscal finance in most countries is going backward. The railroads are operating actively. There is a reasonable sufficiency of food and fuel. Agriculture and manufacturing are back to normal. The political and social status are much more stable. These are the opinions of an authority in a position to be particularly well advised on these subjects. Further views from the same source follow:

The degree to which Europe's economic rehabilitation can go depends greatly on the reductions that can be made in the expenses of land armaments. Governmental deficiencies in Europe represent almost exactly the same sum as do the costs of land armaments.

Despite the fact that Germans seem to have made a greater profit out of the world, in the sale of the ordinary exports, in the disposition of marks to speculators abroad and by sending much removable property out of the country, and despite the fact that they do not have to support an army, it is apparent that the reparations payments cannot be met. The situation in Germany is trending more and more toward a financial débacle. It is very evident that world currencies will have to be stabilized at about present levels. Inflation must stop. Taxes must meet expenditures.

The United States is now suffering as much from German competition as it can. Germany some time ago reached its maximum strength as a business competitor. It is now having difficulty in holding its trade. One of the worst effects of the war on Germany was the destruction of its skill. Now that its plants are running at full capacity there is a great shortage of skilled labor, and as a result there is very general failure of quality in German goods.

France has attained a strong economic position. During the war there was a large manufacturing development in the south to replace that of enemy held territory in the north. Since the armistice, the mills in the north have been rehabilitated. To these have been added the industries of Alsace-Lorraine. France does not feel the effects of the international storm as do England and the United States, where larger percentages of the populace are dependent upon manufacturing and foreign trade.

The reduction of naval armament will go through. The announcement of the Hughes proposal caused all exchange to go up. An enormous movement of goods would have been necessary to create that effect upon it. It was caused by the increased confidence which it engendered. The economic results which will follow such an agreement are immeasurable. It makes war between the United States and Japan an impossibility and removes that cloud which has hung over business so long. While there is serious doubt if much progress can be made in the reduction of land armaments at this time, there is every reason to believe that the danger of another war in this generation has been removed.

Consumers Have Forty-three Days Coal Supply

An inventory of coal stocks as of Nov. 1, taken jointly by the Department of Commerce and the Geological Survey, shows that there was at that date a total of about 47,400,000 tons of coal in the hands of consumers, or approximately forty-three days supply. This compares with stocks as high as 63,000,000 tons in the past. The estimated average number of days' supplies in various consumers hands are as follows:

Railways	29 days
Steel plants and coke industry	42 days
Other industries	67 days
Gas works	87 days
Electric public utility	54 days
Coal dealers	47 days

It must be borne in mind that these are averages and that many individual industries and dealers are far below the average.

Electric Railway for Norway

The Norwegian Storthing has granted a concession to "A/S Akersbanerne," according to the *Electrical Times*, for the construction of an electric railway from the center of Christiania to Ostensjo, a distance of about 8 km. Work on this line will probably commence simultaneously with the construction of the Majorsteun-Sognsvandet railway, a concession for which was granted recently.

Engineering Advertisers' Association Publishes Monthly Bulletin

The Engineering Advertisers' Association of Chicago is now publishing a monthly bulletin in the interest of its members. The bulletin gives a digest of the speeches made at the various meetings and also includes other information and facts regarding the movement of goods from industry to industry, personal notes, etc. At the present time there is a limited number of extra copies of the "bulletin" which will be sent upon request to the advertising concerns selling technical or engineering products.

Rolling Stock

Rockford City Traction Company, Rockford, Ill., has placed an order with the White Company, Cleveland, Ohio, for six motor truck chassis to be equipped with bus bodies. Delivery is to be made on Jan. 15, 1922. The cost will be about $42,000. They are to be operated as feeders to the street railway lines.

Track and Roadway

Los Angeles (Cal.) Railway was recently ordered by the City Council to build tracks from First and Olive Streets to First and Hill Streets.

Pacific Electric Railway, Los Angeles, Cal., has received permission from the State Railroad Commission to construct a spur track at grade across Palm Avenue, in Orange, Orange County.

Public Service Railway, Newark, N. J., will be asked by the Camden City Council to relocate its tracks and poles from the Cooper River to River Avenue, Camden. The poles are now in the street and will be placed along the sidewalk.

American Public Service Company, Abilene, Tex., has expended $110,000 in rehabilitating its lines. The improvements include new trolley poles, new roadbed and rails. The company has pledged an extension of about half a mile to McMurray College, now being constructed.

Scioto Valley Traction Company, Columbus, Ohio., will buy 15,000 new ties and have them delivered at intervals during the winter months. This property is also looking after the condition of its bridges, culverts, rails, stations and overhead equipment and is preparing to repaint four bridges the coming spring.

Chicago (Ill.) Surface Lines will order promptly for the four-track special work quadrants necessary to place in effect the loop district rerouting plan recommended by John A. Beeler and approved by the Illinois Commerce Commission in connection with its recent 5-cent fare order. This rerouting plan was described in ELECTRIC RAILWAY JOURNAL for Nov. 26, page 938.

Power Houses, Shops and Buildings

Gulfport & Mississippi Coast Traction Company, Gulfport, Miss., will soon reinstate a turbine which has been at the manufacturers for repairs. Since the engine was disabled some time ago, the one remaining engine has carried a heavy overload to supply power for the entire coast.

Corpus Christi Railway & Light Company's (Corpus Christi, Tex.), power houses and all electrical equipment were destroyed by fire that caused damage amounting to $75,000. The plant will be rebuilt at once, but the owners say it may be three weeks or longer before current is available for the resumption of car service.

Los Angeles Railway, Los Angeles, Cal., has completed the first substation of a $450,000 series. The station is located at Vernon Avenue and Pacific Boulevard and houses a 1,000 kw. converter. The structure is 42 x 52 feet and cost $58,000. New feeder cables will be installed and officials of the company plan to have the station serving power before the Christmas rush.

Cincinnati (Ohio) Traction Company, which contracted for electric current from the Union Gas & Electric Company for the operation of a majority of its cars, is now receiving power at its Price Hill, Cumminsville and Hunt Street substations. The substations at Hartwell, Norwood and Walnut Streets are being put into shape and will be ready for use within a few weeks. The traction company is planning to abandon all its power houses with the exception of the Pendleton plant, which is modern and well equipped.

Trade Notes

Railway Service Corporation, Indianapolis, Ind., has changed its name to the Railway Service & Supply Corporation.

Blaw-Knox Company will move its New York office from the City Investing Building to the Carbide & Carbon Building, 30 East Forty-second Street, on Dec. 15.

Okonite Company, Passaic, N. J., has opened a branch office in Atlanta, Ga., Room 1513 Candler Building. E. A. Thornwell has been appointed Southeastern sales representative, and John L. Phillips manager. Their territory will be North and South Carolina, Georgia, Tennessee, Alabama, Florida and the city of New Orleans, La.

Fred H. Ogden severed his connection on Dec. 1 as sales manager of the International Steel Tie Company, Cleveland, Ohio. On that date Mr. Ogden became general sales manager of the Wyrick Register Corporation, Detroit, Mich. This concern will begin marketing on Jan. 1 a self-printing autographic register, which will turn out printed forms in either duplicate or triplicate. Mr. Ogden has had nineteen years' experience in electric railway engineering work and in the sale of electric railway supplies.

Habirshaw Electric Cable Company, Inc., Yonkers, N. Y., and two affiliated companies the Electric Cable Company and the Bare Wire Company, were placed in the hands of receivers on Nov. 26. The debts of the companies aggregate about $5,000,000, and the assets, it was stated, are in excess of $7,000,000. It was explained that the reason for the receivership was a lack of liquid assets to meet maturing obligations. John B. Johnston and John S. Morley were the receivers for the three concerns, named by Judge Knox of the federal court.

Westinghouse Electric & Manufacturing Company has made its Salt Lake City service department a branch of the Denver office under the direction of A. F. MacCallum, district service manager, Denver. M. R. Davis, formerly district service manager at Salt Lake City, will remain there and devote his time to sales service work and to securing repair business for both shops. There have been changes also in the Seattle office, according to the announcement of the company, B. B. Burkett having been appointed district service manager to succeed N. P. Wilson. Mr. Wilson has been transferred to sales service activities in the Seattle territory.

Hardinge Company, 120 Broadway, New York, which recently acquired the pulverized fuel department of the Quigley Furnace Specialties Company, has made the following announcement in regard to the new organization: H. A. Kimber, formerly of the Quigley Furnace Specialties Company, is now in charge of the sales of the Quigley pulverized fuel department of the Hardinge Company. L. W. Marso, who is in charge of the branch office located at 427 Oliver Building, Pittsburgh, Pa., has now become associated with the company and will continue in the Pittsburgh office under the name of the Hardinge Company. O. M. Rau, formerly consulting engineer to the Philadelphia (Pa.) Rapid Transit Company, has now become associated with the company and will specialize in the handling of pulverized fuel systems as applied to boilers. W. O. Renkin has become associated with the company in the capacity of managing engineer of the fuel department.

New Advertising Literature

National Tube Company, Pittsburgh, Pa., is now ready to issue the "National" Bulletin No. 8C which deals with a protective coating for pipe that is intended to be used in underground service or in other locations where it is subject to excessive corrosion.

Westinghouse Lamp Company, 165 Broadway, New York, has issued bulletin E-101 with the title, "Illumination Values and Their Measurements." It contains tables of present standards of desirable illumination for various purposes, illustrations of instruments for measuring the intensity of the illumination, etc.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor CARL W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative R. E. PLIMPTON, Editorial Representative PAUL WOOTON, Washington Representative

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Are You Ready for the Winter?

THE importance of proper preparation for snow conditions was very forcibly impressed on all by the severe winter of 1919-1920. Comparisons of equipment failures on a few of the roads operating in the New England district which was most affected indicate that careful preparation made months in advance of the storm was a paying investment. The provision of adequate snow-fighting equipment supplemented by a carefully worked out system for attack is a prime consideration, and to this should be added a comprehensive program for dipping and baking armatures and other electrical parts exposed to the severe conditions. Roads that were most unfortunate in the past should profit by the experience of others and districts which were not visited by the previous storm may be the ones to suffer most this year. Full preparation should be made without delay as the expense to which a company goes in maintaining effective snow-fighting facilities is sure to be repaid by its retaining the good will of railway patrons.

Favorable Progress Being Made with Transit Hearing

THE railway men who have testified at the New York hearings have generally approved the tentative plan of reorganization proposed by the commission, with two exceptions. The first is that they naturally must delay assent so far as their own property is concerned until the valuations are made public. The second is that with practical unanimity they have expressed a fear that the method of control proposed in the original outline might result in eventual political domination of the super-holding company proposed. It is toward this provision that Mr. Williams directed his principal criticism. He also expressed fear of opposition to the plan on the part of the owners of underlying securities unless some measures were adopted looking more clearly to the retention of the rights of the holders of underlying liens. The force of the first criticism made by Mr. Williams has been somewhat destroyed by the later assurance from Chairman McAneny that as regards the board of control a sharp line of demarcation will be drawn between that board and the operating companies and that the commission proposes that the operating companies shall have all the ordinary functions of operation that the companies have at present. In this connection, however, the warning of Mr. Morrow is of great value, that no matter what plan is put together there will be perils in it, no matter whether the property is under private management or public management. Otto H. Kahn, in referring to this feature, largely supported Mr. Morrow's view though emphasizing the need for adequate equities in the proposed consolidation for present bondholders.

The first phase of the investigation is fast drawing to a close. The promise is made that early in the new year the valuations will be taken up for consideration. Ideas about valuations vary widely. The owners of the various properties may be counted upon zealously to guard their own interest. It is right that they should do so, but the fact ought to be constantly borne in mind by them that the commission plan, properly drawn and safeguarded, will have a future potential value that it would be well to weigh carefully against any differences which may exist at the outset between the values advanced by the commission and those which the owners themselves set upon their properties.

Railways Have Particular Interest in Harding's Message

PRESIDENT HARDING'S message to Congress contains at least two recommendations of very vital concern to electric railways—the creation of "judicial or quasi-judicial tribunals for the consideration and determination of all disputes (between labor and capital) which menace the public welfare" and amendment of the constitution "so as to end the issue of non-taxable bonds" by federal, state and municipal governments. By thus boldly recommending congressional action on these important though largely unpopular matters the President has again demonstrated his interest in and understanding of the needs of business and the dangers that lie ahead in the present order of these two things. He won the very high admiration of the electric railway men generally in his address before the midyear dinner of the A. E. R. A. nearly two years ago and now these recommendations to Congress confirm the confidence that he won then.

The question of non-taxable bonds was discussed in these columns last week. As to the other matter, it is hard to imagine any strike of labor which causes more direct inconvenience, suffering and financial loss to the general public than one involving a street railway. Yet such strikes have not been uncommon due to the circumstances that permit a labor organization "to exact unfair terms of employment or subject the public to actual distresses in order to enforce its terms," to put it in the words of the President. While the President is more concerned with strikes of those labor organizations which involve the whole nation, the machinery that may be devised to arbitrate nation-wide disputes might logically be duplicated in local or state tribunals organized to take jurisdiction in controversies of sectional or community interest. The Kansas tribunal sets the precedent in this country for this sort of handling of labor matters, and its record for effectiveness thus far has been good.

Some railway managements may look at this proposal as another "War Labor Board" proposition, or may be averse to it simply because of their disapproval of having any authority that may step in between the company and its employees in any of their relations. The decisions of the War Labor Board certainly gave ground for substantial fear of any such governmental agency.

However, the decisions of this board in increasing wages without regard to the ability of the company to pay have been pretty well discredited, and it is inconceivable that the Harding labor tribunals would be so constituted as to be able to take cognizance of only one side of the problem. Commission regulation and service-at-cost franchises have so firmly established the idea that rates of wages and rates of fares are inseparably tied together and that any increase in wages must be passed on to the public that there can never again be a repetition of the War Labor Board attitude in acting on this great question.

So it would seem the part of wisdom for all railway men not to oppose the Harding proposal, but to support it and use every effort to assist Congress to develop an act that is comprehensive and effective.

A Long Way to Go for Ties

A RECENT news item in this paper called attention to the fact that the Philadelphia Rapid Transit Company had purchased a large quantity of Douglas fir ties which are to be shipped by water from the Pacific Coast. In spite of the distance, it is stated that the ties will be laid down in Philadelphia at about a dollar each. Meanwhile, cedar ties from Maine recently have been imported into Connecticut, where for many years the supply of local oak and chestnut ties seemed to be unlimited.

The very fact that ties are being transported such great distances indicates the truth of the statements heretofore made to the effect that tie timber is becoming more and more scarce and that the electric railways must pay more attention to the tie problem. Even granting that high freight rates on yellow pine ties from the South caused Philadelphia to look elsewhere for ties, the available supply of such timber is decreasing and the cost is becoming almost prohibitive, due to higher labor rates.

Under such conditions the use of substitute ties must continue to increase and the most careful consideration should be given by track engineers to their design and selection. But the wood tie is by no means to be considered out of the case. On the contrary, the so-called inferior tie timbers may be used if means are adopted to protect them from wear and decay. Such protection calls for the use of tie plates and timber preservatives. It seems probable that there will be a rapid increase in the use of inferior wood ties together with the protective agents mentioned. Incidentally, the Douglas fir tie is classed as an inferior tie, being a soft wood which is rated rather low in the scale of mechanical property ratings of timber. Nevertheless, this species constitutes about 8 per cent of the total number of ties annually used by our railroads.

The matter of preservatives for tie timber is assuming an increased importance in the electric railway industry and it is indeed fortunate that coincident with increased interest in the subject, the Engineering Association has provided a valuable aid to those who are seeking information, in the excellent joint report on wood preservation which was presented at the recent Atlantic City convention. This report may be considered almost as a textbook on the subject and it was very favorably received by those engineers who are among the representative men in the wood-preserving industry.

The Piano Manufacturers and Shakespeare Also Teach Us How to Sell

DIFFERENT industries have to use different methods to induce people to purchase more of the goods they manufacture than are actually needed. A larger number of electric railways than formerly are becoming convinced that merchandising methods are desirable in the railway business and they can well study the methods followed in older commercial lines.

Under the heading "Selling Raisins and Rides," in the ELECTRIC RAILWAY JOURNAL for Nov. 19, instance was cited of the new plan of selling raisins in 5-cent cartons for snacks, as an example of how the sales of a standard food product were increased enormously in a short time, and at an actual although not apparent advance in price over purchasing by the pound. When this brilliant example of catering to the public's desire was mentioned to a manager who has become nationally famous for his 5-cent packages of transportation, he said: "Why don't you tell 'em about the piano business, the furniture fellows and other birds that make us think we just have to have their stuff whether we can appreciate it or not?" What he continued to say is better paraphrased in less vivid verbiage.

Is it not a fact, he asked, that the piano people have sold their product so well that the successor of the harpsichord and spinet is considered an indispensable part of the furniture whether any one in the home ever plays it or not? Sales ability put that view across with rich and poor alike. Then look at the furniture fellows with their subtle insinuation that no really sane persons would be content with anything but "period" furniture, the period style to change, of course, long before the furniture has worn out. More recently, it has been discovered that the later forms of phonograph cabinets are too ugly to be with this period upholstery, so we are asked to buy gramophone cabinets disguised as tables or desks. If we insist upon retaining the more efficient and more compact sound producers we are coarse yokels. At least there is something about the advertising that makes us feel that way, whereupon we rush to the period emporium and soon see the honest phonograph whose looks did not belie its purpose trundled out into the cold.

A more flagrant example is the selling of automobiles on a long-run credit basis. At a recent conference the executive of an automotive credit concern pointed out why private car installment customers were so much more reliable than motor-truck purchasers of the credit class. The truck buyer quit when he found that he wasn't making money. It was pure business with him. In the case of the private car buyers, a variety of other motives operated to keep them to fulfill their contracts. A dominant motive was that a "car" was essential to their standing in the community. They would rather stint themselves in food or household matters than give up what habit had turned from a luxury into a need.

The note that ran through this manager's talk was that no business is a success unless it can induce people to buy more than their bare necessities. The managers who say that people ride only when they need to and that no attractions in fare (or service) could increase that riding are wrong. Shakespeare evidently understood the principles of salesmanship better when he made the distressed Lear cry:

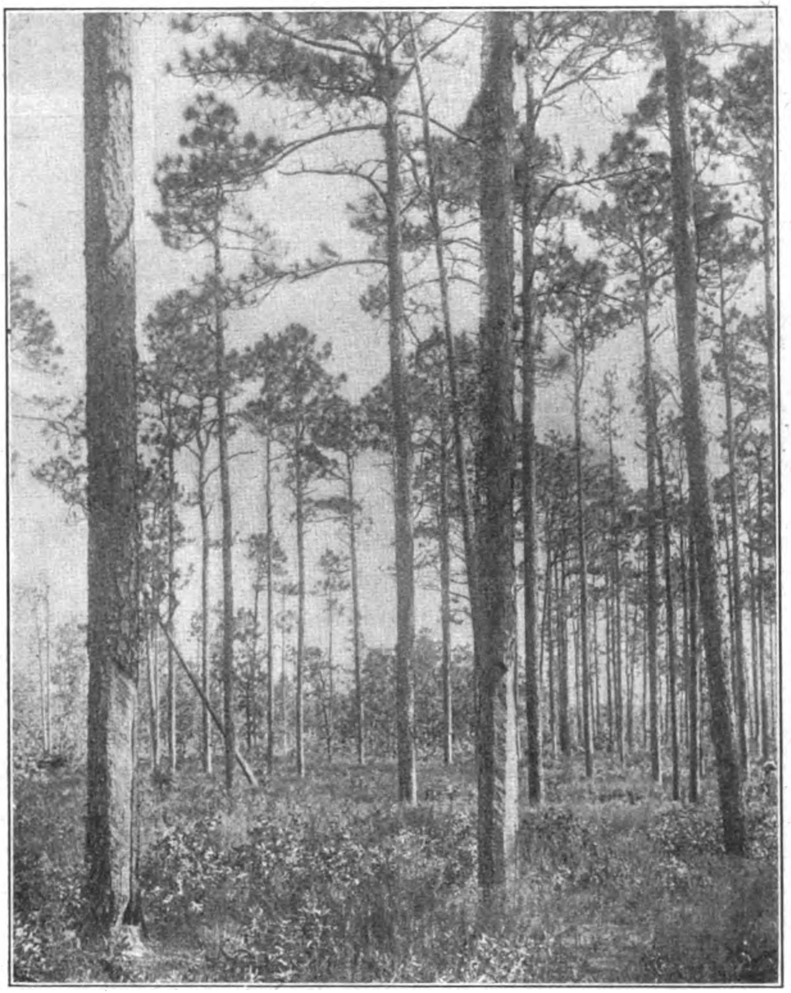
> "Oh reason not the need: our basest beggars are in the poorest thing superfluous.
> "Allow not Nature more than Nature needs, man's life is cheap as beasts."

From Tree to the Finished Stick

Turpentine and Rosin Are Important Products of the Pine Gum—Barrels for Transporting Rosin Are Made of Waste Pine Strips—Large Straight Trees Are Used for Poles and Small Ones for Ties

BY HOWARD H. GEORGE
Engineer Maintenance of Way Public Service Railway of New Jersey

YELLOW pine is one of the most important woods used in electric railway construction work for ties, bridge timbers and piling. Probably few of the many engineers specifying long leaf yellow pine have ever seen the wood in its native state and are but vaguely acquainted with the various steps in the process of its manufacture into sized sticks. Such knowledge, however, assists materially in showing the importance of conserving the present supply and preventing waste in cutting to uneconomical dimensions. A trip to Florida, Georgia or some other Southern state would, therefore, probably prove both beneficial and interesting, especially at a time when we are all getting out our winter overcoats and making other preparations for the winter season. One of the important products of the pine is its gum, from which is manufactured turpentine and rosin. The tree, before being cut down, is tapped for naval stores, a general term applied to such products of the pine tree as rosin, tar, turpentine, etc. A tree can be tapped or boxed for from three to four years, and some large trees have as many as four boxes on them. A box is made with a specially constructed axe with a bit 10 in. long. This box is cut just above the base of the tree and forms a receptacle for the gum. After this the tree is chipped, commencing immediately above the box to start the flow of gum. The chipping is diagonal and gives a sort of breastbone look to the tree. It is made with a square knife on a handle 2 to 6 ft. long and is done once a week from Feb. 1 to Oct. 20 for the purpose of insuring a continuous flow of gum. Accompanying illustrations show trees which have been boxed and chipped and a workman in the act of "hocking" or "chipping" a tree.



VIEW IN A PINE FOREST. THE TWO TREES IN THE FOREGROUND HAVE BEEN BOXED AND CHIPPED

Instead of cutting a box in the base of the tree the more modern way is to use a clay pot holding about a quart and hang it on a nail, so placed as to catch all the drippings.

The chipper is followed round the woods by a man who carries a pail and dips the gum out of the box with a trowel-shaped spoon, or scrapes it out of the pot, as the case may be. When his pail is full he dumps it into one of the collecting barrels, which are so placed as to be convenient for a given territory. When the barrels are filled they are carted by wagon to the still. The barrels are rolled up an incline to a platform which is level with the top of the still, the gum is emptied out and a fire is started in the fireplace below. The still consists of a large copper receptacle and holds about thirty-five barrels of gum. When the gum and water boil the steam escapes through the top connection into the worm, which passes through a large wooden tank filled with cold water. This causes the steam to condense and the liquid to run out through a small pipe at the bottom of the worm into a large barrel placed alongside the track. The water, being heavier, goes to the bottom and the spirits rise to the top and flow through a small pipe about 3 in. below the top of the barrel and into a white oak barrel that has been glued on the inside to insure a tight seam and prevent leakage. During the process of distillation a little water is added now and then, in all about three barrels, to prevent the spirits and gum from burning.

When the distillation has gone on for a period of about two hours the stiller sounds his still and can tell by the sound whether he has all the spirits out of the gum or not. If so, the top connections to the worm are removed and the residue is run out through a tail gate at the bottom of the still and into a large strainer lined with cotton batting to catch all chips, needles or any

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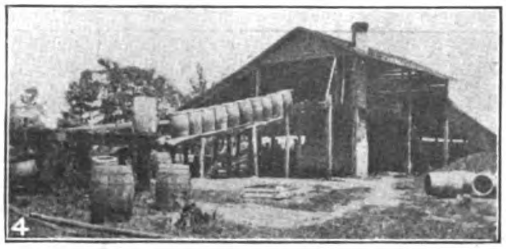
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Manufacturing Operations for Making Ties, Poles and Turpentine

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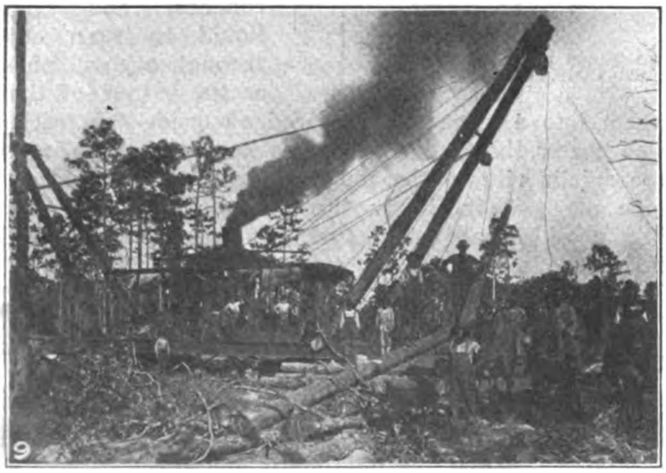
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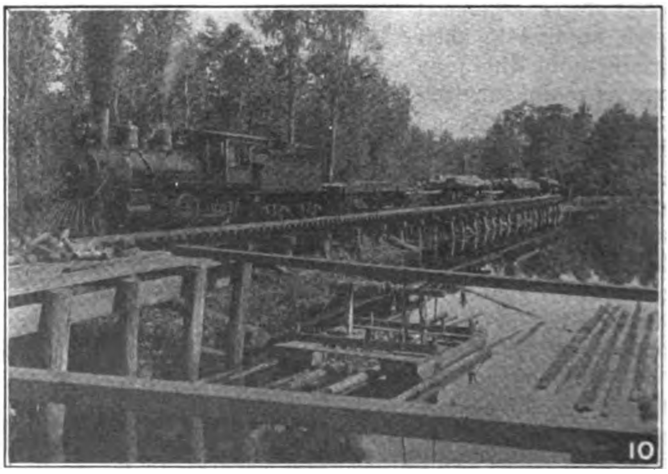
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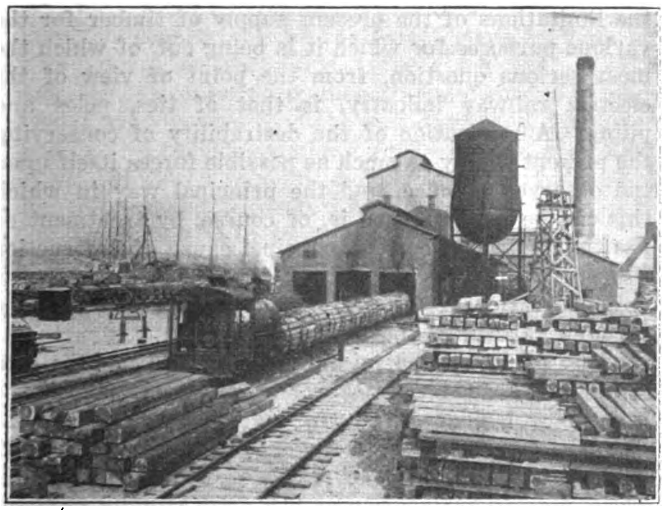
No. 1—Workmen hocking or chipping a tree.
No. 2—Tree equipped with clay pots.
No. 3—Workman engaged in collecting gum.
No. 4—A typical turpentine still.
No. 5—Typical Southern skidding screws.
No. 6—Piling is taken from the river and loaded at dock onto cars.
No. 7—Train loaded with saw logs.
No. 8—Bull pen reaching from shore into the river.
No. 9—Derricks hoisting saw logs in the woods.
No. 10—Unloading trestle at river's side.

dirt that may have accumulated during the chipping of the tree or transportation of the gum to the still. Through the strainer it flows into a large vat and, while still hot, is barreled.

A charge of thirty-five barrels of gum will make about seven barrels of spirits and twenty barrels of rosin. A cooperage is run in connection with the still and the barrels that are used for the rosin are manufactured there of waste pine strips. After the spirits and rosin are barreled they are shipped either by rail or water to the naval stores yard, where they are inspected, graded and registered by an inspector appointed by the state. If the spirits have been adulterated they are turned down and confiscated by the state and the shipper is prosecuted under the law governing the adulteration of spirits. Before the state had these inspectors the spirits were frequently adulterated with kerosene oil, sometimes to the extent of 33⅓ per cent.

The same inspectors inspect the rosin. When the rosin arrives at the naval stores the barrels are turned on end and have their heads knocked off. The rosin is spiked or broken to a depth of 5 in. and a 1-in. cake is cut from each barrel as a sample. The inspector compares this cube with the standard grade and gives each barrel its proper marking. There are twelve grades of rosin, the grades running from a very pale amber color to a very dark opaque brown. The inspectors have nicknamed them so as to remember them and also as a sort of private code. They call Grade W.W., Water White; W.G., Window Glass or William; N., Nancy; M., Mary; K., Kate; I., Isaac; H., Henry; G., George; F., Frank; E., Ed.; D., Dolly, and B., Betsy.


TIES GOING INTO CYLINDERS FOR TREATMENT

After the inspection has been completed the barrels are sealed up again and either shipped or stored, depending on the condition of the market at the time. The cotton batting waste from the still is used to make acetic acid and is also found useful for starting the boiler fires.

There is also another system known as the "Gilmer System" for extracting the turpentine from the tree. Under this system the tree is not chipped or boxed. A ¾-in. hole is bored into the sap-wood and is covered with a metal cap. Attached to the cap is a 3-in. metal lead and another cap which fits over a glass jar, making an airtight conductor for the turpentine from the time it leaves the tree until the jar is filled. The turpentine in the jar, being protected from the air, loses none of its strength by evaporation. It is claimed that pure turpentine can be seen in the jar on top of the crude turpentine and gum, and this is wasted under the first described system of collection. By this method two barrels of crude turpentine and gum will make one barrel of spirits. The principal markets for turpentine and rosin are Jacksonville, Fla.; Savannah, Ga.; Charleston, S. C., and New Orleans, La.

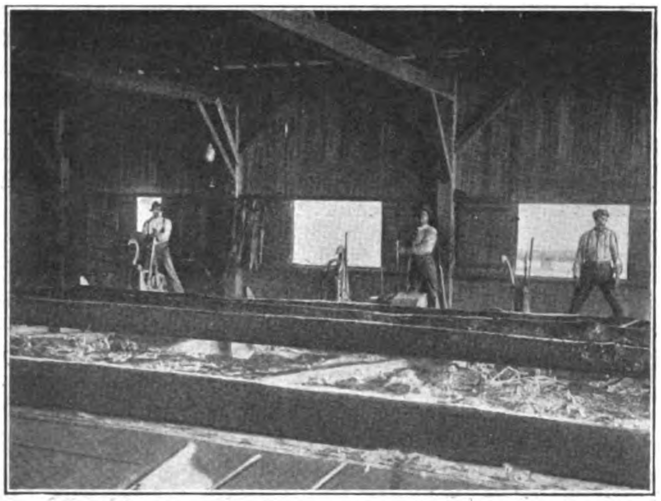
LARGE, STRAIGHT TREES NECESSARY FOR PILING

After the trees have passed their usefulness for naval stores the woods then become the field of activity for the lumber industry. The trees are inspected by the foreman of the logging camp, who can tell just what they are best suited for. If the tree is large and straight he will select it for a pile and will put his pile mark on the bark with a knife or axe.

After being felled the tree is peeled of its bark and inner bark or cambia. A large two-wheeled wagon drawn by either a yoke of oxen or a team of mules carts it to the river-front or railroad track. If to water, when about one hundred and fifty have been assembled, they are rafted together and towed down the river by a small tug or launch to the sawmill or creosoting plant, as the case may be. Here they are removed from the water by a large steam crane. An accompanying view shows the plant of a large creosoting concern at Jacksonville, Fla., where two rafts of piling are being unloaded at the dock. If they are to be used for piles, they are inspected and stamped and then loaded on bolster bale cars, and when a batch of three cars is made up they are pulled out in the yard and run into the cylinder for treatment.

TIES STACKED IN PILES FOR SEASONING

Should the tree be very large or should there be no piling orders the tree is cut down for saw logs. Most of the large timber camps have short railroads of their own starting at their dock and running back into the woods where the cutting of trees is being done. The logs are hauled to this track by the two-wheeled wagons above described, are there loaded on the saw-log train by a large steam crane and hauled away to the dock or landing, where they are bundled and rafted for towing to the mill. The sawmill generally has a large pen reaching from the shore out into the river, called a bull pen. The saw logs are pushed into this pen and left there to be handled by the mill crew. The saw logs ride up an incline on an endless chain conveyor into the mill,



TRAVELING LOG CARRIAGE IN MILL

WORKMEN HEWING CROSS TIES IN WOODS

where they slide off on an inclined platform. Here they are either held or dropped off on the saw carriage.

From experience the sawyer knows eactly what the log will cut to as soon as he sees it and immediately clamps the log to the carriage. The carriage travels down past the saw and the log is sawed on one side and then turned to be sawed on the other side coming back. This is repeated until all four sides are sawed. The bark and waste wood falls off and slides along on rollers to the resaw mill. This wood is then resawed into inside trim, scantling, laths and other small material, while the bark, sawdust and slabs are used for fuel. After the saw logs have been sawed they are graded. The prime goes out one way, the merchantable and standard another. The merchantable and standard grades are the ones which are usually creosoted.

If the tree is quite small or is not suited for a piling or saw log it will be cut down and hewn into ties. Most of the trees will make two standard heart ties, 7 in. x 9 in. x 8 ft. 6 in., and from two to four 6-in. x 8-in. x 8-ft. sap ties. The ties are carted to the railroad or riverfront and shipped to the creosoting plant, where they are unloaded and stacked to season for at least three months. After seasoning they are inspected, branded and loaded on bale cars and when a batch of sixteen cars, containing from 800 to 900 ties, has been loaded they are pushed into the cylinder for treatment.

The only part of the tree that is left in the woods is the stump or butt of the trunk, and these are blown up with dynamite and cut into small pieces and loaded on small cars. These cars are run into brick retorts which are heated by fire underneath. The spirits and moisture escape in the form of steam through an outlet pipe at the top and pass through a cold worm and are collected and distilled in about the same way as at the still. After being distilled it is pumped up into a large tank for storage or barreled up for shipment. If the distillation has been correctly carried on there results a turpentine that contains about 2 per cent water and is known as wood turpentine. It will dissolve rosin just like water does sugar.

After the distillation the retorts are opened and the wood is transferred to charcoal ovens. The gases pass out through the top in the form of a dense black smoke while the pitch runs out through a small pipe at the bottom into a vat and while still hot is barreled. So that the only parts of the tree that have not been used are the needles and the gases that escape.

One cannot but be impressed by the scale of operations on any large lumbering project, as well as with the limitations of the present supply of timber for the various purposes for which it is being cut, of which the most serious question, from the point of view of the electric railway industry, is that of ties, poles and piling. A realization of the desirability of conserving the present supply as much as possible forces itself upon the observer at once, and the principal way in which this can be accomplished is, of course, by treatment of the timber to prevent its principal cause of destruction —decay.

Conservation of the present supply can also be aided through careful engineering design of our structures; that is, by using the minimum sizes and lengths consistent with good engineering practice. It is believed that many timber structures have been erected in the past by rule of thumb methods or in accordance with arbitrary designs, as the result of which considerable excess timber has been used over that actually required to carry the desired loads, this frequently being done so as to provide for the subsequent loss in strength due to partial decay and to postpone the day when complete removal becomes necessary. It must also be remembered in this connection that the smaller sections not only contain less lumber per unit of length but that the unit price per thousand feet board measure is also usually much less, and this total difference in cost would partly offset the cost of treating the smaller sizes actually required. The economy of using treated timber where failure is caused by decay and the large increase in prices of all kinds of untreated timber are the principal factors which are bringing about the more extended use of wood preservatives, and this use is bound to increase in the future as greater need for substitutes for timber is felt.

It would also be well to emphasize the importance of proper seasoning. The sap in the cells of the wood must be largely removed so as to eliminate as far as possible the moisture in the wood structure, which is one of the essential requirements for the growth of the wood-destroying fungi. Then, too, this moisture must be removed in order to provide space and reservoirs for the wood preservative and to insure its penetrating far enough into the wood to accomplish the desired results. In some methods of treatment the aim is to fill the cells with the preservative oil, while in others the aim is merely to thoroughly coat the cell walls. Whatever may be the method employed, this moisture must first be removed in some way, and for this reason seasoning before treatment is considered highly essential to most satisfactory treatment, since cracks develop during the seasoning process, whether in air or steam. If these cracks develop after treatment, as is likely to be the case where treatment is made without proper seasoning, the inner or untreated portions of the wood will be exposed and decay of the exposed portions will probably soon follow, thus largely nullifying the benefits derived from the treatment given.

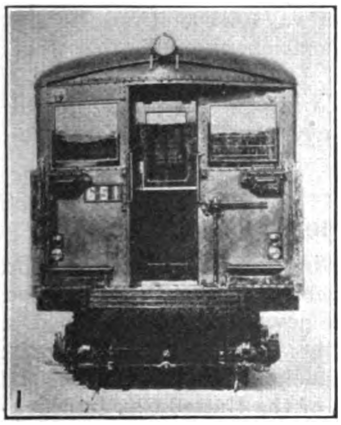
New Cars for Frankford "L"

All-Steel Cars 55 Ft. Long Have Seating Capacity of Fifty-one—Doors Are Fitted with Electric Contact Tripping Shoes to Prevent Danger of Injury to Passengers

WHEN the order for the new cars of the Frankford Elevated Railway, Philadelphia, Pa., was placed with the J. G. Brill Company last February it was the intention to build 100 cars for this service. This number was later reduced so that the first equipment being constructed consists of fifty all-steel elevated cars with three doors on each side. There are four windows between the center door and each end door and two additional windows between the end doors and the ends of the car. The side windows are equipped with double sash, the lower part of which is stationary and the upper arranged to drop. Arch-type roof construction has been used with twelve ventilators of the Railway Utility Company's honeycomb type, located six on either side. These ventilators are welded in place and are equipped with registers which may be opened and closed as desired.

At diagonally right-hand corners there is a motorman's compartment with a hinged door for entrance and exit from the interior of the car body. This door is arranged to fold back so as to cover the operating mechanism when not in use. The train door at each end of the car and the six side doors are of the single sliding type hung on ball-bearing hangers which operate on tracks. All side doors are 4 ft. wide. This allows plenty of space for incoming and outgoing passengers. The doors are equipped with the National Pneumatic Company's latest type of door-operating equipment, so arranged that all doors of each car are operated from one end of the car, which admits of train operation with a guard or conductor placed between alternate cars. The doors are controlled either in unison or separately by push buttons located at a convenient place for the train guard and are all fitted with the latest type of electric contact tripping shoe so arranged that if the closing door touches a passenger it is immediately reversed, thus obviating any danger of injury to the passenger.

On each door post is a single push button so the station platform guard can close any individual door as desired. At a convenient position at each end of the car are located indication lamps to advise the train guard or conductor when the doors of his particular car are closed, and the same lamp located at the front end of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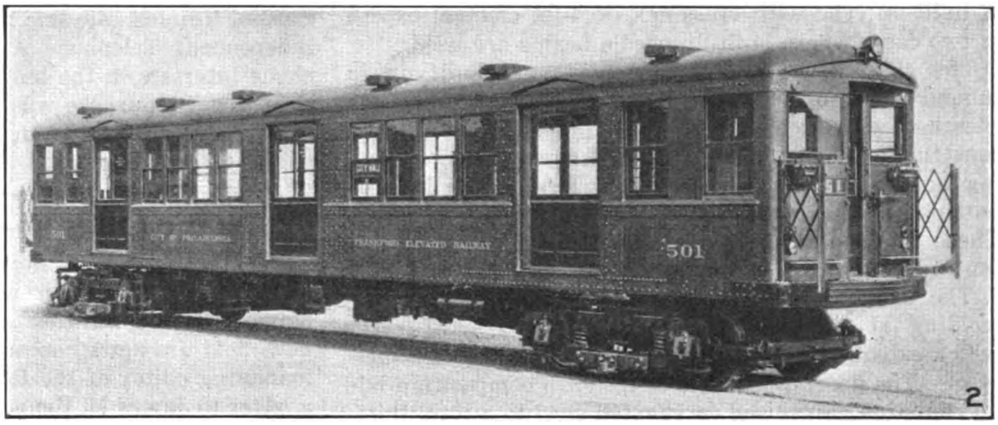
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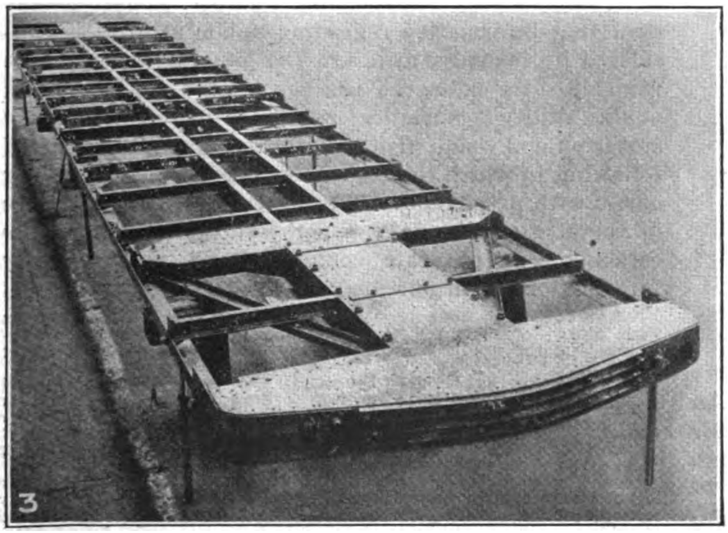
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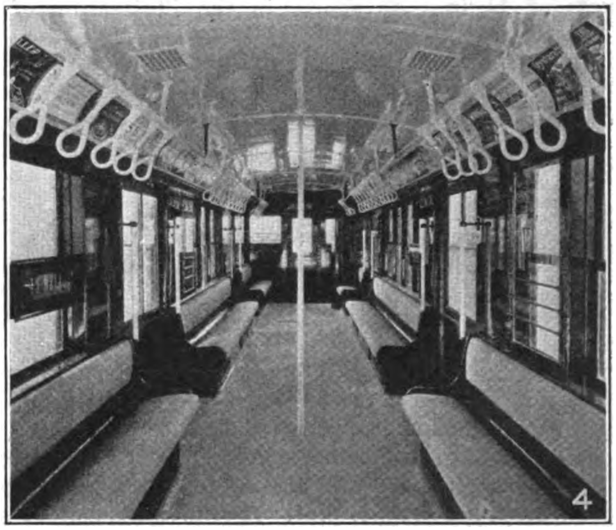
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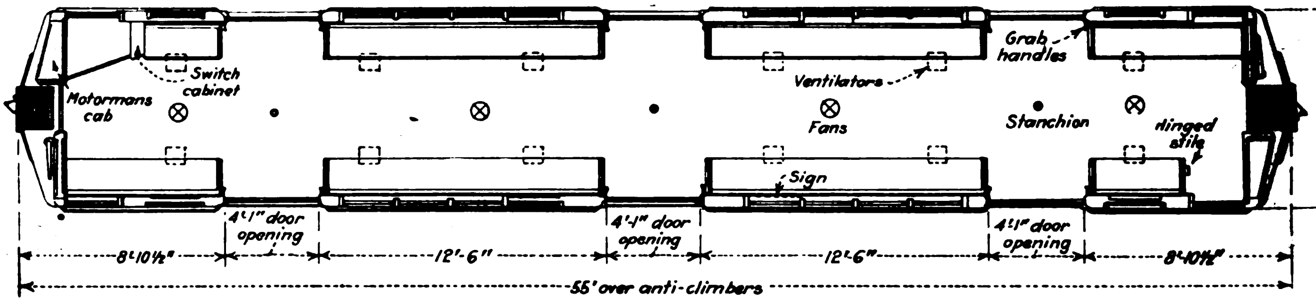
UNDERFRAME AND COMPLETED CAR WITHOUT COUPLERS FOR FRANKFORD "L"

No. 1—End view of new car.

No. 2—Exterior of Frankford Elevated Railway car previous to installation of couplers.

No. 3—Underframe of car in course of construction.

No. 4—Longitudinal seats provide plenty of space for standing passengers.



Floor Plan of Frankford Elevated Railway Steel Car

the train, in a convenient position for the motorman, will indicate when all doors of the train are closed.

In the accompanying tables are listed some of the important details of these cars.

TABLE I—DIMENSIONS AND EQUIPMENT WEIGHTS

Length over anti-clinbers	55 ft. 0 in.	Height from rail to underside of side sills	3 ft. 3⅜ in.
Length over corner posts	51 ft. 11½ in.	Truck wheelbase	6 ft. 8 in.
Width over all	8 ft. 6 in.	Diameter wheels	34 in.
Length over bolster centers	38 ft. 0 in.	Wheel tread	4⅜ in.
Center to center of side posts	2 ft. 4½ in.	Wheel flange	1 in. x 1⅜ in.
Width of side door openings	4 ft. 0 in.	Seating capacity	51
Height from rail over roof	12 ft. 0 in.	Weight of car body	38,500 lb.
Height from rail to top of floor	3 ft. 11½ in.	Weight of trucks	30,000 lb.
		Weight of equipment	17,500 lb.
		Total weight	86,000 lb.

One of the underframes for these cars is shown in an accompanying illustration. The principal members of the underframe include side sills of 5 x 3½ x 3 in. angles, two center stringers of 8-in., 18¾-lb. channels, and sills of built-up type with crossings of 4-in. channel except in two cases where built-up needle beams are used.

The side, window, and door posts are built up in tubular form of steel ⅛ in. thick and the sides are sheathed with steel of the same thickness. The roof construction consists of 3/16-in. thick steel plates extending across the entire roof and spliced at carlines by butting sheets, riveted to carlines and welded at joints. These roof plates are also riveted at their ends to the top rail angles and to the top of letterboards.

The headlining is of ¼-in. Agasote with sheet-steel molding at the joints. The advertising card racks which extend the full length of the car are also of sheet steel. The flooring consists of flexolith composition laid on chanarch galvanized corrugated steel to a total thickness of 1⅛ in. As shown in the illustration of the interior of these cars the seating is longitudinal. An upright stanchion is provided opposite the center pair of doors and grab handles at each side of all side doors. These grab handles and the center stanchions are of 1-in. porcelain enamel pipe. A full equipment of sanitary hand straps are provided and there are two Brill signal bells in each car, one in each motorman's compartment. The lighting consists of two rows of lamps down the sides of the car and directly over the seats.

TABLE II—EQUIPMENT DETAILS OF FRANKFORD CARS

Air brakes—Westinghouse Traction Brake Company's Type A.M.U.E.
Motors—Two G. E. Co.'s No. 259.
Control Equipment—Westinghouse Electric & Manufacturing Company's type A.B.F.
Bumpers—9-in. face with 7-in., 10.28-lb. Hedley anti-climbers.
Couplers—Van Dorn air and electric type.
Destination signs—Electric Service Supplies Company's Keystone.
Handbrakes—Brill horizontal handle.
Heater equipment—Consolidated Car Heating Company's panel type.
Headlights—Electric Service Supplies Company's Golden Glow S.H. 74.
Step tread—Universal.
Trucks—Brill 27-MCB-3, motor and trailer, with oil retaining center plates.
Ventilators—Railway Utility Company's Honeycomb.
Seats—Brill longitudinal upholstered in rattan.
Curtains—No side curtains. Door of motorman's compartment equipped with Pantasote curtain.
Third rail shoe—Champion.

Illinois Committee Continues to Inform

FOLLOWING its custom of issuing interesting and instructive pamphlets on utility problems for the benefit of the public, the Illinois Committee on Public Utility Information has recently published another booklet giving "Its History, Purpose and Work." The various activities of the committee, its relation to newspapers, its co-operation with other organizations, its relation with universities and colleges in their quest for utility information are explained and reviewed.

The last page of the booklet contains six suggestions which are offered by the committee and which "would be of benefit both to the utility companies and to customers in bringing about the establishment and continuance of a proper relationship."

The Illinois Committee on Public Utility Information was formed in April, 1919, under the auspices of the Illinois State Electric Association, Illinois Gas Association, Illinois Electric Railway Association, Illinois Independent Telephone Association and all other telephone interests in the state. It was announced at that time that its purpose was "to inform the public on the fundamentals, and particularly the economics, of the public utility industry."

Utilities Now Co-operate with Papers

THE co-operation in giving and gathering public utility information which has recently developed between public utilities and newspapers has opened a new field in news, according to Stanley W. Bogert, managing editor of the Philadelphia *Public Ledger*. In a letter to James M. Bennett of the United Gas Improvement Company of Philadelphia, Pa., Mr. Bogert makes clear that information regarding public utilities is considered by business men and the general reader to be valuable. He hails the passage of the old era when public utility companies regarded newspapers with suspicion and would give no information, and the period following in which the companies flooded the newspaper offices with propaganda. The letter, which is indicative of the attitude the daily papers are taking toward the establishment of state committees on public utility information, is, in part, as follows:

> What you have done here in frankly and freely supplying us with news demonstrated that the utility companies, the newspapers and the public can benefit from a free discussion of these matters.
>
> It used to be that some of the utilities, or those who represented them officially, would have nothing to do with the newspapers or the public. There is a new basis of news relationship now in many instances, however. You have been a part of this new order, just as the Illinois Committee on Utility Information and Captain Ling of the Ohio Committee on Public Utility Information.
>
> The thing that strikes home is the abandonment, under the new order, of the propaganda idea; that you and some others are ready to supply news minus propaganda; that you have been willing to supply, upon request, information which in the past, by custom, would have been denied. It is just a fair way of doing things.
>
> There is almost a new field in utility news. The utilities certainly are very close to the public and it can do no harm to keep the public advised of their progress, their needs, etc. It would be fine if this news could be put out more generally on the real news basis which you are following.

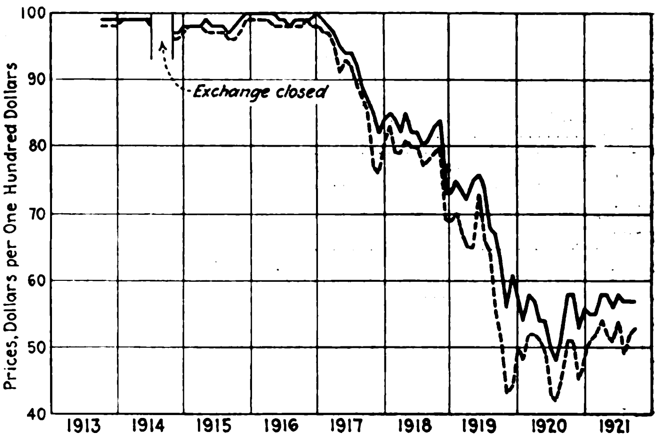
Statistics of New York Railways

Tables and Charts Presented at the Hearings Before the New York Transit Commission by the Commission's Chief Accountant Give Interesting Facts in Regard to the City's Largest Transportation Companies

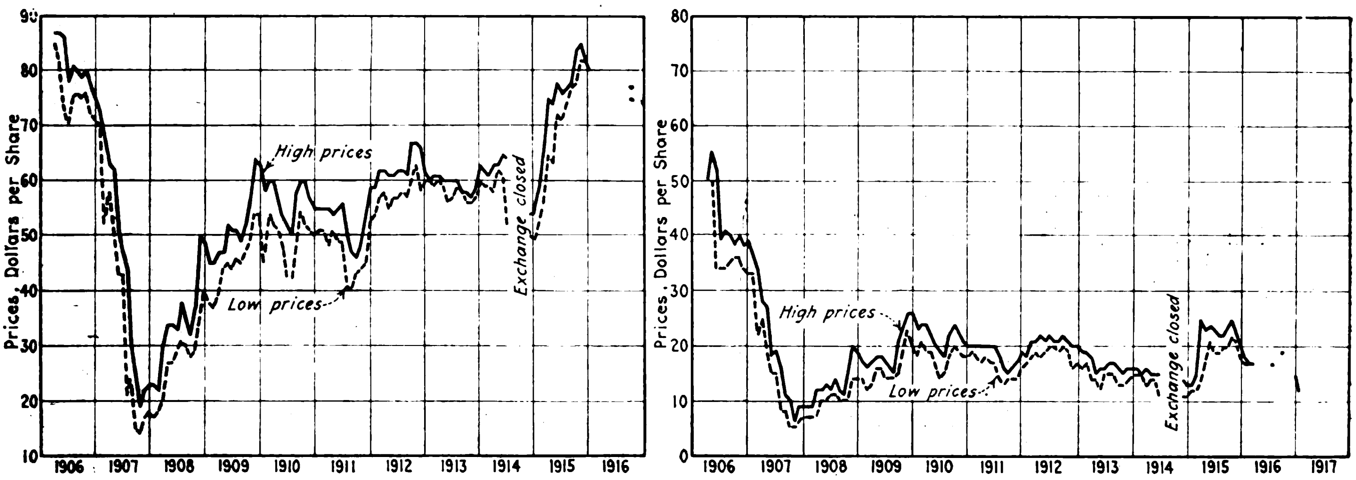
THE accompanying tables and graphs are from a number presented at recent hearings before the New York Transit Commission by the chief accountant for the commission, Frederick W. Lindars. The figures and graphs in general speak for themselves, but a few comments may be of assistance.

In Table I the roads included under the Brooklyn Rapid Transit System, Third Avenue System, New York Railways System, etc., are the same as given in Table II, although it should be understood that in several cases the roads grouped with the Brooklyn Rapid Transit and the New York Railways systems include roads now operated independently.

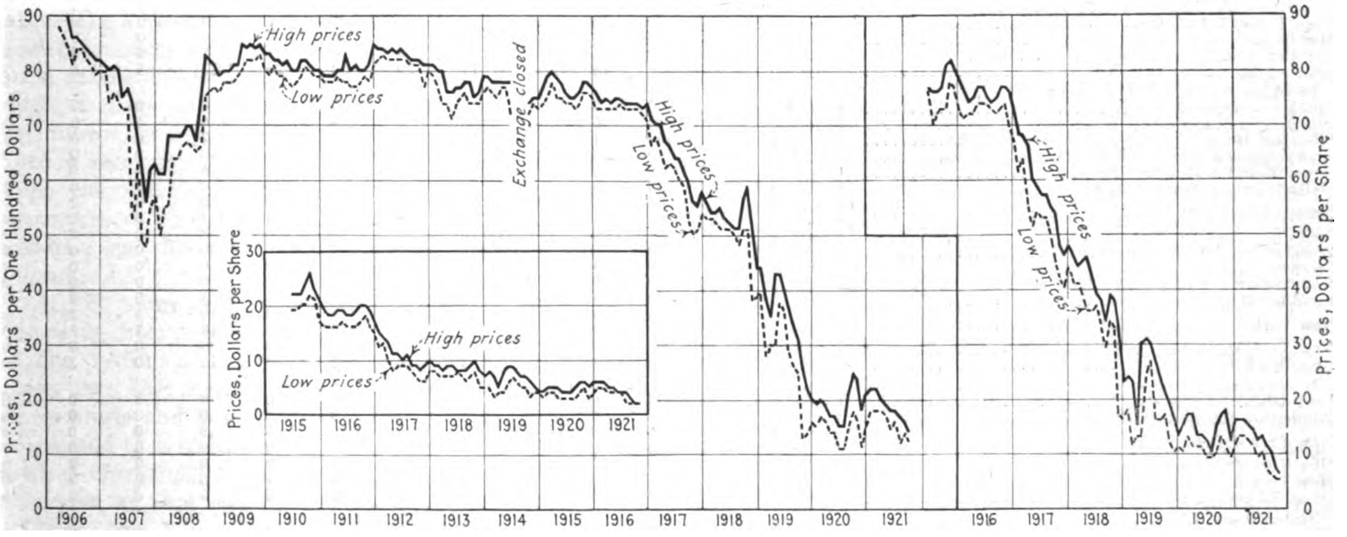
The figure given in Table I as "passenger fare per revenue passenger" is obtained by dividing the receipts from all passengers by the number of passengers paying the initial fare. Thus, on the New York Railways,



Prices of the 5 per cent first and refunding mortgage bonds of the Interborough Rapid Transit Company, 1913 to 1921 inclusive.



At left, Interborough-Metropolitan preferred stock, 1906 to 1916. The two points in October, 1916, represent isolated transactions. At right, Interborough-Metropolitan common stock (including trust certificates), 1906 to 1917. The two points in the latter part of 1916 and the line in the early part of 1917 represent isolated transactions.



The long graph at the left gives the prices of the Interborough-Metropolitan collateral trust 4½ per cent bonds from 1906 to 1921. The graph in the panel shows the prices of the Interborough-Consolidated common stock (voting trust certificates) from 1915 to 1921. The graph at the right shows the prices of the Interborough-Consolidated preferred stock from 1915 to 1921.

THESE GRAPHS SHOW BY MONTHS THE HIGH PRICES (BY SOLID LINE) AND THE LOW PRICES (BY DOTTED LINE) FOR VARIOUS SECURITIES OF TRACTION PROPERTIES IN NEW YORK

TABLE I. REVENUES, ETC., OF THE RAPID TRANSIT AND SURFACE RAILWAYS IN NEW YORK CITY

(The figures given are in cents per revenue passenger and are for the fiscal year ended June 30, 1921)

	Total All Companies	I.R.T. (Subway)	I. R. T. (Elevated)	B. R. T. (Subway and Elevated)	B. R. T. Surface	Third Avenue System	Second Avenue Railroad	New York Railways System	Queens Surface Lines	Staten Island Surface Lines	Hudson and Manhattan	Miscellaneous Brooklyn Surface
Revenues:												
Passenger fares	5.07	5.00	5.00	5.00	4.89	4.86	4.90	5.11	5.10	6.90	7.45	2.62
Advertising, sale of power, etc	0.42	0.45	0.40	0.18	0.29	0.98	0.30	0.47	0.14	0.05	0.46	0.92
Interest and dividends on investments, rentals from real estate, etc	0.22	0.09	0.02	0.11	0.14	0.56	0.01	0.89	0.02	0.38	0.24	0.04
Total revenue	5.71	5.54	5.42	5.29	5.32	6.40	5.21	6.47	5.26	7.33	8.15	3.58
Deductions from revenue:												
Operating expenses	4.30	3.41	3.79	4.62	4.78	4.58	5.24	5.44	5.63	7.80	4.12	3.17
Taxes	0.30	0.07	0.61	0.27	0.25	0.34	0.52	0.46	0.24	0.31	0.50	0.44
Interest	1.05	1.24	0.63	0.51	0.83	1.47	1.02	0.82	0.96	1.09	4.13	0.35
Rents	0.65	0.38	1.74	1.04	0.18	0.27	0.01	0.64	0.24	0.20	0.07	0.48
Miscellaneous deductions	0.13	0.26	0.13	0.00+	0.00+	0.36	....	0.04	0.00+	....	0.10	0.02
Total operating expenses, etc	6.43	5.36	6.90	6.44	6.04	7.02	6.79	7.40	7.07	9.40	8.92	4.46
City's interest and sinking fund (*a*)	0.46	0.73	....	1.66	....	....	....	....	....	....	....	....
Estimated cost to restore free transfers, etc. (*b*)	0.36	....	....	....	1.54	....	0.07	1.17	0.02	0.37	....	....
Total deductions	7.25	6.09	6.90	8.10	7.58	7.02	6.86	8.57	7.09	9.77	8.92	4.46
Deficiency in revenue	1.54	0.55	1.48	2.81	2.26	0.62	1.65	2.10	1.83	2.44	0.77	0.88

(*a*) Contract No. 3,	$4,675,000
Contract No. 4,	6,730,000
Total,	**$11,405,000**

(*b*) Estimated at $9,000,000.

TABLE II. SCHEDULE OF CAPITAL STOCKS OUTSTANDING JUNE 20, 1921, AND DIVIDENDS PAID BY RAPID TRANSIT AND SURFACE RAILWAY COMPANIES IN NEW YORK CITY, YEARS 1912 TO 1921, INCLUSIVE

	Capital Stock		Percentage of Dividends Paid									
	Class	Outstanding	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Third Avenue Railway System:												
New York City Interborough Ry. Co	Common	$5,000,000	0	0	0	0	0	0	0	0	0	0
New York, Westchester & Conn. Traction Co	Common	2,000,000	0	0	0	0	0	0	0	0	0	0
Pelham Park & City Is. Ry. Co	Common	45,000	0	0	0	0	0	0	0	0	0	0
Southern Boulevard Ry. Co	Common	250,000	0	0	0	0	0	0	0	0	0	0
Union Railway of New York	Common	2,000,000	0	0	0	0	0	0	0	0	0	0
Bronx Traction Co	Common	58,100	0	0	0	0	0	0	0	0	0	0
Westchester Electric R.R. Co	Common	500,000	0	0	0	0	0	0	0	0	0	0
Yonkers Railroad Co	Common	1,000,000	0	0	0	0	0	0	0	0	0	0
Belt Line Ry. Corp	Common	734,000	0	0	0	0	33⅓	0	0	0	0	0
Brooklyn North R.R. Co	Common	100,000	0	0	0	0	0	0	0	0	0	0
Dry Dock-E. Bway. & Battery R.R. Co	Common	1,200,000	0	0	0	0	0	0	0	0	0	0
42nd St., Manhattanville & St. Nicholas Ave. R.R. Co	Common	2,500,000	0	0	0	0	0	0	0	0	0	0
Kingsbridge Railway Co	Common	8,600	0	0	0	0	0	0	0	0	0	0
Mid Crosstown Railway Co	Common	150,000	0	0	0	0	0	0	0	0	0	0
Third Ave. Railway Co	Common	16,590,000	0	0	0	0	0	1	0	0	0	0
Third Ave. Bridge Co	Common	20,000	0	0	0	0	0	0	0	0	0	0
New York Railways System:												
Broadway-Seventh Ave. R.R. Co	Common	2,100,000	12½	10	10	10	10	10	10	2½	0	0
42nd & Grand St. Ferry R.R. Co	Common	748,000	26	18	18	18	18	18	18	4½	0	0
Fort George & 11th Ave. R.R. Co	Common	3,000,000	0	0	0	0	0	0	0	0	0	0
Twenty-third St. Ry. Co	Common	600,000	18	18	18	6	18	18	18	4½	0	0
Bleecker St. & Fulton Ferry R.R	Common	900,000	1½	1½	1½	1½	1½	1½	¾	0	0	0
34th St. Crosstown Ry. Co	Common	1,000,000	0	0	0	0	0	0	0	0	0	0
Christopher & Tenth St. Ry. Co	Common	650,000	8	8	8	8	8	8	8	2	0	0
Sixth Ave. Railroad Co	Common	2,000,000	7	8¾	7	7	7	7	7	1¾	0	0
New York Railways Co	Common	17,495,060	0	0	0	0	0	0	0	0	0	0
Eighth Avenue Railroad Co	Common	1,000,000	16	16	16	16	16	16	16	8	0	0
Ninth Avenue Railroad Co	Common	800,000	8	8	8	8	8	8	8	4	0	0
New York & Harlem Railway Co (*a*)	Common	8,656,050	21	14	14	14	14	14	14	12	10	5
	Preferred	1,343,950	21	14	14	14	14	14	14	12	10	5
Independent Railways System:												
Manhattan Bridge 3c. Line	Common	450,000	0	0	6	6	1½	0	3¾	5	5	2½
Manhattan Railway Co	Common	60,000,000	7	7	7	7	7	7	7	7	7	7
Interborough Consol. Corp	Common(*c*)	932,626.92	0	0	0	0	0	0	0	0	0	0
	Preferred	45,740,500	0	0	0	3	6	6	3	0	0	0
Second Avenue R.R. Co	Common	1,862,000	0	0	0	0	0	0	0	0	0	0
Bush Terminal R.R. Co	Common	20,000	0	0	0	0	0	0	0	0	0	0
Marine Railway Co	Common	50,000	0	0	0	0	0	0	0	0	0	0
Van Brunt St. & Erie Basin R.R	Common	200,000	5	6	4	4	4	5	5	5	5	2
Interborough Rapid Transit Co	Common	35,000,000	16	12	15	20	20	20	17½	5	0	0
Brooklyn Rapid Transit System:												
Brooklyn Heights R.R. Co	Common	200,000	0	0	0	0	0	0	0	0	0	0
Bridge Operating Co	Common	100,000	6	6	6	6	6	6	6	6	0	0
Brooklyn, Queens County & Suburban R.R. Co	Common	2,000,000	1	15	10	5	5	2½	2½	0	0	0
Coney Island & Gravesend Ry. Co	Common	350,000	5	10	5	5	5	5	10	0	0	0
Coney Island & Brooklyn Ry. Co	Common	2,983,900	0	0	6	7½	6	6	6	0	0	0
DeKalb Ave. & North Beach R.R. Co	Common	10,000	0	0	0	0	0	0	0	0	0	0
Nassau Electric Ry. Co	Common	8,500,000	0	0	0	0	0	0	0	0	0	0
	Preferred	6,500,000	4	8	6	4	4	4	2	0	0	0
South Brooklyn Ry. Co	Common	500,000	0	0	0	0	0	0	0	0	0	0
Prospect Park & Coney Is. R.R. Co	Common	250,000	0	0	0	0	0	0	0	0	0	0
Prospect Park & So. Bklyn. R.R. Co	Common	50,000	5	0	0	0	0	0	0	0	0	0
New York & Coney Is. R.R. Co	Common	100,000	5	0	0	0	0	0	0	0	0	0
Brooklyn Rapid Transit Co	Common	(*b*)74,520,000	5	5½	6	6	6	6	3	0	0	0
New York Consolidated R.R. Co	Common	13,900,000	0	5	7	10	10	10	10	5	2½	0
	Preferred	5,000,000	0	5	7	10	10	10	10	5	2½	0
New York Municipal Ry. Corp	Common	200,000	0	0	0	0	0	0	0	0	0	0
Brooklyn City R.R. Co	Common	12,000,000	8	8	8	8	8	8	10	10	2½	0
Queens County Lines:												
Long Island Electric Ry. Co	Common	600,000	0	0	0	0	0	0	0	0	0	0
Manhattan & Queens Traction Co	Common	20,000	0	0	0	0	0	0	0	0	0	0
New York & Long Is. Traction Co	Common	750,000	0	0	0	0	0	0	0	0	0	0
	Preferred	250,000	0	0	0	0	0	0	0	0	0	0
New York & North Shore Tr. Co	Common	979,350	0	0	0	0	0	0	0	0	0	0
New York & Queens Co. Ry. Co	Common	3,235,000	0	0	0	0	0	0	0	0	0	0
Ocean Electric Railway Co	Common	35,000	0	0	0	0	0	0	0	0	0	0
Staten Island Lines:												
Richmond Light & R.R. Co	Common	2,871,750	0	0	0	0	0	0	0	0	0	0
Southfield Beach R.R. Co	Common	250,000	0	0	0	0	0	0	0	0	0	0
Staten Is. Midland Ry. Co	Common	1,000,000	0	0	0	0	0	0	0	0	0	0

(*a*) The New York & Harlem Railway Co. also owns a steam railroad, which is leased to the New York Central Railroad.

(*b*) The outstanding capital stock of this company in 1912 was $44,837,217.98; in 1913, $49,013,217.98; in 1914 to 1916, inclusive, $74,455,217.98; in 1917, $74,455,212.98; in 1918 and 1919, $74,455,159.37. (*c*) Number of shares with no par value.

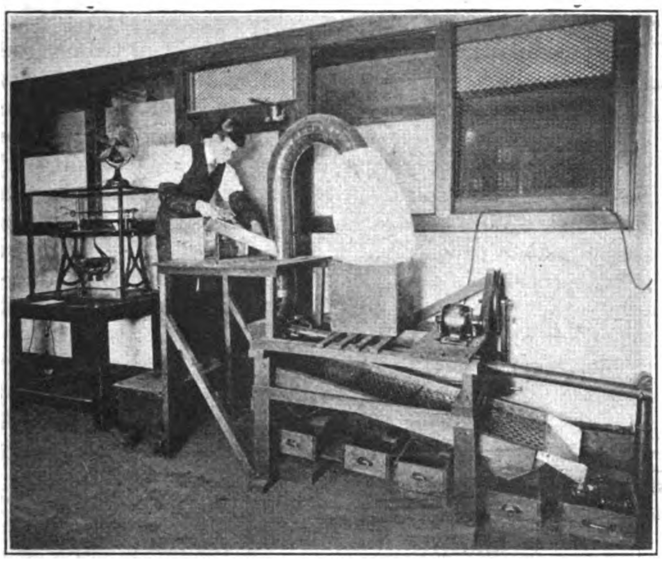
Equipment and Its Maintenance

Short Descriptions and Details of New Apparatus of Interest to the Industry. Mechanical and Electrical Practices of All Departments

Railway Builds Coin and Ticket Sorter

Mixture of Coins and Tickets Fed Into Device and Air Pressure Blows Tickets Into One Receptacle While Coins Roll Down an Incline and Are Sorted Into Their Respective Denominations

WHEN the British Columbia Electric Railway began using fare boxes quite a problem was presented for the ticket and accounting departments to separate the coins and tickets which were mixed indiscriminately. The machine shown in an accompanying illustration was the result, and this has effectively solved the difficulty. The machine consists principally of a stovepipe arrangement into which the mixture of tickets and coins are fed. Air from a blower is fed into this pipe at the bottom, while the attendant feeds the mixture of coins and tickets in at the center. The tickets are blown up and over the swan-neck portion of the pipe into a box which is protected by a cheesecloth bag to keep the tickets from blowing about the room. The structure of cheesecloth allows the air to pass through readily, so there is no difficulty from excessive air pressure.



Coin and Ticket Sorter Used by the British Columbia Electric Railway

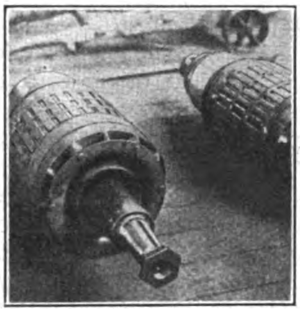
At the same time as the tickets are blown upward, the coins drop down and emerge through a small opening at the bottom of the pipe, which is offset to direct the coins into the sorting tray. This sorting tray is built at an angle and is made to vibrate by means of hangers connected to a small motor. The sorting tray is divided with perforations for 10-cent pieces, pennies, nickels and quarters, so that each size can drop through into a box underneath. This type of sorter effectively takes care of the coins and sorts them into their respective denominations.

The receiving and sorting pipe is 6 in. in diameter and 1/16 in. thick, and is made of galvanized sheet iron. The opening for receiving the mixture of tickets and coins is about 5 in. across and 2 in. high. This is left open and no trouble is experienced from tickets blowing back. The end of the pipe from which the tickets emerge is flanged to form a bell mouth and a base for the cheesecloth covering. The air enters at the bottom of this pipe through a 2-in. wrought-iron connection from the blower. The end of this air pipe has a small lip to prevent the coins from dropping into the air pipe. This air pipe is also located a little above the opening for the discharge of the coins and is shaped so that the direction of the air pressure is upward. The blower for supplying the air is driven by a 3-hp. motor. This was used because the motor was available without purchasing a new one. A smaller size could be conveniently used, however. The sorting tray is made of ⅛-in. iron plate and is 1 ft. 6½ in. wide by 4 ft. 7 in. long. The shaking arrangement consists of small eccentrics on a shaft underneath the tray, connected so that as this is rotated by operating the motor located on a shelf over the tray the necessary vibrating is produced. Should any paper money be put into the mixture it, of course would be blown in among the tickets, so it is not necessary to separate this before the mixture is fed into the pipe.

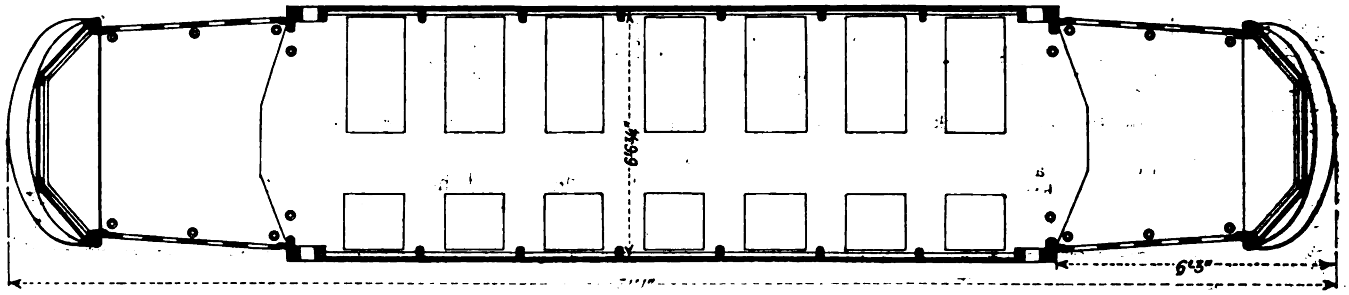
The time taken to sort coins for the British Columbia Electric Railway is about two and one-quarter hours per day.

Building Up a Damaged Pinion Fit

THE accompanying illustration shows a G.E.-201 motor armature shaft which was practically ruined as a result of a loose pinion on one of the equipments of the Boston & Worcester Street Railway. Before welding equipment had become a necessary piece of apparatus for electric railway shops this shaft would have been scrapped as the pinion end was badly scored. A ⅛-in. cut was taken off the damaged portion in order to provide for the adding of new stock and by the aid of an Indianapolis welding outfit the scarred and worn shaft was built up. A new key-way was then cut with a milling machine and the shaft turned to proper size. The cost of the machining and welding was approximately $5, against the price of a new shaft which would have been in the neighborhood of $50. The equipment was returned to service immediately, which would have been impossible if a new shaft had been installed.



Pinion Fit on Armature Shaft Repaired by Welding



FLOOR PLAN FOR HELSINGFORS SINGLE-TRUCK CAR

American Cars for Finland

Single-Truck Cars for the Helsingfors (Finland) Tramways Company Have Exceptionally Long Platforms so that Twelve Standing Passengers Can Be Accommodated on Each

THE J. G. Brill Company has shipped twenty closed motor cars, mounted on Brill 21-E trucks, to the Helsingfors Tramways Company, Helsingfors, Finland. These cars are particularly noteworthy on account of the 6-ft. 3-in. platform at each end, inclosed with four-part folding doors in two sections, one section folding out against the body corner posts and the other against the vestibule posts. Doors and folding steps are manually operated either from a lever located against the vestibule in front of the motorman or on a stand in the open bulkhead where the conductor is located. Twelve standing passengers can be accommodated on each platform and, as twenty-one passengers can be seated in the car, this gives a total carrying capacity of forty-five passengers.

Passengers are not permitted to stand in the car-body aisle, which is left clear for the passengers moving to and from their seats. Each platform is also equipped with six stanchions, three on each side of the door openings, which serve as grab handles for the standing passengers.

Wood is the principal material used in the underframe construction, yellow pine being used for the side and center sills and oak for the end sills and crossings. The side-sill members are 4¾ x 5⅞ in., and the center stringers 4¼ x 5 in., reinforced with a steel angle 6 x 3½ in. The oak end sills are 3½ x 6⅜ in., and the crossings 3¼ x 5⅞ in. All members of the underframe are substantially joined together and secured with tie rods. The upper structure is constructed with ash corner posts, 3⅜ in. thick, and ash side posts, 2¼ in. thick, with concave and convex panels of poplar. The plain arch type of roof, which extends the full length of the car, is supported on wooden rafters 1⅛ in. wide over each side post in combination with concealed steel rafters 1¼ x ⅜ in., and ⅞ in. wide between posts.

Seven body windows on each side are inclosed with double sash. All upper sash are framed in one-piece and are stationary, while the lower sash can be raised. The end of each platform is inclosed with a stationary vestibule having three windows, the single sash of which all drop into pockets behind the dasher. For the convenience of the motorman, the center of the three vestibule sash may be held at various heights, it being equipped with a suitable rack for this purpose. Below the vestibule windows, the dasher on the outside is of $\frac{1}{16}$-in. steel and there is a $\frac{3}{16}$-in. steel lining on the inside.

The absence of bulkheads in the body ends not only eliminate the usual sliding doors, but permit quicker access to the car body and at the same time there is an appreciable saving in weight, which is a most important feature. For the assistance of passengers and also as a support, a pipe stanchion on each side of the body end extends from over the end sills up to the leaders. The interiors are finished in cherry, including all doors and window sash as well as the other interior woodwork. Agasote is used for the ceilings in the body proper, but the platform ceilings are of carline finish. Each side wall between the belt rail and the floor is also covered with Agasote.

The seating arrangement consists of seven transverse cherry slat reversible-back seats with 36-in. cushions for two passengers on one side of the aisle, and on the other seven single seats, with 18-in. cushions, of the same general type, giving a total seating capacity of twenty-one passengers. All seats are constructed with the Brill "Winner" mechanism and have one-piece pressed steel pedestal and aisle plates. The slats in both the cushions and backs are so arranged that alternately there are dark and light slats, giving the seat somewhat of a unique appearance.

The trucks, No. 21-E, on which these cars are mounted, are constructed for 3-ft. 3⅜-in. track gage, and have 7-ft. wheelbase and 31½-in. diameter wheels. A substantial wooden wheel guard extends completely around the truck.

Welding a Cracked Bolster

THE bolster shown in the accompanying illustration was cracked in a collision of cars on the Seattle & Rainier Valley Railway. At first it was thought that the car would have to be retired from service until another bolster could be obtained from the East. However, the Prest-O-Lite outfit soon repaired the crack and the cost of the outfit was saved by this one repair job.

REPAIRING A CRACKED BOLSTER

The repaired bolster has now been in service for over a year with no signs of failure.

Efficiently Arranged Wood-Working Shop Increases Output

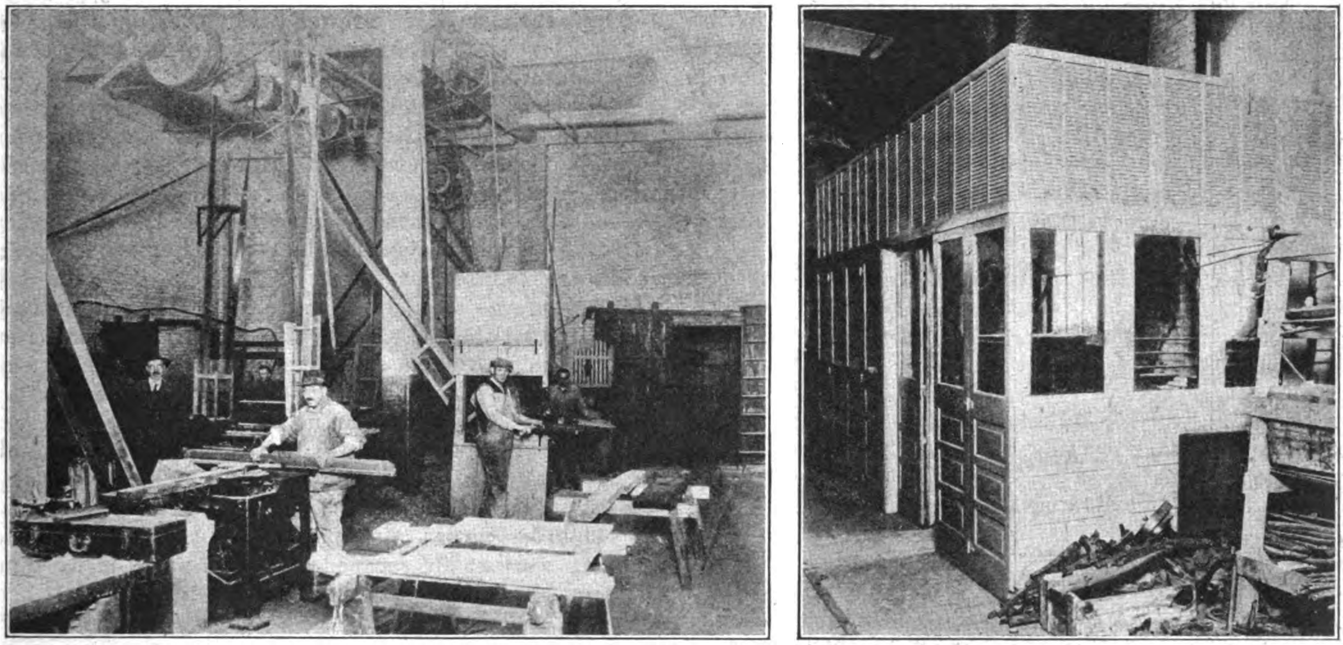
Second Avenue Railroad, New York City, Has Enlarged Its Wood-Working Shop, Installed Additional Up-to-Date Machinery and Provided an Efficient Lighting System

WHEN the Second Avenue Railroad of New York City began its program of reconstruction and remodeling of rolling stock, as described in the ELECTRIC RAILWAY JOURNAL for Feb. 19, 1921, it was badly handicapped by the lack of wood-working facilities. A few saws of various types and wood-working benches arranged along the wall next to the windows constituted the entire wood-working equipment. Realizing that the preparation of material for the interior finish, vestibules, sash, etc., of the remodeled cars was in reality a far more extensive branch of work than the car repairing usually undertaken, C. E. Chalmers, receiver for the road, set about increasing the facilities and mill equipment necessary for this work. An accompanying plan shows the shop as rearranged, and the list of wood-working machinery now in use includes machines found most necessary for the economical and rapid turning out of this work.

The wood mill now occupies a space of approximately 3,700 sq.ft. The various machines have been grouped so that the rough material will progress naturally from the east end, where it comes in from the lumber storage, to the west end, where tracks provide facilities for the cars that are to be worked upon. The wood-working benches are located along the south wall, where the light from the row of windows on this side gives ample illumination for the various hand operations.

The problem of artificial illumination came up with the regrouping of the machines in the center and north side of the room, where there were no windows, and a lighting system has been installed which gives abundant light without shadows for all the various machines. Five 400-watt Mazda C lamps with Ivanhoe reflectors are used. These are mounted at a height of about 14 ft. above the floor and their horizontal spacing is shown on the accompanying plan. The workmen are highly pleased with the lighting effect and a cheerful, contented force means efficient work with less waste from damaged material. In discussing the lighting of his shop, Mr. Chalmers said he considered the lighting system the most important part of the equipment. Insufficient or poorly arranged lighting produces eye strain, which leads to bodily fatigue and so lowers personal efficiency, while a brilliantly lighted shop adds greatly to the morale of the men and improves the quality of the work produced.

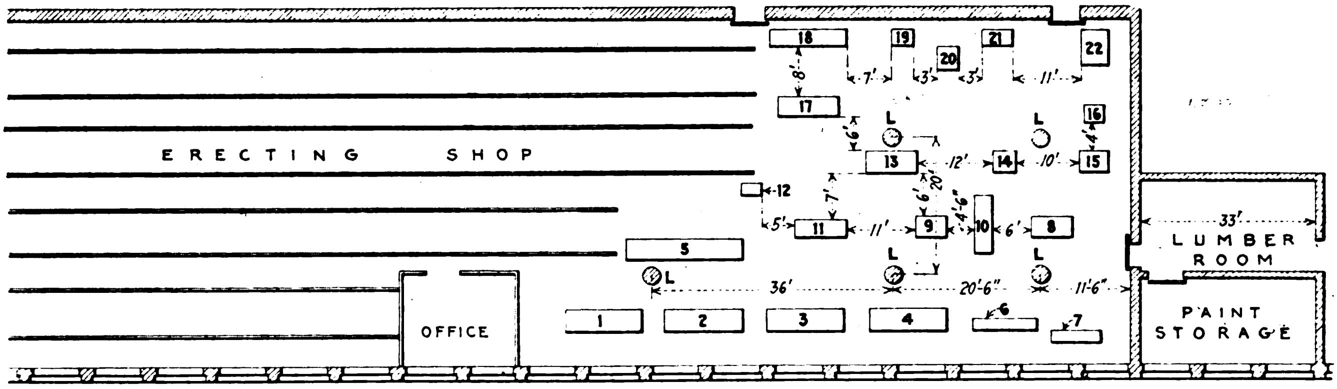
The old system of providing machines and operators with drop lamps is not satisfactory, as glare cannot be avoided. A shop with any considerable number of drop lights is unsightly and the cost of wiring is high. When an operator changes his position he tries to change the location of his drop light by tying the wire to some stationary object, which is objectionable from the standpoint of safety. In addition to the lighting system in the wood-working shop fifty-five units with 200-watt lamps and Ivanhoe reflectors and five units with 400-watt lamps have been installed in various other departments and in the inspection and overhauling shop. By using a general lighting system with large units located out of reach of the workmen disappearance and breakage of lamps, which amounts to a considerable item, is done away with. Mr. Chalmers has estimated that the saving in this respect from the newly arranged system will pay for the entire cost of the installation in less than a year's time.



AT LEFT, A CORNER OF THE WOOD-WORKING SHOP. AT RIGHT, FOREMAN'S OFFICE CONSTRUCTED OF CAR DOORS AND BLINDS

CARS PROGRESS FROM WOOD-WORKING SHOP TO PAINT SHOP

The wood-working department is served by three tracks, so that work can be carried on and repairs made on from eight to ten cars at one time. These same three tracks run through the paint shop, which is immediately behind the wood-working department. The paint shop is separated from the wood shop by a fire wall with fire doors. As soon as the work on the car bodies is com-



No. 1, 2, 3, 4, 5 Work benches, No. 6 Panel bender, No. 7 Lathe, No 8 and 9 Band saws, No 10 Jointer, No. 11 Mortiser and relisher, No. 12 Grindstone, No. 13 Plainer, No. 14 2 Spindle variety, No. 15 Jig saw, No. 16 Postborer, No. 17 Circular saw, No. 18 Swing saw, No. 19 Emery wheel, No. 20 Band saw sharpener, No. 21 Automatic swbd., No. 22 60 Hp. motor, L = 400 Watt lamps

PLAN OF WOOD-WORKING SHOP FOR SECOND AVENUE RAILROAD, NEW YORK CITY

pleted the cars can be moved back on the same track into the paint shop.

The paint storage room is a new addition which has just been constructed. This is shown at the right in the accompanying plan. This paint storage room is entirely of fireproof construction and the walls are made of Camp duct tile. A large quantity of these was available without purchasing new material and the inspectors from the Fire Underwriters considered this construction equal to that of any tile construction that could be used.

The foreman's office for the wood-working department is constructed of old car doors and shutters and provides a very attractive appearing office. The utilization of old car doors for partitioning off departments has been used in several other railway shops. The International Railway of Buffalo has used this type of construction for partitioning off its electrical department from the machine shop. This was described in the ELECTRIC RAILWAY JOURNAL for June 18, 1921, page 1115.

Pasting Skip-Stop Signs on Poles

As an Emergency Method Which Required Quick Completion, Properly Marked Posters Were Applied to Poles to Designate Stops

BY G. H. MCKELWAY
Engineer of Distribution Brooklyn (N. Y.)
Rapid Transit Company

IN THE ELECTRIC RAILWAY JOURNAL of Oct. 15 there was a short article on the painting of skip-stop signs on poles in Chicago. This stated that 16,000 poles would have to be painted and it was estimated that it would take approximately five weeks to complete the work. This is at the rate of over 500 poles a day if only six days are worked each week, and it therefore means that a large gang of men must be put on the work and permitted to do nothing except paint the signs. It was also stated that the work was being done as fast as possible so as to have it finished before the commencement of the "Pageant of Progress."

A somewhat similar emergency occurred in Brooklyn during the war, when, in order to save fuel, the railway company was ordered by the Fuel Administration to install a large number of skip stops and the order was dated so as to go into effect in about a week from the time that it was issued.

It was impossible for the line department to paint more than a small proportion of the number of poles that would have to be marked, so the contract for marking the poles was given to a large bill-posting company. Posters properly marked with large blue letters on a white background and of a size large enough to reach around the pole were printed and pasted on the poles at the correct height by the employees of the bill-posting company in a few days.

These signs did not make such a good appearance as painted ones would have done and would not have been anywhere near so permanent. However, it was thought that the skip stops were only a temporary measure and would not be permitted to remain after the emergency was past, and if they should be required longer the poles could be painted by the line department. The bill posters offered to stick the posters on with glue instead of paste and then to varnish them to protect them from the weather, two measures that would have greatly prolonged the useful life of the posters, but these offers were not accepted because, as stated previously, it was thought that the change was only a temporary one and, if it should prove permanent, it woud be better to paint the signs on the poles.

The order was in effect but a short time and then the posters were easily scraped off, much more easily than it would have been to paint out the signs if they had been painted on the poles. However, a few were missed, and although they were removed as soon as they were reported the writer found two in place almost a year after they had been put on which were still in quite good condition.

Perhaps some other railroad company will be able to profit by this experience if it has to install quickly a large number of such signs and their permanence and appearance are not important items.

New Non-Freezing Dynamite Demonstrated

A DITCH blasting test in snow and ice was made during the last few days of November, near Wausaukee, Wis. The ditch was blasted by the propagated method using a new non-freezing dynamite manufactured by the Du Pont Company. The dynamite was loaded through 8 in. of snow and about ½ in. of ice in wet soil, the temperature of which was 35 deg. F. at the point of the load. Moreover, the dynamite used had been exposed in storage to freezing temperatures for several weeks. The results were entirely satisfactory. Straight dynamite has been used for years in nearly every kind of open work, but a disadvantage has been its liability to freeze at temperatures below 50 deg. F. Any dynamite loses some part, if not all, of its efficiency when chilled or frozen and many attempts have been made to make the explosive low freezing.

A Rotary Snow and Ice Digger

A Very Efficient Machine for Loosening and Removing Ice and Snow from Electric Railway Tracks Is in Use on the Eastern Massachusetts Street Railway System, Lynn Division

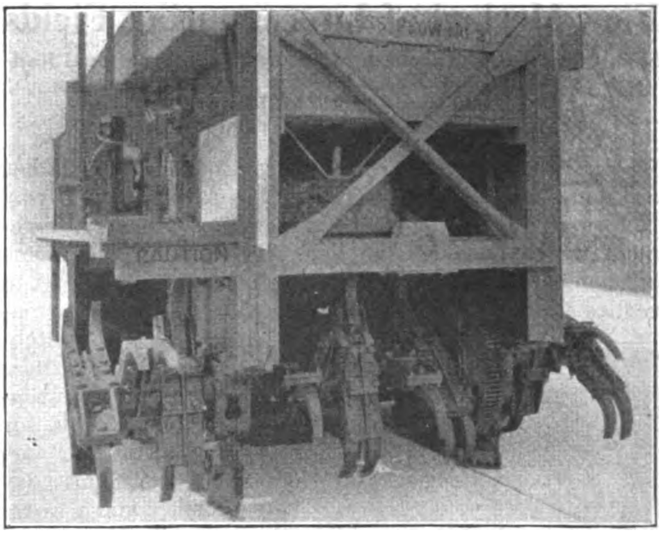
AS AN addition to their snow-fighting equipment, the Eastern Massachusetts Street Railway has added a snow digging and loading machine of the type shown in the accompanying illustrations. This machine is the invention of A. T. Sampson of Lynn, Mass., and the railway officials expect that it will be of great assistance in keeping down high track centers and preventing an accumulation of ice during the winter months.

The operation of the machine can be divided into two essential parts. The first consists of the mechanism for loosening the snow. This consists of a revolving shaft mounted at the front end on which are placed the ice cutters and diggers. The shaft is made of 2½ in. tool steel and has seven picks mounted on it. This shaft revolves at a speed of about 1,000 r.p.m. The picks dig into the ice and sleet and loosen it for removal. In addition to the picks, there are two vibrating diggers or rooters, one located over each rail. These diggers have a series of wedged shaped teeth on the bottom and are operated by means of cams on the revolving shaft so that they move back and forth in a horizontal plane so as to loosen all ice over and adjacent to the rails.

The diggers are about 16 in. long and swing on a pivot at their top. They have a rooting movement of about 7½ in. and break the ice down to about 1¾ in. above the rail. Behind these diggers are smaller picks mounted on a rocker shaft. These have an upward and downward movement of 5½ in. They break the remaining film of ice down to the face and into the groove of the rail and clean this so that the wheels are always assured of a clean rail, no matter what the ice conditions may be.

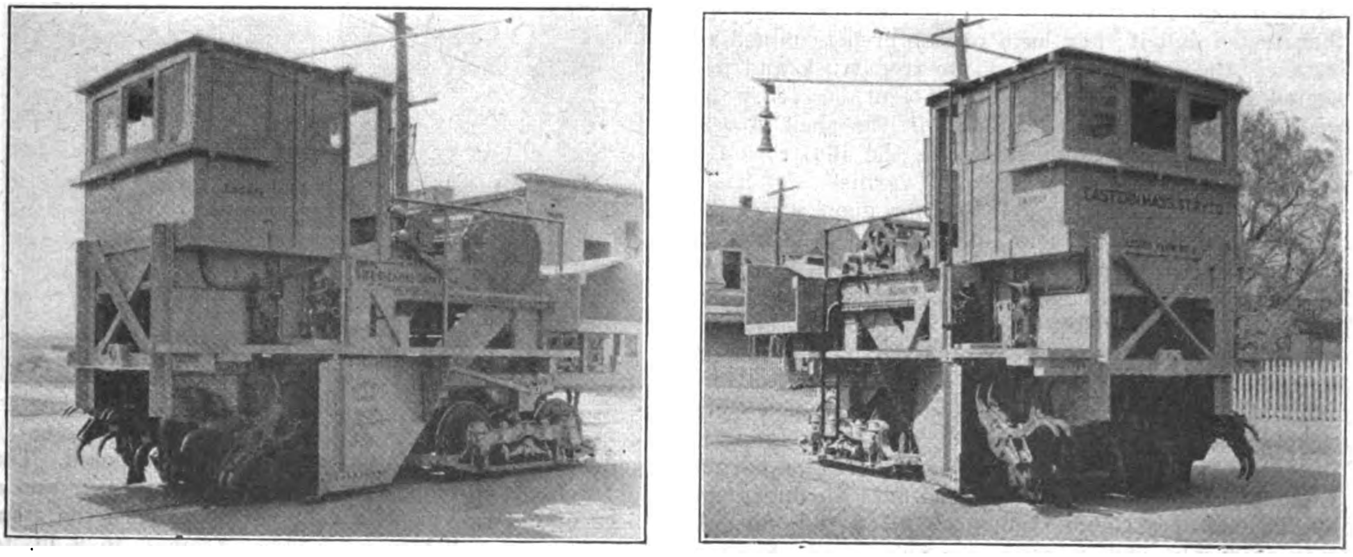
SCOOPS REMOVE LOOSENED ICE

Located immediately behind the picks and diggers is a scoop 9 ft. 6 in. wide, which has the form of an inwardly flaring shovel. The central portion of this scoop has a heavy duty conveyor which lifts the snow and ice, draws it into the machine and expels it from chutes located one on either side of the machine. This conveyor is capable of handling 1,600 cu.ft. of ice and snow per minute and where it is not desirable to deliver the snow and ice to trucks for hauling away, the conveyors can carry the material to a sufficient height so that it will be thrown entirely clear of the track and effectively clear the track for operation.


FRONT END OF THE ICE DIGGER

The ice-digging machine has a steel framework which weighs about 13,000 lb. There are about 7,000 lb. of steel castings and about 1,200 lb. of iron castings in its construction. The machine complete weighs about 48,000 lb. and is driven by two 90-hp. motors. In addition to the motors used for propelling the machine, two additional motors operate the diggers and conveyor. Adjustment for the depth of cutting is provided by lifting the front end of the machine in its relative position to the cab. The digging mechanism has a three-point suspension, which gives it flexibility.

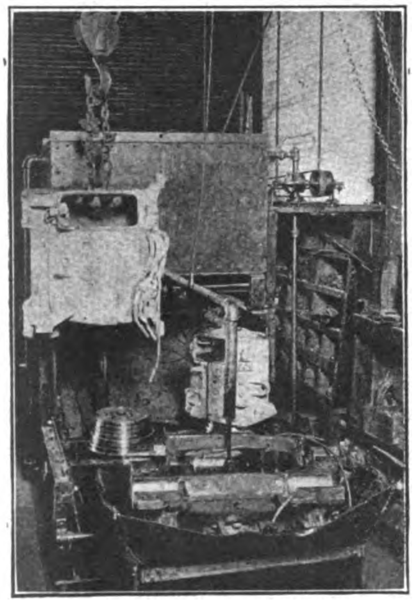
A sample machine having the essentials of this one but built of a flat car was constructed and tested by the Eastern Massachusetts Street Railway last winter. This worked on the Lynn Woods route, which at that time was completely blocked by snow and ice. This ice cutter went through 12 in. of ice and twelve men were kept busy removing the ice broken by the machine. This test under such severe conditions was very impressive as indicating the amount of work that could be accomplished.


SIDE AND END VIEWS OF THE ICE DIGGING MACHINE

Flow Method of Impregnating Fields

Shop Constructed Apparatus Used by the International Railway of Buffalo Makes Possible the Impregnating of Field Coils Without Removing Them from the Motor Frames

THE dipping and baking of armatures and fields has done more to improve the operation of railway motors in the last five years than any other improvement which has been applied. The reason that some companies do not get better results is that they fail to realize that in order properly to bake fields and armatures it is absolutely essential that there be sufficient ventilation in the oven, for without it, the varnish will not dry properly and a worse condition is created than if the fields had not been dipped. The preheating of an armature or field is as important as the dipping and baking. It dries up any possible moisture that may be lodged in the insulation or on the copper, permits the varnish to penetrate much more readily and thoroughly, thus insuring better insulation and preventing vibration, which undoubtedly causes more armature and field failures than any other one cause.



Flow Method for Treating Motor Shells and Cores

The removal of the field coils from a shell in order to dip and bake them is a rather expensive method, and quite frequently in removing the field from the shell the insulation is cracked, necessitating reinsulating, which is very expensive. This expense the International Railway of Buffalo, operated by the Mitten Management, Incorporated, has eliminated by the use of the outfit as shown in the accompanying illustration. The armature is removed and the inside of the shell and field coils are blown out with compressed air and then wiped off with a cloth moistened with gasoline. The fields are then tested and if they have proper predetermined resistance, the shell is placed on an iron truck and preheated to 180 deg. F. The equipment necessary for soaking the fields when mounted in the shell is very simple. The upper tank shown in the illustration is capable of holding five barrels of varnish and has a gravity feed to the terraced casting upon which the various types of motors are placed by the use of an electric crane. Upon opening a globe valve in a 2-in. pipe line the varnish flows from the upper tank through the terraced casting into the inside of the motor shell, which is filled up to the height of the commutator inspection opening. It is then allowed to soak for at least one hour. A valve underneath the casting upon which the shell rests is then opened and the varnish flows into the large tank which sets in the ground. The varnish is pumped from this lower tank back into the upper tank by the use of a Gould Company's 25-cu.ft. pump. In case of a split motor frame, the halves are placed on the iron rack in front of the terraced blocks and the middle 2-in. pipe shown in the illustration is used for filling these halves. It is not necessary to bolt either the shells or the halves when they are being filled, which, as all equipment men will appreciate, means a considerable saving of time. The large flanged tray is used under the split shell rack so that none of the varnish will be lost when the motor frame is emptied by being raised on one side by the crane.

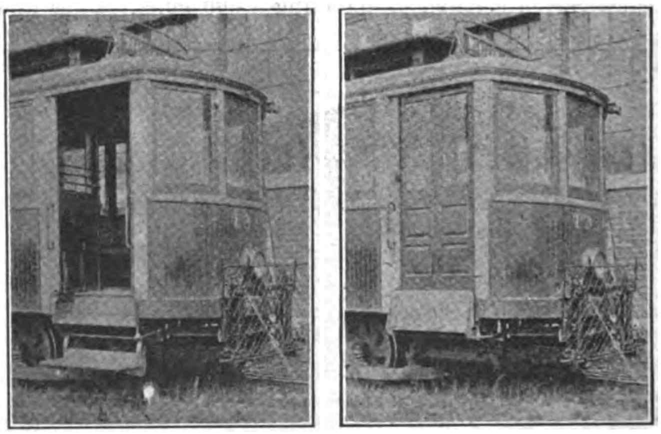
Carrying Capacity of Ball and Roller Bearings

THE Bureau of Standards has just issued Technologic Paper 201, giving in considerable detail the results of experiments to determine the maximum load and the static friction under load of ball and flexible roller bearings. Tests were made of balls of 1 in., 1¼ in., and 1½ in. in diameter in grooved races and on rollers 1¼ in. in diameter and 5¼ in. long in flat and cylindrical races. The total deformation and area of contact of bearings and races were measured and compared with Hertz's theory.

The conclusions reached were that the result obtained agreed roughly with Hertz's theory and where differences were found to exist they can be ascribed to inhomogeneity of the material. The ratio of friction to load is practically constant and equal to 0.00055 for all three sizes of balls up to a critical load which varies with the diameter of the ball. These critical loads were 1,300 lb. for 1 in., 1,700 lb. for 1¼ in. and 2,200 lb. for 1½ in. balls. A similar critical load of 25,000 lb. was found for the roller bearing with a ratio of friction to load equal to 0.00075. This critical load, at which the friction began to increase more rapidly, was in all cases lower than the safe load as determined by permanent deformation and as calculated from Stribeck's law. The paper describes the apparatus used and methods, results and conclusions for static friction and compression tests.

Folding Steps for Double-Step Cars

THE Portland Railway, Light & Power Company is using a folding step in connection with the remodeling of its double-step cars. In its raised position the lower step folds up and covers the top step as well as the opening below the doors. Passengers are thus prevented from hanging on after the doors are closed. The top of the step hanger runs back under the car and a piece of old rail is attached to it to balance the step. With this installation it requires from 6 to 8 lb. to operate the doors and steps.



Folding Step in Its Lowered and Raised Position

Preventing Overhead Corrosion

Steel Messenger Wire Was Replaced with Copper Clad Using Same Three-Point Suspension with Galvanized Iron Hangers

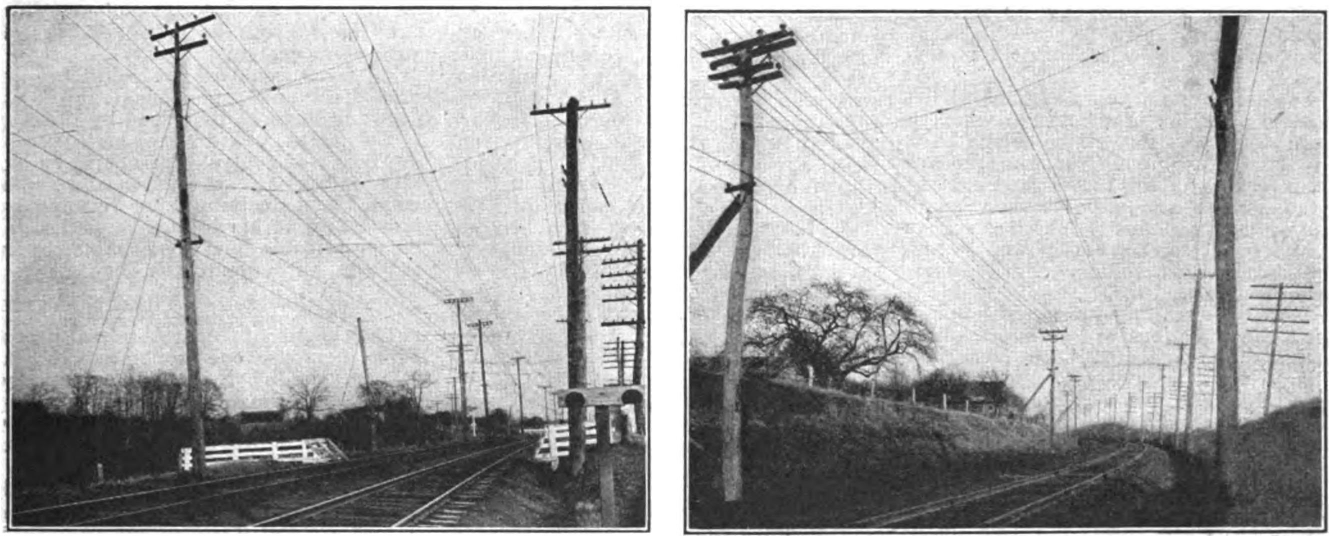
By L. E. Scott
Assistant Engineer Connecticut Company

During the year 1907 8 miles of New York, New Haven & Hartford double-track steam road between East Hartford and Vernon, Conn., was electrified for 600-volt direct-current trolley operation. This was done primarily for the passenger service. A three-point catenary suspension with 150-ft. section on the straight track was used. The messenger was Siemens-Martin 7/16-in. stranded galvanized steel cable, the hangers were the G. E. Japan pipe type and the trolley was No. 0000 grooved copper and the ears were of the malleable screw type. This section is on a grade of 13 ft. per mile, so that trains going east were continually under power. Between the hourly electric passenger service it has been and still is the custom to operate double-headed steam locomotive freight trains.

In 1913, after six years service, the steel messenger on the up-grade track began to break. An inspection showed it to be very much corroded and eaten by the hot gases of the steam engines. The messenger was then renewed with one similar to the first. In 1919 this second messenger began to break, and inspection at this time showed this second messenger to be very much corroded and very weak. The hangers, ears and the sections of the spans and pull-offs which were over the up-grade track were also so much pitted that it was thought best to renew all the spans and to renew the pull-offs, hangers and ears over this track.

The messenger, hangers and ears over the down-grade track were found still in good condition. Both trolley wires were the original ones and were in apparently in no worse condition because of the hot gases from the locomotives. From this it appeared that the gases from the locomotives had little effect on copper and so in 1920 estimates were made toward renewing the entire overhead with copper or copper clad steel, the wornout messenger, the spans and pull-offs with copper clad steel and the three-point suspension with eleven-point suspension and the hangers with copper clad ones. The estimate for this work was $15,000. Another estimate of $6,100 was made for construction exactly as above except for the messenger of galvanized steel. After further discussion it was finally decided to replace the steel messenger with a copper clad messenger and to use the same three-point suspension with galvanized iron hangers. The spans were to be of ⅜-in. seven-strand galvanized iron and the pull-offs ¼-in. seven-strand galvanized iron.

The trolley and messenger were anchored every thousand feet by using Ohio Brass strain plates with two extra plates on top, between which the messenger was clamped by replacing the standard plates with longer plates. The anchor wires were 5/16-in. seven-strand galvanized iron. The lengths of the messengers used varied with the lengths of the sections, which were 150 ft. on straight track and as short as 80 ft. on the curves. Six lengths of flexible hangers were used, namely, 5 in., 6 in., 13¾ in., 15 in., 16½ in. and 18¼ in. These hangers were made of ⅝-in. galvanized iron rod with a 2-in. slot in the upper bend for flexibility. The iron collar similar to the spool was designed to thread on the hanger and seat tightly on the ear and served as the means of holding the pull-off on curves. The sample prices of hangers and ears on the 150-ft. sections were:



Catenary Construction Used to Overcome Corroding from Steam Locomotive Gases

One 5-in. hanger	$0.56
Three 13¾-in. hangers	1.34
Three 7-screw clamp ears	1.31
Iron pull-off collar	0.17

The above work was done during a period of about four months and the accompanying illustrations show the straightaway and curve. The right-hand messenger is the one renewed.

Another Method of Repairing Door Guides

In the Nov. 26 issue of the Electric Railway Journal, page 954, a method was given for fastening angle iron door guides on cars where the screw holes have become worn in the wood. A similar method has been used by the Quincy Railway of Quincy, Ill., except that instead of using angle irons for the door guides these are replaced by a channel iron welded to another plate. In places where the original angle iron guides cannot be used further the Quincy Railway finds that the use of the channel is cheaper than two angles and works just as satisfactorily.

Commission's Tentative Plan Criticised*

Holding Company Liable to Be Controlled by Politics— Substitute Proposed

BY T. S. WILLIAMS
President Brooklyn Rapid Transit Company

TO A LAYMAN it would not seem as if the commission's plan had followed the direct and simple path outlined in the law. Instead it proposes an indirect and in some respects an objectionable course. It creates an intermediate agency, not provided for in the law—the so-called new Company A—which purchases the railroads, pays for them with its mortgage bonds, and then conveys the properties to the city subject to these purchase money bonds.

The city thereupon leases the railroads back to three new railroad companies respectively, called, for convenience, B, C and D, whose stocks are to be owned by Company A, and A's stock in turn is to be held in some kind of trust by the Transit Commission.

From the city's point of view all its control over the properties to which it acquires legal title will be delegated to the holding company, in whose board of directors it will have three out of six members and a partial say as to the seventh member. Whether such a complete delegation of power is desirable from a municipal point of view may be questioned.

From the existing investors' point of view the objections to this intermediate company arrangement are numerous, and, I fear, insuperable, even assuming that the investors would be reconciled to a plan of municipal ownership.

1. The holding company will necessarily be a political company. Three of its directors will be appointed by the Mayor, three by the representatives of the bondholders in the three operating companies, and the remaining director by these six. In case they do not agree the Transit Commission is to select him. In practical effect, therefore, this would probably mean an official—that is a political—control; for all that would be necessary to make it so would be a refusal of three of the directors to agree with their associates as to the seventh director. Complete harmony might be more natural but with equally unpleasant consequences.

If we could assume that the representatives of the city and those of the investors would always be high minded, clear headed, impartial men, the objection would not be so potent, but can we always expect this? The plan for the holding company directorate involves a divided responsibility, and this frequently encourages approval of acts which a central responsibility would shrink from.

There might easily result consequences not favorable either to the city or the investor. Unless the standard of municipal government is miraculously improved, it is inconceivable that so great an opportunity as this plan would present for political patronage and profit would be long disregarded. In the employees of the railroads and their families there would be an army of perhaps 100,000 voters, and there would be the constant temptation to require the construction of new lines at the behest of local or political interests—lines not justified by their earning capacity Investors would not be likely to intrust their properties to such an uncertain and unsafe control, nor would the best interests of the taxpayers be likely to be thus subserved.

2. The powers proposed to be conferred on the holding company are inconsistent with the professed intention of making the three lessee companies the real operating companies. These powers are not very specifically set forth in the plan, but from what there appears and from what has been suggested at the public hearing by the commission and its counsel, they apparently will be broad enough to cover pretty nearly everything connected with the management of railroads except the more or less mechanical work of actual operation. Remember that each of the three groups of railroads, although distinct and separate in their leaseholds and in their mortgage liens, will have nothing to say (except through their minority representation in the holding company) as to the use of their surplus income, as to the extensions or abandonment of their lines, even as to the turning over of parts of their lines to another operator, to the purchase of supplies, to the improvement of their facilities, to the issuance or non-issuance of transfers, and to many other matters that are related closely to growth in earning capacity, to the preservation of the properties and the integrity of their mortgages. The holding company will be the real operator and manager in all these respects.

3. The holding company will pay for the acquired railroads by its purchase money mortgage bonds issued at 100 per cent of the agreed value of the railroads and properties bought, will forthwith issue other obligations for working capital and for a fare barometer fund, and, as additional capital is required for extensions and improvements from time to time, will sell new bonds. If the investor is asked to part with his proportionate ownership in a railroad upon a deferred payment plan, he should at least be assured that his lien upon what he has sold will be amply protected and not diluted, and that its integrity should not be weakened by dividing income of his property among bondholders of another mortgage.

SUBSTITUTE PLAN PROPOSED

The holding company feature of the commission's plan is therefore not only of doubtful legality and open to serious practical objections, but its adoption is not necessary for accomplishing the purpose of the commission and it is not a straightforward following of the method laid down in the law. I suggest that all the objects of the commission can be better attained and with greater safeguard to the public and private interests by adopting in lieu thereof something like the following.

That each system of railroads convey title to its properties directly to the city at a fixed price representing their fair value, subject to the lien of any existing mortgages thereon (the amount of which shall be deducted from the purchase price), possession to be finally surrendered upon the completion of payments of the net purchase price. Payment of this price to be made in semi-annual instalments of such amount as will amortize the net cost in a given number of years, with the option of the city to anticipate such payments and pay off the mortgage liens and thereby sooner to get possession.

That pending completion of payments, and as additional security therefor, the properties thus sold be leased back by the city to a corporation named by the sellers, upon terms substantially as follows:

The lessee to operate the properties, subject to the supervision of a board of control, and after paying operating expenses (inluding taxes and rents, if any), interest and amortization on existing mortgage liens, and providing suitable reserves, to pay over the balance of income to the city.

All funds required for additions, improvement and extensions (capital expenditures) to be furnished by the city.

The rates of fare to be fixed by the board of control, but not to be less than sufficient to permit the lessees to make the deductions from revenue authorized in paragraph above, and so far as practicable and reasonable to be uniform throughout the city.

BOARD OF CONTROL OF THREE SUGGESTED

The board of control to consist of three persons, one appointed by the Mayor, one by the lessee companies, and one by the Governor, and to have general supervisory and regulative powers, including that of audit of accounts.

This arrangement would practically leave it optional with the city when it should avail itself of complete ownership and possession of the properties, and what extensions and improvements should from time to time be made.

From the point of view of the owners of the railroads the substitute plan which I have suggested would have the additional advantage that each system of railroads would stand, so to speak, upon its own bottom. Its revenues would not be subject to diversion to the interests of other railroads or other railroad owners, as would be the case under the commission's plan.

The plan which I have suggested would, more than the commission's plan, eliminate politics from the transportation problem. The city and the operators would have a common aim. Hostility, lack of co-operation, public prejudice, suspicion, would have no justification.

The receivership, or near-receivership, of the companies would facilitate such an arrangement. I can see no insuperable obstacle to carrying it out providing the valuation of the properties is fair and ample safeguards surround its payment. All speculation in traction securities would cease.

The various companies would take from the lessee company representing them the interest and amortization paid on any existing bonds, and pay it over to the bondholders or their representatives. They would likewise receive from the city the payments to be made by it and apply them in liquidation of the remaining equity. When all should be done they would quietly pass out of existence.

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*Abstract of statements presented at hearing of the New York Transit Commission, New York, Dec. 7, 1921.

Engineering Societies Honor Marshal Foch

The Four National Organizations Elect the French General to Honorary Membership in Recognition of His Ability to "Direct Human Energy"

MARSHAL FOCH was placed at the head of the honor roll of the organized engineering profession of the United States when he was elected on Dec. 13, the day before his return to France, to honorary membership in the four national engineering societies. The organizations whose governing boards unanimously conferred this distinction upon Marshal Foch were the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and the American Institute of Electrical Engineers.

The certificate of honorary membership was presented by Col. William Barclay Parsons, who commanded the Eleventh Engineers, the first engineer regiment to go abroad, and one which gained great fame.

The ceremonies were held in the auditorium of the Engineering Societies Building. On the platform were the presidents of the four founder societies or their representatives as follows: L. P. Alford for Dean Dexter S. Kimball of Cornell, mechanical engineers; George S. Webster, Philadelphia, civil engineers; Calvert W. Townley, for William McClellan, Philadelphia, electrical engineers; and Edwin T. Ludlow, New York, mining engineers. Others in the platform group were Ambrose Swasey of Cleveland, Commander Legion d'Honneur and founder of the Engineering Foundation; Charles F. Rand, chairman of the Engineering Foundation; Col. William J. Milgus, Col. A. S. Dwight and E. D. Adams.

J. Vipond Davies, president of the United Engineering Society, presided and made the opening speech. This follows in part:

"This action is unprecedented in that it has been taken at one and the same time and is to be conferred by one instrument. It is epochal to our societies in that it constitutes one more bond of union between the several branches of our profession, as represented by our Founder Societies, and our professional brethren in France.

"The United Engineering Society, the board of trustees of which I have the honor to be the presiding officer, is, as its name implies, an integral part and parcel of the functions and activities of our founder societies, holds title to this building and property, and administers its research department known as Engineering Foundation, directed by Charles F. Rand as chairman, and Alfred D. Flinn, as secretary, and also the library, which we claim to be the best equipped technical library of engineering in existence, with Dr. Harrison W. Craver, as director."

Colonel Parsons then delivered in French the following address:

"The art of engineering was defined a long time ago as 'the art of directing the great sources of power in nature for the use and convenience of man.' No better definition can be found today. Of all the sources of power in nature, the greatest, most valuable and at the same time the most difficult to direct is the energy of man himself. He who can direct human energy and turn it to the service of mankind is a great engineer.

"You, Marshal, have directed a greater mass of human energy than any other man has ever done. And you have successfully directed this mass for the highest uses of mankind, in that you by its aid have preserved for him one of the most precious of human possessions—liberty! Liberty not only for your own illustrious country, but for all the nations of the world.

"The four national engineering societies of the United States now desire to make record of their appreciation of this fact and to convey to you an expression of their most profound admiration for the great leader of men by conferring on you honorary membership in all the societies, the highest honor in their gift and one hitherto never conferred on a single individual.

"Four thousand members of these societies were enrolled in the armed service of the United States, the greater part of whom had the glorious distinction to serve the common cause in France under your orders. They heard the voice and they saw the hand of the master as he led them through battle to victory. Now we desire that you will still continue to lead us, but in peace, by permitting us to inscribe your name at the head of our roll of honor, where it will be, as your deeds have been, an example to us to do better work, and where it will remain forever a noble inspiration for all future generations."

Mr. Webster then presented to Marshal Foch the beautifully engrossed certificate of honorary membership.

Marshal Foch responded, by paying the following tribute to the part of engineers and engineering in the war:

"It was due largely to the engineers and the engineering industries that the war was brought to a successful conclusion. The armies could not have accomplished much without the effort of the engineer. Success was made possible to a great extent by the industry of the people at home, but when decisive moments arrived the engineer stood out as an essential factor in attaining success.

"What would have become of the armies without the engineering industries and without the professional knowledge which you exercised and which enabled us to lead our armies in the field, to feed them, to protect them and to facilitate their forward movement.

"It is for these reasons that I am pleased to be here today, to receive so splendid a welcome, to express my gratitude and that of France and of all my countrymen for the splendid sacrifices made by the men of your calling. I am grateful to you for including me in your ranks as one of the members of your four national engineering societies. This honor I deeply appreciate, and I shall always cherish this event with the happiest memories."

A statement issued by the engineering societies emphasized the character of Marshal Foch as an engineer. The statement said:

"The fundamentals of engineering achievement are co-operation and co-ordination. It was the ability of Foch to supplement his military genius with the effective co-operation of the commanders of the armies of five nations and the co-ordination of their operations that won the great victory.

"Ferdinand Foch studied engineering in Ecole Polytechnique and Ecole d'Application d'Artillerie. He served on the technical section of the Ministry of War early in life, and in later years was a full professor in Ecole de Guerre.

How to Keep Cars on Time

Members of New England Club Discuss Papers of Messrs. Whitney and Bolt—Hon. Henry C. Attwill Gives Informal Talk on "Relations Between City Governments and Street Railways"

THE papers on how to keep cars on time, presented at a meeting of the New England Street Railway Club on Dec. 1, by Howard F. Whitney, Springfield Street Railway, and W. C. Bolt, Eastern Massachusetts Street Railway, were published in abstract in last week's issue of this paper. An abstract of the discussion on these papers, at the afternoon meeting of the club, follows:

R. B. Stearns, vice-president Eastern Massachusetts Street Railway, emphasized the value of regular service in maintaining good public relations. Frankness in explaining street railway problems to the public is essential. Punctuality also keeps down costs, and close co-operation between rolling stock maintenance and operating departments is vital. Pull-ins have been reduced on the Eastern Massachusetts system from 1,000 to 750 per month in the past year. The 30,000-mile overhauling schedule of this system appears to be a money-maker in preventive maintenance. A bonus divided between car-service and maintenance men for punctual car movement works extremely well, figuring cars within 5 per cent of on time at terminals during a month and appraising the value of the time saved in the setting apart of this money on a 50-50 basis between the two classes.

L. D. Pellissier, president and general manager Holyoke Street Railway, urged the importance of helpful supervision of car movement and of provision for rapid loading and unloading of cars. Team-play among operating forces, restriction of automobile parking in congested sections, safety areas and rapid fare collection all aid in schedule efficiency.

John Lindall, superintendent rolling stock and shops, Boston Elevated Railway, suggested giving the public information as to the percentage of trips run on time, together with classified delays and causes thereof. Tact in trying to remove obstructions to traffic is of more avail than a hostile attitude. Motor-operated wrecking trucks equipped with cranes, manned by crews skilled in clearing up breakdowns and capable of proceeding to a blockade on the highway surface have proved of great value in Boston compared with the old method of sending out trolley wrecking cars. The wrecking trucks now in use at Boston can lift loads as high as 10 tons by blocking under the rear end of a chassis frame and can lift and carry with the crane 5 tons. The trucks are rated at 3.5 tons, with White chassis and power-driven winches and "nigger heads." The speaker felt that better supervision can be given by traffic executives from automobiles than from street cars, owing to the limitations of movement of the latter.

H. F. Fritch, assistant general manager Eastern Massachusetts Street Railway, said that punctuality of car movement should be sought throughout the entire organization of the modern system. The psychological effect of pull-ins on the public is not good. E. S. Wilde, vice-president, Union Street Railway, New Bedford, Mass., advocated diplomacy in dealing with track obstructors. In addition to using automobiles, superintendents in New Bedford ride over the system in the cars at least monthly and report their findings. Regularity of service is more valuable than speed. Mr. Pellissier emphasized the importance of flash signals at critical points and of ample telephone facilities in minimizing traffic delays due to slow notification of executives, mechanical and operating departments of trouble. Others who discussed the value of good service were A. B. Hale, Griffin Wheel Company, Boston; Thomas Kendrigan, Manchester Street Railway, Manchester, N. H.; R. D. Hood, Dover, N. H., and R. R. Anderson, superintendent of transportation United Electric Railway, Providence, R. I.

CHAIRMAN ATTWILL EMPHASIZES MUTUAL INTERESTS OF RAILWAYS AND PUBLIC

With President Dana in the chair, the evening session of the club was marked by an address by Hon. Henry C. Attwill, chairman Massachusetts Department of Public Utilities, upon "Relations between City Governments and Street Railways." In a comprehensive and informal talk which was listened to with keen interest by the largest gathering in the history of the club outside of an annual meeting (162 were present), Chairman Attwill sketched the unity of interest prevailing between successful public utilities and the communities which they serve. He emphasized the willingness of the public to co-operate with companies whose problems and needs are set forth frankly and understandingly, notwithstanding the noise of agitators. Conservative operation pays, the speaker said, and he urged a conduct of affairs which will produce something of that confidence on the part of the investing public that it feels toward the savings banks of Massachusetts. "Customer ownership" of electric railway securities was also advocated as a means of bettering conditions. The "square deal" offers a better means of securing good public relations than insistence on "constitutional right."

In the discussion which followed the presentation of Mr. Attwill's address, H. H. Crapo, president Union Street Railway, New Bedford, advocated co-operation with municipal authorities.

New York Railroad Club Dinner Well Attended

THE third annual dinner of the New York Railroad Club was held in the grand ballroom of the Hotel Commodore, New York City, on Thursday evening, Dec. 15. A large number of electric railway men helped to swell the attendance on this occasion. Frank Hedley, president and general manager of the Interborough Rapid Transit Company, New York, acted as toastmaster. Addresses on railway conditions together with a fine musical program furnished the evening's entertainment.

Joint Convention of Illinois Associations

THE joint convention of the Illinois Gas Association, the Illinois State Electric Association and the Illinois Electric Railways Association will be held on March 15 and 16, 1922, at the Hotel Sherman. The morning sessions will be joint sessions while in the afternoon separate technical sessions will be held for each association. The annual banquet will be on March 15. The complete program will be available soon.

American Association News

Bus Operation to Be Studied

THE first meeting of the committee on trackless transportation of the American Association was held at association headquarters on Dec. 15. Among those present were: H. B. Flowers, United Railways & Electric Company of Baltimore, chairman; W. J. Flickinger, the Connecticut Company, New Haven, Conn.; H. B. Potter, Boston (Mass.) Elevated Railway; and J. N. Shannahan, Newport News & Hampton Railway Gas & Electric Company, Hampton, Va. Secretary J. W. Welsh, who was also in attendance, explained that this committee was in full charge of the study of trackless transportation by the association. There will be two co-operating committees to work with the American committee, one from the Engineering Association and one from the Transportation Association.

The committee plans to make a complete study of the economic situation. It is to prepare instructions for investigation by the engineering committees in regard to proper designs and refinements of equipment. The transportation committee is to be asked to study the proper place of the bus in the transportation field and what routes are proper for establishment. This also brings up the question of mass transportation.

Other investigations will be made to establish the principle of financing extensions into undeveloped fields and whether a trolley bus or motor bus is to be used; a discussion of regulation and franchise requirements, a discussion of the question of abandoning tracks on unproductive lines or substituting trackless transportation for existing service in sections now supplied when the structures need renewal. The report is also to define a policy on the whole problem and draw conclusions.

Power Distribution Committee Starts Work

THE power distribution committee of the Engineering Association held its first meeting of the year at the association headquarters, New York City, Wednesday, Dec. 14. Those present were M. B. Rosevear, Public Service Railway of New Jersey, chairman, J. R. C. Armstrong, Brooklyn City Railroad; H. S. Burd, National Conduit & Cable Company, New York City; R. W. Eaton, public service engineer, Providence, R. I.; G. C. Hecker, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; H. D. Hawks, Anaconda Copper Mining Company, Chicago, Ill.; Adrian Hughes, Jr., United Railways & Electric Company, Baltimore, Md.; H. S. Murphy, Philadelphia Rapid Transit Company, Philadelphia, Pa.; Charles H. Jones, Metropolitan West Side Elevated Railway, Chicago, Ill.; F. McVittie, New York State Railways, Rochester, N. Y.; G. Hall Roosevelt, General Electric Company, Schenectady, N. Y.; and F. J. White, Okonite Company, Passaic, N. J.

The various subjects which have been assigned to the committee were discussed in considerable detail and subcommittees were appointed to follow up the work closely. Several recommendations were made to the executive committee for additional standardization work that it appeared desirable to have sectional committees of the American Engineering Standard Committee undertake. These included specifications for overhead wire crossings and a specification for high conductivity trolley wire. The subject of standard specifications for wire cables which is now under consideration by a sectional committee of the American Engineering Standards Committee was discussed and the detailed organization with provision for a technical committee was outlined. The power distribution committee has a very full schedule of work for this year and its early start together with the interest that was manifested by the large attendance indicates that much work will be accomplished.

Connecticut Company Section Elects New Officers

THE fortieth and annual meeting of the Connecticut Company section of the American Electric Railway Association was held in New Haven, Conn., on Dec. 7. About 100 members were present who were entertained at the opening with a concert by the Connecticut Company section band of thirty-five pieces. This band, made up of the employees of the Connecticut Company, was organized a short time ago under the supervision of I. A. May, comptroller.

The meeting was opened by President Harlan. Election of officers for the coming year took place and the following were elected: President, C. H. Chapman, manager of the Waterbury division; vice-president, S. W. Baldwin, attorney; secretary, C. K. Savery; treasurer, George H. Crosson, and director for three years, A. L. Donnelly, division engineer.

The speaker of the evening was Leonard M. Tarr, who is in charge of the weather bureau at New Haven. He gave an interesting talk on the weather, its causes, etc.

Chicago Section Meeting

THE November meeting of the Chicago Elevated Railroad section of the American Electric Railway Association was held on Nov. 30, with an attendance of about 125 members. After some musical entertainment C. G. Goodsell of the Chicago, North Shore & Milwaukee Railroad gave an interesting talk about the Americanization work which is being done on the North Shore line.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Company Makes Three Proposals

Grand Rapids Dispute Approaches Settlement with Railway's Valuation Offer

New negotiations between officials of Grand Rapids, Mich., and the Grand Rapids Railway have apparently brought the traction difficulty in that city much nearer a settlement than it has been for many months. Three new proposals made by the company form the basis for the recent discussions and may serve as a chart by which both parties may successfully sail through the Scylla and Charybdis of valuation and depreciation which have destroyed so many previous conferences.

Elimination of bus competition, which the company has insisted on throughout the discussions, seems temporarily assured with the refusal of Judge Dunham, on Dec. 5, to declare the jitney ordinance invalid until it is attacked by someone with a legal right to do so. As a result jitneys which have been operating without a license have been ordered from the streets.

The three proposals of the company are as follows:

1. A valuation of $5,950,000 with the right of either party to a revaluation at the end of five years.
2. A valuation of $5,650,000 for the full term of thirty years.
3. A thirty-year franchise, leaving the matter of revaluation, rate of return and depreciation allowance to the Michigan Public Utilities Commission for the life of the franchise.

In case none of these is satisfactory the company suggests that the problem be referred to the Michigan Public Utilities Commission for settlement, since the company's financial condition requires immediate action.

The figures presented by the company were arrived at by using, for a basis of computation, the figures offered City Service Director Wagner from time to time. General Manager DeLamarter in a letter said that on the compromise basis of an assumed 35 per cent appreciation instead of the actual 51 per cent, the valuation is $6,844,419. According to these computations, the valuation of $5,950,000 is $811,946 less than the present fair value as shown in them, and the valuation of $5,650,000 is $1,111.946 less than the present fair value.

Both propositions are based on an 8 per cent return, which was previously tentatively agreed upon, and both include an allowance for depreciation of 3 per cent on physical property, all allowances unexpended to be charged with interest at a rate to be mutually agreed upon, and subject to future agreement, with arbitration if necessary.

Service Director Wagner some time ago placed a valuation of $5,100,000 upon the Grand Rapids Railway property, but later placed the figure at $5,450,946. The company has come down several million dollars. The later proposition made by Mr. Wagner was that the city could without hesitation offer the valuation the company asked, providing the annual depreciation is equal to the retirements, and that all above this belongs to the people and represents their investment in the property.

As Mr. Wagner explained it the plan would also overcome the present generally agreed impractical method of tying up depreciation money so it could not be used for improvements and extensions, and at the same time automatically correct itself and make it to the interest of the company to reduce fares and increase service.

In figuring price trend, Mr. Wagner placed it at 25 per cent above normal instead of 54 per cent as Attorney Knappen for the company contended was the government figure.

With the temporary lapse in the bus dispute, troubles seem to be clearing. Judge Dunham in his opinion and decree, however, said that he was not passing on the validity of the ordinance but on the contention of the city that having applied, and having been granted and having acted under the ordinance, the jitney men themselves could not attack it. Bondsmen who were holding bonds for the drivers recently forfeited them, and the drivers were unable to continue. As yet the amendment to the jitney ordinance has not been presented to the City Council.

Amicable Agreement Reached in Baltimore

After careful consideration of the company's problems, the cost of living, and the general downward trend of prices, representatives of the United Railways & Electric Company, Baltimore, Md., and its employees have reached an agreement under which there will be a reduction in pay of 2 cents an hour, beginning Jan. 1, 1922. This reduction applies to platform men, shopmen and certain other classes. The salaries of office forces will be reduced 4 per cent.

The agreement authorizes the company to employ in its construction gangs laborers at current market rates.

The new arrangement was decided upon after a series of conferences at which the officials of the company met representatives of every department. Both sides expressed themselves frankly and freely, and there was complete harmony throughout the deliberations.

Newspaper comment in Baltimore lauds the co-operation and splendid spirit existing between the officials of the railway and its employees. The *News* under date of Nov. 30 says:

> For years back the United Railways has made a practice of sharing its prosperity with its employees. It has maintained something more than a working agreement with them; it has established in their relations an all-in-the-family feeling. The company, the men and, no tleast, the public have all benefited from that policy.

The *American* of the same date says:

> The last effort of the local employees for a wage increase, made about a year ago, furnishes a good illustration. The request was for a 15-cent advance. The United offered a 2-cent advance and submitted the figures to prove that this was all it could afford. The men voted on the proposition, accepted it and stayed at work. They have followed the same policy in this instance of a wage decrease.

Final Brief Filed in Fare Controversy

Chicago Case Taken Under Advisement by Federal Judges—Staggered Hours Suggested

With the filing of the last brief on Dec. 12 the fare case of the Chicago Surface Lines was taken under advisement by Federal Judges Baker, Carpenter and Page in the United States District court. The documents filed by the city of Chicago and the Illinois Commerce Commission consisted largely of an attempt to point out items of savings which would make a 5-cent fare order possible.

Unfortunately for the representatives of the public, as suggested in the company's brief, these items were not supported by evidence offered during the hearing and therefore could not be used as a basis for the order. Attorneys for the companies assert that there was no evidence which justified the order and that the case "rests upon nothing more substantial than conjecture or hopeful prophecy." On the suggestion of the commission for a wage reduction, the company's brief says:

> No evidence was offered that the salaries of office employees or the wages of labor could or should be reduced. On the contrary, all the city's witnesses were opposed to the idea of any reduction in the present wage scale.

Hearings have been going on before the local transportation committee of the City Council on the question of solving Chicago's transportation problem, with particular reference to subways. All kinds of suggestions have been made, including a proposal to experiment with a monorail system. A plea for adoption of staggered hours was made on Dec. 8 by Harold Almert, representing the American Association of Engineers. He said this would cut congestion and crowding in half and would require no capital expenditure. He suggested as a first move the passage of an ordinance creating a commission.

Proposed New Houston Grant Favorably Received

The City Council of Houston, Tex., has discussed the proposition submitted by officials of the Houston Electric Company for an extension of its franchise and a compromise agreement on the fare controversy that has involved the traction company and the city for the last two years. No formal action has been taken by the city government, although Mayor Holcombe and all members of the Council have expressed approval of the proposition as submitted by Luke C. Bradley, district manager for Stone & Webster.

The offer of the company to compromise the fare controversy was submitted when it was seen that the city would enact an ordinance reducing fares from 7 cents to 5 cents when tickets are purchased in packages of twenty for $1. It was proposed that individual cash fares when paid on the cars should remain at 7 cents. Sewall Myer, city attorney, had been instructed to draft an ordinance along these lines to be submitted at the next meeting of the Council. Its immediate passage is quite certain.

Summed up, the proposition submitted by Mr. Bradley is as follows:

> The company agrees to spend not less than $1,200,000 within two years, in such order as the Council may designate, for additions, extensions, new cars, equipment and other betterments.
>
> As soon as these improvements are made and the company is in position to give adequate service at a lower cost, the first reduction will be the selling of four tickets for 25 cents. Such future reductions in fare will be left to the fairness of the City Council. Pending this time fares will remain at 7 cents. The city will drop its present fare ordinance to compel the traction company to sell twenty tickets for $1.
>
> The city in return for promised improvements and fare reduction will grant an extension of the present franchise for a period of sixteen years, such extension to become effective only after the railway has complied with its agreements with the city for extensions and fare reduction.

Strike Averted on Suburban Line

A threatened strike of the trainmen operating the lines of the Seattle & Rainier Valley Railroad, Seattle, Wash., has been averted, and a compromise agreement on a new wage scale, retroactive to Oct. 1 and effective to next April 1, has been ratified at a mass meeting of the railway employees. The new agreement, which involves 120 men, fixes a wage scale dating from Oct. 1, of 53, 56 and 62 cents an hour, according to the length of service of the men, with a maximum payment of 66 cents to one-man car operators. The scale represents a cut of about 10 per cent.

The company's contract with its employees expired on Oct. 1, and on Aug. 17 notice was given the men that a new wage contract would be sought. Since that time various proposals and counter proposals have been made, without an agreement. A deadlock was reached, when both parties failed to agree on a third arbiter to an arbitration committee. The company's proposal, rejected by the men, set a scale of pay retroactive to Oct. 1, as follows:

> The month of October, 56½, 59½ and 62½ cents an hour; November, 53, 56 and 60 cents, and December, 51, 54 and 58 cents.
>
> Effective Dec. 1, time and a half for overtime was to be paid after eight and one-half hours, except that extra men working piece runs would not receive time and one-half for overtime until aften ten hours.
>
> Conductors working one-man cars and those relieved on the road to be paid ten minutes straight time for making up turn-in reports; instructors to receive 5 cents an hour above basic scale.

General W. M. Brown of the traction company said:

> The whole difficulty is not that the men employed on this property do not understand that a wage adjustment downward is due, but they fear the criticisms of the municipal employees who are striving to maintain a wage considerably in excess of that paid by private industries all over the country.

Survey Ordered.—At the meeting of the San Francisco Board of Supervisors on Nov. 21, the city engineer was ordered to study and make plans for a four-track subway under Market Street from the Ferry to Valencia Street, a distance of about 2½ miles. This was proposed as a means of relieving the increasing congestion of this important thoroughfare and making its entire width through the business district available for vehicular and pedestrian traffic. The proponent of the measure said he did not anticipate immediate construction, but thought a start should be made on such a project.

McGraw-Hill Company Acquires "Review"

The Paper Will Be Published Monthly for Practical Electrical Men in Industrial Plants

The McGraw-Hill Company, Inc., has purchased the *Electrical Review* and will continue to publish it, beginning January, 1922, in Chicago, but as a monthly. Its title will be changed to *Electrical Review and Industrial Engineer* and it will be devoted to electrical and mechanical operation and maintenance in mills and factories. The publishers believe that there is a growing demand in such installations for specific and practical information on the operation of electrical systems by those who take up the work where the consulting, designing and installation engineers leave off. To these practical men, a service not heretofore available will be provided.

As in the past, *Electrical World*, the national weekly, will be devoted to the problems of executives and electrical engineers responsible for the administration of policies, for engineering developments and for practices in all branches of the electrical industry. Its editorial scope, except for broadening, remains unchanged, and embraces (1) the fundamentals of electrical engineering as a profession; (2) production, distribution and application of electrical energy as a service; and (3) the broad problems of production, distribution and application of electrical equipment and merchandise as a business.

Indianapolis Company May Seek Relief

Announcement was made recently by Dr. Henry Jameson, chairman of the board of directors of the Indianapolis (Ind.) Street Railway, that the company will lay before the Public Service Commission its entire financial problem and ask for a readjustment after the first of the year unless the company's revenues are improved considerably by the stoppage of jitney bus competition.

Dr. Jameson's statement was in the nature of a comment on a request by the Board of Public Works for representatives of the railway to appear to explain why a petition has not been presented to the Public Service Commission for relief from costs of paving between tracks. Dr. Jameson said that tests are being made to learn if enforcement of the jitney regulation ordinance is raising the company's revenues. As yet no definite figures have been compiled. Dr. Jameson said:

> The railway must have more income than it has at present either by raising fares or by elimination of special taxes. At the proper time the whole financial problem will have to be put up to the Public Service Commission. We have not formulated any general plan of action yet, but we know that the company cannot progress and be rehabilitated until an adequate income is provided, thus assuring credit.

At conferences held between city officials and representatives of the railway since the company's franchise was surrendered for an indeterminate grant the company has insisted that it should be relieved of paying the cost of paving between tracks. The company asked also that it be relieved from paying the $30,000 annual franchise tax to the city and the entire amount of $500,000 was declared forfeited to the city when the company did not make this payment last spring.

During subsequent conferences, Dr. Jameson and other directors of the company said they would take the matter up with the Public Service Commission in an effort to be relieved from paying paving costs. Members of the Board of Public Works said recently that a reasonable time has elapsed, but that the company has not put its case before the commission.

Asks New Estimates for Electrification

Estimates for the electrification of nearly 40 miles of track of the Delaware, Lackawanna & Western Railroad near Scranton, Pa., have been asked by officials of the company. The General Electric Company and the Westinghouse Electric Company are preparing the figures, which are expected to be ready March, 1922. The railway rejected bids submitted last summer.

Tax Amendment Introduced

A very determined effort will be made at the present session of Congress to secure legislation to limit or prevent the issuance of tax-free securities by states and their sub-divisions. Representative Foster of Ohio has introduced a constitutional amendment which provides that Congress "shall have power to lay and collect taxes on incomes derived from obligations issued or created by a state or any political sub-division thereof after the ratification of this article, without apportionment among the several states and without regard to any census or enumeration."

The difficulty with any constitutional amendment is the probability that its ratification by the States will be very difficult to secure. A suggestion which is receiving serious consideration is the placing of a heavier inheritance tax on tax-free securities. Any such legislation would be reflected immediately in the sales value of such bonds and would act as an automatic check on their sale. There is a very general feeling in Congress that some way will be found to limit the issuance of such securities.

Picketing Lawful, but Intimidation Illegal

The Supreme Court of the United States on Dec. 5 held that picketing in labor disputes is lawful, but must be done by a single striker at each entrance or exit, but intimidation is illegal, in the case of the American Steel Foundries vs. the Tri-Cities Central Trade Council, growing out of a threatened strike at Granite City.

The court upheld the right of labor men to persuade men to discontinue work and join the strikers, if done by personal persuasion, but not by assembling a large number of strikers at entrances of a plant where a strike is in progress, which may lead to intimidation and civil disorder.

The court held that labor organizations are legal under the Clayton law and that they may use all lawful methods to enlarge their membership and influence in labor matters.

The decision of the Circuit Court of Appeals was affirmed in part and reversed in part. Associate Justice Brandeis concurred in the result and Associate Justice Clarke dissented.

New York Inquiry Nearing Close

The First Stage of the Investigation Now in Progress Before the Transit Commission Appears to Be Drawing to an End—Valuation Hearing Early in 1922

General agreement was expressed during the hearing before the Transit Commission of New York this week with the tentative outline of the commission's plan although criticisms were offered with respect to some of the details. The first stage of the inquiry appears now to be drawing to a close. It is promised by the commission that early in 1922 that body will probably be prepared to go ahead with consideration of the various valuations.

N. F. Brady, chairman of the board of directors of the Brooklyn Rapid Transit, followed President Williams of that company on the stand before the New York Transit Commission in the session of that body on Dec. 7. Mr. Brady was questioned more particularly by the counsel with respect to the policy that had been adopted by the company on declaring dividends during 1917 in the face of the knowledge that the company was making a poor showing compared with the year before and that the company was faced in the following year with the burden of $57,000,000 of maturing notes.

Mr. Brady said that the situation was not nearly as gloomy as counsel for the commission had assumed; that there was sufficient surplus shown on the balance sheet of the company; that the company had earned the dividends, and that he doubted whether the company would have been justified in passing payments before it did.

Again the question was brought up, as in the case of President Williams, of the obligation of which the company felt toward holders of stock to the amount of about $30,000,000, who were formerly bondholders and had been induced to convert their bonds into stock on the basis of the dividend showing of the company over a number of years previous to conversion.

The consideration that governed the financial policies of the company with respect to dividends is contained in the answer "yes" of Mr. Brady to the following question of counsel for the commission:

> Your position then is, as I understand it, that although the conditions were looking bad early in 1917, as you stated to your stockholders and had recorded in your minutes, and although the cost of labor and materials was mounting, and taxes were mounting and you were in considerable difficulties in the matter of whether you would be able to finance these $57,000,000 of notes, that taken all in all, as long as you had earned the dividend, you felt that you would not be justified in discontinuing it during 1917 on account of the effect that it might have on the investors' minds, on the ability of the company to finance its future requirements, and on account of what Col. Williams called your moral obligation to stockholders, and the other elements you have mentioned?

Lindley M. Garrison, former Secretary of War, and now receiver for the Brooklyn Rapid Transit Company, on Dec. 8 criticized some features of the preliminary plan drawn by the Transit Commission, but added that he was in general accord with the proposals.

On the witness stand for about four hours Mr. Garrison said that he did not wholly agree with Colonel Timothy S. Williams, president of the Brooklyn Rapid Transit Company, that the proposal for a board of control of seven men would offer large opportunities for abuse that Mr. Williams thought existed in the proposal plan, but said that it did present an opening for an undesirable political domination of the city's transportation system.

He spoke of the difficulty of having the so-called A company, or holding company under the plan, borrow additional money for the transit system because it would have pledged all its properties as security for the payment of the purchase price of the lines. Agreeing in part with the suggestions made by Colonel Williams before the commission, he said that the time must come when the city would have to finance the transit system.

Both Mr. Garrison and W. S. Menden, the general manager of the Brooklyn Rapid Transit lines, told of the results of operation under receivership. They described the abolition of transfer points, coal costs, need for rehabilitation of the lines, and general physical condition. They also told of the passing of the Brooklyn City Railroad lines back to their owners to operate.

Testifying on Dec. 12 on the general condition of the lines of the Brooklyn City Railroad, which operates about 50 per cent of the surface tracks in Brooklyn, H. H. Porter, president of that company, said that the company had observed an increase in profitable short haul traffic and was showing a profit above all charges. He reported that costs were going down and that efficiency of labor was increasing.

Mr. Porter said:

> I may say that the directors and officers of the Brooklyn City Railroad will, of course, co-operate with the commission in every way to effectuate this plan, if they feel it can be done safely for the security holders. The Brooklyn City Railroad, occupying the position it does, and myself, occupying a relative position to the security holders, feel a great deal of hesitancy in making a definite commitment.
>
> We have no great banking houses to look after and advise our security holders. About half of the stockholders are women, and we, therefore, have an unusual responsibility. I am in thorough accord with the principle of consolidation and putting all the properties together and with the proposal for taking them over into an ownership by the city, and meantime to have them operated by the present security holders.
>
> I feel, however, that there are two very important conditions attendant upon effectuating such a plan. One is the absolute security for the payment of interest, the 5 per cent interest on the funds to be secured; and, secondly, the safety of the principal until it shall have finally been amortized. That means that either the security holder must pin entire faith upon the company or the security holder must fall back upon the security of the property.
>
> I feel very strongly that the suggested board of control would not work for the efficient or would not lend itself to the most efficient operation of the system. I believe that the highest and best efficiency in any organization can only be secured by fixing the responsibility and narrowing it down, and that such a board of control will serve to diffuse the responsibility between the operating officers and the board of control.
>
> It is only by securing the highest efficiency that we can hope to have a 5-cent fare or less. I think that is my principal criticism of the plan, except that I feel that the form of contract should so assure the holder of the security of the payment of the 5 per cent interest that there would be no possibility of having to take the property back.

It was at the session on Dec. 12 that George McAneny, chairman of the Transit Commission, hinted that criticism of the proposal for a board of control of seven members had been so general among traction experts that this feature would be revised when the revised plan was formulated after the hearings have ended.

Both Mr. Morrow and Arthur M. Anderson, head of the bond department of J. P. Morgan & Company, testified on Dec. 13 about Interborough finances. While Mr. Anderson was testifying it developed that the Morgan firm as far back as 1914 advised against starting dividends on the preferred stock of the Interborough-Consolidated Corporation, then under formation to succeed the Interborough-Metropolitan Corporation, only to have the warnings disregarded.

After it had been brought out that J. P. Morgan is chairman of the Interborough bondholders' protective committee, of which Mr. Morgan is a member, Mr. Morrow said he had studied the commission's settlement plan and proceeded step by step to announce his approval of various features enumerated by Clarence J. Shearn, special counsel to the commission.

It was made clear that Mr. Morrow's comment was not to be considered final nor to bind the committee in any way. He explained that the matter had not formally been placed before the committee which awaited the final statutory plan expected to be ready next month. Mr. Morrow was, however, inclined to accept the board of control idea, adding "you cannot put together any plan, you cannot make any provision for the future which will not have in it perils of all kinds, whether you have private management or whether you have public management."

Mr. Beeler to Assist in Solving New York City Situation

Announcement was made by the New York Transit Commission early in the week ended Dec. 17 that John A. Beeler, the well known consulting engineer, has been appointed consulting traffic expert by the New York Transit Commission and will begin work right away on an investigation and report on rerouting the surface lines in New York City. For work of this kind Mr. Beeler is especially qualified from his experience as constructor and operator of electric ralways. For thirteen years he was constructing engineer and chief engineer of the Denver Tramway, and for the twelve following years he was the chief operating executive at Denver.

For the past six years Mr. Beeler, acting as individual consulting engineer and traffic expert, has studied and reported on traffic problems in a number of important cities in this country. One report was on Boston for the State of Massachustets. Another report was on the situation in Washington, D. C., for the Public Utilities Commission of the District of Columbia. Later he reported for the Board of Control on railway matters in Kansas City. Recently he has been engaged in a study of the situation in Chicago, where a re-routing plan for the surface lines, as recommended by Mr. Beeler in his testimony, has been ordered to be installed. The selection of Mr. Beeler in New York would indicate that the New York Transit Commission is in favor of adopting the most modern methods of service by the various operating companies, through an examination of what ought to be done to supply New York citizens with 100 per cent service.

Pittsburgh Plan Advanced

City Council Approves Revised Settlement Agreement—Solution of Railway Problem Brought Nearer

After a delay of two weeks, during which time many conferences have been held between Mayor Babcock, Mayor-elect Magee and City Council, for the purpose of making revisions in the plan for the new franchise and the reorganization of the Pittsburgh Railways outlined in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 26, the plan as revised has been approved by all interested parties including Council, which passed on it Dec. 13. It will come up for final passage by Council in a few days, after which it will go to the Public Service Commission for ratification.

TO END RECEIVERSHIP

With approval by the commission, steps will be taken by the company to terminate the receivership and provide $5,000,000 additional capital necessary to give effect to the agreement. Reorganization of the railway will follow and the railway properties, under the Public Service Commission valuation of $62,500,000, with a stipulated annual return of 6 per cent, will be operated as a unit.

The board of control, with amplified powers under the amended plan to give the city supervision of the service, facilities, rates, charges and finances of the company, and of its extensions, will be known as the Traction Conference Board, it was decided by the committee.

COMMITTEE APPROVAL GIVEN

The approval of the Committee on Public Service and Surveys of City Council was given without discussion. George N. Monro, Jr., special city counsel in charge of public utilities litigation, advised the committee that all parties interested had agreed to the plan and form of agreement, with the amendments recently drafted.

The amendments were drawn as the results of numerous conferences during recent weeks of Council, Mayor Babcock, Mayor-elect Magee, A. W. Thompson, president of the Philadelphia Company, City Solicitor Charles B. Prichard, Mr. Monro and A. W. Robertson, counsel for the company.

The plan was presented to Council on July 25 last, and was ordered to be publicly circulated. General approval by civic organizations and the public followed. Public hearings were held by the Councilmanic committee. Some organizations of the Allied Boards of Trade proposed an alternate plan, based on the Cleveland plan of operation, which has been studied by the committee and found its main features not to be applicable locally, although desirable provisions of it were a part of the local plan.

Joint Operation Started in Detroit

Joint operation between the Detroit United Railway and the Detroit Municipal Railway on Trumbull Avenue was set for Dec. 15. For several days previous to that date the Peter Witt cars of the municipal railway were run over the Trumbull line to familiarize the city motormen with the route and to instruct the Detroit United Railway motormen who will become city employees with the details of operation of the new cars. Arrangements were made to issue transfers from the Municipal cars on the Trumbull line to all connecting lines of both systems.

The agreement for the joint operation of cars has been drafted by Elliott G. Stevenson, counsel for the Detroit United Railway, and approved by Corporation Counsel Clarence E. Wilcox and will become effective as soon as signed by both parties. The agreement is understood to contain the detailed arrangements for the joint operation on the lines affected. The agreement is drawn so as to be effective on a day-to-day basis and may be repealed by either company at any time it may elect.

With the termination of the joint operation the situation will return to the status quo, and neither the company nor the city will have gained or lost any rights in the streets. The agreement also provides that no ordinance or power of enacting ordinances is suspended or modified in any way by the city in becoming a party to the agreement.

With the day-to-day lines the city will take over 128 cars for its use. When the plan for joint service goes into effect the Detroit United Railway employees who would lose their positions will be given places on the municipal cars and will be supplied with uniforms of the municipal railway.

According to present plans the company and the city will operate cars alternately on Fort Street, Woodward Avenue, Trumbull, Fourteenth and Hamilton lines, and all other Detroit United Railway lines will continue operating as at present throughout the winter. The universal transfer will be put into effect as soon as the work of printing and distributing the transfers is completed.

Half Dozen Hurt in Interurban Crash

One man was killed and a half dozen others were injured when an interurban car of the Cincinnati & Dayton Traction Company crashed into another car, standing on the tracks near the carhouse south of Carrmonte, Dayton, Ohio.

CRUSHED VESTIBULE OF INTERURBAN CAR

The moving car was crowded with workmen on their way to the plant of the General Motors Company at Moraine City. The standing car had been run out on the main line a few minutes before the accident occurred in order to let another car leave the carhouse. According to witnesses the motorman failed to see the car standing on the track until too late. When he observed that a crash was inevitable the motorman leaped through a window, receiving only minor injuries.

The coupling apparatus of the standing car was forced through the front end of the interurban. The impact hurled all persons in the moving car toward the front end.

Investigation is being made by the executives of the railway to determine whether the accident was caused by the slippery condition of the rails or the dense fog that hung over the countryside at the time. The conductor said the car was running 25 to 30 m.p.h. at the time of the accident.

News Notes

Last Respects Paid Henry J. Davies.—Funeral services for the late Henry J. Davies were held on Dec. 7. The honorary pallbearers were J. J. Stanley, president of the Cleveland Railway; R. A. Harmon, Thomas Schmidt, George Radcliffe, directors of the railway; C. Nesbitt Duffy, Detroit; Judge Fielder Sanders, City Street Railway Commissioner, Andrew Squire and Harry J. Crawford, legal counsel for the company.

Old Employees Back?—It is rumored that the newly elected Democratic administration in Albany, N. Y., will request the United Traction Company to discharge all imported conductors and motormen and to restore with full seniority rights all of its former employees who care to return to work. No threat is to be made of the curtailment of any existing right or privilege now enjoyed by the United Traction Company. It is simply to be invited in the spirit of helping boost Albany to give preference in employment to its old Albany employees.

Two Arbitrators Chosen.—C. H. Schoepf, chief engineer of the Cincinnati (Ohio) Traction Company, and Raymond Cleary of Springfield, Ill., representative of the International Brotherhood of Electrical Workers, have been chosen as arbitrators to settle the wage disagreement between the traction company and its electrical workers. The men have asked for an increase from 87½ cents an hour to $1.05 to date from the expiration of their contract, Nov. 15, 1921. The Ohio State Industrial Commission has been asked to appoint the third arbitrator.

New Improvement in Prospect.—Members of the Sayler Park Business Men's Club have indorsed the plan now under consideration by interests controlling the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, whereby the traction line will be extended so as to bring the cars to the heart of Cincinnati, Ohio. The plan outlined by L. G. Van Ness, general manager of the traction company, is to extend the traction line from Anderson Ferry to the Dixie Terminal and to operate this extension by the West End Terminal Railway, which will be organized with a capital of $1,000,000. The members of the club, who will be benefited by the improvement, have also voted to give their moral support to the plan.

Financial and Corporate

Montreal Tramways Betterments in 1921

Details of Work to Be Paid For From Proceeds of $1,750,000 Bond Sale

Among the improvements made by the Montreal (Que.) Tramways during the year and for which the proceeds from the sale of $1,750,000 bonds will be used, noted in last week's issue of this paper, is the new Cote substation, complete in every detail and in the heart of the city. In this substation there will ultimately be four G. E. rotary converters with a maximum capacity of 10,000 kw. Already two machines are installed and in operation. The other two are expected within the month. Including the land, building, high-tension underground conduits, tie lines and converters, the installation when completed will represent approximately $750,000 investment, all of which will be charged to capital.

DETAILS OF WORK COMPLETED

Two car routes were also extended during the year. This work necessitated laying 2.62 miles of open single track at an investment of $30,000 per mile. In addition to these 13.38 miles of tangent track were rehabilitated and twenty-one pieces of special track intersections having a total length of 9,800 track-ft. were relaid. Not all of this cost, however, could be charged to capital, for under the service-at-cost contract only the excess cost over that renewed can be capitalized. This remains true even if the replacement is in kind. However, on falling prices, where the replacement cost is less than that replaced, the difference must be credited to the renewal account so as to maintain at all times the integrity of the investment represented by the capital account of $36,286,295.

The opening of the Cote substation by the Montreal (Que.) Tramways has allowed the company to increase materially the amount of hydro-electric power used. Power is purchased from three sources, the Montreal Public Service Company, the Shawinigan Falls Power Company and the Montreal Light, Heat & Power Company.

STEAM PLANTS SHUT DOWN

With substations tied in to all of these sources of supply, it has been possible to shut down the Williams Street steam power station and hold it in reserve for emergency purposes. Power in the past has cost on a weighted average basis, considering the amount of steam generated and hydro power used, about 1 cent per kilowatt-hour. It being possible to buy hydro power at 0.5 cent per kilowatt-hour, it is self-evident that power charges can be decreased materially in the future. The Hochelaga plant will be the only remaining steam generating station.

The Montreal Tramways Power Company, it is understood, has in contemplation a hydro-electric power development of some 200,000 hp. in the outskirts of Montreal. Until this plan is more fully developed and under way, however, there seems to be no likelihood of closing down the Hochelaga steam plant.

As for the 1922 plans of the tramways, extensive track rehabilitation is planned and there is a possibility of further track extensions, although nothing definite can be said at this time as to just how much work will be undertaken. In a large measure that amount of work to be done will depend upon business conditions, the amount of traffic and the price of materials.

Plans Being Prepared for Sale of Interurban Under Foreclosure

The way is gradually being cleared for the sale of the property of the Aurora, Elgin & Chicago Railroad, Aurora, Ill., under foreclosure. Before January 1 Judge Evans is expected to indicate the manner in which the sale will be conducted. Among the questions which still remain to be decided is whether the property will be sold as a whole or in separate parcels. There is no way now in which definitely to tell what the result of the sale will be, but it would appear more than likely that the stockholders will not realize anything on their investment in the company.

In proceedings brought recently in the United States District Court to establish the lien on various bond issues of the system Judge Geiger has ruled as follows:

1. The original mortgage, amounting to $1,546,000, of the old Elgin, Aurora & Southern Traction Company, is a first lien on the Fox River division, including the Aurora and Elgin City lines, but is not a lien on the Batavia power house or the third-rail line into Chicago.
2. The $2,455,000 of underlying first mortgage bonds of the Aurora, Elgin & Chicago Railroad are a first lien on the third-rail property and the Batavia power house, but are not a lien on the Fox River division.
3. The $4,738,000 of Aurora, Elgin & Chicago general mortgage bonds are a lien on the third-rail line, the Batavia power house and the Fox River line subject to the above underlying issues.

Historical Treatise on Currency Inflation

"Currency Inflation and Public Debts" is the title of a historical treatise soon to be issued by the Equitable Trust Company, New York, for which company the volume was written by Edwin R. A. Seligman, Ph.D., LL.D., McVickar professor of political economy at Columbia University. An introduction has been written to the volume by Alvin W. Krech, president of the Equitable Trust Company, in which he discusses the three great problems of the growing burden of taxation, the sudden changes in price levels and the instability of currency. Dr. Seligman says that everywhere the massing of gigantic debts and the issue of irredeemable or inconvertible paper money operated to accentuate price increases and to add the woes of inflation to the other evils of war. Mr. Krech says that it must be admitted Dr. Seligman's paper is not conducive to optimism, but to his mind its austere and clear outlines convey a lesson which should not be missed.

Louisville Railway's Income for 1921

In the Dec. 3 issue of this paper the figures quoted in comparison for 1920 for the Louisville (Ky.) Railway should have referred to the estimated figures for the last quarter of 1921. The deficit mentioned in each case was after the dividend requirements had been deducted and was not an operating deficit. To remove all possible misunderstanding the full table is published.

Since the preparation of this statement the figures covering operations for the month of October are available, and, due to a reduction in operating expenses, the net income for the month is approximately $24,000 more than the amount estimated. On Nov. 1, the company put into effect a new scale of wages, reducing existing rates approximately 5 cents an hour, and with this saving and other expected decreases in expenses, the company hopes to be able to wipe out a very large part of this shortage in individual requirements for this period, which was estimated at about $105.856 as shown in the accompanying table.

	Nine Months Jan. 1 to Sept. 30, 1921	Three Months Oct. 1 to Dec. 31, 1921 (Estimated)	Total 1921
Operating Revenue of Louisville Railway:			
Transportation revenue	$3,163,341	$1,105,000	$4,268,341
Other operating revenue	146,012	48,000	194,012
Total operating revenue	$3,309,353	$1,153,000	$4,462,353
Operating expenses	2,516,933	862,500	3,379,433
Net operating revenue	$792,420	$290,500	$1,082,920
Taxes	273,000	99,000	372,000
Operating income	$519,420	$191,500	$710,920
Non-operating income (L. & I. R.R. Co., etc.)	57,869	30,000	87,869
Gross income	$577,289	$221,500	$798,789
Deductions from gross income:			
Interest on indebtedness, etc	479,906	158,752	638,659
Net income available for dividends	$97,383	$62,748	$160,130
Dividend requirements:			
Preferred stock	$131,250	$43,750	$175,000
Common stock	374,562	124,854	499,416
Total dividend requirements	$505,812	$168,604	$674,416
Deficit	$408,429	$105,856	$514,285

Note: In the event of an unfavorable decision by the courts in our fare case, the company will be obliged to make refund to holders of 7-cent ticket fare receipts. Based on ticket sales from March 24 to Oct. 24, 1921, it is estimated that such liability up to Dec. 31, 1921, will be about $335,000.00. If such refund were ordered, the earnings of the company would be decreased by this amount, and the deficit for 1921 would be increased to about $850,000.

Return of Trolleys to "New Haven" Favored

Business Interests in Connecticut Want Electric Railways Returned to New Haven Railroad—United States Attorney General Seeks Advice from Local Interests

Harry W. Daugherty, Attorney General of the United States, holding personal hearings at Hartford, Conn., during the week ended Dec. 17 indicated that he looked with favor on the proposal to return the Connecticut Company and the Boston & Maine Railroad to the ownership of the New York, New Haven & Hartford Railroad. Only one voice, that of Howell Cheney, Manchester, was raised in opposition to the plan. Scores of business and financial men, however, presented arguments why the securities of these companies ought to revert to the "New Haven."

THE Attorney General had previously announced that his decision would rest largely on the question of competition. To that he added that the burden of proof would be on those claiming that the properties involved were in competition.

With a statement that he wanted to know why the "New Haven" subsidiaries, any more than those or other railroads of the company, should be kept under government control, Mr. Daugherty gave so much encouragement to the scores of business men at the hearing that Vice-President and General Counsel Buckland of the "New Haven" was called upon for a statement and referred to the fact that the "court" was apparently with him.

Most of the subsidiaries of the "New Haven" were divorced from it seven years ago when the directors were forced by the Wilson Administration to consent to a federal court decree based on a suit brought by the Department of Justice on the ground that the "New Haven" had built up a monopoly in violation of the Sherman Anti-Trust Act.

In commenting on the situation the Attorney General said:

> I am familiar with this controversy. While I am unwilling to prejudice the situation, yet on the general proposition that transportation companies should be sustained, supported and extended. I have pronounced ideas. I am perfectly willing to listen to those who want to tell me that the Boston & Maine and the electric railway subsidiaries of the New Haven are not in competition, but the burden of proof will be on those who claim that they are competitive. I see no reason for discussing that point.
>
> I want to know from you, gentlemen, if you know of any reason why the government should maintain the supervision of this particular property under federal trustees any more than it should have supervision over any of the other railroads of the country. The situation is a little peculiar in New England. If the government can do anything that will be helpful to these properties, I am here to see what the government can do, but I am, of course, interested primarily in determining the legal aspect.

"We feel that, under the past administration, we have been in jail long enough" declared E. Kent Hubbard, Middletown. "We want to be free. Is there anyone here who would object to the government releasing control of the New Haven properties?"

Howell Cheney, Manchester, spoke as a representative of Cheney Brothers, largest silk manufacturers in the world. He said there was a grave question as to the advisability of bolstering up the credit of the "New Haven" by returning the Connecticut to its control. He said the Connecticut Company under an efficient board of trustees had been kept in good condition and its integrity had been maintained, while electric railways in other New England states had failed. This was due, he felt, to the policy of developing the entire system as one unit so as to make the strong parts carry along the weak parts. Mr. Cheney viewed with grave apprehension whether the return of the Connecticut Company would "avert the impending disaster to the New Haven." He thought that to a considerable extent the present favorable condition of the Connecticut Company was attributable to the management by the trustees. Mr. Cheney said he was not prepared to answer concerning state supervision. So far, he said, it has not helped. It has hindered. He favored a continuance of the federal trusteeship until matters approached stability. He didn't see how the return of the Connecticut Company could save the "New Haven," for its securities could not be hypothecated now.

Benjamin J. Spock, until recently chief counsel for the Connecticut Company, asked permission to answer Mr. Cheney. The Connecticut Company, he said, was not a going concern, but hopelessly bankrupt and had nothing to lose by any disaster that might befall the "New Haven." He pointed out that the Connecticut Company owed the State nearly $2,000,000 in back taxes and owed the New Haven nearly $4,000,000 in rentals.

Edward Milligan, a director of the New Haven road, said " a false impression would have been created by Mr. Cheney's remarks" were it not for the statement of Mr. Spock. The fact was, he said, that the Connecticut Company has had a big brother which has helped it. It is true, he added, "that the Connecticut Company has had a board of trustees of five admirable men, of which Mr. Cheney's brother is one member. If Mr. Cheney's arguments concerning the Connecticut Company are sound, then we'd better put the railroad in the hands of trustees. Those who own properties are usually best to manage them."

Louis F. Butler, president of the Travelers' Insurance Company, Hartford, said that company owns about $1,300,000 of the securities of the New Haven of various kinds, including 1,500 shares of stock. He said that the electric railways ought to be returned to the railroad and expressed the opinion that the New Haven itself was responsible for what advancement the Connecticut Company had made. In the first place, he said, if the electric railways were returned to the railroad, an unnecessary expense would be saved by the elimination of the salaries of the trustees. The chairman receives $7,500 a year and the others $6,000 each.

The hearing was continued at Boston, Mass., on Dec. 14.

The present federal trustees of the Connecticut Company are Judge Walter C. Noyes, New York; Morgan B. Brainard, Hartford, Conn.; Charles Cheney, Manchester; Leonard M. Daggett, New Haven, and Charles G. Sanford, Bridgeport. They constituted themselves a board of directors and made Lucius S. Storrs, New Haven, president. The trustees were appointed by the court without any solicitation on their part, being practically drafted for the service.

Judge Noyes, chairman of the board, is quoted as having said recently that he would be glad to be relieved of the responsibility of acting as a trustee should the Department of Justice at Washington see fit to change its present policy.

The return of the stock and management of the Connecticut Company to the "New Haven" road, or the termination otherwise of the federal control of the trolley company, was recommended in a special report of the Public Utilities Commission submitted to the 1921 session of the Connecticut Legislature after an exhaustive study of the electric railway problem. It was advised that the Attorney-General of Connecticut be directed to request the Department of Justice to reopen and modify that portion of the judgment decreeing the assignment and transfer of the capital stock of the Connecticut Company to a board of five federal trustees, largely on the ground that it was a Connecticut corporation doing solely an intrastate business. No action was taken by the Legislature.

Reorganization Plan Advanced

Plans for the reorganization of the Vincennes (Ind.) Street Railway, recently sold by order of the federal court, have been placed before the Public Service Commission in a petition asking the commission's approval of the plans and for authority to issue securities. The petition was sent to the commission from St. Louis by Samuel A. Mitchell, counsel for the Mercantile Trust Company. Retention of the 5-cent fare in Vincennes was said by the company to be a reasonable, adequate and just provision under all the existing circumstances.

The old company has $250,000 of bonds outstanding and $350,000 of stock, all common. The new company proposes to issue $200,000 in bonds and $100,000 in stock, all common. All of the bonds and stock of the old company known as the Vincennes Traction Company excepting four shares of the latter would be paid to George H. Armstrong, who bought the railway, which the petition values at $300,000. The new bonds would bear 6 per cent interest and would mature on Jan. 1, 1941, and be secured by mortgage on all of the property of the railway. This mortgage would be made in favor of the Mercantile Trust Company as trustee, and bond interest would be paid by the company from a fund created by $1,000 monthly payments made by the railway. For retirement of the bonds it is proposed that the railway company also pay $500 monthly to the trust company.

The property of the railway was purchased by George H. Armstrong, St. Louis, at a sale held by Charles Martindale, master in chancery, at the court house in Vincennes on Oct. 15. About two years ago the company was thrown into the hands of a receiver as the result of a suit in equity, an action of the Mercantile Trust Company. The company has been operated since that time by Edward C. Theobold as receiver.

Briefs on Depreciation Filed with I. C. C.

Two briefs were filed with the Interstate Commerce Commission on Nov. 22 upholding the right of the Washington Railway & Electric Company, Washington, D. C., to transfer jurisdiction over its depreciation charges from the District Public Utilities Commission to the Interstate Commerce Commission and one brief attacking such right.

The railway asks that the Interstate Commerce Commission take jurisdiction over the matter. It was supported in its stand by the American Electric Railway Association. The counter brief attacking the legality of the transfer was filed by Francis H. Stephens, corporation counsel for the District, and Conrad H. Syme, special counsel for the utilites commission.

The company's brief says that the jurisdiction of the Interstate Commerce Commission with respect to regulation of depreciation reserves and accounting of the Washington Railway & Electric Company extends to all property of the company used in rendering transportation service. It adds that the inevitable effect of depreciation rules promulgated by the local commission would be to make it impossible for the Washington Railway & Electric Company to continue to operate some of its lines which now run from points in Washington to points in Maryland.

All the time and money spent by the Public Utilities Commission in fixing valuations of street railways of the District will have been wasted if the Interstate Commerce Commission should take jurisdiction over the depreciation accounts of the companies, the brief filed by the Public Utilities Commission argued.

The brief of the American Electric Railway Association cites numerous instances and laws which are claimed to apply to the present case, and adds "more work remains to be done before correct rules, formulas and principles are evolved."

Filing of briefs followed a preliminary investigation which was held at Washington on Oct. 24 before Commissioner Eastman.

Opinion on Valuation Reversed

The Court of Appeals of the District of Columbia, recently reversed the opinion of the late Justice Gould, who upheld the valuation on the Potomac Electric Power Company by the Public Utilities Commission.

The majority opinion in objecting to the commission's valuation as of July 1, 1914, instead of Dec. 31, 1916, ruled that the present cost of reproduction is one of the necessary elements to be considered in fixing a fair and reasonable valuation.

The dissenting opinion of Chief Justice Smyth pointed out that the power company had failed to show that the commission's valuation was "inadequate, unreasonable or unlawful."

Unless this opinion should be reversed on appeal to the United States Supreme Court, the Potomac Electric Power Company will be entitled to the use of a fund of more than $1,500,000 which has accumulated under an order of Justice Gould in 1917 requiring the company to impound 2 cents out of each 10-cent collection from the consumer.

This order was amended twice, so that the company recently has been required only to impound 1½ cents.

Interurban Seeks to Abandon Routes

The Interurban Railway & Terminal Company, Cincinnati, Ohio, has applied to the State Public Utilities Commission for permission to abandon two existing routes. One line extends from Cincinnati to New Richmond, 17 miles, via Coney Island, and the other to Lebanon, 33 miles, via Norwood. In the spring of 1918 the company abandoned its line to Bethel.

C. M. Leslie is operating the lines as receiver and J. F. Egolf is the superintendent. In his application the receiver sets forth the deficits in operating revenues as follows: 1918, $84,253; 1919, $13,365; 1920, $20,344, and 1921, $18,911. The case has been set for hearing on Jan. 31.

Members of the Silverton Welfare Association, which suburb is on the Lebanon route, say that if the line is abandoned they will again appeal to the Cincinnati (Ohio) Traction Company to extend its service to the community.

Financial News Notes

Deficit Lowered on Boston "L".—The receipts of the Boston (Mass.) Elevated Railway for the month of October exceeded expenses by $133,178. This has reduced the deficit as of Nov. 1 to $209,245.

Abilene Service Resumed.—Operation of the electric railway in Abilene, Tex., has been resumed by the American Public Service Company, under a new agreement with the city of Abilene. Five miles of track are included in the system.

Bonds Extended at Increased Interest.—The Department of Public Utilities of Massachusetts has authorized the Springfield Street Railway to extend from Jan. 1, 1922, for five years $330,000 of 5 per cent gold bonds dated Jan. 1, 1902. The new interest rate will be 7 per cent.

Stockholders' Assents Received.—The Public Trustees of the Eastern Massachusetts Street Railway, Boston, Mass., have announced that assents to the readjustment plan recently suggested to the bondholders are coming in to them rapidly. Up to Nov. 26 a large majority of owners of the $13,000,000 had sent in their acceptances. This readjustment plan was explained in detail in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 12, page 880.

Tax Commission's Valuation Stands.—The Columbus Railway, Power & Light Company, Columbus, Ohio, is on the books of the state of Ohio for the sum of $17,825,190, a valuation placed upon it this year by the Ohio Tax Commission, in spite of energetic efforts on the part of the company to have the figure decreased. This is an increase of $727,660 over 1920, when the figure was $17,097,530, and a boost of $1,033,660 over 1919. As a final play in its attempt to get the valuation cut down the company filed suit in the Franklin County Common Pleas Court, but after a series of star chamber conferences with the commission it withdrew the suit.

Additional Stock Offered to North American Holders.—Stockholders of the North American Company, New York, N. Y., were notified on Dec. 5 of an offering at par of additional common stock in total amount of $10,422,400 par value, or 70 per cent of the common stock now outstanding. The offering is made in installments of $2,233,340, or 15 per cent, to be subscribed for on or before Jan. 3, 1922; $2,977,850, or 20 per cent, on or before Dec. 30, 1922; $2,977,850, or 20 per cent, on or before June 30, 1923, and $2,233,350, or 15 per cent on or before Dec. 31, 1923. Any stockholder who takes up a portion of one installment will have an option on an equivalent proportion of the succeeding installment. The $2,233,350 of stock offered for immediate subscription has been underwritten by Dillon, Read & Company, who will receive all option rights not availed of by the common stockholders or their transferees.

Segregation of Properties Proposed.—Holders of first mortgage 5 per cent. gold bonds, due June 1, 1933, of the Springfield (Ill.) Consolidated Railway have received notice from A. D. Mackie, vice-president and general manager of the corporation, that the corporation's franchise in Springfield expires in 1928, or five years prior to the maturity of the bonds, and estimating that $750,000 must be expended to put the property and equipment in condition to render adequate service. In readjustment of the situation the company recommends that the railway, gas and electric heating properties of the Springfield Consolidated Railway and Springfield Gas & Electric Company in Springfield, Ill., and the electric and heating properties which now serve De Kalb and Sycamore, Ill., be merged under the name of the Illinois Power Company. The old bondholders are asked to accept one of two offers for each $1,000 of bonds; either (a) one $1,000 new first mortgage 5 per cent gold bond of the Illinois Power Company, due June 1, 1933, and $100 cash or (b) $900 cash, plus the accrued interest on the present bond. The offer expires on Dec. 15, 1921, and the plan must be declared operative by Feb. 15, 1922.

$10,000,000 Public Service Bonds Offered.—The Public Service Corporation of New Jersey, Newark, N. J., has sold an issue of $10,000,000 of twenty-year 7-per cent bonds dated Dec. 1, 1921, to a syndicate composed of Drexel & Company, Bonbright & Company, Inc., and Clark, Dodge & Company, which were offered publicly on Dec. 9 at 98¾ and accrued interest yielding 7.10 per cent. Proceeds, together with additions from cash now in the treasury, will be used to pay off $12,500,000 notes maturing March 1, 1922. The new issue is a direct obligation of the corporation secured by $14,000,000 general mortgage sinking fund 5s, due 1959, and $5,000,000 capital stock of Public Service Electric Company, its subsidiary. Stock of the subsidiary for ten years has not paid less than 10 per cent annually. The net income of the Public Service Corporation for the year ended Oct. 31, 1921, was $11,747,285, more than three times annual interest requirements on funded debt including present issue.

Traffic and Transportation

Troy Fights Fare Advance

Constitutionality of Governor Miller's Public Service Commissions Law Attacked in Albany Court

Corporation Counsel Thomas H. Guy of Troy, N. Y., on Dec. 6 obtained from Supreme Court Justice Harold J. Hinman an alternative order of prohibition restraining the Public Service Commission from further consideration of the United Traction Company's application for an 8-cent fare. Mr. Guy attacked especially the constitutionality of section 49 of the public service commissions law covering rates on the constitutional ground that the Legislature is without power to delegate a power to others that it does not itself possess.

The order acted as a temporary stay on hearings or determinations of the Public Service Commission and will so stand until determined.

Appearance was had and arguments heard before Justice Hinman at a special term on Dec. 10. Mr. Guy laid special emphasis upon court decisions to the effect that where a right has been conferred by the constitution such right is not subject to the police (regulatory) powers of the state; that section 18 of Article III of the New York State Constitution provides: "But no law shall authorize the construction or operation of a street railroad except upon the condition that the consent of the owners of one-half in value of the property bounded on, and the consent also of the local authorities having control of, that portion of the street or highway upon which it is proposed to construct or operate such railroad be first obtained."

IMPORTANT LEGAL POINT INVOLVED

Justice Hinman's ruling on the question is expected to go to the Court of Appeals for final decision, unless the higher court passes on it in other proceedings where it has been raised before the Troy case is heard in the Appellate Division, Third Department, and reaches the Court of Appeals. The constitutionality of the amendment recently has been unanimously sustained by the Appellate Division, First Department, and a further appeal in the case has been taken to the Court of Appeals. Different departments of the Appellate Division have been known to decide the same point of law differently.

So important is the legal question involved that Justice Hinman said he would request Justice W. O. Howard to take over his unfinished trial term at Troy so he could give the order his exclusive time.

The United Traction Company operated in Troy under franchises granted by the city to its predecessors in which conditions were accepted limiting the fare to 5 cents and the Common Council refused to waive them to permit the company to charge an 8-cent fare when the rate was raised to this sum in Albany, where there is no franchise limitation.

In his argument Mr. Guy called attention to the constitutional provision of 1876 which made necessary the consent of local municipalities for construction or extension of street railroads and gave them the right of imposing conditions under which franchises may be exercised. The Troy franchises were granted under this authority, Mr. Guy said, and he argued that they became contracts which the Legislature could not impair or abrogate in the exercise of the police power of the state and that the amendment to the public service commissions law violated the constitution by so doing. He argued that the power of consent and the imposing of limitations having been exercised, there could be no construction of it that would make it ineffective.

The Court of Appeals in the Glens Falls case, the first of the rate cases, decided that the Legislature in conferring the power of regulation of railroad corporations and the rates to be charged by them, in 1907, to the Public Service Commission, gave with it authority to change or increase any rate that had been fixed by a state statute, but not where the rate was established or limited in the grant of a franchise by a municipality.

L. P. Jale, appearing for the commission, argued for the constitutionality of the amendment, saying that in giving the commission the power of changing all fare rates where necessary to prevent confiscation the Legislature was exercising a governmental function in the public interest. "It is as much to the public interest that rates may be increased as well as reduced," said Mr. Hale. "It is as important that the United Traction Company be allowed a profit on its investment that will enable it to give proper service in the city of Troy as that its citizens shall not be overcharged."

John T. MacLean, counsel for the United Traction Company, contended the limitation of fares contained in franchise grants by municipalities had been permitted by the State and were to continue in force until such time as it exercised its power to change them and that it had given such power to the Public Service Commission.

Should the courts decide the motion in favor of the petitioner, the entire force of the public service commissions law would be undermined and only a constitutional amendment could clothe it with the powers it is now assumed to possess.

Sacramento Given Choice in Fare Issue

Answering the appeal of the Pacific Gas & Electric Company, Sacramento, Cal., for increased fares, the State Railroad Commission recently presented three choices to the city.

The commission found justification for a 7-cent fare if all the present franchise requirements were lived up to. The present 6-cent rate could be retained if the city permitted certain rerouting, eliminated some early morning trips, and last, if the city should repeal the ordinance against "one-man" cars, a 5-cent fare would be authorized.

The city must decide by Feb. 1.

Commission States Limitations

California Body Defines Its Power to Stop the Operation of Auto Lines

If there is to be any fundamental change in the present policy of the State of California in regard to the use of the highway by motor transportation companies such change must come by direct legislative action or as a result of an initiative petition of voters, the State Railroad Commission declared on Nov. 25 in a letter discussing its relation to the subject. The letter was written to R. B. Swayne, San Francisco, in response to a suggestion by him that motor carriers should not be permitted to parallel railroad lines; further contending that this form of competition is unfair by reason of the fact that the motor companies make use of the highways built at public expense and that they do not pay taxes in the same proportion as the railroads.

The utility commission points out that it is acting within the limits of the power conferred upon it and in accordance with the legislative will, adding:

> Manifestly, if there is to be any change of fundamental State policy toward automobile transportation companies such change must come through legislative action. Ultimately the decision rests with the electors, expressing their will through their legislative representatives or directly by means of the initiative.

The letter follows in part:

> You will recall that motor transportation developed before there was any specific legislative enactment applicable to it. In that period it attained considerable proportions. The first control over this type of carrier resulted from a decision of the Supreme Court early in 1917, wherein it was held that motor operators acting as common carriers were included in the term transportation companies as used in the State constitution.
>
> Following the decision of the Supreme Court the Legislature at the 1917 session took the first step toward placing auto stage and truck transportation under State legislation. At this session what is known as Chapter 213, Statutes of 1917, was enacted, requiring all parties proposing to enter the motor transportation business after such date first to secure a certificate of public convenience and necessity from the Railroad Commission and also permits from the governing bodies of all political subdivisions through which they proposed to operate routes. Those operating exclusively within incorporated city limits were exempted from the act.
>
> At the 1919 session of the Legislature this act was amended, giving the Railroad Commission sole jurisdiction in the matter of certificates by eliminating the requirement of obtaining permits from local political subdivisions and broadening the act to include in addition to common carriers all persons or companies engaged in the business of transportation of persons or property for compensation over any public highway in this State between fixed termini or over a regular route.
>
> In transportation matters the policy of the commission is not different from its policy relating to other forms of public utility service. It protects existing utilities that are adequately serving the territory and are prepared to meet the demands as they arise. You will note that from an examination of the decisions of the commission many applications to enter the automobile field are denied because existent steam or electric facilities or both are adequate.
>
> In any discussion of the transportation problem the effect of the privately owned automobile upon established systems cannot be disregarded. At the present time there is in the State of California one privately owned car for every seven persons, and this means that the entire population of the State could be moved at one time by these cars alone. The same condition largely obtains in regard to automobile trucks, as nearly every farmer owns some kind of auto truck.

Interstate Fare Changed

Electric Line Ordered to Desist From Practicing Undue Prejudice Required by Franchise Grant

The Interstate Commerce Commission has just decided that a franchise contract entered into between the predecessor of the Pennsylvania-Ohio Power & Light Company, Youngstown, Ohio, and the village of Hubbard, Ohio, fixing rates between Youngstown and Hubbard is without effect where the rates so fixed result in unjust discrimination against interstate commerce. The Youngstown Company is ordered by the commission to increase these rates by putting into effect upon five days' notice a one-way cash fare of not less than 20 cents and a commutation rate of not less than $5 for fifty-four rides. In the words of the commission the company is directed "to cease and desist from practicing the undue prejudice, undue preference and advantage found to exist in the relation of intrastate and interstate passenger fares."

I. C. C. ASSUMED JURISDICTION

The present rates between the two points, established by a franchise ordinance of the village of Hubbard, are: Cash fare, 12 cents; round-trip ticket, 20 cents; special tickets good for twenty-two rides, $2, and fifty-four-ride commutation ticket, $3.80. No other rates on the Youngstown & Sharon line are affected by the decision.

In the report of the commission on the case (No. 12,123) it is pointed out that the interurban railway is approximately 14.5 miles in length between Youngstown and Sharon and that the maximum distances from Youngstown and Sharon to Hubbard are 8.75 miles and 7.18 miles respectively. The existing rates of fare between Youngstown and Hubbard were established in a franchise ordinance passed by the village of Hubbard in 1901, the same rates being prescribed between Hubbard and Sharon, excepting that the cash fare was 13 cents as compared with 12 cents between Youngstown and Hubbard.

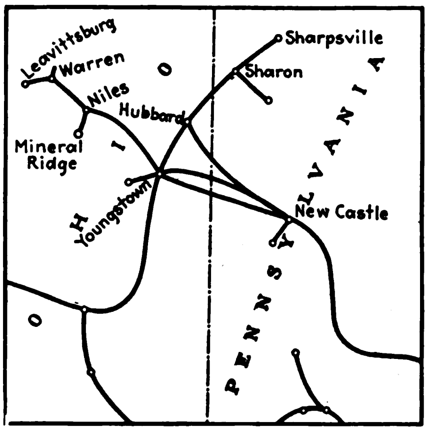
INCREASED FARE SCHEDULE IN EFFECT IN 1920

The report recites that effective on Feb. 15, 1920, by a tariff filed with the commission, the one-way fare between Hubbard and Sharon was increased to 20 cents, the price of fifty-four-ride commutation ticket to $5 and the round-trip and special tickets between these points were cancelled. A tariff subsequently filed with the commission proposed to establish the same fares between Hubbard and Youngstown as those between Hubbard and Sharon. It was also proposed to increase the one-way fare between Sharon and Youngstown from 30 cents to 35 cents and the fifty-four-ride commutation ticket between these points from $9 to $10. This tariff became effective on interstate travel on Oct. 1, 1920. The report continues:

> A tariff carrying the same fares was rejected by the Public Utilities Commission of Ohio in so far as it attempted an increase in the fares between Hubbard and Youngstown on the ground that it was without jurisdiction to allow the establishment of rates and charges in excess of those prescribed by the franchise contract. Refusals of the Public Utilities Commission of Ohio to allow increases of fares in similar cases have been sustained by the Supreme Court of Ohio. The petitioner shows that prior to filing this petition it and its predecessors exhausted all means through negotiation with the village of Hubbard and otherwise to obtain relief from the franchise fares between Hubbard and Youngstown, but without avail.

As to the contention of the village of Hubbard that the franchise was binding as to rates, the report of the commission says:

> The answer to this is that if the maintenance of fares fixed by a franchise contract results in unjust discrimination against interstate commerce, it is within our power to remove it by prescribing other and different intrastate fares.
>
> It is not shown that present interstate fares between Hubbard and Sharon or between Sharon and Youngstown are unreasonable. On the other hand, they appear to be relatively lower than fares maintained by other electric interurban railways in Ohio in the same general territory.
>
> We are of opinion and find that the interstate passenger cash and fifty-four-ride commutation fares between Sharon and Hubbard, also the interstate passenger fares between Sharon and Youngstown, are just and reasonable fares for interstate transportation between these points; and that the maintenance of corresponding intrastate fares between Hubbard and Youngstown lower than the just and reasonable interstate fares between Sharon and Hubbard has resulted and will result in undue prejudice to persons traveling in interstate commerce over the petitioner's line in the State of Ohio and between points in the State of Ohio and Sharon, Pa.; in undue preference and advantage to persons traveling intrastate between points in Ohio; and in unjust discrimination against interstate commerce.
>
> We further find that, whether the aforesaid passenger fares pertain to transportation in interstate commerce or to transportation in intrastate commerce, the transportation services are performed by the petitioner under substantially similar circumstances and conditions; and that said undue prejudice and preference and unjust discrimination can and should be removed by establishing intrastate passenger cash and fifty-four-ride commutation fares between Hubbard and Youngstown not less than the interstate passenger fares herein found reasonable between Hubbard and Sharon.



MAP SHOWING LOCATION OF HUBBARD AND YOUNGSTOWN

In 1917 the company asked the Council of the village of Hubbard for a relief from the fare provision of its franchise fixing the rates between Youngstown and Hubbard. It received no relief from the Council and then applied to the Public Utilities Commission of Ohio. The state commission decided that it had no authority to disturb an interurban rate fixed by franchise. A mandamus suit was next brought in the Supreme Court of Ohio to compel the Public Utilities Commission to assume jurisdiction. The Supreme Court decided this mandamus case against the contention of the railway. Finally in 1919 the company filed a petition with the Interstate Commerce Commission under the section of the transportation act of 1919, which gives carriers the right to complain of discrimination.

New Jersey and Michigan Fare Cases Considered by Supreme Court

Further arguments will have to be presented to the Supreme Court of the United States before it will rule in the case of the Board of Public Utility Commissioners of New Jersey vs. the Public Service Railway of that State. The court on Dec. 12 denied a motion to take up the case for argument. The case involves an injunction granted to the railway which restrained the Public Utility Commission from continuing in effect its order for a 7-cent base fare with a charge of 2 cents for each initial transfer. The motion was denied without prejudice and a further effort may be made to interest the Supreme Court.

The Supreme Court dismissed for want of jurisdiction the case brought against the Detroit United Railway by the townships of Avon, Brandon, Farmington, Oxford, Orion, Royal Oak, Troy and West Bloomfield and the villages of Birmingham, Farmington, Orion, Oxford and Rochester and the city of Pontiac. The court was not convinced that any federal question was involved in the controversy as to the right of the railway to charge rates of fare higher than those agreed upon in its franchises.

Interurban Bus Operators Must Pay

The City Commissioners of Dayton, Ohio, recently enacted a bus ordinance requiring all jitneys and buses transporting passengers in the city to pay a license fee, ranging from $125 to $200 per annum. The latter is for buses carrying fifteen or more passengers and became effective Oct. 1, 1921.

The question then came up as to interurban buses operating in and out of the city, in which one commissioner favored an amendment to exempt the interurban bus from paying the license fee. Several of the interurban managers voiced their sentiment in the matter, protesting the passage of the amendment on the ground that it would interfere with the traffic of the interurban lines, so the majority of the commission went on record as favoring voting down the amendment which will not exempt the interurban bus operators from paying a license fee. In the future bus operators transporting passengers in and out of the city must pay a special license fee.

People Make Request

The Hagerstown & Frederick Railway, Hagerstown, Md., has recently had a number of requests to have its loop cars run all one way, going out North Potomac Street, and returning to the square by way of Antietam Street. So insistent has this request, or almost a demand, become, that the management of the railway has decided that it will let the patrons of the cars settle it. It is proposed to have all users of the cars vote upon their preference. Ballots may be secured from the conductors of the cars.

Under the present system, cars leave the square every fifteen minutes and go in either direction around the loop, passing at the Fairground gates. Under the proposed change it would mean that the cars would leave the Public Square every seven and one-half minutes and go out North Potomac Street.

State and Interstate Fares Must Be Equal

By an order of the Interstate Commerce Commission dated Nov. 7, 1921, just published, the Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio, is granted the right to establish fares for intrastate service equal to the fares charged for interstate service.

The hearing was the result of a petition of the traction company, which operates an interurban line between Vanport, Pa., and Steubenville, Ohio, and intermediate points, and a local service between points within Ohio, and a branch line to Chester, W. Va. The lower interstate fares charged by the company had the effect of practically denying to the traction company the use of its interstate fares, for by declaring his destination as the state line and paying the required intrastate fare a passenger could stay on the car and pay the intrastate fare after crossing into the other state.

The company stated that because of the low intrastate fares it was unable to secure sufficient revenue to pay the cost of operating and maintaining its railway and taxes, that its bond interest was in default of payment for more than a year and that the line needed repairs which the company could not make.

The finding of the commission was that the interstate fares were just and reasonable and that:

> Maintenance of intrastate fares between the same points lower than the just and reasonable interstate fares has resulted and will result in undue prejudice to persons traveling in interstate commerce over the traction company's lines in the state of Pennsylvania; in undue preference of and advantage to persons traveling intrastate between points in Ohio, and in unjust discrimination against interstate commerce. . . . and that the undue prejudice and preference and unjust discrimination can and should be removed by establishing intrastate passenger fares not less than the interstate passenger fares.

The new rates will go into effect on Jan. 6, 1922, according to the order of the commission, No. 12,092.

Old Bus Controversy in Wheeling Renewed

When the application of the Ultimate Bus Company, which has been operating buses between Wheeling and Martins Ferry and Bellaire, Ohio, was read in Council in Wheeling recently the Wheeling Traction Company filed a protest. The railway contended that the City Council had no jurisdiction; that the applicant was not operating solely in the city of Wheeling, but in two states, and that the application could be referred only to the State Road Commission of West Virginia.

The railway contended further that the buses were not a necessity; that they were not able to carry all the traffic over this route; that the traction company had handled and could handle all the traffic; that if the buses continued to operate the traction company would have to stop operating; that the capital of the applicant was less than $40,000; that the bus line could not assure Council what length of time it would continue to operate, and that already the application made by it to the State Road Commission of West Virginia had been turned down on the ground that it was not a public necessity.

A committee of three was appointed to investigate the application. The controversy between the Wheeling Traction Company and the Ultimate Bus Company has been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Railroad Taxation Provides Free Roads for Motor Transportation

Furnishing almost free a roadway for motor transportation lines out of money provided by taxation of the railroads was declared an injustice by C. A. Whitmore of the State Highway Commission of California in a speech made recently at Redlands, Cal. He said in part:

> A peculiar paradox exists in California. We raise the money to meet highway bonds and interest from taxes on railroads and public utilities. With this money we build highways which are now used by automobile transportation lines in competition with the railroads. The competition reduces the revenues of the railroads and reduces the income which accrues to the state, with a part of which it builds highways. The state furnished almost free a roadway for one common carrier out of money provided by taxation on another. Obviously this situation cannot continue. Highways cannot be maintained under circumstances like these.
>
> I hold no brief for the railroads but they deserve a fair deal. Auto trucks have taken over much of the short hauling. Sixty-two per cent of the freight between Bakersfield and Los Angeles is hauled over the Ridge road in motor trucks. Yet because this highway is showing in a few places the stress of this tremendous traffic, our critics are claiming improper construction.

Illinois Committee Advises Advertising

Newspaper advertising at this time particularly is being recommended to all of the utility managers on the mailing list of the Illinois Committee on Public Utility Information for two reasons, which the committee sets forth as follows: (1) Because of the industrial depression the advertising in local papers has fallen off tremendously, which means that utility advertising will get "a better play" and that the newspaper editor will extend himself in helping the utility formulate such advertising as will get results; (2) because public utility companies are in the same fix as other businesses. Gross sales have fallen off because of the depression, but overhead expense is going on. This combination makes difficult the earning of profits. The solution is to get after business, and one of the best means of doing this is through newspaper advertising. The committee makes the reservation that it does not advocate advertising campaigns, but comments that public utility advertising should be continuous; that it should have a well thought out, carefully planned day to day and week to week effort in which the most constructive ability available should be employed and the best advice obtained.

Ohio Cities Want Buses

Since the Northern Ohio Traction & Light Company, Akron, Ohio, decided to buy busses to be operated in the city of Akron, applications have come from both Canton and Massillon petitioning the company for bus service in those cities.

The November issue of *Northern Light*, the official publication of the company, says:

> Should the operation of the buses purchased prove a success, and the necessity of the cities demand it, there is little doubt that lines will be established in both Canton and Massillon.

No Immediate Rate Reduction Is Probable

Reductions of public utility rates in Indiana to correspond with the marked decline in prices of other commodities cannot be expected at once by utility patrons because the rates were not advanced commensurately with the general increase of prices during the war period. This statement is contained in the annual report of the Indiana Public Service Commission, which has been completed by Frank B. Faris, examiner for the commission. The report says:

> The past year has been one of rather marked decline in most commodity prices, and has been characterized by a business depression. It is imposible, however, for the Commission radically to reduce utility rates to correspond to the decrease in farm products, etc. During the past year there were only 538 formal cases filed as against 827 the year before, a reduction of 35 per cent.
>
> There is, however, a sound distinction to be made between the cessation of demand for increased rates on the part of the utilities and a slashing of utility rates on the part of the Commission. Utility rates did not increase in proportion to, or contemporaneously with, the rapid increase of prices during the year 1919 and a part of 1920. Had utility rates been increased in direct proportion to, and simultaneously with, all commodity prices and labor costs, they could have been reduced in direct proportion to the decrease in these elements in utility expense.

In another part of the report, however, the commission expresses the hope that the economic readjustment will work for a reduction of rates commensurate with utility costs.

The commission says it is a source of satisfaction to observe that prices of materials and labor have started to decline, and that this ultimately will result in better public service, a more liberal policy of making public utility extensions and finally a reduction in rates commensurate with the reduction in cost of utility service.

One-Man Cars Indorsed in New Hampshire

The New Hampshire Public Service Commission has indorsed the one-man car. The question came before the commission in the form of petitions, asking the commission to forbid the use of these cars on the Concord Electric Railways. The finding of the commission contains the following statement:

> We find that the petitioners have entirely failed to prove their allegations to the effect that the one-man cars are unsafe or that the service rendered by them is inadequate and unreasonable.
>
> The commission's consent was given to the operation of these cars before they were installed. This was done in the interest of economy. It results in the saving of the wages of one man on each car operated, although the motorman is paid 5 cents an hour additional for collecting the fares. The public gets the direct benefit of this economy because the less the operating expenses the less the public is required to pay in fares. The crying need of street railway companies today is reduction in operating expenses. Rates have been increased to a point now that is burdensome. To increase revenue by a further raise in rates is impracticable. The tendency should be downward and not upward. The one-man car furnishes the best solution for this difficult problem thus far discovered. Its use is increasing and bids fair in a short time to become universal wherever it can be used to advantage and reasonably accommodate the public .
>
> The objection of the public to these one-man cars, because of whim, prejudice or misapprehension of the true facts, does not justify us, nor would it be in the interest of the public itself to order the two-man cars restored. The petition is accordingly denied.

Wants Bus Company to Fulfill Contract

Mandamus proceedings have been brought by twenty residents of the Cowen Park district of Seattle, Wash., to compel the Sound Transit Company to operate its Roosevelt Heights Stage line. Hearing on this suit has been postponed for one week by Judge J. T. Ronald of the Superior Court. The city of Seattle is represented by first Assistant Corporation Counsel J. L. Kennedy, who is appearing as a "friend of the court," since the municipal corporation is not a party to the suit.

The company's certificate of necessity was issued under the 1921 state law, which provided that all auto transportation companies who were operating buses on or before Jan. 21 of the same year, must be permitted to continue that operation. Mr. Kennedy alleges that the company, as a corporation, was not operating buses at that time, and stated that the city could produce affidavits to prove this contention. The Sound Transit Company began operations when certificate was issued, but when the city secured an injunction preventing the buses from picking up passengers inside the city limits, the operation was discontinued, leaving the Cowen Park district without transportation of any kind.

In the meantime, the company has pending in the Thurston County Superior Court an application for a review of the action of the state department of public works in inserting in the company's certificate of necessity a clause placing the Roosevelt Heights stages under the jurisdiction of the city's jitney regulatory ordinance.

Transportation News Notes

Bus Line Proposed.—Minot Cab Company, Minot, N. D., is planning a passenger auto line service between Bismarck and Minot.

Two Million Motor Vehicles Produced.—In 1920 there were 2,205,197 motor vehicles produced in the United States. Of this number 1,883,158 were passenger cars and 322,039 were trucks.

Seeks Franchise.—The Citizens' Bus Company, Little Rock, Ark., has recently been organized and has asked the City Council for a franchise to operate buses in the western portion of the city.

Bus and Truck Service Arranged.—The Shore Transportation Company, Salisbury, Md., will establish a freight and passenger service by auto buses and trucks on the eastern shore of the highways of the State of Maryland.

Petition to Use Texas Road.—John H. Kirby, Houston, Tex., and his associates who are promoting an interurban line from Houston to Seabrook, a resort on the bay shore about 20 miles from Houston, have asked the City Council for permission to use the Municipal Belt Railway from Harrisburg to Pasadena as a portion of the track of the interurban.

Restrained from Advancing Fares.—Judge D. M. Anderson in the District Court of Ottumwa, Ia., granted a temporary injunction on Nov. 29 restraining the Ottumwa Railway & Light Company from enforcing an increase in fares from 5 to 7 cents. The company had previously announced that beginning Dec. 1 the new rates would take effect.

Cancels Application.—The Southern Pacific Company, Portland, Ore., has notified the Public Service Commission that it has canceled its application for an increase of fares on the electric railway lines of West Linn. The company had asked for an increase from 5 to 8 cents. Applications for increased fares on the lines of Salem and Eugene, owned by the Southern Pacific Company, have not been withdrawn.

Commission Reiterates Opinion.—The New York Public Service Commission has denied the application of the New York State Railways for a reopening of the order dismissing the Company's application for a higher rate of fare than 6 cents in the city of Utica. The opinion of the commission in this case was reviewed at length in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 24, page 535.

Bus Company Formed.—The Transit Company, Dover, Del., a corporation to provide motor transportation for both passengers and freight, has been organized among the residents of Central and Lower Delaware. The officers are: President, James H. Wheatley, Dover; vice-presidents, Dr. W. F. Hoey, Frederica, and Ralph E. Staats, Smyrna; secretary, Jefferson Cooper, Cheswold. The corporation hopes to have its lines in operation by 1922.

Conference on Fares in Pittsfield.—Lucius S. Storrs, vice-president of the Berkshire Street Railway, met the special transportation committee of the Chamber of Commerce of Pittsfield, Mass., recently and for the second time went over the fare problem in Pittsfield and Dalton. It is said that Mr. Storrs is disposed to try out a flat 10-cent fare in Pittsfield, with transfer privileges and zone elimination as recommended by the committee.

Wants to Manufacture Trackless Car.—Superintendent of Railways D. W. Henderson, of the Seattle (Wash.) Municipal Railway lines, has recommended to the City Council that the city manufacture a trackless trolley car for a trial on the municipal lines. Superintendent Henderson reported that manufacturers of trackless trolleys had informed him that the cost of sending a car for trial purposes in Seattle would be prohibitive.

New Terminal In Use.—More than 80,000 persons in a day of eighteen hours are now making use of the Dixie Terminal, Cincinnati, Ohio, in order to board cars of the South Covington & Cincinnati Street Railway for various points in Kentucky. The official turnstile figures for Saturday, Dec. 3, show 34,119 persons went through in one direction in a twelve-hour period and 40,013 in a full day's run. The story on the Dixie Terminal was told at length in the ELECTRIC RAILWAY JOURNAL, issue of Nov. 12, page 865.

Reduced Fares for All Schools.—A decision granting children attending private and convent schools the benefit of the reduced fare ordinance, enacted several months ago, was handed down by Judge Thomas H. Darby in the Hamilton County Common Pleas Court. The decision orders the Cincinnati (Ohio) Traction Company to sell the 5-cent tickets to the convent school children between the prescribed ages of ten and eighteen years. Judge Darby in his decision said that the testimony tended to show that the courses of study in the convent schools are similar to those in the public schools and that the attendance at these is accepted by the school authorities in lieu of attendance at the public schools.

To Comply with Commission Finding.—In accordance with the finding of the Interstate Commerce Commission in the case of the Louisville & Northern Railway & Lighting Company, Louisville, Ky., the company will soon put in effect a new schedule of rates on commutation tickets between Louisville and New Albany and Louisville and Jeffersonville. This announcement was made by counsel for the company. The commission, as reported in the ELECTRIC RAILWAY JOURNAL for Dec. 10, 1921, held that the 10-cent passenger fare between Louisville and New Albany was unreasonable, as well as a 9-cent fare for commutation tickets.

City Appeals Recent Judgment.—The city of Muncie, Ind., through John McPhee, city attorney, has filed in Circuit Court a transcript for an appeal from a recent judgment in City Court which ruled Muncie's so-called anti-jitney ordinance invalid. The ordinance seeks to make it unlawful for motor buses to use the streets in which street cars operate. William A. McClellan, judge of the City Court, ruled the ordinance was class legislation and therefore unconstitutional. The ordinance was passed at the instance of the Indiana Union Traction Company, which asserted it was operating its local street car system at a loss, because of jitney bus competition.

State Control for Rhode Island Buses.—State control of jitneys and buses and the limitation of their operation to routes serving the public convenience or necessity will be asked at the approaching session of the Rhode Island General Assembly. Associated interests of the United Electric Railways, Providence, R. I., are behind the demand. The proposed bill will be based upon the Connecticut law, which became effective last April, and will take control from the cities and place it with the Public Utilities Commission. The Connecticut law requires that the applicant for a license must prove that the proposed service is required for the public convenience or necessity.

Are Trackless Cars Motor Buses?—The City Electric Company, Albuquerque, N. M., has stopped operation of trackless trolleys until a decision has been rendered by the district court. G. Roslington, president of the property, says that the action of the company in discontinuing the line was prompted by the recent ruling of Judge W. W. McClellan that a trackless car is an automobile and under the motor vehicle law must carry a state license tag. Mr. Roslington in arguing the matter before District Attorney declared that he should be permitted to operate the trackless cars without an auto license because of his franchise which, he said, allowed him to operate street cars "by electricity or any other improvement thereon." Mr. Mabry, contending for the State, said that a franchise the company might hold would not overrule every law which the state might make.

Personal Mention

Former Mayor in Control

Judge Holland, a Man of Proved Executive Ability, Heads Dallas Railway

Judge William M. Holland, former Mayor of Dallas, Tex., will assume the duties of president of the Dallas (Tex.) Railway on Jan. 1, 1922. He was elected by the directors at a meeting held in Dallas on Dec. 7.

Much gratification has been expressed by residents of Dallas over the election of a Dallas man to head the electric railway. Judge Holland succeeds the late Col. J. F. Strickland, who was also president of the Texas Electric Railway and a number of other electric companies. Under the reorganization that is now taking place, new presidents are being elected for each company.

Judge Holland is recognized throughout Texas as an attorney of marked ability. He was for four years judge of the Dallas County Court and served as Mayor of the city of Dallas for the four years from 1911 to 1915. His relations with the utilities of the city during his administration proved that he had an insight into the affairs of these companies that assured fair treatment both for them and for the people of the city.

Since leaving the Mayor's office he has been engaged in the practice of law in Dallas. He has not had experience as an executive of traction companies and his only relation with such companies, except as that of an attorney, was while he served as Mayor. Judge Holland was also elected a member of the board of directors. He previously had served on the directorate.

It is announced that Richard Meriwether will remain as vice-president and general manager of the company, and C. W. Hobson will remain as chairman of the board of directors.

Addressing the board of directors upon being notified of his election, Judge Holland signified his acceptance of the position in the following language.

> It shall be my purpose as president of the Dallas Railway, co-operating with its directors, officers and employees, to give the people of Dallas the best service possible for the revenue received. I realize fully that those who are intrusted with the management of our street railway company have a difficult job.
>
> I believe that with a policy of fairness and frankness and a spirit of toleration on both sides, the electric railway of Dallas can operate with a minimum of misunderstandings between it and the public and the public's representatives—the Mayor and Commissioners.
>
> I do know that the growth and prosperity of every modern American city is dependent upon its street car system. Under the able leadership of Colonel Strickland, who was a man of extraordinary talents, great progress was made in our Dallas company. Much remains to be done. I hope to be instrumental in still bettering the service until Dallas shall have in fact a metropolitan electric railway system."

The board of directors made the following statement:

> The directors of the Dallas Railway, in considering the selection of a president for the company, both as citizens of the city of Dallas and as directors of the company, concluded the successor to the late Colonel Strickland should be a local man. This conclusion was heartily indorsed by the nonresident stockholders, both feeling that by such determination would be extended and increased, the good feeling between the public and the railway. . . .
>
> Judge Holland is well-known to all the citizens of Dallas. His record as Mayor for two terms thoroughly established his executive capacity as a man of unquestioned integrity, thoroughly honest in all things, and highly capable. Judge Holland becomes the president of this company without obligation to either the public or to the corporation, except to do justice to both parties, and we feel that both interests will be impartially guarded and conducted. His record as Mayor of this city bears the imprint of fairness and ability which will be of great service to the public and all interests concerned.

When Judge Holland takes up his duties on Jan. 1, 1922, he will find a huge accumulated deficit in earnings as authorized under the franchise granted the Strickland-Hobson interests in 1917. This franchise authorized a net return of 7 per cent on the fixed valuation of the property. Statistics show that the earnings have been 5.32 per cent.

JUDGE WILLIAM M. HOLLAND

The company has operated under the franchise for fifty months and its net earnings up to Nov. 30, 1921, amounted to $1,645,089, leaving a deficit in authorized earnings of $599,475. Total earnings during this period amount to $10,405,344, while operating costs have amounted to $8,760,254. The total value of the company's property now is $9,407,889, as fixed by the franchise for rate-making purposes.

Mr. Dalton Resigns as Manager of Idaho Company

H. E. Dalton, general manager of the Boise Valley Traction Company, Boise, Idaho, for several years, has resigned his position and F. L. Ring, traffic manager of the line since last May has been named as manager in his place.

The resignation of Mr. Dalton was placed in the hands of the directors some time ago, but the change was made but recently. Mr. Dalton has large private interests of his own which require his entire attention and it was for that reason he left the company.

Previous to his joining the operating staff of the Boise Valley Traction Company in 1908, Mr. Dalton was for several years superintendent of the Louisville & Southern Indiana Traction Company, New Albany, Ind.

His successor, Mr. Ring, has had considerable experience in electric railway operations and is entirely familiar with the business he takes over as he has been next in charge to Mr. Dalton for some time.

Charles Day President of Former Ohio Electric Subsidiary

Charles Day, of the firm of Day & Zimmerman, Philadelphia, Pa., was elected president of the Indiana, Columbus & Eastern Traction Company, Cincinnati, Ohio, at a meeting of the directors held on Dec. 8. Mr. Day succeeds J. H. Sundmaker, of Cincinnati, as president and director. Mr. Sundmaker severed his connections with the company some time ago, opening an office in Cincinnati for special consulting work.

The Indiana, Columbus & Eastern Traction Company was a part of the Ohio Electric Railway system until the dissolution of the latter by the Federal Court some time ago on application of the receiver.

Mr. Plimpton Associate Editor on "Bus Transportation"

R. E. Plimpton has joined the staff of the ELECTRIC RAILWAY JOURNAL and its supplement, BUS TRANSPORTATION, on which he will be an associate editor. Mr. Plimpton will devote particular attention to the writing and preparation of articles treating more particularly with the technical and engineering phases of automotive equipment. On ELECTRIC RAILWAY JOURNAL Mr. Plimpton will handle the subject of auxiliary motor truck freight service to electric railways and also take charge of the statistical work, in which he has had much experience.

Mr. Plimpton has held positions in both editorial and advertising work on several papers. In becoming a member of the staff of ELECTRIC RAILWAY JOURNAL and BUS TRANSPORTATION he rejoins the McGraw-Hill Company. He was formerly with *Power*, from the editorial staff of which he resigned in 1915 to accept a position as publication manager for the Society of Automotive Engineers. While both advertising manager and editor of the society's publication he was responsible for changing it from a small monthly bulletin to the sizable paper that it is at present. In 1918 he joined the Motor Transport Corps and at the end of the war wrote a history of the engineering activities in motor transport as developed abroad by this country. More recently he has been associated with the advertising agencies of George H. Gibson, Newall-Emmett Company and the Wales Advertising Company.

W. R. Sebree has been chosen president of the Caldwell (Idaho) Traction Company, formerly in the hands of Receiver C. D. Purkhiser, who is now the general manager. W. A. Stone has been elected secretary.

E. C. Van Diest has again taken charge of the affairs of the Intermountain Railway, Light & Power Company Colorado Springs, Col., as vice-president and general manager, to replace E. J. Condon, Jr., who recently resigned.

John Mayhan, master mechanic Danville Street Railway & Light Company, Danville, Ill., has been appointed electrical superintendent of the Spokane & Eastern Railway & Power Company, Spokane, Wash. In this new position he will have charge of all rolling stock, also the powerhouse, substations and overhead. This company operates several electric locomotives and handles freight. Mr. Mayhan was at one time construction engineer for this company. He will be succeeded at Danville by C. E. Walters, who has been serving as general foreman.

John S. Bleecker, formerly general manager of the New Orleans Railway & Light Company, New Orleans, La., and subsequently general manager of the Myles Salt Company, which is located near New Orleans, has resigned to go into business in New Orleans. Mr. Bleecker was for two years associated with the latter company, which owns and operates the largest salt mine in the world. Mr. Blecker went to New Orleans in 1919 from Columbus, Ga., where he was general manager for Stone & Webster of the Columbus Electric Company and the Columbus Railroad Company.

H. O. Garman, chief engineer for the Indiana Public Service Commission, has resigned that position, effective Dec. 31. Mr. Garman became consulting engineer for the Indiana Railroad Commission when that department was created in 1907. Later, when the Indiana Railroad Commission became the Indiana Public Service Commission, he was retained as head of the engineering staff. He has served on the commission fourteen years and under five different Governors. He may be succeeded, temporarily at least, by Earl J. Carter, assistant to the chief engineer. He expects to give his entire time after Jan. 1 to private interests.

Obituary

John I. Loftis, inspector for the Georgia Railway & Power Company, Atlanta, Ga., died recently. Mr. Loftis had been connected with the company for thirty-two years.

Clarence E. Rood, sales manager of the Gould Coupler Company, New York, died on Dec. 11 after a brief illness. Most of his business connections had been in the railway field. At one time he was a member of the firm of Rudd & Brown, Buffalo, manufacturers of car wheels, and later operated his own malleable iron works in Lancaster, Pa. He has been connected with the Gould Coupler Company in the sales department for the past twelve or thirteen years. He had an exceptionally large circle of acquaintances in both the steam and electric railway field.

Hugh E. Crilly, an electric railway builder well-known because of the pioneer construction work he did in Eastern Pennsylvania, died in Allentown, Pa., on Dec. 13. He was the builder of the first electric railway in Allentown in 1891. During the next few years he constructed and financed himself numerous other undertakings, many of which he sold on completion. Among the larger lines built by him were interurbans around Lancaster, Pa., and a large section of the urban lines in Reading, Pa. Mr. Crilly was born in Ireland in 1852. He came to the United States in early manhood, settling in Lawrence, Mass., later going to Pennsylvania, where he became one of the best known business men in the state.

W. Caryl Ely Dead

Former Head of International Railway and of the American Association Stricken With Heart Failure

W. Caryl Ely, president of the American Electric Railway Association from 1904 to 1906 and for many years before and after those dates an active factor in the councils of the association, died suddenly on Dec. 14 of heart failure. Only the day previous Mr. Ely had lunched at the Engineers Club in New York among friends and associates who had known him for many years. News of his death will come to his many friends in the electric railway business in the United States and Canada as a great shock just as it did to his associates in Barron G. Collier, Inc., of which he had long been vice-president and in the affairs of which he had been active almost to his last hour.

When president of the American Electric Railway Association Mr. Ely was perhaps the principal factor in laying the foundation for the association organization as it now stands, with its various activities as a real national body lending constant aid the year round to the companies within its membership. In association councils, as in everything else that he touched, Mr. Ely was a real leader who saw long before others did some of the problems which have recently caused the industry its greatest concern. He was one of the very early advocates of the policy of frankness with the public which has lately come to be accepted as not only advisable, but absolutely necessary to the future welfare of the industry.

W. CARYL ELY

Mr. Ely was a man of prodigious enterprise. He was perhaps best known among railway men as the former head of the International Railway, Buffalo, and for his work with the Collier organization, but these were only a small part of the activities to which Mr. Ely turned his attention from time to time. To his foresight, courage and determination very largely stands the achievement of the perfection of the noiseless typewriter. He early saw the need for a machine of this kind, and when others doubted he backed the enterprise with all the financial resources at his command. Always interested in public affairs, Mr. Ely took a very prominent part in furthering the plans for the Pan-American Exposition in Buffalo, and then gave of his time from his many other interests to serve as a director and member of the executive committee of the exposition and as chairman of the transportation committee of the exposition. Another important work by him in the interest of the public was his service in the Legislature of New York, in which body he led the Democratic forces when Theodore Roosevelt was a member of that body. Mr. Ely and Mr. Roosevelt disagreed fundamentally on many political doctrines, but there grew up between them a mutual respect which developed into life-long friendship. Mr. Ely's charm of manner and unvariable courtesy and consideration for others endeared him to his many friends. At the same time his sound judgment and forensic ability made him a natural leader among men.

It is impossible to do more than sketch Mr. Ely's career and to refer briefly to the more important of his multifarious business activities. He was born in Middlefield, Otsego County, N. Y., on Feb. 15, 1856, and was educated in the common schools and at Cooperstown, N. Y., and Cornell University. He studied law and was admitted to the bar at Ithaca, N. Y., in 1882 and engaged in practice at East Worcester, N. Y. In 1885 he removed to Niagara Falls, N. Y. He afterward established the firm of Ely & Dudley and later that of Ely, Dudley & Cohn. In 1899 he gave up the practice of law to become president of the International Traction Company, Buffalo, N. Y., and the International Railway and removed from Niagara Falls to Buffalo. In 1891 he was nominated by his party for justice of the Supreme Court and from 1893 to 1896 he was treasurer of the Democratic State committee.

During Mr. Ely's residence at Niagara Falls, he was actively identified with numerous business enterprises. He was one of the organizers of the Niagara Falls Power Company and was identified with the Buffalo-Niagara Falls Electric Railway, being the first president of that company. He also had much to do with the formation of the Carter-Crume Company, Ltd., and William A. Rogers, Ltd. In the fall of 1898 and spring of 1899 Mr. Ely was active in forming a plan of combining into one system the electric railways in and between Buffalo, Niagara Falls, Tonawanda, Lockport and adjoining towns, and uniting them with the Niagara Falls Park & River Railway on the Canadian side by means of the steel arch bridge at Niagara Falls and the suspension bridge between Lewiston and Queenston. A short time later the International Traction Company and the International Railway were formed, of which companies Mr. Ely became president, serving in that capacity until March, 1905. For six years previous to 1910 Mr. Ely was president of the Ohio Valley Finance Company, and engaged in the construction and operation of electric railway and electric lighting properties in the Ohio valley between Pittsburg and Wheeling. Among the other companies in which he was interested there were the East Liverpool Traction & Light Company, the Ohio River Passenger Company, and the Steubenville & East Liverpool Railway & Light Company. He was a member of the Automobile Club of America and the Metropolitan, National Democratic, Transportation, Engineers and Cornell Clubs of New York, and also of the Cornellian Council.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Ten per Cent Cut on Northern White Cedar Poles

Pole producers have published a cut on Northern White cedar poles, effective Dec. 1, which makes a difference in delivered cost of from 5 to 10 per cent, according to size. The decrease was made in order to bring prices on the Northern poles into line with those on Western poles, which had been reduced during the early part of November: Prices on Northern white cedar poles, f.o.b. New York, are as follows: 40-ft., 8-in., $16.50; 40-ft., 7-in., $14.35; 35-ft., 8-in., $14.10; 35-ft., 7-in., $11.85; 30-ft., 7-in., $8.55; 30-ft., 6-in., $6.80; 25-ft., 7-in., $6.80; 25-ft., 6-in., $5.05. There has been an increase of 10 to 15 cents per pole on Western red cedars within the last few days to take care of changing through freight rates.

Demand for the Northern white cedar pole in the East is normally small. The main supply goes to the Middle West. Stocks are good and immediate deliveries can be made. Cross-arm quotations have been reduced several times in the last few months, and producers state that prices are now as low as possible. Some hope has been placed in a reduction of freight rates, but even if these were down to 1913 levels it would make only about 10 per cent difference in delivered prices.

Substantial Reduction in Line Hardware Prices

Reductions on line hardware of all sorts have been announced. New net prices quoted by a representative manufacturer include suspension-insulator fittings, pierce-forged steel pins for wood and steel arms, cross-arm saddles, centering washers, pole-top bracket, steel pins, clamp pins and clamps, wood-top pins, ridge irons, angle and standard cross-arm braces, through, machine, spacing and eye bolts, washers, strain plates, anchor of guyrods, pole steps, turnbuckles and tools. The average reduction is approximately 10 per cent and is the second since July 1, the other having been made Sept. 1.

Manufacturers state that the drop was put into effect in an effort to stimulate the market for line material and that some increase in demand has been noted. Many central stations are well stocked against seasonal requirements, as was the case with the utilities in eastern Massachusetts that made repairs out of stocks to lines damaged in last week's sleet storm there. A heavy call for this material recently came from the Pacific Northwest, where a blizzard had done considerable damage.

New Electric Railway in Spain

Early construction is proposed of an electric railway in Spain, to carry both passengers and freight and to operate between Corunna, Santiago, and Carballo—a distance of about 40 miles. Preliminary plans are now being worked out and a company with adequate capital will be organized to finance the construction, which will include the building of five tunnels. At present the only means of passenger transportation between these points is by motor bus, requiring four hours for the journey; freight traffic is handled by motor trucks. Extensions are also planned for the local electric street railway system in Corunna.

Copper Prices Slightly Stronger

Domestic business in copper has remained the same as for the last few weeks, but with a decline in exchange foreign business has decreased considerably. Prices are getting firmer in the domestic trade. Domestic inquiry is from both wire-drawers and brass founders, with the buying by larger rather than smaller companies. While some inquiry and purchases are still for prompt shipments, most of the inquiry is for the first quarter, some being for April metal. Much of the present inquiry is from large consumers.

The highest price reported so far has been 14 cents for January and February deliveries. A little December copper is understood to have brought 13⅞ cents delivered, while a January sale in New York has been made at 13⅞ cents.

December shipments of copper are expected to be quite large as much of the metal sold in September and October and some of the November business was for shipment before the end of the year. December sales, it is thought, will be doing well if total reaches that for September, when approximately 100,000,000 lb. was sold for foreign and domestic shipment.

Developments at Washington seem to account for the improvement in exchange and the increased buying of copper.

Rolling Stock

Indianapolis (Ind.) Street Railway should purchase twenty-five cars for city operation, according to a statement made to the board of directors by President R. I. Todd.

San Francisco, Cal.—The board of public works has requested the supervisors to adopt an ordinance authorizing the purchase of twenty cars for the municipal railway system. The need for these cars which are estimated to cost between $300,000 and $350,000, has been shown by City Engineer M. M. O'Shaughnessy.

Track and Roadway

Indianapolis (Ind.) Street Railway has been ordered by the Board of Public Works to lower car tracks on Kentucky Avenue at the intersection of Harding Street to conform to the street grade, and to pave between tracks at this point. The company was ordered also to pave between tracks on Oliver Avenue at the intersection of Harding Street. When these two streets are repaired they will present a thoroughfare on Kentucky Avenue from Washington Street to Troy Avenue.

Shore Line Electric Railway Norwich, Conn., is building a short section of track between the end of what was formerly known as the Groton & Stonington Street Railway and a connection with the tracks of The Connecticut Company in Main Street, New London. This new trackage represents about 1¼ miles, including the bridge which, as soon as the Crystal Avenue bridge in New London is completed next spring, will enable the receivers to operate from Westerly into New London. This construction is made in the name of The Groton & Stonington Traction Company, a newly chartered and incorporated company, wholly owned by the receivership estate.

Aichi Electric Railway, Nagoya, Japan, has been granted construction rights for an extension of its line to Okazaki. Negotiations for right of way have commenced, and it is expected that actual construction work will begin very shortly. This same company has applied for permission to construct two other lines, one of more than 10 miles branching from Ota on the present Tokoname line to Handa, and another 3 miles long from Tokoname to Handa via Narawa. Official sanction has been given for the construction of the railway between Oi and Tsukechi, in Gifu Prefecture. A company has been organized with a capital of 2,000,000 yen ($997,000) to carry out the construction and operation of this line, and 50 per cent of its stock has been taken by the Daido Electric Power Company.

Power Houses, Shops and Buildings

Philadelphia, Pa.—Sealed proposals for electrical equipment for the substations on Cumberland Street, for the Frankford Elevated Railway will be received at the Director's office, Department of City Transit, until noon Dec. 20.

Chattanooga Railway & Light Company, Chattanooga, Tenn., on account of the incessant growth of demands for electric current in the Chattanooga territory, is planning to provide additional power equipment. For some months preparations for the installation of this equipment have gone forward and the work is now practically completed. In the substation at Carter Street the transforming equipment has been increased in capacity more than 50 per cent The original equipment was placed in this station in 1914, and after a lapse of seven years it has proved to be inadequate.

Cumberland County Power & Light Company, Portland, Me., is again considering the construction of a steam power plant as an auxiliary to its hydraulic power supply. The proposition has been under discussion at various times during the past ten or fifteen years. Tentative plans call for the installation of two turbo-generators of 5,000 kw. capacity each. Steam will be generated in oil-fired boilers. The construction of the proposed station would result in the abandonment of the Forest Avenue plant, while the Plum Street plant would be utilized as the distributing center. It is estimated that the plant would cost about $1,000,000.

Trade Notes

Seattle, (Wash.) Municipal Railways, through the Board of Public Works, recently awarded a contract to Allis-Chalmers Company for furnishing 116 air compressors, at a cost of $30,207, f.o.b. Georgetown shops. This was the lowest of three bids submitted. Contract for furnishing 300 33-in. rolled steel wheels for the railway department was let to Cambria Steel Company, on a bid of $10,575.

The L. Robinson Corporation 8-10 Bridge Street, New York, N. Y., is the name of an organization recently formed by L. Robinson, as electrical insulation specialists. The main laboratories of the company will also be located in New York, while the manufacturing facilities will be in Newark, N. J. and St. Louis, Mo. The corporation will have trade affiliations in Canada. L. Robinson, who has had long experience in the development and marketnig of insulating materials, was in charge of the insulating department of the Standard Varnish Works, New York, Chicago and Toronto, for about fifteen years. Previous to entering the service of the Standard Varnish Works he held many positions in the operating field of electric railways in Canada, France and the United States. Associated with L. Robinson in his new company is W. D. Crumpton as vice-president and treasurer, who for many years was connected with the bureau of purchases of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and afterward for fourteen years was purchasing agent and storekeeper of the British Westinghouse Electric & Manufacturing Company, Ltd., Manchester, England.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors   HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor   N. A. BOWERS, Pacific Coast Editor   H. S. KNOWLTON, New England Editor   C. W. SQUIER, Associate Editor   CARL W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor   DONALD F. HINE, Editorial Representative   R. E. PLIMPTON, Editorial Representative   PAUL WOOTON, Washington Representative

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With the Season's Greetings and Best Wishes for a Prosperous New Year for the Electric Railway Industry

Municipal Bookkeeping Explained by Mr. Whalen

A PROFIT of some four thousand dollars was soon changed into a deficit of much larger proportions within a few minutes during the testimony of Grover Whalen, Commissioner of Plant and Structures for the city of New York, before the Transit Commission this week. It is rather to Mr. Whalen's credit than discredit that he had the facts, the knowledge and the ability to answer the queries of the commission and help get at the true state of affairs in the city's trolley operations on Staten Island. For as soon as he was asked to show the effect of accounting for certain charges, well known to be existent, he admitted that if the city had kept books as any independently operated concern must do, the profit the city announced would vanish into a real deficit.

The Transit Commission, in its hearings, is trying to get at some really basic and useful facts for the benefit of the public. It is of great value to the public of New York City, and elsewhere, and also to the transportation and public service industry in general to have emphasized that the public, as well as private enterprise, cannot produce profit where profit does not exist.

The city is not to be blamed for not making a profit on this particular undertaking. No transportation man would expect the venture to be profitable. It is a small undertaking in sparsely settled territory, operating at a low fare. But once the public impression is made that a "profit" exists it is important to know from a city official exactly what this "profit" figure is and that a real accounting would show a deficit which the public has to pay.

Patent Office Situation Needs Your Personal Attention

ANY one who is interested in an industry which depends upon science and engineering for its fundamentals and for its most efficient advancement must be shocked at the conditions in the United States Patent Office if he knows anything about them.

Out of a total force of 437 men, 163 experienced, scientifically and legally trained men have resigned during the past two years on account of the conditions in the Patent Office, principally the remuneration available. Forty-nine thousand applications are waiting and some of the examining divisions are eleven months behind.

In his recent report the Commissioner of Patents states: "The Patent Office is in a deplorable condition. . . . the Patent Office is breaking at the very moment when it should be responding to the fullest extent to the depressed conditions of the country." The present conditions cannot be allowed to go much further without danger of the Patent Office ceasing to function.

Relief for these conditions is contained in the Lampert Patent Office bill, H.R. 7077, which has the unanimous approval of the patent committee of the House of Representatives and can probably be passed if it could be brought to a vote. Certainly if enough pressure can be exerted upon various Congressmen by their constituencies this matter can be brought to a vote and the condition relieved. Electric railway men can render real service by writing to the representatives from their home districts to urge Floor Leader Mondell and Patent Chairman Lampert to bring about a vote on this bill.

The New York Transit Hearing Broadens

THE testimony at the hearings of the New York Transit Commission this week has emphasized the necessity of some constructive plan for bringing order out of the confusion which now exists in the New York traction situation. At the same time it has made apparent some problems which are bound to come up in any solution. Last week, with the operating men on the stand, the chief criticism expressed of the tentative plan of the commission was the fear that politics would be paramount in the proposed Board of Control.

This week the aspect of the situation first considered was that presented by representatives of the underlying bonds of various companies, who, as a body, did not seem so much concerned over political control. Perhaps they felt that the results of private operation were not all that could have been wished. At any rate, the chief contribution which they made to the general inquiry was doubt whether all of the underlying bondholders will be willing to exchange their present equities for the general lien to be provided in the proposed new 5 per cent bonds. Such universal exchange, moreover, they argued, was unnecessary, because as the underlying liens matured they could be retired by the action of a sinking fund, or the sale of new securities, based on the universal lien. Until, however, the commission announces which lines it will take over, it will be impossible to say which bondholders will have the opportunity to make such a choice.

This leads up to the proposed rerouting plan offered in evidence on Tuesday by Daniel L. Turner, consulting engineer of the commission, and which he was careful to explain was submitted on his own responsibility only and had not been approved by the commission. While he used the term "abandon" in connection with certain portions of the existing system, the report was intended evidently only as representing an expert traffic viewpoint, and Mr. Turner admitted that even the 22 miles of track not now in use could be removed, if at all, only with difficulty and after tedious litigation, if the companies insisted on clinging to their rights.

The future under the commission's plan of the roads or sections of roads which it elects not to take over is yet shrouded in mystery. Whatever is done with them they should not be condemned in all cases as unprofitable simply because they have not been making money under the conditions of the last few years. It should be borne in mind that the average operating expenses in 1921 on all the surface lines in Manhattan was 60.11 cents per car-mile, exclusive of taxes, and 65.24 cents per car-mile including taxes. These seem unreasonably large, in view of the fact that during the last fiscal year the Chicago Surface Lines made money, although gross receipts amounted to only about 47 cents per car-mile.

Mr. Chalmers of the Second Avenue Railroad has already shown what can be done by a few improvements. If the constructive program outlined by Mr. Turner in the way of increased speed and train operation could be put into effect, it would show still greater advances in service and efficiency. In fact, the introduction of even half of his program would make necessary a complete revision of the present ideas in New York of the financial and service possibilities of the surface lines.

Muskegon and Battle Creek Favor the Trolley

AFTER eighty-four days the residents of Des Moines voted for the trolley as against the auto. It probably did not take the voters this long to make up their minds, but it took that long before the franchise election could be arranged. On the other hand Saginaw recently voted in favor of buses after a trying experience somewhat similar to that of Des Moines. Now come Muskegon and Battle Creek. With the issue put squarely before both these cities they have gone on record in favor of the trolley. In Muskegon, the Council is authorized to pass ordinances denying the use of the streets to the bus lines affected so there shall be no unfair competition. In the Battle Creek case, where the choice was strictly between the auto and the trolley, the vote was overwhelmingly in favor of the electric car.

Saginaw remains in strange contrast with the cases of Des Moines, Muskegon and Battle Creek. About the only thing that this proves is that the residents of Saginaw, considering what they have endured since railway service there stopped, are permitting their animosities to blind them to their own immediate personal convenience and to make them reckless to the extent of gambling on their own and their city's future.

A Wholesale Price to the Wholesale User

THE transition of the American electric railway from the status of a purely manufacturing and distributing industry to a *business* seems foreshadowed in the several publicity plans and fare schemes that are being tried throughout the country. One of these schemes in which both cheerful publicity and an unusual fare have been combined is the operation of the unlimited-ride, weekly pass at Youngstown, Ohio. So much interest has been manifested in this plan—now definitely adopted after the eight weeks trial period—that the Youngstown Municipal Railway has consented to the publication of the detail analysis of nine weeks operation.

This analysis not only seeks to answer squarely every question that has been raised about this unusual form of transportation, but also tries to show wherein the unlimited-ride pass appears to possess a more businesslike basis than other ways of selling at wholesale.

One point it seems particularly worth while to stress here is that the sale of tokens or strip tickets at a reduced rate does not necessarily oblige the purchaser to ride more, although it is a stimulus in that desirable direction. However, there is no time limit on such tickets, and they may be divided among as many persons as there are riders. Contrary to this, the pass is distinctly the concession of a wholesale price only to the wholesale, and practically individual, user. The one way he can win over his paying the price of two maximum fare rides a day is by taking more than two rides. At the same time, it is most unlikely that those rides in excess of two per diem will be taken in the rush hours.

Despite the stereotyped objection to an unlimited service rate, it will be found that the average gross rides per pass per diem has hovered around 4.2 to 4.3 right along, while the actual "origin-to-destination" rides are no more than 3.3 a day. Apparently pass buyers like the railway a lot better than before, but they do not seem to spend all of their time riding the cars at that. After all, if the main thing is to make more profitable use of the off-peak car-miles, Youngstown can be said to have made a beginning that will encourage everybody but the jitney operator and trolley baiter.

New Haven Dissolution Decree Expected Soon

ANOTHER instance of the helpful attitude of the present administration at Washington to business is furnished in the visit of Attorney General Daugherty to New England in connection with the inquiry into the New Haven dissolution decree, and the assurance that the government's policy in the case will not be based on legal technicalities, but on the practical requirements of New England as a whole. These requirements as brought out at the hearings, with the exception of one or two small voices, were that the status of the properties as a unit be preserved.

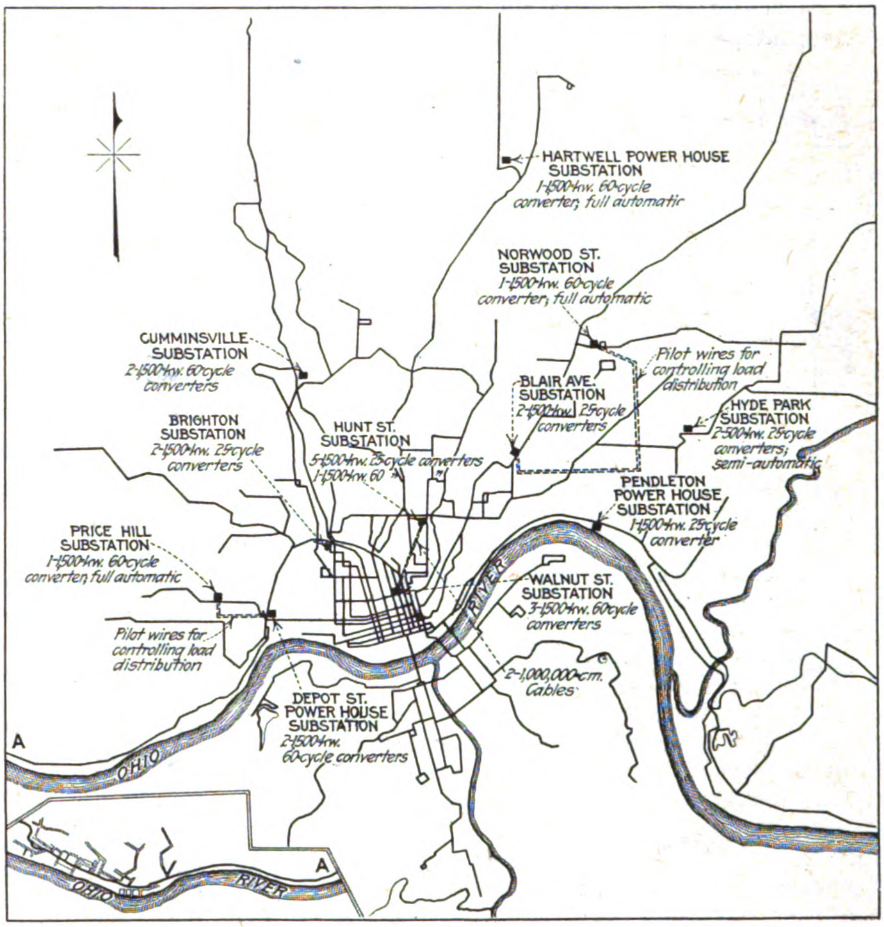
Probably few more shocking examples exist of unwarranted interference by government with business than that presented by the New Haven case. The original dissolution action was of course unjustified. It was brought during the Roosevelt administration, but was withdrawn the following year under the administration of President Taft at the recommendation of Attorney General Wickersham after a careful investigation. He found the trolleys and railroad supplying complementary, not competitive, service. Then during the Wilson administration the dissolution decree was promulgated.

Mr. Daugherty's decision is expected to be made known soon after Jan. 1. His recommendations may take one of two forms. He may order the sale of the subsidiary holdings which have not yet been disposed of, as soon as market prices would justify the step, or recommend a supplemental decree to permit the return of the Connecticut Company's trolley lines and the Boston holding company to the New Haven.

Against the onus of all the changes and charges previously recited the New Haven management has struggled bravely now for more than seven years. It is to be hoped that for the company the end is in sight, particularly since the interstate commerce act has been strengthened and the last possible reason appears to have been removed for the charge that, with the lines of New England again one, the system might be subject to abuse.

Modernizing Cincinnati Traction Power System

Large Saving to Be Effected by Scrapping Long Obsolete Generating Equipment, Building New Substations and Purchasing a Portion of the Energy Required— Three Automatic Substations Included in the Plan


HARTWELL POWER HOUSE SUBSTATION
1-1,500-kw. 60-cycle converter; full automatic
NORWOOD ST. SUBSTATION
1-1,500-kw. 60-cycle converter; full automatic
CUMMINSVILLE SUBSTATION
2-1,500-kw. 60-cycle converters
Pilot wires for controlling load distribution
BLAIR AVE. SUBSTATION
2-1,500-kw. 25-cycle converters
HYDE PARK SUBSTATION
2-500-kw. 25-cycle converters; semi-automatic
BRIGHTON SUBSTATION
2-1,500-kw. 25-cycle converters
HUNT ST. SUBSTATION
5-1,500-kw. 25-cycle converters
1-1,500-kw. 60
PENDLETON POWER HOUSE SUBSTATION
1-1,500-kw. 25-cycle converter
PRICE HILL SUBSTATION
1-1,500-kw. 60-cycle converter, full automatic
WALNUT ST. SUBSTATION
3-1,500-kw. 60-cycle converters
RIVER
Pilot wires for controlling load distribution
2-1,000,000-c.m. Cables
DEPOT ST. POWER HOUSE SUBSTATION
2-1,500-kw. 60-cycle converters
A
OHIO
A
OHIO RIVER

Map of Cincinnati Traction Company Lines and Substation Locations

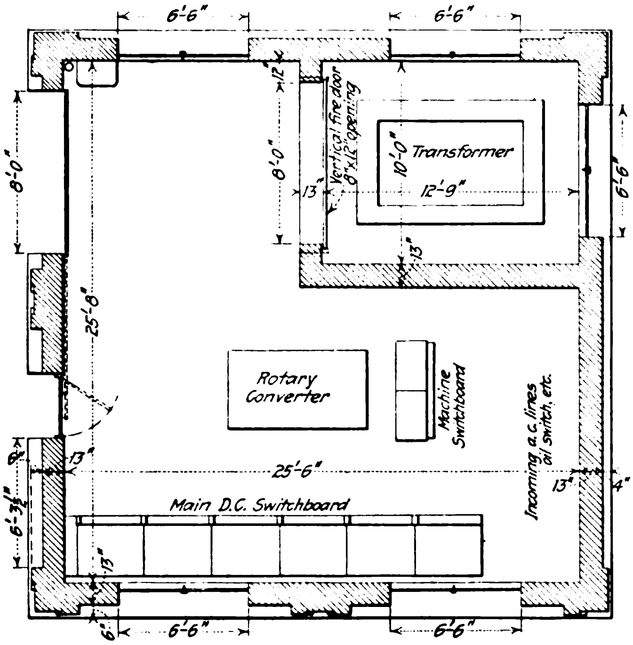
AN ANNUAL saving of $84,000 is expected as the result of a plan now well under way to modernize the power supply system of the Cincinnati (Ohio) Traction Company. This is conservatively estimated, and against the new plan is charged the carrying charges on the total investment in all the old equipment replaced as well as the new installed. This in general includes abandonment of considerable generating equipment still in use, the construction of four new substation buildings and the installation of ten new 60-cycle, 1,500-kw. rotary converters, including three automatics; an increase in the number of points of power supply from eight to eleven and involving a rearrangement of the feeder system, and the purchase of energy needed beyond the capacity of the company's alternating-current generating equipment from the Union Gas & Electric Company. The capacity of the traction company's alternating-current equipment at the Pendleton power station is 30,000 kva. and the maximum demand on it has been about 17,000 kw., while the total power demand on alternating-current and direct-current generating equipment has run about 24,000 kw. The plan of operation will probably be to operate the alternating-current generating units at Pendleton, or part of them as required, at practically constant load and take from the Union Gas & Electric Company whatever additional power is required in order to get the most efficient use of the power plant, and hence a low cost per kilowatt for the power generated. However, if it develops in actual operation that the total cost of power would be less by taking a practically uniform amount from the electric company and handling the swings and peaks on Pendleton, this opposite scheme of operation will be followed. In other words, the scheme is flexible, enabling the railway management to determine that balance of low cost of energy generated against low demand cost of energy purchased which will result in the lowest average cost per kilowatt for all energy consumed.

Another factor which should be mentioned in connection with the company's broad plan of reducing power costs is the equipment of all cars with Economy watt-hour meters, the idea being to reduce the consumption as well as the cost per unit. The results of this phase of the plan, as indicated by the saving made the first month the cars were equipped, will be very gratifying.

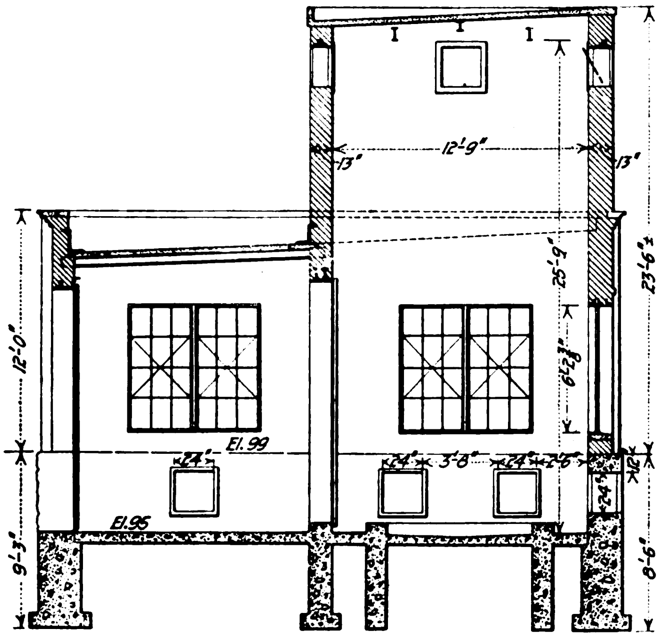
The main present source of energy for operating the cars of the Cincinnati Traction Company is the Pendleton power house, which is located in the east end of the city. This is equipped with three 10,000-kva., 25-cycle turbine units and 3,000-kw. capacity of non-condensing, reciprocating engine-generator units. This station thus supplies direct-current energy to the feeders extending to the immediate vicinity and 25-cycle alternating-current energy transmitted at 6,600 volts to five rotary converter substations. One of the outgoing high-tension lines extends from the power plant to the Brighton Avenue substation and thence to the Cumminsville substation, where it is stepped up to 33,000 volts for a line extending to the Hartwell power plant located on the Ohio Traction System about 9 miles from the downtown district of Cincinnati. This line serves one 500-kw., 25-cycle converter located in the power station and supplying energy to the interurban system and some of the outlying lines of the Cincinnati Traction Company. In addition to this one rotary, the Hartwell power plant contains two 1,000-kw. direct-current, non-condensing, reciprocating engine-generators, which are used during the peak hours.

Aside from the Pendleton station, the principal source of power for the Cincinnati Traction Company has been the Depot Street power house, located at the west end of the city and equipped with eight generating units, two of which comprise non-condensing, Corliss compound engines direct connected to direct-current generators, and the six others being old four-pole generators, belt driven by non-condensing simple engines. The total capacity of this plant is 4,500 kw. and until very recently it has been operated continually and practically to capacity.

The substations supplied with 25-cycle alternating-current energy from the Pendleton power house and their capacities are given in one column of an accompanying table which lists the old and new direct-current facilities. The locations of the power houses and the substations of the new plan are indicated on the accompanying skeleton map showing the car lines in Cincinnati. The old power supply system comprised three sources of trolley current direct from direct-current generating stations and six sources from substations, one power plant and substation being at a common point, so that there were eight points of supply to the 600-volt feeder and trolley lines on a system comprising 228 miles of track.



Sectional Plan



Longitudinal Section

FLOOR PLAN AND CROSS-SECTION OF SINGLE-UNIT SUBSTATION DESIGN

Obviously, much of the generating equipment of the company has long since been obsolete and was resulting in an excessive cost of energy for car propulsion. Since it was possible to enter into a favorable contract with the Union Gas & Electric Company for the purchase of energy, this plan was determined upon rather than to build new modern power plant facilities in order to reduce the power costs to an economical figure. Following this out, all reciprocating engine-generating units are to be abandoned, dismantled and disposed of. The dismantling of the Depot Street power house was begun Nov. 1, and the direct-current generating equipment in the other two power stations will soon follow, as the installation of the new substation equipment is well under way.

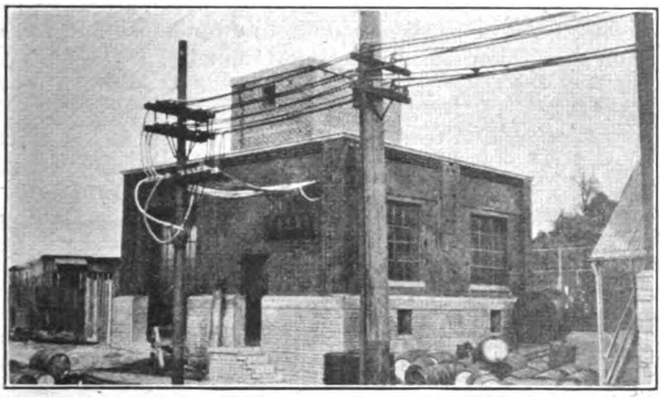
RECONSTRUCTION TO BE MADE

Under the new power supply plan 60-cycle, three-phase energy will be purchased from the electric company at 13,200 volts, from transmission lines built into the substations by the electric company. For the sake of uniformity, all of the new 60-cycle machines are to be of 1,500-kw. capacity and the transformers are 1,500-kw., three-phase units. These were used because of the economy of space and investment required. While with these transformers it is impossible to operate at two-thirds capacity if one phase is down, it was believed that the number of cases of trouble of this kind is so small as compared to cases of converter trouble that it is not an important disadvantage and does not offset the other advantages. The converters, automatic equipment and practically all of the other substation equipment were supplied by the Westinghouse Electric & Manufacturing Company.

Abandonment of the Depot Street power house is made possible through the installation of two new subtions. One of these is to be located in the present power house, where the equipment will consist of two 1,500-kw., 60-cycle rotary converters arranged for manual operation. The other is the new Price Hill substation pictured herewith, which is equipped with one 1,500-kw. rotary converter arranged for full automatic control. This was the first of the new substations to be placed in operation.

The present Cumminsville substation is to be abandoned, the present 1,500-kw., 25-cycle converter moved to the Pendleton power house partly to replace the reciprocating units now being operated there, and a new substation of the same name built in the immediate neighborhood of the present Cumminsville substation. This will be equipped with two 60-cycle, 1,500-kw. manually operated converters. The shifting of the old converter will of course not be made until after the new station is completed and placed in operation. Similarly, the 25-cycle, 500-kw. rotary converter located at the Hartwell power plant is to be transferred to the present Hyde Park substation to reinforce the capacity there and a new 1,500-kw., 60-cycle machine with full automatic control installed in the power plant, replacing the present converter and the direct-current generating equipment, which latter will be scrapped. With the additional 500-kw., 25-cycle unit installed at the Hyde Park substation, the voltage regulation in the territory it serves will be greatly improved, since this includes two bad hills for which the present single unit is unable to carry the load at times.

The direct-current generating equipment shut down



Price Hill Automatic Substation, Showing Transformer Tower at the Far Corner

in Pendleton power house is replaced partly by the installation of the one 1,500-kw., 25-cycle converter installed in the station, as already mentioned, and by the building of a new substation on Norwood Street as shown on the map of the system, this new point of energy supply to the system also materially improving the voltage in that vicinity. The Norwood Street substation is equipped with one 1,500-kw., 60-cycle converter and arranged for full automatic control.

Perhaps one of the most important new substation locations is that on Walnut Street, between Thirteenth and Fourteenth Streets, practically in the heart of the downtown, or heavy load, section. This substation is to be equipped with three 1,500-kw., 60-cycle converters, manually operated. The former points at which energy was supplied to the trolley system formed roughly a semi-circle around the downtown section and the voltage there was somewhat low. Hence the installation of this new three-unit substation right in the center of the downtown load will greatly improve the voltage and undoubtedly bring about a material reduction in line losses.

The accompanying table sums up the direct-current capacity provided in the old power system and that which will be available upon completion of the new facilities. It will be noticed that six substations and one rotary converter in the seventh, aggregating a capacity of 16,500 kw., will be supplied with 60-cycle purchased energy, while five substations and five converters in the sixth, aggregating a capacity of 16,000 kw., are supplied with 25-cycle energy from Pendleton power house, owned by the company. The total direct-current capacity connected to the feeder and trolley system has been increased from 27,000 kw. to 32,500 kw. Thus a 40 per cent increase in capacity has been provided, a substantial improvement in voltage regulation made and a very worth-while saving in the annual power cost obtained. Furthermore, if the new substations had not been installed, it is estimated that it would have been necessary to install $100,000 worth of additional copper in order to bring up the voltage regulations to a satisfactory condition. Hence it may be said that the installation of the new substation plan has virtually salvaged $100,000 worth of feeder cables in addition to the other savings.

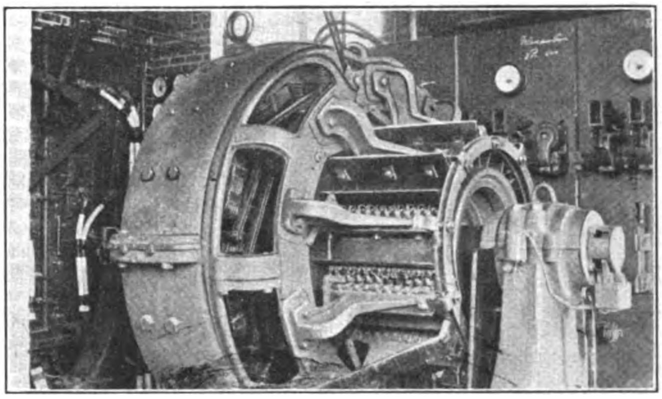
SOURCES OF 600-VOLT CURRENT

	Kw.-Capacity Former System	Kw.-Capacity New Plan	Frequency
Pendleton power house......	3,000 (d.c. generators)	1,500 rotary converter	25
Depot Street power house...	4,500 (d.c. generators)	3,000 rotary converter	60
Hartwell power house......	2,000 d.c. generators) 500 (rotary converter)	1,500 rotary converter	60
Hyde Park substation.......	500	1,000	25
Blair Avenue substation.....	3,000	3,000	25
Hunt Street substation......	7,500 25-cycle 1,500 60-cycle	7,500 1,500	25 (60)
Brighton substation.........	3,000	3,000	25
Cumminsville substation....	1,500	.....	25
New Cumminsville substation	.....	3,000	60
Walnut Street substation....	.....	4,500	60
Price Hill substation........	.....	1,500	60
Norwood substation........	. ...	1,500	60
	27,000	32,500	

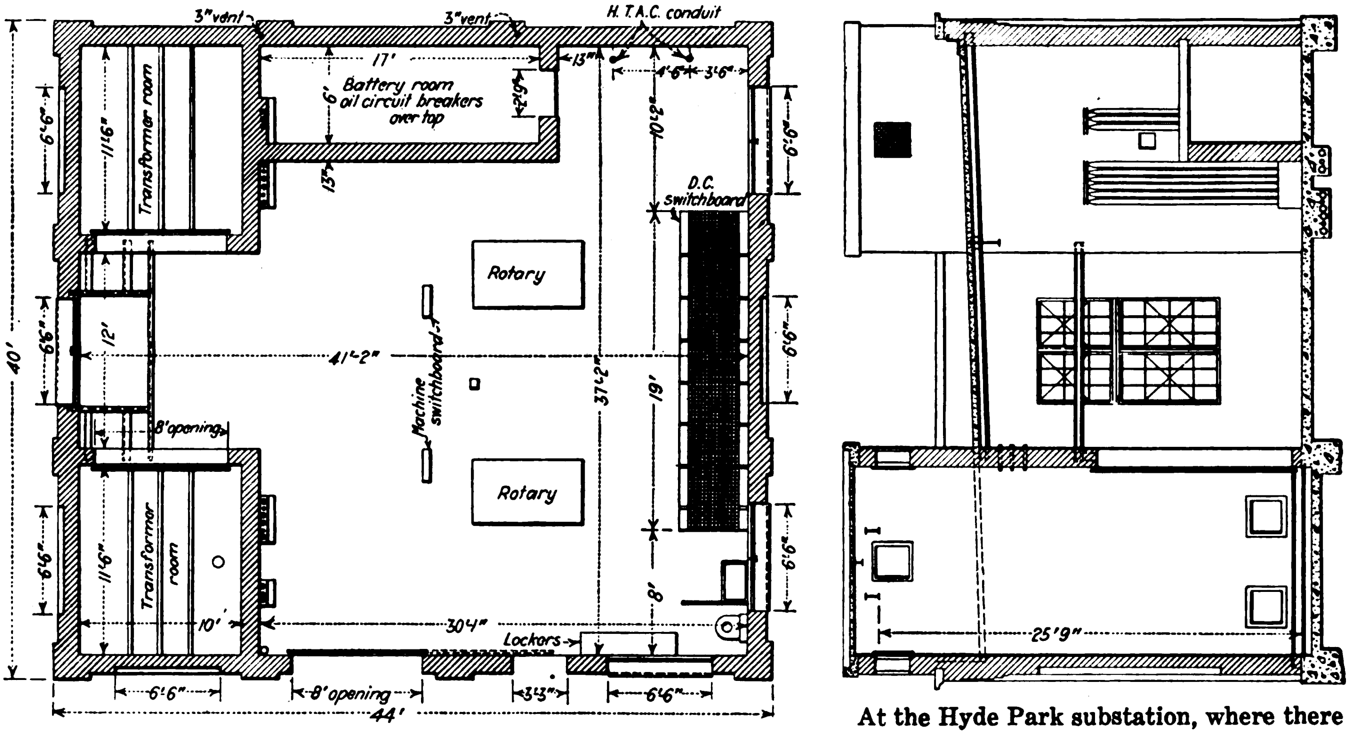
Manual or Automatic Control

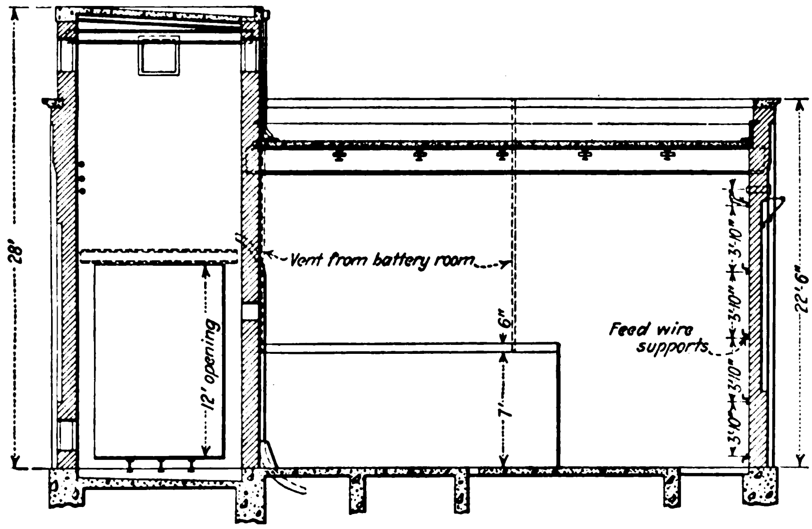
It will be noted from the foregoing discussion that only the single-unit substations have been arranged for full automatic operation. In rearranging the power system, only the Price Hill, Hartwell and Norwood substations could be equipped with but one 1,500-kw. converter, the size on which the company had standardized. As to the use of automatic control on stations requiring more than one 1,500-kw. unit, T. H. Schoepf, vice-president and chief engineer, who was responsible for the new power plan, was of the opinion that the fixed charges on the additional investment required in the automatic equipment to handle two or more units were so high as to wipe out any saving resulting from the automatic operation. The possibility of trouble with substation operators resulting in a shut-down on the system was not felt to be a controlling consideration in the adoption of automatic control. Not all of the substation operators in Cincinnati are union men and only ten out of sixty or seventy employees in the electrical department who would strike in case of trouble are operators. Another consideration was also involved in the decision for manual operation of the new Cumminsville substation. This substation serves important lines extending to sections of the city not otherwise reached and is located in rather an isolated place where it would take too long for an inspector to reach the substation in case of trouble. It was therefore considered too important a location to depend on automatic operation and the manual operation was used because it was believed to provide greater assurance of continuity of service.

A special feature of the automatic control in two of the substations is the connection of the Price Hill automatic with the manually operated Depot Street substation and the automatic Norwood substation with the manually operated Blair Avenue substation by means of a pair of pilot wires. The purpose of these is to enable the substation operator at Depot Street, for example, to control remotely the Price Hill automatic and



1,500-Kw., 60-Cycle Rotary Converter with Main Feeder Board to the Right and Machine Starting Panel to the Left, with Rear of Board Toward the Converter by this means to dispatch the load between the two stations in such a way as to produce the minimum demand of the two substations summed together. This is desirable because the contract for purchased power is based on the maximum system demand and not the sum of the maximum demands of the individual substations. The same balancing of demands between the Blair Avenue and Norwood Street substations is provided for. The remote control makes it possible to cut the converter in the automatic substation in or out, regardless of the master voltage relay.





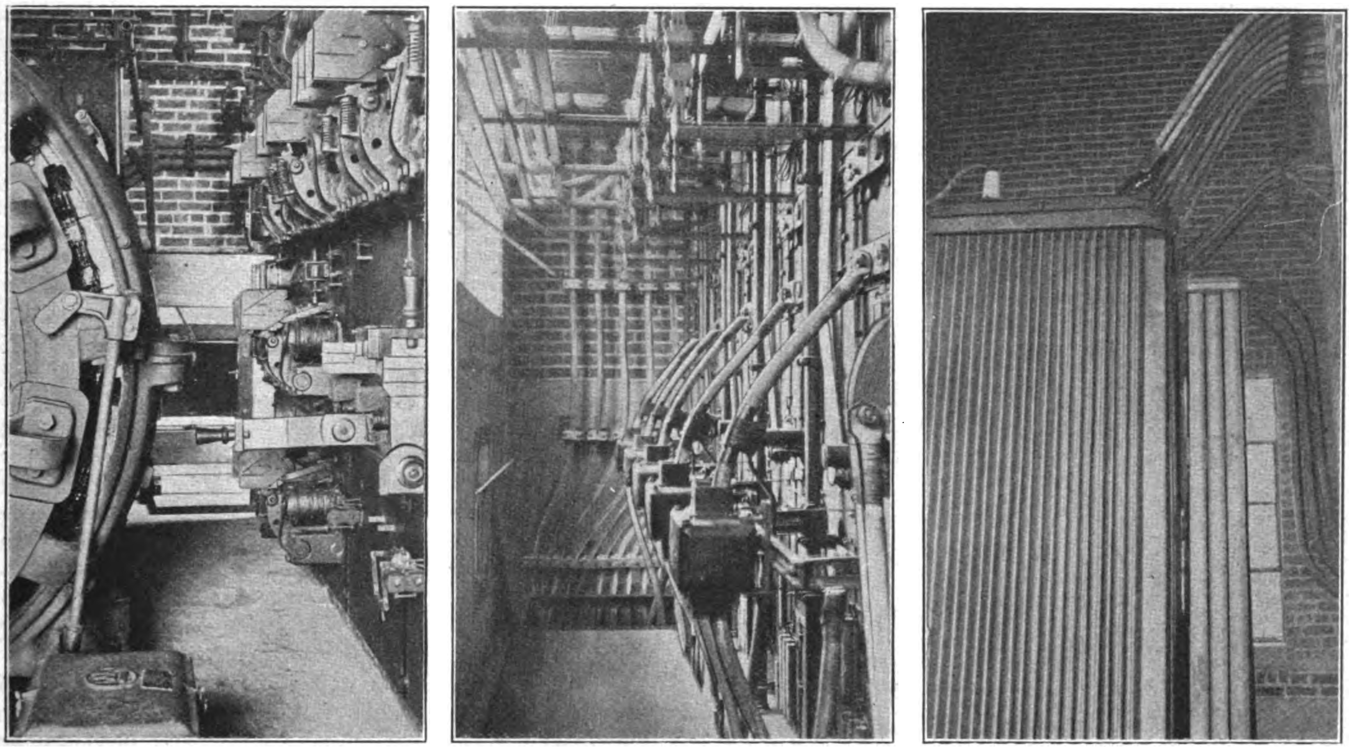
Floor Plan and Sections of Two-Unit Substation

Further ability to dispatch the load so as to produce the lowest cost of power is provided by tying the 25-cycle Hunt Street substation together with the 60-cycle Walnut Street substation by means of two 1,000,000 circ.mil cables. These cables are connected between the direct-current buses in the two stations so that it is possible to shift the load from Hunt Street, supplied by the Pendleton power house, onto Walnut Street substation, which is supplied with purchased power, or vice versa. In other words, depending on whichever is more economical, the bulk of the load served by the Hunt Street and Walnut Street substations can be largely carried on either substation and thus shifted from the company power plant to the purchased power, or vice versa. Similarly, the remote control of two of the automatic 60-cycle substations from two of the 25-cycle manually operated substations makes possible a certain shifting of load from or to the Pendleton power house and to or from the Union Gas & Electric Company.

At the Hyde Park substation, where there has been one 500-kw. converter, the company has had a semi-automatic operation for the past year. The station is equipped with automatic reclosing circuit breakers. An operator goes to the station at 4 a.m., starts the machine up at 5 o'clock and remains until 8 a.m. The machine is then left running without an attendant until 4 oclock in the afternoon, when the operator returns and remains until 8 p.m. Upon departing at this time he again leaves the machine running and it is shut down by a carhouse foreman at 1:30 a.m. This scheme of operation saves two operators, or $10.40 a day. This plan of operation has been in over a year and there has been only one case where it was necessary to send an electrician to the station on account of trouble. If the machine is thrown off the line for any reason, the lights supplied by it in a nearby office of the company go out, and unless they come back on promptly a clerk there notifies the electrician. The machine is of course equipped with bearinge thermostats and other protective devices.

Details of Substation Design

The first of the new substations to be completed and placed in operation was the Price Hill substation. The building is constructed with foundation, floors and roof of concrete and walls of brick. The windows and doors are hung in metal frames with wire reinforced glass. The building is practically 25 ft. 6 in. square inside, with one corner, 13 ft. 10 in. by 11 ft. 1 in., walled off for housing the three-phase transformer. A tower 12 ft. high is provided over the transformer room in order to give headroom enough to raise the coils out of the tank, permitting the tank to be moved out and the coils lowered to the floor level if work is to be done on them. A simple block and tackle hung from steel beams placed under the roof for the purpose are used for handling the transformer coil in this manner. The transformer compartment is closed off in front by a fireproof door, and the main door to the substation is directly opposite this, this same outer door being used for both transformer and converter and other equipment in taking them in or out of the station. There is room enough between the transformer compartment and the outer door to move the converter in a diagonal direction to or from its foundation.



At Left, Main Direct-Current Switchboard Showing Close Spacing Between Board and Converter. In Center, Rear of Main Direct-Current Switchboard. At Right, Three-Phase Transformer and Connection in Transformer Room at One Corner of the Station

The floor plan and elevation of this Price Hill single-unit substation are reproduced herewith, as are also the drawings for the Cumminsville two-unit substation. This station has a transformer room at either side of the building and a tower over each. The transformer room doors face each other and there is space between the two towers inside the station to move the transformer tank out, whence it can be moved in or out of the substation through the 8-ft. door at the front of the building, which is also used for admitting the converters.

The location of the various equipment in both substations is readily seen in the accompanying drawing. The building design for the Norwood Street substation will be the same as that for Price Hill and the new building for the three-unit Walnut Street substation will be of special design, combining with the substation a central depot for the line department. Ventilation is provided in all the substations by means of screened openings around the station at the floor level and just below the roof in the towers. These are all 2 ft. square and equipped with windows hinged off center so that they will automatically close unless held open. Ten of these openings are provided per machine.

On the theory that because the substation is automatically operated and therefore that there is no one around, the spacing in the Price Hill substation was cut down considerably below the spacings provided by the National Safety Code and a saving of $2,500 on the cost of the building thereby made. This spacing was said to be approved for automatic operation by the underwriters.

Generous High-Tension Oil Switch Capacity

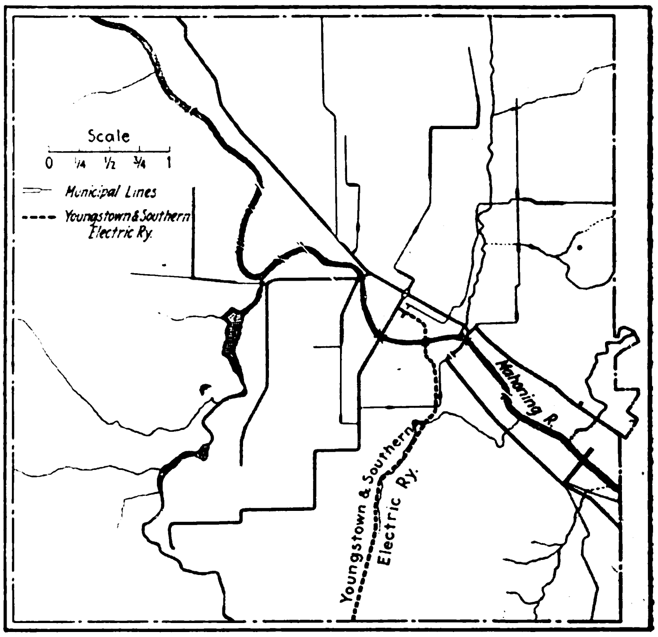
Only one high-tension line is connected with the Price Hill substation, as this is very close to a substation of the Union Gas & Electric Company, but the other new substations are served by two high-tension lines. In both cases, each high-tension line is equipped with its own type 0-1 oil switch of very large capacity, it being expected that this generous capacity of the oil switch will eliminate one of the common sources of trouble resulting from oil switches of insufficient capacity. In the two-unit stations either machine can be connected to either line by manipulating the disconnect switches. All of the circuit breakers are remote-control solenoid operated. The lightning arresters on the two-unit substations are mounted on the roof between the two towers, while on the Price Hill substation they are mounted on a rack which has been placed on the front wall of the building.

Employees of the electric railway serving Geneva, Switzerland, have accepted a reduction of an amount equivalent to $4.83 per month in their wages, effective Oct. 1, according to advices to the Department of Commerce. The employees based their protest against the decrease on the ground that up to that time there had been no proportionate reduction in the cost of living in Switzerland.

Analysis of Weekly Pass at Youngstown

Rate of Increase in Revenue So Far Is Double and Rate of Increase in Riding Is Quadruple That of Non-Pass Lines in Same District—Density and Earnings per Car-Mile Show Substantial Rise—Jitneys Cut Almost in Half and More Going

THE combination of jitney competition, of a severe industrial depression and reduced purchasing power by most of those who were left at work led the Youngstown Municipal Railway (a subsidiary of the Republic Railway & Light Company) to seek relief in something other than a higher rate of fare. Under its service-at-cost sliding or, in this case, climbing scale the fare had gone up to 9 cents cash and 8⅓ cents ticket. As a still higher fare offered neither the likelihood of more revenue nor of more service to the public, the company took the opposite tack and decided to reduce fares.


Scale
0
¼
½
¾
1
Municipal Lines
Youngstown & Southern Electric Ry.
Mahoning R.
Youngstown & Southern Electric Ry.

MAP SHOWING LINES OF YOUNGSTOWN MUNICIPAL RAILWAY, CONNECTING INTERURBAN LINES AND YOUNGSTOWN AND SUBURBAN RAILWAY

The form of fare reduction, however, is decidedly novel for an American city of this size. Instead of lowering the fare to regular riders, off-peak riders or any-time casual riders alike, the reduction has been effected by offering a wholesale price to those who would ride wholesale. This idea is different from that of selling at a lower rate tickets which can be used within any desired period thereafter. It is being carried by means of an unlimited-ride pass good only for the week designated and priced at $1.25, which works out at slightly more than the cost of two cash or ticket rides a day.

Thus the net effect so far as the public is concerned has been to lower the average fare per passenger from the 6.7 cents approximated in September before adoption of the pass in the week beginning Oct. 3, 1921, to about 6 cents. To the passholder who takes more than the usual two rides a day the cost of a ride is actually less than 5 cents (about 4.1 cents) on the basis of all rides taken, and practically a nickel when allowance is made for the transfer proportion.

The low price of the pass in comparison to the cost of single rides was fixed with regard to the amount of jitney traffic possible of recapture rather than with respect to the creation of entirely new business. Cars were running decidedly underloaded, so that there was no question about being able to handle and seat many more passengers with no increase in car-miles except a few trippers. As shown hereinafter, these anticipations were justified sufficiently during the trial period of eight weeks to cause the continuance of the pass.

TRAFFIC ON PASS LINES HAS INCREASED MORE THAN TWICE AS FAST AS ON NEIGHBORING LINES

Under ordinary circumstances, it would be difficult to say how much of the traffic and revenue changes following a fare alteration is due to cooler weather, more jobs or more attractive fares. The situation at Youngstown, fortunately, is quite helpful along this line. The Youngstown Municipal Railway is within the same steel-mill area as the Pennsylvania-Ohio Electric Company, also a Republic Railway & Light Company subsidiary, but is segregated under the service-at-cost contract with the city of Youngstown.

According to company officials, the industrial uplift within the last three months has been at least as effective immediately outside of Youngstown as within the city. Other things being equal, therefore, the rise in earnings of both properties ought to show practically the same percentage. This is not the case. By reference to the set of graphs on page 1105, it will be seen that the first nine weeks following the pass compared with the average income for the last three weeks preceding the pass show a rise of 14.3 per cent on the Youngstown Municipal lines, whereas the Ohio-Pennsylvania lines with no change in either interurban or city fares show a rise of but 6.9 per cent.

Another check is furnished by the Youngstown & Suburban Railway. This railway is permitted to charge only 5 cents within Youngstown, so that both its low cash fare and topographical position protected it against any competition from the pass fare. This line also shows even a decrease in percentage.

A comparatively small road like this will naturally be subject to greater fluctuations in revenue than a system serving a greater diversity of customers. For all that, the Youngstown & Suburban figures are of value as corroborative evidence of the industrial slackness in this area.

A SUBSTANTIAL INCREASE IN REVENUE AND A RISE IN EARNINGS PER CAR-MILE

Another way of analyzing the growth in traffic and revenue would be to compare say three November-December weeks of the pass with the average of the three weeks just before the pass. This turns out to be a 20 per cent increase in revenue and an increase in riding usefulness of 44 per cent. The latter figure is significant in comparison with the fact that the riding on the other lines could have increased only in proportion to the rise in revenue, since no fare changes had been introduced.

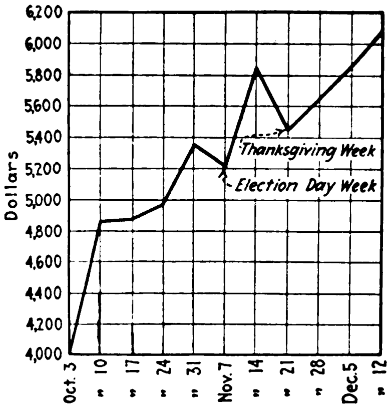
Because of the large proportion of seat-miles hitherto unused, the increase in business has been handled with but small additions in car-miles. A comparison of mid-September and early November shows that passengers per car-mile had by that time risen from 5 to 6.4 or 28 per cent. Likewise, the revenue per car-mile rose from 34 to 38 cents, or 8.5 per cent. It will be seen that the pass is resulting in more effective use of the company's car-mile and car-seat output. An increase in car-miles can do no harm when accompanied by a greater difference between intake and outgo.

WHERE DID THE ADDITIONAL TRAFFIC COME FROM?

Increases in revenue of 20 per cent and increases in riding of 40 per cent are so large for the recent weeks in question that it is well to look into the sources of street railway traffic.

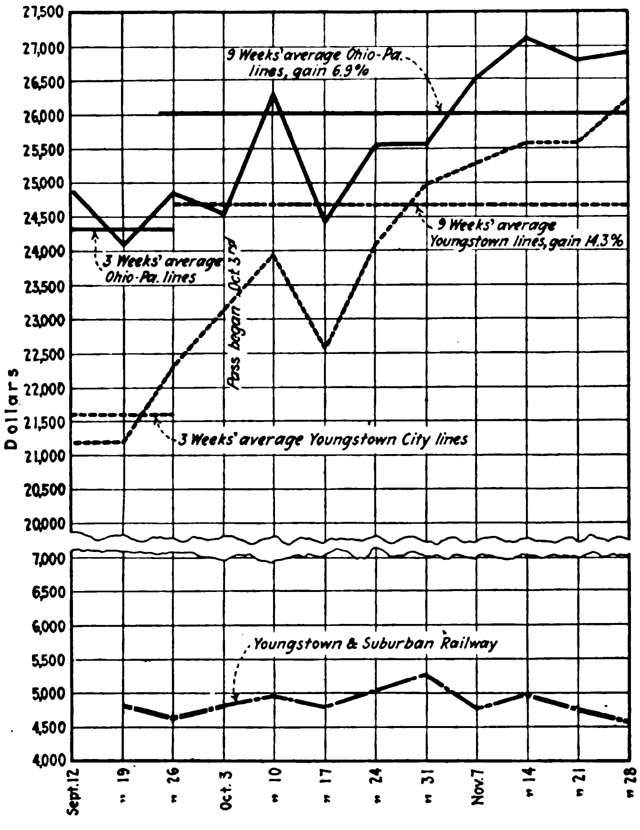
The largest source by all means was in recovering what had been lost to the jitneys. It is true that the company was charging 9 cents cash and 8⅓ cents ticket (at six for 50 cents) against 10 cents cash by the jitney with only a limited sale of jitney tickets at 8⅓ cents. To the transfer rider, however, the street car fare was 10 cents because of a 1-cent transfer charge. The difference between the awkward 9-cent rate and the jitney dime apparently was not enough to keep many people from patronizing the privateers. One reason was their greater speed, nearly all Youngstown jitneys being touring cars.

Those who have studied the behavior of the public toward jitney vs. car operation over the same highways know that the prejudice of the majority is not so strong as to make them willingly endure waiting for their favorite. The usual procedure is to take whichever comes first. There is no way to stop this tendency other than to run so many cars that the jitneyman cannot earn even his running charges or else have a style of fare that will make a person wait for the car. Only the sale of some form of prepaid transportation good within a limited period meets the latter specification. Here is how the plan works out: A person who has bought a pass for the week's riding has spent all he intends to that week. Every jitney ride would be extra expense. Hence he waits to get his money's worth to the uttermost. The person who buys the 8⅓-cent tickets loses nothing more than 1⅔ cents in taking a jitney ride inasmuch as his tickets are good any time. The cash rider has but 1 cent more to pay and will scruple still less to use the first jitney in sight.

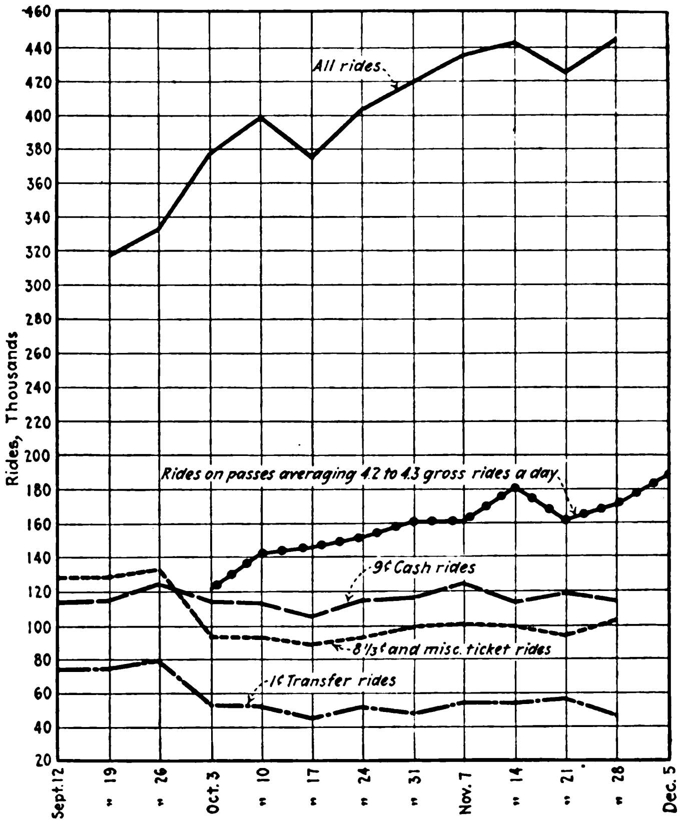


VARIATIONS IN SALE OF PASSES, CITY RIDERS ONLY, SHOWING FALL-BACKS IN HOLIDAY WEEKS—INCREASE OF WEEK OF DEC. 12 OVER WEEK OF OCT. 3 IS 50.6 PER CENT

It may be urged that there is nothing to prevent the jitneymen from getting together and offering a pass of their own. This would not be easy, because it would call for close co-operation among a lot of unruly individualists and besides would demand the setting up of an auditing organization. It is doubtful whether they would succeed with a pass in any event. So long as people patronize jitneys when they happen to be around, they do not worry much about the unreliability of such service in the late hours, on holidays or during bad weather. Let them be asked to pay for a whole week's riding in advance and they will betray a different and



GRAPH SHOWING HOW MUCH FASTER REVENUE HAS INCREASED ON PASS LINES COMPARED WITH NEIGHBORING NON-PASS LINES



GRAPH SHOWING INCREASE IN ALL RIDING AND IN DIFFERENT KINDS OF RIDING ACCORDING TO FARE PAID privilege he pays $1.25. This amount is equivalent to fifteen rides at the 8⅓-cent ticket rate. Cash riders are hardly likely to continue paying 9 cents per ride if they ride as often as this; and it is questionable whether even the ticket customer averages more than that number, counting all extra riding. Where jitney competition exists, the ticket rider is almost as likely as the cash rider to take a jitney if it comes first. The pass rivets the rider to the street car. Therefore, the concession at Youngstown must be read in the light of the fact that there was jitney competition to consider, and that this competition had led to unavoidable waste in car-mileage. The low price of the pass in relation to an equal amount of ticket or cash fares is not only a reward for wholesale patronage but also for exclusive patronage of the railway.

The passenger who previously paid an extra cent for a transfer is the greatest gainer. Instead of 9⅓ cents his fare averages practically 5 cents, but to make up for it he takes about 3⅓ net rides a day. Of these rides, two may be considered as the usual industrial rides; the others are off-peak rides and also much shorter in length of haul. A passholder has no hesitation about riding half a mile or less. It costs him no more and gives him a special feeling of superiority over those who do have to count the cost every time they might want to ride.

It has been said that the street car ride is no longer a thing desirable for its novelty or superiority; but it is the medium to many desirable ends. That form of charging, therefore, which does most to make these ends easier to attain is the one to use if the street car and its supplementary bus are to meet with maximum public favor. The record at Youngstown surely does show that the humble and humbled car ride need not be confined to the class of things that one uses as little of as possible.

THE PASS REVEALS THE STEADY AND NON-STEADY CUSTOMERS

A study of the fluctuations in the number of different classes of riders during the period under review discloses that each is differently affected by traffic stimulants or depressants. The cash rider is the most sensitive to these; the pass rider, the least sensitive.

Even as between cash and six-for-50-cent-ticket riders there is revealed a strong difference. Proof is afforded by the weeks of Sept. 19 and 26 before the inauguration of the pass. The traffic of the latter week shows an increase of 8.9 per cent in the cash riders, whereas the ticket sales increased but 0.9 per cent. In this week of Sept. 26, the number of cash and of local (8⅓ cent) ticket riders were close together, namely, 119,240 against 120,328. Ticket buying may also be influenced by the date of pay day at the mills.

It was during this last week preceding the pass inaugural that the company publicity campaign was at its crest. This advertising (see "Selling the Ride at Youngstown," Nov. 19, 1921) was of a nature to call forth the most favorable reaction and must have had its share in attracting the patronage of that class which does not use the service often enough to buy half a dozen tickets at a time. Indeed, the continuous car window-card advertising must be credited with a share of any success the pass itself enjoys.

A further differentiation of the traffic was revealed when the passes went on sale for the first week, beginning Monday, Oct. 3. On comparing this week with Sept. 19, it will be observed that there was almost no drop in the cash or full-fare riders, merely, 113,108 to 112,582, or less than normal fluctuations from week to week. Apparently, these people averaged so few rides a week that they had no interest in any wholesaling plan. The average number of cash riders in the following eight weeks of the pass is on the order of 113,000 to 114,000, with a general rising tendency.

VARIATIONS IN SALES OF DIFFERENT CLASSES OF FARES YOUNGSTOWN MUNICIPAL RAILWAY, SHOWING THAT MAXIMUM FARE RIDERS HAVE NOT BEEN AFFECTED IN NUMBER

Week Begun	All	9c. Cash	All Tickets	Passes	Transfers
Sept. 19	317,184	113,108	129,799	......	74,278
Sept. 26	331,877	123,239	130,931	......	77,507
Oct. 3	378,006	112,582	92,652	119,389	53,383
Oct. 10	398,575	111,803	91,179	144,041	51,272
Oct. 17	382,421	105,427	88,730	145,637	45,626
Oct. 24	405,373	112,443	91,489	151,194	50,247
Oct. 31	418,938	113,320	97,575	160,567	47,476
Nov. 7	434,327	123,142	100,259	157,706	53,220
Nov. 14	442,684	111,367	99,012	179,417	52,888
Nov. 21	426,162	117,790	94,942	159,222	54,208
Nov. 28	433,831	114,465	101,890	170,819	46,657

As was expected, a substantial cut was made in the ranks of the 8⅓-cent ticket purchasers for some of these people must have been pretty steady riders. The drop, compared with Sept. 19, was from 119,240 to 81,322 or nearly one-third. The table shows that this classification is crawling up, the more recent ticket sales on regular city lines running around 90,000 a week and more.

Almost always as one scans the record of week to week, it is seen that cash riders fluctuate much more in numbers than do ticket riders. It will also be found that pass riding and single-trip riding respond differently to the same conditions. Election and Thanksgiving weeks (Nov. 7 and Nov. 21) showed a fall in pass sales and riding because the shrewdest element among the pass-holders reasoned they would not save in those weeks. This element so far has caused variations up to 7 per cent. Apparently, Thanksgiving was more widely celebrated as a holiday than election, for in election week the drop in pass sales over the preceding week was only 2.4 per cent. On the other hand, a holiday is likely to bring out the patronage of rare customers who make trips outside their usual paths, such as visits to friends, attendance at games, etc.

It is to be expected that as the company's service through the addition of safety cars improves while the jitney service declines the railway will secure a larger number of casual customers, whether cash or ticket. For all that one cannot lose sight of the fact that week after week more than 113,000 riders continue to pay the top fare, although the pass would cut their price per ride almost in half. This fact, as well as the heavier fluctuations in this class, indicates that sometimes this type of patron walks and sometimes he rides, depending upon weather, upon changes in his usual travel habits, upon his having packages to carry, upon being anxious to get to work on time, etc. In Sept. 19 week, 113,108 cash riders brought about one-half the revenue; in Nov. 28 week, 114,465 cash riders brought about two-fifths of the revenue.

In conclusion, it may be mentioned that in September weeks just before the pass was put on, the percentages of each class of riders was as follows: cash 39 per cent, tickets 38 per cent and transfers 23 per cent. The pass has altered this to: passes, 36 (to 40) per cent, cash 27 per cent, tickets 20 per cent and transfers, 13 per cent.

The foregoing analysis is based upon data from the officials of the company and Walter Jackson, who was engaged to aid in installing this plan.

Rerouting in Manhattan

Commission's Engineer Recommends Radical Changes in Surface System, Abandonment of 100 Miles, Much Higher Speed, Right of Way to Cars on Tracks, No Parking of Vehicles in These Streets During Rush Hours, Use of Trailers, and Other Changes

ONE of the most interesting parts of the testimony during this past week at the traffic hearings in New York was the report submitted on Tuesday, Dec. 20, on rerouting in Manhattan by Daniel L. Turner, the commission's consulting engineer. Mr. Turner's testimony was accompanied by two maps illustrating his ideas in regard to tracks to be abandoned. They are reproduced herewith. The upper map shows the routes recommended; the lower map shows by heavy lines the routes recommended for abandonment by Mr. Turner, and by light lines the routes to be retained. An abstract of Mr. Turner's report follows:

MR. TURNER'S TENTATIVE REROUTING PLAN

The proposed rerouting plan for Manhattan recognizes:

1. That a new system of surface lines is needed that will permit the most convenient and freest circulation about the borough for a single fare and with a minimum amount of transfer; and that will have sufficient capacity to meet all the traffic requirements.
2. That the vehicular congestion in many of the streets of Manhattan—particularly in the important north and south thoroughfares—has nearly reached the limit.
3. That it is of paramount importance that consideration be given to the needs of the vehicular traffic as well as to those of surface car traffic, to the end that additional capacity for vehicular movement may be secured, it being recognized that new north and south thoroughfares are practically impossible because of prohibitive cost.
4. That, therefore, the rerouting of the surface lines in Manhattan should be accomplished in such a manner as to utilize for the purpose the minimum number of north and south streets which is possible, without detriment to the convenience and capacity of such new surface line system.

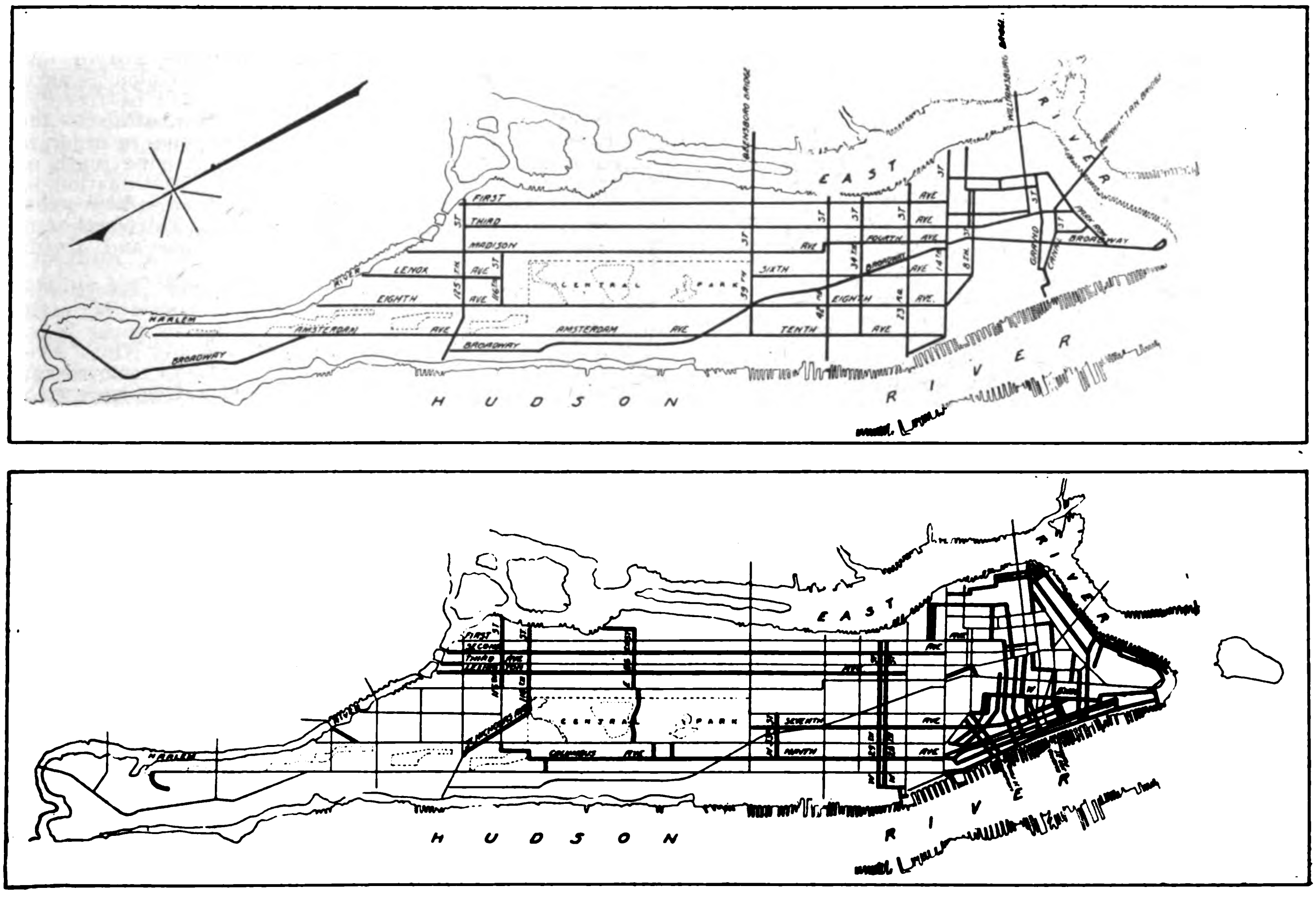
Based upon the foregoing principles:

(a) The new surface car system is to utilize approximately 148 miles of single track—or about 100 miles less trackage than is now in the streets.

The present lines operate over approximately 226 miles of single track. There are 22 miles of track in the streets that are not now being used. The minimum amount of trackage controlled by a single company is 3 per cent; the maximum 35 per cent of the total. Much of the trackage is the result of the competitive development of the different companies in times gone by. One company following another in the field has attempted to parallel lines on which traffic had already been developed by its predecessor. In some cases, lines have been constructed closer together than necessary for public convenience. In this way the borough has been over-built with surface car tracks. The total trackage, used and unused, amounts to about 248 miles of single track. It is proposed to abandon a total of about 100 miles of single track now in the streets, or about 40 per cent of the total.

In abandoning the lines the aim should be to effect as much of a reduction in trackage as possible without impairing the ability of the remainder of the street car system to serve the public with the maximum convenience and with adequate capacity in conjunction with the rapid transit system.

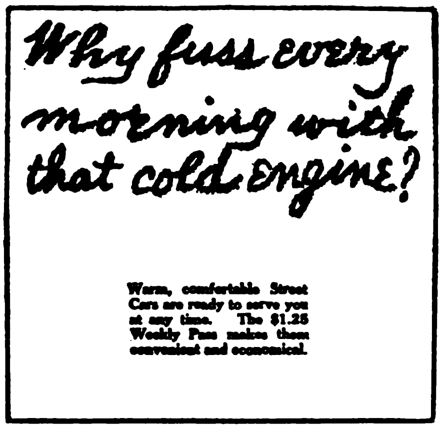
(b) A rerouting plan has been developed for operation by one company. The surface cars in Manhattan are now being operated under nine separate operating companies.



THE UPPER MAP SHOWS THE SURFACE LINES IN MANHATTAN WHICH MR. TURNER RECOMMENDS SHOULD BE RETAINED. THE LOWER MAP SHOWS THE PRESENT SYSTEM, THE LINES WHICH HE RECOMMENDS SHOULD BE ABANDONED BEING INDICATED BY HEAVY LINES less favorable attitude toward the transit Bedouins. The fact that some 6,000 people in and around Youngstown are willing to pay $1.25 a week in advance for their car rides is a compliment to the stability of the electric railway and one that will not be paid to any one of less trustworthiness.

Aside from the business recaptured from the jitneys, there has been some increase due to the creation of traffic encouraged by the liberal price and transferability of the pass. It is impossible to say how much, but it will be admitted that when a passholder has to ride somewhere his non-pass companion is going to ride on the same conveyance.

The period covered in the tabulation begins with Sept. 19, or after the let-down of summer temperature, the ending of vacations, and the opening of the schools. It closes Sunday, Dec. 4, or just before Christmas shopping travel begins. Exclusive of special causes that affected traffic during particular weeks, the period might be defined as one of slowly rising improvement in industrial conditions but far below the improvement shown on the pass-using lines comprising the Youngstown Municipal Railway. This has been proved by comparing the ratio of increase on those lines with the same management's adjacent lines outside of the Youngstown & Suburban Railway. Rain was a depressing factor the greater part of November. In February, 1920, the city of Youngstown passed an ordinance to regulate jitney operation. The principal features were a $5,000 liability bond for personal injuries; a $2,000 property damage bond; owner's license fee of $10 a year and a driver's license fee of $5 a year; owner or driver must be resident of the city for at least six months; every bus to give at least sixteen hours continuous service and operate over designated routes only. The ordinance was enjoined by the jitney men and carried for argument up to the State Court of Appeals. This court approved the bonding and license charges, but held that the clauses concerning residence, hours and regularity of service were unreasonable and invalid.



Why fuss every morning with that cold engine?

Warm, comfortable Street Cars are ready to serve you at any time. The $1.25 Weekly Pass makes them convenient and economical.

FIRST SHOT IN CAMPAIGN TO CAPTURE PRIVATE AUTOMOBILE USERS

From this it will be seen that the amended ordinance, which went into effect in April, 1921, imposed no particularly weighty burden except the two liability bonds. The jitneys remained practically unmolested. Indeed, the various efforts made to simplify downtown parking and routing rules indicated a belief that they were to remain a factor in local transportation.

At present a maximum of some 250 jitneys, mostly touring cars, are licensed. Of these, not more than 140 have been observed in daily operation during the early part of December. As the jitney fare is generally 10 cents and jitneys are encouraged rather than hindered by industrial depression, it is fair to assume that much of the recent drop in numbers has been effected by the institution of the unlimited-ride pass. These vehicles are continuing to drop out at the rate of one or two a day, which elimination should help all classes of electric railway traffic.

Some jitneys probably have paid up their bonding obligations in full and so may be expected to hold out longer than those which have to pay in installments. The insurance companies have also come to the conclusion that these traffic ragamuffins are a poor risk and are not likely to renew any policies in case any jitneyman has the courage or the coin to seek renewal. The Youngstown Council has added this December a further deterrent in the form of a $10,000 instead of a $5,000 personal injury bond. This amendment was very largely due to the increase in good-will that has come to the company because of the pass and more safety car service. Here then is the way matters are standing or rather toppling with the graceless jitney.

UNLIMITED RIDES IN THEORY; LIMITED RIDES IN FACT

The first remark of many electric railway men on learning that the pass is both transferable and good for an unlimited number of rides within the week of issue is to compare it to the long-abandoned scheme of selling light on a flat-rate or unlimited-use basis. Actually, the resemblance is purely superficial. The purchaser of light or water on a flat-rate basis may leave his dwelling with all the lamps burning and all the taps open, these things being entirely separate from himself. But he and his ride are inseparable. It is true that after completing the ride, he is at liberty to transfer his pass. This is not so likely as one would suppose at first thought. The workman going to his job is not going to give the pass to anyone else, for when the luncheon bell rings he will need it for himself.

There are occasions, of course, where the pass can be transferred. For example, when the workman or other holder comes home for the evening some other member of the family may care to use it for a visit. In any case, why should not the maximum use of the pass be encouraged so long as the extra rides lie outside the rush-hour range and within the capacity offered by the base schedule? One point that has impressed the officials of the company is that except for rare circumstances a pass is not used more than once in each rush hour.

Facts from earlier experience should prove more convincing than any arguments. In European cities where long luncheon periods are more common than here, one is not likely to find a higher figure than five gross rides per pass per diem. This was the figure in Blackpool, a city of 64,000 population. Although the passes at Blackpool have to be bought on an annual contract basis on a formidable application blank, there were 2,700 such "contract tickets" in force a couple of years ago. The reason for this was that the tickets for both short and long rides were priced so low that even the person riding but twice a day would make a big saving.

The passes at Racine, Kenosha and Youngstown have been priced upon the principle that the holder must take more than two rides a day to win out over the maximum cash fare. If, then, the American pass is not so uneconomically low-priced as the foreign contract ticket, its attractiveness to the prospect is enhanced in other ways, such as requesting only one week's transportation pay in advance, eliminating all written forms and indorsements in purchasing and stressing its transferability.

If there was much reason in the objection to this transferability, it would certainly be revealed by figures showing a higher average number of rides per pass per diem than abroad. Actually, the figures for both Racine with 63,000 and Youngstown with 146,000 are much lower than Blackpool's. In Racine, the number of revenue rides (viz., after allowing for what would otherwise be transfers) averages 3.8 a day. In Youngstown, the net average is somewhat less because the bigger the city, the smaller the proportion of people who can go home to lunch since distance and time tend to offset the cheapness of the ride.

Therefore, while the gross number of rides per diem per pass in Youngstown has averaged 4.2 to 4.3, the actual net rides per passholder; *i.e.*, excluding transfers, is considered about 22 per cent less or 3.3.

The average number of rides per pass has remained consistent from the very first week. Ordinarily, one would expect that the first week or two would show a maximum figure because the first buyers would be likely to contain all those people, like solicitors, errand boys, agents, etc., whose riding is abnormally high. However, the sale of the pass was pushed with such vigor that this effect did not appear. Those who were added to the ranks in later weeks must have averaged less rides than the general averages show, but as no drop appears it may well be supposed that experience with the pass leads to its greater use. The gross average throughout November was 4.3 rides except in Thanksgiving week, Nov. 21, when it dropped to 4.2.

On the whole, it is firmly established that while passholders do ride more they do not spend all their time on the cars nor scheme how to get others to do so. As in the case of the Schaddelee monthly club fee plan, the holder has a privilege which he values too highly to transfer freely.

ABSENCE OF TANGIBLE TOKEN HAS NOT PREVENTED AN INCREASE IN REVENUE

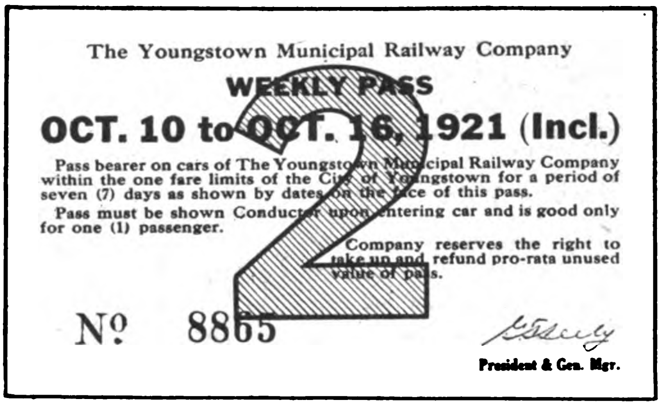
An entirely pertinent question raised in connection with the use of the pass is that of properly accounting for this class of riders as distinguished from those who give up a tangible token in the form of cash, ticket or transfer. No special difficulties offer themselves in this direction on foreign street railways for the reason that when a ticket inspector boards a car every passenger must show either a receipt issued for the trip under way or else a pass good for the section on which the ride is being taken.

On American street railways, of course, it is not usual to issue receipts except to zone-fare riders; nor is it customary to have an inspector examine the transportation receipts or tickets. A pass, therefore, would simply be shown to the conductor on boarding. If it were a multi-zone pass, it could be shown both on leaving and entering the car. The latter practice is that of the London Underground Railway except that the "seasons" (passes) are shown not to trainmen but to a gateman at both the entrance and exit stations.

In the practical application of the pass at Racine in the late summer of 1919, it was soon found that the rides taken per pass were so steady that continuation of its registration seemed unnecessary and was therefore discontinued. The original plan was to have the passenger drop cash fares or metal tickets in Johnson counting-type fare boxes, while every presentation of a pass was rung up on an old transfer register. This practice was retained until the addition of some cars without registers brought up the question whether it was worth while to spend the extra money. The management then decided that the relation of pass sales to the known traffic conditions on different routes was sufficiently clear to make the special registration unnecessary.

The larger the city, of course, the more difficult it is to keep track of all the factors that influence riding. Hence the application of the pass to Youngstown with its 146,000 instead of 64,000 population was a bigger problem in accountancy. Nevertheless, theories must always give way to realities. The realities are that both riding and revenue have increased with the coming of the pass; and that the relationship between increased riding and increased revenue is about what might be expected when the great reduction in the cost per ride is taken into account.

It is not pretended that no passenger ever gets by without presenting a current pass; but will anyone assert that any other method of fare collection secures all of the legitimate revenue? It is not alleged, either, that a dishonest conductor might not try to intercept cash or tickets destined for the box and ring up a pass presentation instead. As a matter of fact, the pass riders constituting two-fifths of the total traffic cannot be tampered with at all. There will always be some stealing, some indifference and some indulgence under any form of fare collection. The ultimate thing always is: Is more money coming into the till?



The Youngstown Municipal Railway Company

WEEKLY PASS

OCT. 10 to OCT. 16, 1921 (Incl.)

Pass bearer on cars of The Youngstown Municipal Railway Company within the one fare limits of the City of Youngstown for a period of seven (7) days as shown by dates on the face of this pass.

Pass must be shown Conductor upon entering car and is good only for one (1) passenger.

Company reserves the right to take up and refund pro-rata unused value of pass.

2

Nº 8865

President & Gen. Mgr.

A SAMPLE OF THE YOUNGSTOWN WEEKLY PASS

To clarify the reference to fare collection, it should be stated that the practice at Youngstown is to use a locked Cleveland box for cash and paper tickets, while the passes are rung up on the "ticket" side of the register. The attention of the platform men to this rule seems pretty clear from the fact that the number of rides shown per pass varies by no more than one-tenth ride per day, the high figure being 4.3 and the low, 4.2. By this time the management knows quite well what it may expect from different conductors and different routes under given conditions of traffic activity, for experience and the law of averages will be quick to betray any abnormalities.

One thing the management did learn at once, namely, the sales ability of its different conductors. Another matter about which it gained useful information was with regard to the localities from which it can expect the largest proportion of steady customers. This is taken up elsewhere in a discussion of how differentials in fare differentiate the riders.

It has already been brought out that while the passholder is theoretically in the position to ride all the time, he really does not take more than 4.3 gross (with transfers included) or 3.3 net rides a day. For this

Each operating company largely routes its lines over the tracks which it owns or controls, whether or not such lines serve the public most conveniently. No one of the companies controls trackage serving all parts of the borough. Consequently no single company can furnish a comprehensive and convenient service.

Under the rerouting plan the sole idea has been to lay out lines that will serve the public most conveniently and adequately. No consideration has been given to track ownership. Under one operator instead of nine this is possible.

(c) The rerouting plan provides for the operation of twenty-five lines. The nine Manhattan companies now operate thirty-five different lines. It is proposed to reduce the number of lines by nearly a third.

On thirty of the most important lines now operated, only 1,069 cars operate homeward during the maximum rush hour. This is an average of less than thirty-six cars per hour per line. The minimum movement in cars per hour was eight on one line and the maximum was ninety-eight on another line. Some of these lines operate over the same tracks. But when it is recognized that a twenty-second headway, which is not an unreasonably close headway under proper conditions, will permit 180 cars per hour to travel over a single track, it is obvious that the trackage available in the Manhattan surface car system is not being utilized to anything like its capacity. This means that the trackage now being used may be reduced. This in turn means a reduction in the number of lines operated, so that the total surface car traffic available will be distributed among fewer lines. Such a reduction in trackage can be carried out to a considerable extent and still retain enough trackage to permit a sufficient number of cars to comfortably transport all the surface car traffic. The rerouting system which has been developed has taken this condition into account, but enough trackage should be retained to accommodate all the traffic that can be induced to utilize the surface lines. The greater the use of the surface lines, the greater the relief which will be afforded on the rapid transit lines, until such times as the rapid transit facilities can be increased sufficiently to meet the traffic requirements.

(d) The new system of lines is proposed to include eleven interborough surface lines designed to conveniently connect the Manhattan surface system with those of Brooklyn and Queens.

Now, except in some minor instances, it is not possible to board a car in Manhattan and travel any distance through the other boroughs. Usually, such car lines as cross the river stop at the bridge terminal in the contiguous borough. It is proposed to create interborough routes—routes that really will traverse the streets in each borough and will permit a considerable interchange of travel from one borough to the other without transfer. Using such routes, with a free transfer and with an additional fare transfer—or for two fares—most points in one borough will be conveniently accessible to nearly every section of the other borough. From the standpoint of public service the interborough lines proposed should be operated as Manhattan lines. The advantage of this method is that it affords passengers from a considerable portion of the outlying boroughs an opportunity to enter into and traverse the central borough for a single fare.

(e) The speed of cars over the surface car tracks should be increased from the present speed to 10 m.p.h., if possible, thereby improving service and inducing a greater use of surface cars, to the end that the surface car system may carry a greater proportion of the rush hour traffic.

Surface car traffic is, as long as surface cars form a component part of the city's transit scheme, a necessary service, and should be given the right of way over other classes of street traffic during the hours of heaviest movement, that is during the morning and night rush hours. In other words, during this time of day, morning and night, the principal business of the city is to get its workers from their homes to their work or from their work to their homes. All vehicles should be kept off the tracks during these hours, and no parking of vehicles in car streets should be permitted. The police power should be utilized to the utmost to push forward the car movement during these hours of the day. At the present time the speed of movement over surface car tracks in Manhattan gets down nearly as low as 5 m.p.h. an hour on a number of lines, whereas cars ought to be operated at an average speed of 10 m.p.h. Such an increase in the speed of car movements has many advantages. It shortens the time of travel between home and work, thereby promoting the use of the surface cars by workers during the rush hours, and thereby permitting them to perform to a higher degree their functions in the transit scheme. Increasing speed also decreases operating cost materially. It reduces the amount of equipment required. And in every way it is a desirable thing to accomplish.

(f) The capacity of the new system should be increased during the rush hours by the use of trailer car operation.

There is no better way of taking care of the heavy overloads during the rush hours than by the use of trailer cars. Such operation should be utilized wherever traffic conditions require it. It will increase capacity and consequently reduce congestion, and improve traveling conditions during the rush hours. With the removal of vehicular traffic from car tracks during rush hour periods and in other ways accelerating the car movement trailer operation can be made use of to better advantage.

(g) Bus operation should be used as feeders and to supplement surface lines wherever traffic requires it. Generally buses should be employed on crosstown lines where tracks have been abandoned and on other routes where traffic may justify such operations. Bus routes have not yet been planned in detail. The question will be dealt with later.

(h) Surface car operation is to be eliminated from the lower west side of Manhattan below Fourteenth Street. In this section, the streets generally are narrow, the trucking intense and the surface car movement is necessarily very slow. Consequently very little traffic is carried on the cars routing through this section. It is proposed to abandon all car lines here, except two crosstown lines. The rapid transit lines traversing the territory are numerous. If additional facilities are needed, bus lines may be inaugurated.

(i) Second, Lexington, Seventh and Ninth Avenues are to be utilized exclusively for vehicular traffic—surface tracks are to be removed.

There are 180 cross streets on the east side and 260 cross streets on the west side of Manhattan. Only eleven avenues traverse Manhattan north and south and serve all of these cross streets. This small number of avenues is wholly inadequate for the enormous amount of vehicular traffic which must use them. Despite this fact, every one of these north and south thoroughfares is occupied for some distance by surface car tracks. The surface cars interfere with the vehicular traffic and the vehicular traffic delays the surface cars. Consequently the service is most unsatisfactory, both for cars and for vehicles.

It is proposed that the four avenues named above be used exclusively for vehicles. By rerouting the Fourth and Madison Avenue line into Broadway at Union Square, Lafayette Street and Lexington Avenue will be free for fast moving vehicles from one end of Manhattan to the other, on the east side. At some future time, in order to improve the connection between Fourth Avenue south of Fourteenth Street and Irving Place, the continuation of Lexington Avenue north of Fourteenth Street, a new street should be cut through the block between Thirteenth and Fourteenth Streets joining Fourth Avenue and Irving Place.

On the west side of Manhattan, Varick Street and Seventh Avenue via Central Park will provide a thoroughfare for fast moving vehicles from lower to upper Manhattan. Second Avenue on the East Side and Ninth Avenue on the west side with the street car tracks removed can accommodate heavy trucking. With such free ways provided for vehicular traffic, it will be easier to regulate such traffic along surface car streets. In other words, the movement of both cars and vehicles will thus be accelerated.

OTHER POINTS BROUGHT OUT

In his discussion of this report, Mr. Turner made some additional observations. He said, in the first place, that the report represented only his own views and was submitted simply for future consideration by the commission. It was based on the idea of utilizing for surface car operation the minimum number of north and south avenues possible, without detriment to the convenience and capacity of the surface car system, and then to utilize these lines as efficiently as possible. He did not discuss the legal method by which the so-called "abandonment" of the lines could be accomplished, but said "yes" when Counsel Shearn asked him whether he did not recognize that even the 22 miles of unused track now in the street could not be removed, or if it could be removed, could be taken away only with difficulty and after tedious litigation, owing to the companies' clinging to franchise rights. Mr. Turner added that improvement of the situation depended on co-ordination of all vehicular traffic and a comprehensive treatment of the situation as a whole. The disadvantage to vehicles and trucks in compelling them to keep off the car tracks during rush hours was compensated for when other streets were given over exclusively to vehicular traffic.

His thought in regard to buses in Manhattan would be that they should first be put on the crosstown streets not served by car lines. He said that evidence before the commission had shown that the cost of transporting a passenger in a decently conducted bus line is considerably in excess of 5 cents, and that if a 5-cent fare was charged for bus with transfer to car, the excess in cost would have to be absorbed by the system as a whole. The capacity of a bus is limited because standing passengers cannot travel in it as comfortably as in a car. Mr. Turner recommended a universal transfer.

Selling the Employee on Salesmanship—I

Persuasive and Sincere Talks to the Employees of the Detroit Municipal Railway Have Met with Singular Success—Safety Talks at Schools and Public Meetings Help to Make Transportation More Readily Salable

BY B. R. BIGELOW
Sales Manager of Transportation, Department of Street Railways, Detroit, Mich.

TRANSPORTATION salesmanship might relatively be spoken of as the trunk of some sturdy tree. It has attained its measure of sturdiness because its vigorous roots reach out in every direction and feed that trunk of transportation salesmanship with the very essence of the ideas which are necessary to its development. The organic soil about this tree must be of the quality productive of its best growth. As the sales manager of transportation, it is my duty to enrich that soil with just the kind of environment that should give a perfect result.

In this position my duties may be stated briefly to consist of the supervision of the school of instruction for car operators, the following up of any complaints of service, the giving of safety talks to school children and to others at public meetings, and interesting myself in any other matters pertaining to the manufacture and sale of transportation. A course of instruction is given which not only has a bearing on actual car operation but also aims to educate the men along the lines of transportation salesmanship. We recognize that the car operator is the department's point of contact with the public and therefore try to make a salesman of every platform man, to the end that passengers may not only have a safe trip on our cars but an enjoyable one as well.

Every man, I believe, in the beginning of his service with us is possessed of certain undeveloped resources of salesmanship. With some they need only to catch the idea of merchandising transportation in order to develop their talent, while with others the process is much slower. I have found that the human side of affairs of life offer an inexhaustible and interesting study.

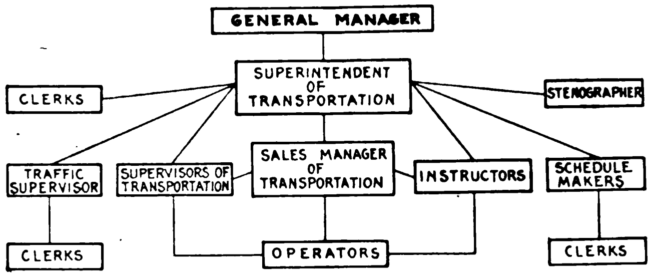
In line with spreading broadcast the safety-first idea, I am at present engaged in giving a series of safety talks to the children of the public schools. These talks are given in the auditoriums of the schools, with the full co-operation of both the principals and teachers. With this type of audience it has been my aim to make the talks short and concise and to have them well illustrated with stories.

In the following sales talks I have endeavored to keep in mind two things, brevity and conciseness, and have also tried to confine myself to one definite phase of the fundamentals of making transportation a more salable commodity.

Sales Talk I—Introduction

Salesmanship is an art worthy of the best thought and study of the electric railway men of today. In this and succeeding articles I aim to visualize the qualifications of a successful transportation salesman. You will ask, perhaps, "Why is salesmanship necessary in electric railway transportation. There are the streets, the cars and people to ride; what more is necessary?"

The electric car supplanted the horse car and became at once a favorite means of transportation. No private means of conveyance could then approach it in speed and general comfort. Electric lines were freely patronized by every one, whether bent on business or pleasure. The electric car in those days was like an ice cream counter on a hot day—everybody patronized it.



HOW THE SALES MANAGER OF TRANSPORTATION FITS INTO THE OPERATING ORGANIZATION

Under these conditions instructions to the operating men were for the most part negative and seldom positive. In other words, they were told what not to do, instead of what to do, as is the case in transportation salesmanship. Shortly after the advent of the electric car other developments having a bearing on car operation took place, such as the construction of improved roadways and sidewalks, thereby inviting pedestrians.

Automobiles designed for private use are now almost universally owned and operated. Those of us who do not own one are quite ready to accept at any time an invitation to ride. Many such invitations are, of course, given and accepted, and whatever their ratio may be, by just so many do they detract from the maximum possible number of car riders. It must be obvious to all that the

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[NOTE.—Mr. Bigelow's series on transportation salesmanship comprises five talks, two of which are included in this article. The remaining three will appear in an early issue.—EDITORS.]

number of people thus given free rides has greatly increased with the passing of the last decade. In many localities today the electric car must also vie with the public service auto. The trolley man of the present must, therefore, be more than a mere trolley man; he must be courtesy personified; in other words, he must be a transportation salesman.

The best waiter in hotel or restaurant is the one who anticipates your wants. The best trolley man of today is the one who anticipates the wants of his passengers. He does this in no small degree by distinctly announcing the streets so that passengers are not obliged to watch for their stopping places.

A trolley man should acquire a complete general knowledge of the city, should have at his tongue's end the location of all public buildings, churches, halls, schools, etc. In other words, when occasion requires he should constitute in himself, in so far as possible, a bureau of information, dispensing such information in a courteous manner. He should always exercise for the tired mother with her babies and bundles particular courteous attention. Patience is indeed a virtue, but in her behalf it is doubly so. This same rule should apply to passengers who are aged and infirm.

He should make from any extreme or unusual occasion opportunities for salesmanship. By way of illustration: In a neighboring city one night a car was being operated from down town to the residential district when suddenly a terrible rainstorm came on. At a street intersection stop, which constitutes the natural line from business activities to home environments, the operator addressed his passengers practically as follows:

"Ladies and Gentlemen: On account of the severe storm I will be pleased to make stops other than the specified ones, wherever such will make for your convenience. I shall look to you for the needed information."

As a result, for the remainder of the trip, he stopped opposite many homes, reached the end of the line on time, and no doubt gained for the company the gratitude of a carload of passengers. Such, you say, was more than courtesy. Yes, it was. It was transportation salesmanship.

Sales Talk II—Development of Salesmanship

We will assume it is agreed that transportation salesmanship is desirable, but how can such a condition be brought about. In any industrial enterprise men are brought together from almost every walk of life. Their standards of living differ widely and their traditions are not the same. Must we then fold our hands and calmly agree that it is a beautiful dream, but cannot be put into active operation?

Do not be discouraged by the critic. The critic is usually pessimistic, generally selfish and never an enthusiast. To the average critic good intentions are regenerated by the enthusiast. The enthusiast commences where the critic leaves off. Obstacles pointed out by the critic become just stepping stones to the enthusiast or, in other words, obstacles are made opportunities by the enthusiast because he overcomes them.

This very municipal enterprise has been brought to its present development in face of organized opposition. Every one of us now has an important part to perform in its further development; you as individual trolley men are now called upon to represent the railway department of this city. The opportunity is thus thrust out to you. Will you grasp it and make it a stepping stone to individual industrial success or will you let it slip through your fingers? It is through you that the citizens of this city will see and know its railway department, and its standards will be judged by your standards; its courtesy and efficiency by your courtesy and efficiency. You and I should make of our organization an industrial democracy, and the qualification of a successful transportation salesman will be added to those which you already possess.

Industrial democracy—what do I mean by industrial democracy? We say a man is democratic when he is courteous, kindly and easy of approach. We say he is democratic when he lives with a full consideration of the rights of others. We say a man is industrious when he confines himself diligently to his business. If you would be living examples of industrial democracy you will not only be devotedly attentive to business but also devotedly attentive to the rights of others. What a fine motto to hang over the door of our motormen's and conductors' room, "This is an Industrial Democracy."

Industrial democracy might well be called a universal creed because it forms in itself a common ground on which men of every tradition can stand and sing its praises. Industrial democracy invites friendship, friendship invites co-operation and co-operation will bring success.

Emergency Power Furnished by Moving a Complete Substation Set

A COMPLETE motor generator was moved intact from one substation to another to relieve the emergency power situation which developed at Ardmore substation of the Los Angeles (Cal.) Railway on Saturday, Dec. 3. One of the machines in that substation was damaged by power interruptions resulting from the wind storm. Ordinarily the job of dismantling and reassembling the machine would have occupied a week.

Insulation on one of the Ardmore generators was burned out by a sudden surge of power which followed interruptions of thirty and forty-six minutes. It looked at first like a two weeks job, but is became apparent that the repair work will take until after the first of the year.

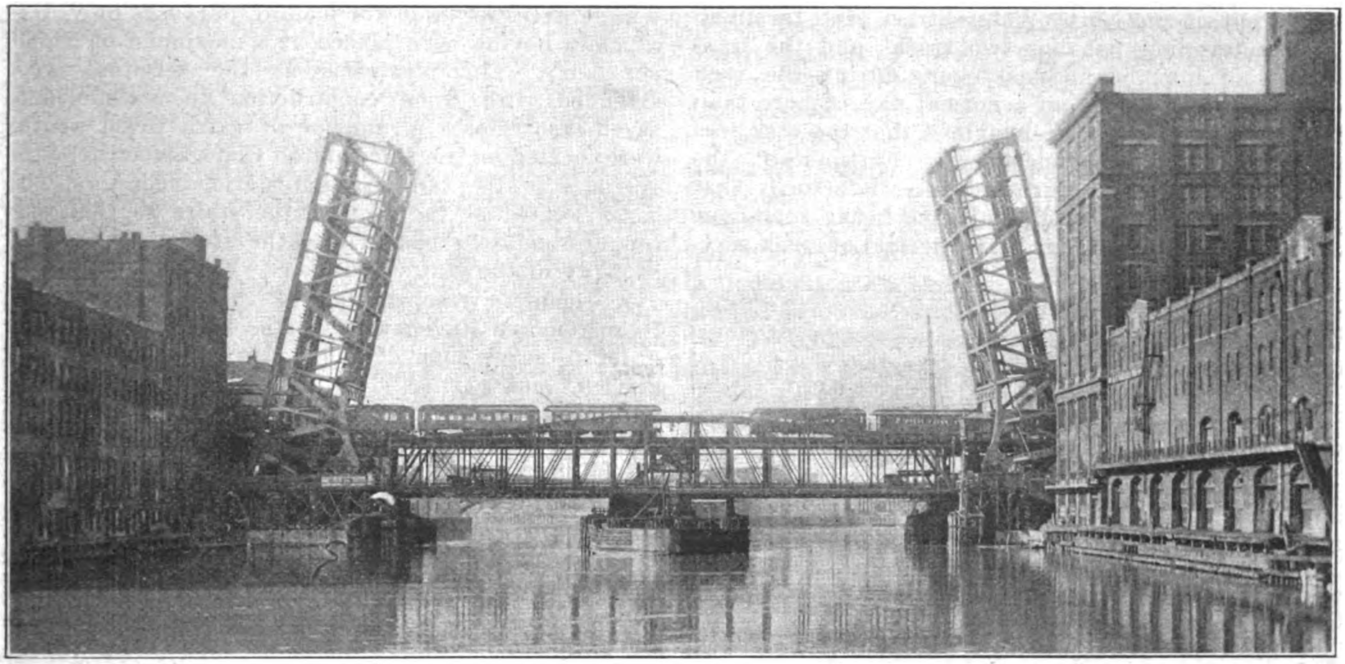
The generator was moved from the Soto Street substation. Work began at 8 a.m. Tuesday and continued steadily for twenty-four hours. The job was finished so the generator could be used Wednesday morning.

An interesting angle in the case is the fact that residents of the Melrose district, in which the trouble occurred, had blocked efforts of the Los Angeles Railway to build and equip an automatic substation in that territory. By their protests to the City Council, permission for the work was withheld. The railway made use of the opportunity to inform the public that opposition of a few citizens had blocked the power program and that if the substation construction had been permitted, the work would have been completed and the resulting inconvenience of curtailed service would have been avoided. Considerable newspaper advertising and publicity was devoted to the subject.

A count made in the month of October showed that an average of between 250 and 300 passengers per day were then traveling by motor bus from San Francisco to Los Angeles, a distance of 482 miles. During the summer months, when the roads over the Siskiyou Mountains are in good condition, there is motor bus service from Portland, Ore., to San Diego, Cal.

Handling Traffic on Chicago "L" During Bridge Replacement

Construction Work Quickly Done, Including Full Interlock Protection for First Train Over Bridge—Difficult Traffic Problem Encountered in Rerouting Trains



NEW BASCULE BRIDGE READY TO DISPLACE OLD SWING BRIDGE AT WELLS STREET

REPLACEMENT of the swing bridge over the Chicago River at Wells Street with a double-deck bascule bridge recently involved some very difficult construction and traffic problems for the Chicago elevated railroads. All trains serving the North Side pass over this bridge. While construction of the new bridge was practically completed with the old bridge in place, the final steps in placing the new bridge in service required that the elevated service over the bridge be suspended for a short period. The time for interrupting service was therefore selected so as to involve the minimum traffic.

The bridge was closed to traffic at 8:05 p.m. on Friday, Dec. 2, and the first train passed over the new bridge at 7 a.m. the following Monday. The work was thus completed so that only one regular rush-hour period (that of Saturday morning) had to be handled without through service.

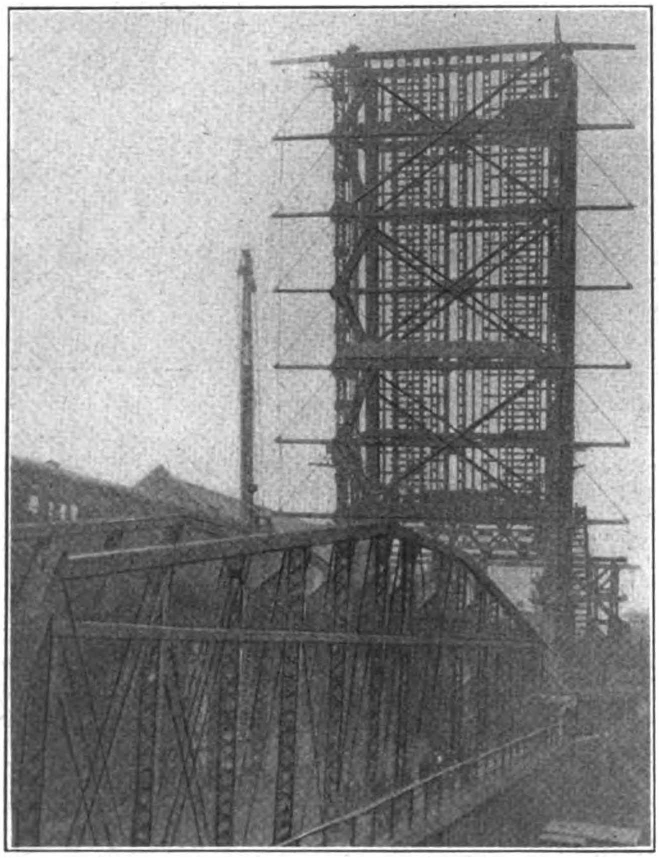
When service was stopped over the bridge on Friday night, the first work done was that of dismantling the old bridge. The elevated forces removed the rails, guard rails, power rails, the interlocking system, etc., from the bridge within six hours. The bridge contractor then swung the bridge parallel with the stream and proceeded with acetylene torches to cut away the central portion of the old bridge to make an opening into which the new bridge could later be lowered. Simultaneously, the steel work of the floor system in the shore panels of the new bridge, which had been omitted to permit the operation of trains through the bridge as it stood in the vertical position, was riveted in place. It was also necessary to remove the approaches for the old bridge and build in those for the new one. All of this was done and the new bridge lowered into position ready for the work of the elevated forces on Sunday night at 10 p.m. The work of completing the new bridge was not carried on through Saturday night, for while an abundance of artificial lights had been supplied by the elevated lines to aid in the work, the shadows cast made the contractor fearful of night work.

As the work to be done by the elevated railroads, however, was all up on top of the structure, this could be very easily floodlighted and the work done at night. The lighting was supplied by two banks of lamps and powerful reflectors located on a 40-ft. pole at either end of the bridge and consisting of five 1,200-watt lamps in each bank. The illumination was excellent but the work was somewhat complicated by snowfall during Sunday night.

Beginning at 10 p.m. work was started to lay the ties, run rails, power rails, guard rails, connect up power cables which had been previously laid on the bridge, install the electro-pneumatic interlocking system, bond the rails, etc. All of this work was completed so that the first train passed over the bridge at 7 o'clock on Monday morning under full protection of the interlocking system. The most difficult part of this mechanical work was the placing of the twenty-four cast manganese bridge rails, which require a very exact installation. About 100 men were used in this work by the elevated lines and 110 by the bridge contractor.

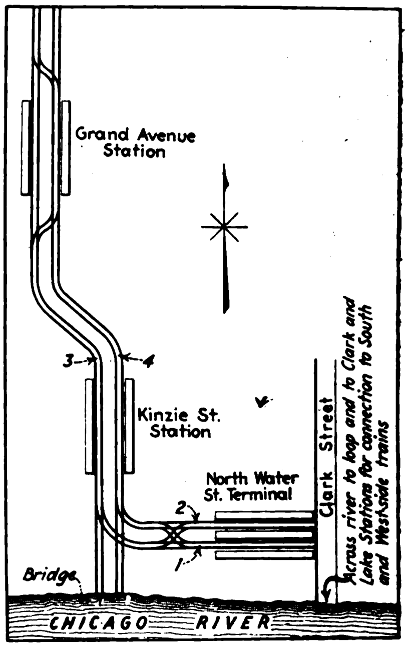
An accompanying illustration shows the two leaves of the new bridge in their raised position with the old bridge still in place. When completed the new structure will be one of the largest and heaviest in Chicago. The clear span from face to face of the concrete piers is 231 ft. The total width of lower deck is 72 ft., providing a roadway of 38 ft., curb to curb, and two sidewalks with a clear width of 13 ft. 6 in. each. Besides the vehicle and pedestrian traffic the lower deck will carry the loads of two street car tracks while the upper deck supports the double tracks of the elevated railroad.

During the interruption to through traffic on the elevated lines, North Side passengers were handled in and out of the North Water Street stub terminal. As this terminal has but two tracks and the total number of northbound passengers during the rush hour from 5 to 6 p.m. on a normal day is more than 28,000, it may readily be imagined that the task was considerable of an undertaking. Fortunately, the work on the bridge progressed so satisfactorily that it was necessary to handle only one heavy rush-hour service without the bridge. The normal off-peak service could be handled very nicely in and out of this two-track, three-platform terminal. The Saturday workward peak was handled by arranging to unload four trains simultaneously at the Kinzie Street station and North Water Street terminal. The trains were moved in groups of four from the cross-over just north of Grand Avenue station, as seen in the accompanying sketch, the two leading trains making no stop at Kinzie Street, but going direct into the two pockets at North Water Street. The third train was operated over the West track to Kinzie Street station, and the fourth train, to Kinzie Street station over the East track, both unloading at this station. As soon as the unloading was completed, train No. 3 was run back on the west track to the first cross-over, clearing before No. 4. Trains Nos. 4, 1 and 2 were then operated northbound in the order named, on the east track. The movement of the second group of through trains was then started as soon as No. 3 cleared the westbound track on its return movement. By thus unloading four trains at a time, it was found possible to handle fifty trains an hour during this morning rush.


RAISED BASCULE OF WELLS STREET BRIDGE DURING CONSTRUCTION

During the Saturday noon rush and the heavy Christmas shopping traffic all Saturday afternoon all southbound passengers were unloaded at Kinzie Street in order to preserve the full capacity of the North Water Street terminal for loading purposes only, this capacity having been placed at a maximum of 24,000 per hour. The platforms at the terminal were extended with wood construction to accommodate seven-car trains. A number of extra ticket booths were located on the sidewalk on Clark Street near the entrance to the terminal and station collectors with boxes located at the foot of the stairs so that passengers could be passed into the station to the full capacity of the stairs and doors.

A complete rescheduling of the Wilson Avenue, Evanston and Ravenswood trains had to be made in order to serve each division, provide sufficient local service, and get the maximum number of cars in and out of the terminal. The problem had many ramifications and involved a very complicated and detailed study in preparation for the emergency. This study included plans for handling the traffic during an evening rush hour, should the bridge for some reason not go into service as contemplated. Had this been necessary, it was planned to shut off all receiving of northbound passengers on the loop during the rush hour, as it would have been impossible to unload them and discharge them from the platforms of the State and Lake and Clark and Lake stations for transfer across the river to North Water Street as fast as they would be received. Also, it would have been impossible to handle the full number of people, 28,000 or more, during the hour from 5 to 6 p.m., had they all desired passage from the North Water Street terminal, and some of them would necessarily have been delayed into the next hour. Fortunately, this shutting off of the loop stations did not become necessary.



SKETCH SHOWING FACILITIES FOR HANDLING "L" TRAFFIC IN EMERGENCY

Another problem involved in the cutting off of the through traffic was the handling of the passengers of the Chicago, North Shore & Milwaukee Railroad between the terminal at the Adams and Wabash station of the elevated, on the loop, and the necessary emergency terminus of these trains on the north side of the river. This was done with sixteen twenty-seat motor buses in a way which won many complimentary remarks from the passengers. The inbound passengers were unloaded at Grand Avenue, from where buses took them by way of Michigan Boulevard to the terminal on Wabash Avenue. As inbound trains reached Wilson Avenue, each passenger was given a bus ticket on the back of which was printed instructions for leaving the train at Grand Avenue, explaining why this was necessary and also telling of the bus service to the loop. When the train arrived at Grand Avenue, therefore, the passengers were all fully informed, and instead of there being kicks, there was praise for the pains the company had taken to transport them to the usual destination.

Similarly, all passengers who came to the Wabash Avenue station of the North Shore line, to take trains north, were instructed by station callers to take the buses waiting which would carry them to the Grand Avenue station. As there was no track space on which the North Shore trains could be permitted to stand, it was necessary to schedule them to leave as promptly as they could be unloaded and loaded. The buses were therefore scheduled to leave the Wabash Avenue terminal at train time, and the trains were scheduled to leave Grand Avenue station just fourteen minutes later, giving the buses time to make the trip between these two points.

The buses used in this service were rented from the Chicago Motor Bus Company at $4.50 an hour per bus, it requiring as high as ten bus loads to haul the people to or from some trains. While this service was expensive for the railroad, it was very much appreciated by the patrons.

Coal Cost in New York Power Statistics

THE two accompanying tables were recently compiled by the accounting department of the New York Transit Commission and presented at a hearing of that commission by Frederick W. Lindars, chief accountant. Table I shows comparatively for the past eight years the pounds of coal burned per net kilowatt-hour and cost of fuel in cents per net kilowatt-hour generated at the power stations of each of the principal railway companies. Net kilowatt-hours generated are defined as the gross kilowatt-hours less the amount used at the generating station. Fuel cost is defined as the amount which is charged to operating expense account, "fuel for power."

Table II gives for the same companies and for the same periods the cost of fuel per ton of 2,000 lb. delivered in the bunkers. The steam generating equipment in the several power stations is not uniform, and some of the companies have found it advantageous to use a mixture of bituminous and anthracite coal to obtain the most economical results. The advantages of location of the power station on the water front and of economical coal-handling machinery is shown in the table.

An interesting comparison is brought out in the case of the Hudson-Manhattan Railroad, which indicates that while the cost of fuel per ton is very much less than that paid either by the Interborough or Brooklyn Rapid Transit Companies, the actual cost of fuel in cents per net kilowatt-hour generated is considerably greater than the same cost to the latter two companies.

TABLE I—POUNDS OF COAL CONSUMED AND COST OF FUEL IN CENTS PER NET KILOWATT-HOUR GENERATED BY THE RAPID TRANSIT AND SURFACE LINES IN NEW YORK CITY

	1914		1915		1916		1917		1918		1919		1920		1921	
	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents	Lbs.	Cents
Interborough Rapid Transit:																
Subway division	2.02	0.29	1.95	0.28	1.91	0.28	2.01	0.31	2.11	0.38	2.17	0.59	1.90	0.54	1.86	0.68
Elevated division	2.31	0.33	2.06	0.30	1.63	0.24	1.63	0.25	1.72	0.31	1.74	0.47	1.76	0.51	1.87	0.68
Average for I. R. T.	2.12	0.30	1.99	0.29	1.79	0.26	1.85	0.29	1.92	0.34	1.93	0.52	1.83	0.53	1.86	0.68
Hudson & Manhattan	3.06	0.27	3.31	0.27	3.43	0.28	3.70	0.45	4.36	0.81	4.53	0.87	4.70	0.84	4.63	0.97
Brooklyn Rapid Transit	3.01	0.32 }	2.82	0.33	2.71	0.33	2.86	0.37	2.92	0.52	2.86	0.74	2.60	0.75	2.24	0.83
Coney Island & Brooklyn	3.73	0.35 }														
New York Railways	3.11	0.44	3.16	0.46	3.07	0.46	....	....	....	....	....	....	....	....	....	....
New York & Long Island	3.73	0.64	3.85	0.65	3.83	0.67	4.31	0.95	4.78	1.25	6.90	1.97	5.56	1.59	....	....
New York & North Shore	4.01	0.55	3.93	0.53	3.88	0.54	4.56	0.76	4.95	1.27	4.97	1.45	5.88	1.34	....	....
Staten Island Midland	5.01	0.78	8.62	1.21	....	....	....	....	....	....	....	....	....	....	....	....
Average for all companies	2.62	0.33	2.50	0.33	2.22	0.29	2.31	0.33	2.38	0.43	2.35	0.61	2.22	0.62	2.03	0.73

NOTES

"Cost of fuel," as used here, is the amount charged to the operating expense account "Fuel for Power."
"Net kw.-hours generated" is the "gross kw.-hours generated" less amount used at generating station.
Average for all companies is based on volume of production and total coal consumed.

TABLE II—COST OF COAL FOR POWER TO THE RAPID TRANSIT AND SURFACE RAILWAYS IN NEW YORK CITY
(The costs are per ton of 2,000 lb. delivered for the fiscal years 1914 to 1921, inclusive)

	1914		1915		1916		1917		1918		1919		1920		1921	
	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous	Anthracite	Bituminous
Interborough Rapid Transit:																
Subway division	.....	$2.86	.....	$2.91	.....	$2.94	.....	$3.08	.....	$3.52	.....	$5.43	.....	$5.72	.....	$7.21
Elevated division	.....	2.88	.....	2.90	.....	2.92	.....	3.07	.....	3.53	.....	5.39	(a)	5.75	(a)	7.16
Total average cost I.R.T.	.....	$2.87	.....	$2.90	.....	$2.93	.....	$3.07	.....	$3.53	.....	$5.41	.....	$5.74	.....	$7.18
Hudson & Manhattan (b)	$1.69	.....	$ 1.62	.....	$1.61	.....	$2.19	.....	$3.72	.....	$3.83	.....	$3.57	$4.87	$3.82	.....
Brooklyn Rapid Transit System	1.66	$2.84 }	1.69	$2.83	1.73	$2.80	2.00	$2.98	2.80	$3.75	3.84	$5.28	4.06	5.71	4.15	$7.44
Coney Island & Brooklyn	1.75	2.67 }														
New York Railways	.....	c2.84	.....	2.93	.....	2.99	.....	.....	.....	.....	.....	.....	.....	.....	d 7.58	.....
New York & Long Island	.....	3.44	.....	3.40	.....	3.48	.....	4.39	.....	5.15	.....	5.57	.....	5.71	.....	.....
New York & North Shore	.....	2.76	.....	c 2.73	.....	c2.78	f1.79	c3.51	f1.78	5.22	f2.01	5.94	.....	4.57	g	g
Staten Island Midland	e 3.15	.....	e 3.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total average cost	$1.69	$2.86	$1.69	$2.89	$1.70	$2.89	$2.05	$3.06	$3.09	$3.62	$3.83	$5.38	$3.79	$5.72	$4.19	$7.26

(a) A small amount of anthracite is included in the cost of the bituminous coal.
(b) From 1914 to 1919 and in 1921 there is included a small percentage of bituminous. The 1921 figure also includes cost of coal used for purposes other than electric generation. After Nov. 15, 1920, the company purchased power from New York Edison Company.
(c) Company reports this as semi-bituminous.
(d) Cost of coal used for heating purposes only. Figures not obtained from annual report, but from records of company.
(e) The kind of coal used is reported by the company as various. In 1913, it was mostly anthracite.
(f) Anthracite screenings.
(g) Power station no longer in operation. Power is bought from Long Island Railroad.

Electric Railway Publicity

Devoted to How to Tell the Story

North Shore Car Card Advertising Makes Impression

REPRODUCED herewith is a series of three car cards which have recently been widely distributed by the Chicago, North Shore & Milwaukee Railroad. They have been carried in the elevated and surface cars in Chicago and Milwaukee and posted in the stations of the elevated railways and the North Shore Line. Because of their unusual design, which seems to portray rather vividly the swift motion of the trains, and the attractiveness afforded by three colors, these cards have been very effective in bringing the electric line to the attention of possible patrons. The idea of speed is popular, and particularly so when it can be had with convenience and comfort—the ideas that were especially set forth in these three cards.

The North Shore Line began the unique idea last year of presenting patrons on trains with a little Christmas greeting. The personal touch which this afforded to the service rendered by the company resulted in establishing a very friendly attitude on the part of many passengers and gave rise to numerous complimentary letters. The same idea is being carried out during the holiday season this year with a little more elaborate and very attractive Christmas card, which is reproduced herewith. This was printed in red and green on a white card and distributed to passengers by the conductors. It is an example of the many little things the North Shore Line is doing to win friends—and with success.

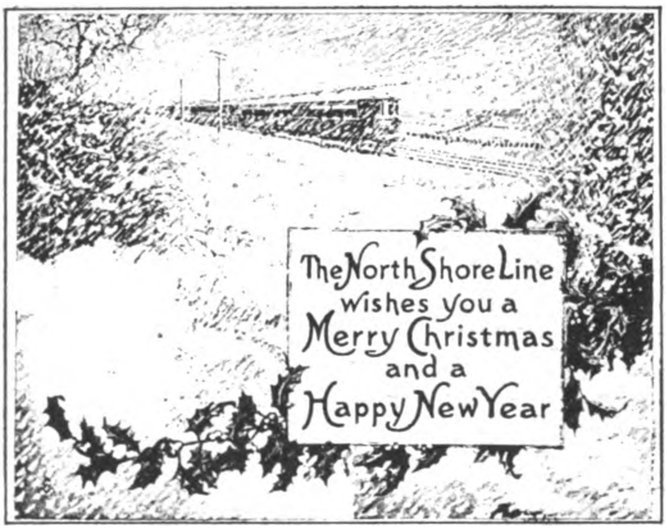
Newspapers Publish Constructive Editorials on Railways' Problems

AN INDICATION of the improved attitude taken by some of the larger newspapers in several of the central states toward problems of electric railway transportation is found in their editorial pages. The following from the *Ohio State Journal* under the date of Nov. 25 is typical:

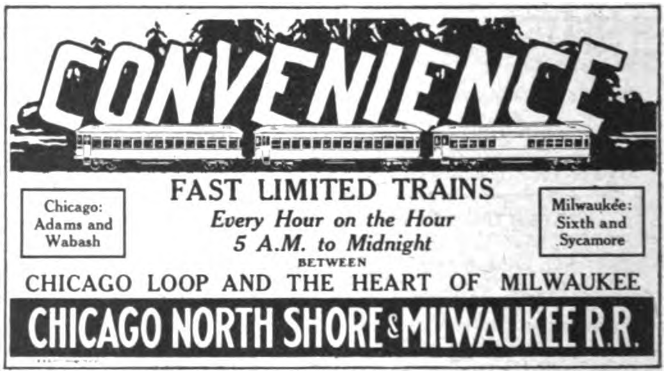
INTERURBAN TRACTION PROBLEM

Application of the receiver of the Ohio Electric for permission to abandon the line that has been operated from Columbus to Orient calls attention to the serious problems confronting that important agency of transportation the interurban. It is not a new problem, but one that came with war days and auto development and the changed conditions they brought. For years interurban managers have given no thought to earning profits for their stockholders. With them it has been wholly a problem of existence; they have been delighted if they kept their income slightly ahead of operating expenses. It is not improbable some lines will be abandoned.

The traction lines reach out into the country and supply a valuable service in the movement of freight and transportation of passengers. Business in many communities has been developed with the traction service as a basis. The public cannot afford to have the interurban traction lines disappear, but it is very certain they cannot continue



The North Shore Line wishes you a Merry Christmas and a Happy New Year



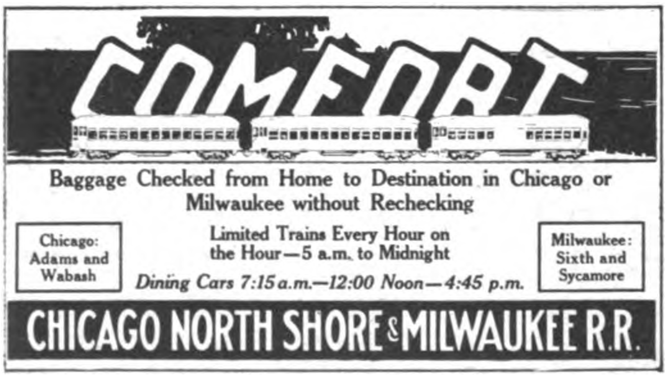
CONVENIENCE

FAST LIMITED TRAINS
Every Hour on the Hour
5 A.M. to Midnight
BETWEEN
CHICAGO LOOP AND THE HEART OF MILWAUKEE

Chicago: Adams and Wabash

Milwaukee: Sixth and Sycamore

CHICAGO NORTH SHORE & MILWAUKEE R.R.



COMFORT

Baggage Checked from Home to Destination in Chicago or Milwaukee without Rechecking

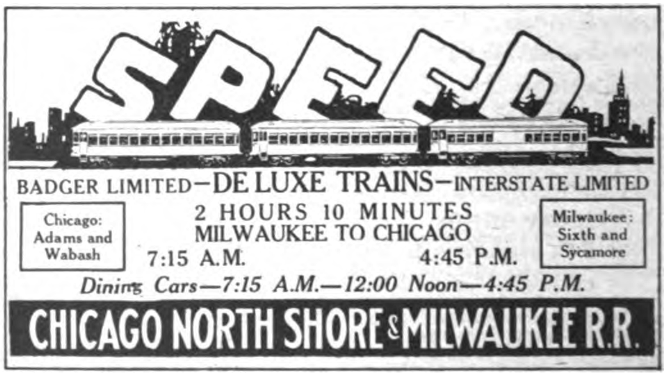
Limited Trains Every Hour on the Hour—5 a.m. to Midnight

Dining Cars 7:15 a.m.—12:00 Noon—4:45 p.m.

Chicago: Adams and Wabash

Milwaukee: Sixth and Sycamore

CHICAGO NORTH SHORE & MILWAUKEE R.R.



SPEED

BADGER LIMITED—DE LUXE TRAINS—INTERSTATE LIMITED

2 HOURS 10 MINUTES
MILWAUKEE TO CHICAGO
7:15 A.M. 4:45 P.M.

Dining Cars—7:15 A.M.—12:00 Noon—4:45 P.M.

Chicago: Adams and Wabash

Milwaukee: Sixth and Sycamore

CHICAGO NORTH SHORE & MILWAUKEE R.R.

GREETING PRESENTED TO PASSENGERS BY NORTH SHORE LINE CONDUCTORS AND THREE RECENT CAR CARDS USED —THE CARDS ARE 10¾ BY 21¼ AND ARE IN THREE COLORS indefinitely with the unhappy conditions in which they have been floundering in recent years, and for which there has been, as yet, no solution proposed.

Another editorial that shows an understanding of an electric railway's operating problems appeared in the same newspaper under the caption the "Cost of Accidents."

How heavy and burdensome is the financial cost of accidents is illustrated in the report of the Cleveland Railway, which shows expenditure during 1920 of $1,250,000 in settlement of claims for damages. The figures tell their own story of the money cost of heedlessness and human carelessness. It does not include the heavy economic loss from impaired earning ability as a result of the accidents.

That sum is a tax on the community, for the full burden falls on the car rider, because in that city under service at cost the fare goes higher as operating expenses increase and can be reduced as operating expenses are decreased. In the operation of a large system in a great city accidents will happen that no amount of forethought and care can prevent, but in a very large way accidents about street cars are of a preventable nature.

The Cleveland company has engaged in a campaign for a reduction in the cost of accidents. Employees will be trained and instructed, caution will be emphasized. The campaign, however, cannot be successful in a large way unless it has the full co-operation of the car riders and others who use the streets. It is asking nothing unreasonable to request the public to be careful of its own safety. The request has a financial value as well as personal, because, as the cost of accidents is reduced, it will have a bearing on the rate of fare charged. It is a place where the public may win doubly by making the campaign of safety a great success.

The Fort Wayne *News and Sentinel*, Fort Wayne, Ind., recently carried the following interesting editorial comment on the electric traction situation in Indianapolis, Ind.:

The Indianapolis Street Railway, relieved of jitney opposition, which was taking from $1,000 to $1,500 a day from its receipts, now comes before the State Utilities Commission with the statement that it faces the necessity of imposing an 8-cent fare in order to maintain its service. During the past year or so, it represents, the service has been carried on at the expense of the integrity of the reserve resources of the company and the detriment of its equipment. There is not the least doubt in the world that the officers of the company are telling the truth. Their books are open to inspection by the state officials and it would be impossible for them to conceal the company's real condition. Even those who are inclined to attribute to them the most sordid of motives must concede that they are telling the truth.

Indianapolis must simply pay a higher rate for her car service or see that service piled up in the wreckage. The 5-cent fare there has been maintained during the stressful period when other companies in other cities have raised their fares radically and the protestants against these raises have always pointed out the case of Indianapolis. It develops now that the Indianapolis company has just about gone broke on the 5-cent fare and it is going to require an enormous boost in fares to save the company.

There is no use disguising the fact that the utility companies over the country have suffered severely during the last four or five years and are destined to suffer for several years to come. The people might as well face the facts and make the best of them. Utility rates like the rates of everything else are higher and they are going to continue higher. When rates are raised the public yells its head off, but yelling does not alter the facts, nor does demagogy change unspeakable conditions.

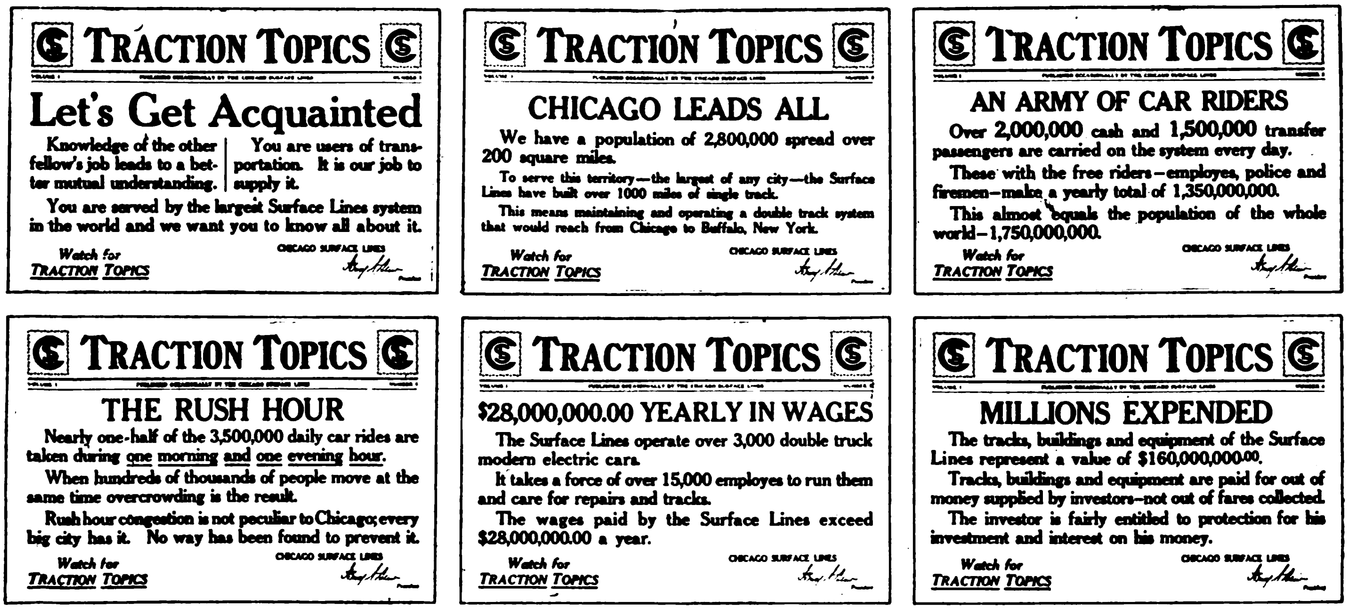
Growling will do no good, protestation will effect no change and investigations will not alter conditions. Moreover, there is this further thing to consider: If the service is boycotted it means a receivership, and a utility in a receiver's hands is a curse to any city.

Traction Topics Posters Would Inform Chicago Riders

HAVING been impressed with the manner in which short, pithy statements about the Chicago Surface Lines were absorbed by the people who visited the Pageant of Progress held in Chicago last summer, at which the traction companies had exhibits, John E. Wilkie, vice-president Chicago Railways, has begun the use of a similar type of informative publicity on the street cars. This is being put out in the form of a weekly poster, 14 in. x 21 in., under the caption of "Traction Topics." These posters are pasted on one of the side windows at either end of the cars, giving them a conspicuous position.

That the new posters are being widely read is attested by the numerous comments in the public press, for while many of these are uncomplimentary, Mr. Wilkie feels that this is a better indication that the publicity is worth something than would be the case if it caused no comment whatever. If the publicity is continued it is felt that these short statements of facts are certain to form a lasting impression in the minds of many car riders.

A few of the first posters that were used are reproduced herewith. The first number was placed on the cars on Nov. 13. The posters are changed each Sunday.



TRACTION TOPICS

Let's Get Acquainted

Knowledge of the other fellow's job leads to a better mutual understanding.

You are users of transportation. It is our job to supply it.

You are served by the largest Surface Lines system in the world and we want you to know all about it.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

TRACTION TOPICS

CHICAGO LEADS ALL

We have a population of 2,800,000 spread over 200 square miles.

To serve this territory—the largest of any city—the Surface Lines have built over 1000 miles of single track.

This means maintaining and operating a double track system that would reach from Chicago to Buffalo, New York.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

TRACTION TOPICS

AN ARMY OF CAR RIDERS

Over 2,000,000 cash and 1,500,000 transfer passengers are carried on the system every day.

These with the free riders—employes, police and firemen—make a yearly total of 1,350,000,000.

This almost equals the population of the whole world—1,750,000,000.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

TRACTION TOPICS

THE RUSH HOUR

Nearly one-half of the 3,500,000 daily car rides are taken during one morning and one evening hour.

When hundreds of thousands of people move at the same time overcrowding is the result.

Rush hour congestion is not peculiar to Chicago; every big city has it. No way has been found to prevent it.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

TRACTION TOPICS

$28,000,000.00 YEARLY IN WAGES

The Surface Lines operate over 3,000 double truck modern electric cars.

It takes a force of over 15,000 employes to run them and care for repairs and tracks.

The wages paid by the Surface Lines exceed $28,000,000.00 a year.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

TRACTION TOPICS

MILLIONS EXPENDED

The tracks, buildings and equipment of the Surface Lines represent a value of $160,000,000.00.

Tracks, buildings and equipment are paid for out of money supplied by investors—not out of fares collected.

The investor is fairly entitled to protection for his investment and interest on his money.

Watch for TRACTION TOPICS

CHICAGO SURFACE LINES

INFORMATIVE PUBLICITY MATTER NOW APPEARING IN CHICAGO SURFACE LINES CARS

Results of Mutual Benefit Association*

Principles and Organization of Twin Cities Company Association—Details of Benefits and Activities and Results Being Obtained

By FREDERICK A. ANDERSON
Social Service Director, Twin City Rapid Transit Company

OUR association of employees was organized in February, 1915. It has grown and its scope of activities has increased as the need has been felt. The foundation which was laid at the beginning has been sufficiently broad to support the features that have been added as the association has developed.

The first principle followed in organizing was that no association, however desirable its provisions, could amount to anything worth while if the spirit and purpose of the employers back of it were not right. The second principle was that the management of the association should be mutual, both employer and employee being personally represented in the management of and contributions to the undertaking. The third principle was that the membership should be voluntary. The membership would not be so likely to feel that they were contributing toward their own association. The fourth principle was that the plan and provisions of the organization should be explained so thoroughly to all the members that there could be no chance for misunderstandings as to its purpose and activities. The fifth principle was that the plan adopted must be as nearly adequate as it could be made. In my study of various organizations I found some with such limited benefits and meager provisions that they were scoffed at by the men. The sixth principle was that the program of activities of the association should be constructive and thorough.

From the very beginning of our company the family spirit has been evident. The first organizers of the Twin City lines felt that what was good for one ought to be good for all, and that those things which were bad for one were bad for others. It was their conception that if all worked together they could produce the best street railway system in the country. Wages, hours, working conditions, physical equipment and the personnel of the organization have consistently been kept at the highest level that the company could maintain throughout its whole existence. After eight years of closest association with this concern I am convinced that this most desirable family spirit is being realized more today as an actual factor than ever before. This applies both to the management and the employees.

Our association is organized upon a mutual plan of management. The employees are represented by ten members of their own choice and the company is represented by ten officials. This composes the executive committee, which has the final word in matters concerning the association as a whole, or any individual matter which may be brought on appeal to this body. There is also a benefit and relief board, which is composed of ten employees' representatives and three officials of the company. This board passes upon any claims which may arise. Associated and co-operating with each of the ten employee representatives there is a departmental committee of three, elected by the employee members. They have charge of all social, educational and physical activities. They also represent the division which elects them in matters pertaining to working conditions, hours, etc. This last phase of the work of the committee heads up in a co-operative committee, which functions separately from the benefit association and has its own constitution and by-laws.

MEMBERSHIP AND DUES

Members pay an entrance fee of $1 and dues ranging from 45 cents to $1.35, which are deducted monthly from their pay checks. The company pays an equal amount of all dues paid by members and, in addition, pays the salaries of association officers, physicians, home visitors and clerical help, cost of consultations, X-rays, medical attention and supplies, office rent, printing, etc. Last year this meant that the company paid 65 per cent of the total budget while the members paid 35 per cent. The money of the association is kept as a separate account in another bank from those used by the company.

When the organization was started the membership was thrown open for three months for charter members. There was no age limit, examination or entrance fee, the company paying this to give us a start. After that time the membership was restricted to those within the age limit (twenty-one to forty-five years, changed later to eighteen to fifty years) who were physically fit and had been in the employ of the company two months or more. No one is coerced to join the association by any official. The average membership, since organization six years ago, has been about 70 per cent of those eligible.

MEDICAL SERVICE IS PROVIDED

If an applicant for membership has a physical defect which can be remedied by surgery or medical care, an exemption is taken covering the defect. This exemption holds good for two years, after which time it is canceled and the member becomes a full-fledged member. If, during this two-year exemption period, the member chooses to have an operation performed, he pays for this himself, but the association reimburses him for the cost of that operation when the term of the exemption expires.

We have ten places where members may receive medical attention. In most of these, the physicians are on duty one hour each day, while at our general medical director's office there is a physician in constant attendance during the whole day. Last year 53 per cent of the members made 10,298 calls for some kind of medical service. Some one has criticised our plan for making the physician so easily accessible to the membership, but we have found it results in decreased time off for disabled members. Of course, the physicians need to head off tactfully the neurotic, but they cause very little difficulty.

In many concerns the medical director makes examinations, treats sickness, performs operations, etc. We believe that our plan more adequately meets the needs of our members. The medical director and his associate have the authority to send any member or dependent member of his family to any specialist whom he deems qualified to pass upon the particular disability confronting him. Such examinations, consultations, tests, X-rays, etc., are paid for as part of the association expense. Last year, for this outside service, which includes general medicine, surgery and dental service, we spent only $2,253.75. We felt rather than to put one dentist on our staff to maintain a dental clinic we would use the money this would take to provide consulting dentists. These consulting dentists are specialists in their line. They take any X-rays, make thorough examinations of the mouth, do any extracting or surgical dentistry that is required and give whatever advice regarding other work that is necessary or desirable. This phase of medical service has just recently been added and is proving most popular and beneficial.

This same principle is also applied to surgery. We believe that surgery should be performed by the very best surgeons available, and therefore we designate the American College of Surgeons. During the last year, 299 operations were performed, at a total cost to the association of $12,278.42, or an average per operation of $41.06. This includes the cost of both major and minor operations. We pay three-fourths of the cost of any operation performed on any dependent member of an association member's family.

It is interesting to note that our surgery has produced tangible results. In a study of members who were operated on during a certain year we discovered that those whose efficiency standing rated 75 per cent or over showed a 3 per cent increase in efficiency, while those below 75 per cent and on down to as low as 50 per cent showed an increased efficiency, after a six months period, of 35 per cent. Therefore, we conclude that a considerable amount of surgery we do is corrective in its results. Surgery means an emergency expense that neither the man nor his family can afford and for this reason we assume a mutual responsibility in this matter. A committee is now studying the proposition of paying the hospital expense as well.

SICK AND DEATH BENEFITS ARE PROVIDED

Our association provides for the payment of benefits ranging from $1 to $2.25 per day for a period of fifty-two weeks or any one disability. Last year we paid 1,183 different sick claims, or a total of $21,274.90. We also paid forty-seven accident claims, or a total of $1,273.32. The average amount paid during the last six years on account of sickness amounted to $22 per individual case.

At the outset of the association we were warned that men would take advantage and stay away longer than they should on account of being paid too large benefits. There may be such cases, but I am convinced that the family spirit has so thoroughly found its way through the organization that there is very little reniging. The first year the average length of time off was eighteen days, the second year this amounted to twenty days. Then we employed a registered nurse as our home visitor and for the next two years it dropped to fifteen days per case. The next year it came down to thirteen days, and this last year it has been 11.3 days per case. This shortening of absence from duty is largely due to increased efficiency in our medical service, home visitors' work and the growing family spirit throughout the organization. When the association first started we did not pay for the first seven days. After trying this for a year, we came to the conclusion that it was not just. Now we deduct only the first two days on all sick claims and none on accident claims.

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*Abstract of paper presented at the annual convention of the Industrial Relations Association of America, New York, Nov. 1-4, 1921.

The association also pays for the prescriptions written by our physicians. Arrangements are made with certain drug stores and by ordering only such quantities as are actually needed we have been able to keep the association prices of the prescriptions down to 40 cents. Last year 4,143 prescriptions were written at a cost of $1,161.03. The association also pays for all medical appliances that are ordered by our physicians.

It is our belief that benefits should be paid for a long enough period to determine whether the illness is to be permanent or not. By paying benefits for a full year it gives us a chance to help the man make such readjustments in his home as are usually necessary when the breadwinner becomes permanently disabled.

It is hard sometimes to determine the actual value of these things, but I feel that the man who drags around the shop or the office with perhaps a slight fever is performing an inferior type of service and his efficiency is reduced materially. Efficient medical service heads off this sort of thing for the man has easy access to the doctor, and it is far better for such a man to be sent home for a day than to do half work for several days and finally have to give up and remain at home a longer time. Medical service should also insist upon a man not coming back to work until he is well. The man who comes back but partially recovered will give a mediocre service only. We require that members have suitable medical attention while off duty. On the whole, medical service shortens the absence and the total number of days lost by employees over a period of time.

Our association also pays death benefits ranging from $150 to $700, according to the class of membership held. In the last six years ninety-eight members have passed away and their beneficiaries have been paid on an average of $478.57.

OTHER SERVICES FURNISHED

The association feels that it has a mission in the home as well as to the employee on duty. In 1917 we employed a registered nurse as our home visitor. Two years ago it was necessary to add another nurse, and last year they were called into 710 different homes, making a total of 4,081 visits. We are just hiring the third nurse now. They deal with emergency needs of all sorts and have the privilege of calling for any medical assistance that is needed in any emergency that may arise.

It is the practice of the general director of the association to call upon every member who is sick for a period of a week or more, and the welcome that is extended to those in charge of the association as they go to the homes is *prima facie* evidence of the way the members feel toward their organization.

The association staff comprises what might be called a general service bureau. Last year more than 1,300 persons called on the general director for varied services and advice. One can hardly conceive of any human problem which has not been dealt with through this service bureau. In many instances where unexpected emergency expenses have come into the home it is necessary to lend the employee money. In every such instance the matter has been thoroughly investigated, and almost invariably there are other services needed which are more important than the lending of the money.

The association has made arrangements with certain oculists to examine eyes at a price of about half of what is ordinarily charged and also with two wholesale optical companies to furnish the glasses at cost. This arrangement has meant a saving of thousands of dollars to members and their families. A similar arrangement has been made with a group of undertakers located in the various parts of the two cities and this has been greatly appreciated. A saving of from 25 to 50 per cent has been made in this manner. The executive committee of the association went a step further this year and contracted to buy coal of a certain dealer and so far this has meant a saving of approximately $12,000 on the coal already sold. Only members are entitled to this reduced price.

The association, through its committees, conducts activities such as parties, tournaments of various sorts, health talks, educational work, Americanization work, etc.

During the six years of our association we have paid in actual benefits the sum of $268,511.30. In addition to this sum the company has paid $130,062.47 for medical services, nurses, consultations, etc., which means that the average budget for the last six years has amounted to $66,428.92.

The company provides old age pensions which members of the association are eligible to receive upon reaching the required number of years of service and age. The pensions are calculated upon the basis of 2 per cent of the employee's average monthly salary or wage during the last ten years of service and this multiplied by the number of years of service. For those who reach the age of sixty-five, the pension cannot exceed 50 per cent of the average salary or wage. For those who reach the age of seventy, the pension cannot exceed $75 a month. A recent provision makes it possible for any employee member of the association who has been in the service thirty years and who chooses to accept a pension to be granted a pension not to exceed $50 a month. The entire expense of the pension system is met by the company out of its current expense account. The management of the pension system is vested in a pension board composed of three officials of the company and two employees appointed by the president, the pension board serving for one year.

RESULTS CONSIDERED SUCCESSFUL

In conclusion, we have found that the principles enumerated at the beginning have worked out in practice. The spirit and purpose of our company have been recognized by the employees. Co-operative management of the organization has been successful. In fact the employees feel that the association is their very own. The best evidence of the real value of the association to the membership has been shown by the high percentage of employees who have identified themselves with it. The original form of organization has been altered but slightly. The activities of the association have met the needs which have arisen.

The growth and development of a new consciousness in matters relating to health and sanitation and the inculcation of higher ideals and living standard show conclusively that the program of activities of the association has been constructive and thorough. I do not mean to intimate that our plan is perfect or that there are not other plans which are just as good, but after over six years of successful operation we feel that our efforts have produced definite results.

Annual Meeting of Iowa Engineers Soon

THE twenty-fourth annual meeting of the Iowa Engineering Society is to be held in Sioux City, Iowa, Jan. 17-20, 1922. Headquarters and meetings are to be in the Woodbury County Court House. The Sioux City Engineers' Club is making elaborate arrangements for the care and entertainment of the visitors. Speakers of national repute are being secured to address the meetings and the Chamber of Commerce is combining with the local club to make the visit of the engineers and their wives most enjoyable, as well as profitable.

The exhibits of manufacturers and material men which have been of such interest at previous conventions will be in evidence again on a greater scale.

International Railway Congress

THE program for the Congress of the International Railway Association, to be held in Rome, Italy, in April, 1922, has now been definitely decided. A formal opening will be held on April 18, and the first technical session on April 19. Meetings will be held thereafter on every day except Saturday and Sunday up to and including April 28, when the meeting will formally close. On May 1 the delegates will travel by special train to the northern part of Italy to inspect the electric railway installations there. The meetings will be held in Rome in the Palais de l'Exposition des Beaux-Arts. The president of the association this year is V. Tondelier, president of the Belgian State Railway System, with headquarters at Brussels.

Indiana University to Entertain Utility Men

THE annual meeting of the Indiana Public Utility Association will be held on Jan. 14 at Indiana University, according to an announcement by W. A. Rawles, dean of the School of Commerce and Finance of the university. The members of the association will be guests of the School of Commerce and Finance and are planning to hold open sessions with the students of the commerce department in attendance. Fraternity houses will entertain the business men, according to plans being perfected by the Boosters' Club.

Charles L. Henry, president of the State Public Utility Association, in outlining the program for the meeting, said that William Lowe Bryan, president of the university, will be asked to talk and that Dean Rawles will explain to the visiting business men the scope of the work of the School of Commerce and Finance.

In addition to the business session, the utility association will hold its annual dinner in the student building on the campus.

Mid-Winter Meeting of New York Association Announced

SECRETARY W. F. STANTON has announced that the mid-winter meeting of the New York Electric Railway Association will be held at the Hotel Astor, New York, on Jan. 24. The program of the subjects to be discussed has not yet been drawn up nor have speakers been decided upon.

Standardization of Screwed Fittings

THE Sectional Committee of the American Engineering Standards Committee on the standardization of pipe flanges and fittings held its second meeting in the rooms of the American Society of Mechanical Engineers, New York, N. Y., December 16. Those present were C. P. Bliss, chairman, New York University; A. A. Ainsworth, secretary, Committee of Manufacturers on Standardization of Fittings and Valves; J. C. Bannister, Walworth Mfg. Co., Boston, Mass.; Commander Bass, United States Navy, Washington, D. C.; S. G. Flagg, Jr., Philadelphia, Pa.; N. S. Hill, Jr., Consulting Engineer, New York, N. Y.; L. H. Jenks, Frick Company, New York, N. Y.; F. E. Johnson, The Kelly & Jones Company, Greensburg, Pa.; J. R. Meloon, General Fire Extinguisher Co., Boston, Mass., E. L. Moreland, Jackson & Moreland, Boston, Mass.; C. W. Squier, ELECTRIC RAILWAY JOURNAL; C. W. Stephen, Reading Steel Castings Company, Reading, Pa., and J. R. Tanner, Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.

It was recommended that O. S. Styer of the Reading Steel Castings Company be added to the members of the committee, and that the American Engineering Standards Committee be requested to make this appointment. The sub-committee on the standardization of the dimensions for malleable, cast iron, steel, and non-ferrous screwed fittings reported that it had finished its investigation and submitted a drawing in accordance with the final decision of the committee with a table of dimensions which it recommended for adoption as standard. This report was received with the recommendation that it be submitted to letter ballot of the entire committee and if an affirmative vote is received that the secretary be instructed to forward copies of the report together with recommendations to the various sponsor bodies and to the American Engineering Standards Committee.

The committee on flange standards reported progress, but due to the large amount of material which it is necessary to analyze and tabulate, a comprehensive report will not be ready for another two months.

American Association News

Mid-Year Meeting Transportation Committee Appointments

THE transportation committee has been appointed for the mid-year meeting and dinner of the American Electric Railway Association which is to be held on Feb. 28, 1922, at the Claypool Hotel, Indianapolis, Ind. H. J. Kenfield of *Electric Traction* has appointed the following men to act as chairmen in their respective territories in charge of securing special railroad accommodations to Indianapolis for those expecting to attend:

New England States—Edward Dana, Boston (Mass.) Elevated Railway.

New York, New Jersey and Eastern Pennsylvania — C. B. Keyes, General Electric Company, New York.

Washington, D. C., Maryland and Southern Atlantic States—L. H. Palmer, United Railway & Electric Company, Baltimore, Md.

Western Pennsylvania, West Virginia and Southern States East of the Mississippi—J. C. McQuiston, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Ohio and Michigan—Charles J. Laney, Northern Ohio Traction & Light Company, Akron, Ohio.

Illinois and Northwestern States—J. V. Sullivan, Chicago Surface Lines, Chicago, Ill.

Missouri, Nebraska, Iowa, Colorado, Utah, Kansas and Southwestern States—Frank O. Grayson, La Salle Building, St. Louis, Mo.

Pacific Coast States—J. H. Handlon, Market Street Railway, San Francisco, Cal.

Executive Committee of the Engineering Association Holds Busy Meeting

THE executive committee of the American Electric Railway Engineering Association met at the Association headquarters in New York City, Friday, Dec. 16. Those present were C. S. Kimball, president, Washington Railways & Electric Co., Washington, D. C.; C. H. Clark, Cleveland Railway, Cleveland, Ohio; R. C. Cram, Brooklyn Rapid Transit Co., Brooklyn, N. Y.; Daniel Durie, West Penn Railways, Connellsville, Pa.; C. R. Harte, Connecticut Company, New Haven, Conn.; H. A. Johnson, Metropolitan West Side Elevated Railway, Chicago, Ill.; Martin Schreiber, Public Service Railway, Camden, N. J.; A. B. Stitzer, Republic Engineers, Inc., New York, N. Y., and J. W. Welsh, executive secretary.

A resolution was adopted defining the duties of the sponsors which have been appointed on the various standing committees of the Engineering Association. The problem of providing a method whereby employees of steam roads which have electrified divisions can become members of the Engineering Association was discussed, and it was recommended that a plan be worked out to enable such employees to become members. Plans for the reorganization of the Engineering Association were discussed and the president was authorized to appoint a committee on reorganization.

P. G. Agnew, secretary of the American Engineering Standards Committee, discussed the relationship of the Engineering Association with that committee and cleared up many points which were not entirely clear. It was agreed that a representative should be appointed on the sectional committee of the American Engineering Standards Committee which is investigating the conductivity of aluminum conductors. The recommendation of the Power Distribution Committee that the question of forming sectional committees for standard specifications on overhead crossings and high conductivity trolley wire be taken up with the American Engineering Standards Committee was approved.

Attorney Addresses Public Service Railway Section

ADDRESSING the Public Service Railway company section of the American Electric Railway Association on Dec. 15, Charles S. Straw, assistant prosecutor of Camden County, N. J., in relating how times have changed, stated that the day of the grouch conductor and motorman had gone by.

Continuing, he showed the similarity between the duties of the prosecutor's office and those of the trainmen in handling the "dear public." He assured the members that in his experience as prosecutor, law suits that now go before a judge and jury can rely on a fair and impartial trial without a verdict being reached before the case is heard simply because a corporation is defendant.

The speaker also brought out in the course of his address that at no time has he ever been approached by any officials of the Public Service Railway to minimize the facts of an accident, but on the other hand they desired to be informed only of the true facts of the case.

Mr. Straw prophesied a great future for Camden City in the advent of the bridge across the Delaware River. He emphasized the point of how the trainmen's courtesy and efficiency to visitors made a lasting impression. The speaker concluded his address by complimenting the trainmen for their efforts to "keep smiling" under sometimes most trying circumstances, and stated the motto that should always be kept in mind is "he who serves most, serves best."

Instructor Reilly addressed the members on his favorite subject "Safety First," and related the good news of only one trivial accident reported during the current month.

Chief Engineer Waters, president of the new Athletic Association, gave some interesting data regarding the association, stating that a membership of 1,000 is anticipated and that a new building will, in all probability, be erected in the ensuing year.

Mr. Hanf, master mechanic, gave some very interesting information on equipment repairs and in his smiling and good-natured way he won the cooperation of the trainmen in "Playing Safe."

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Mr. Mitten Offers Private Operation

Proposes That P. R. T. Run Frankford Elevated Under Cost of Service Plan

Operation of the city-owned Frankford elevated line in Philadelphia, Pa., by the Philadelphia Rapid Transit Company was proposed by Thomas E. Mitten, president of the company, at a meeting with the City Council on Dec. 13. President Mitten cast out all previous negotiations, and presented his proposal on an entirely new basis. The plan was submitted to a commission of city officials for consideration.

The cost of service system is the method suggested by Mr. Mitten. Under it the company would pay to the city all the Frankford elevated earnings, and charge against such earnings the full operating costs of the road from Frankford to Front and Arch streets, and a further charge for the use of the Market street subway from Front to Fifteenth street.

SUGGESTS APPOINTMENT OF COMMITTEE

Mr. Mitten, in the statement proposing the new plan, said:

> As I have already said, 10,000,000 passengers would be carried on the Frankford "L" if operated by the city with terminus at Front and Arch streets. If operated by P. R. T. as a part of its Market street system, with a single fare from Frankford to Sixty-ninth street, an additional 10,000,000 passengers would be drawn from P. R. T.'s cars and added to the number carried on the Frankford "L," making 20,000,000 thus carried, instead of 10,000,000 if operated by the city.
>
> Ten million of P. R. T.'s present passengers thus diverted to the Frankford "L" would cause a considerable loss in P. R. T.'s present revenue which, however, would be compensated for by the rental charged to operating costs of Frankford "L" for proportionate use of the Market street subway terminal between Front and Arch streets and Fifteenth street station.
>
> If P. R. T. operated the Frankford "L" in this way, paying to the city all of Frankford "L" earnings between Frankford and Fifteenth street station, and charging against such earnings the full operating costs of the Frankford "L" from Frankford to Front and Arch streets and for the proportionate use of the Market street subway to Fifteenth street, the financial result would be at least as good for the city as would follow city operation of Frankford "L" to a terminus at Front and Arch streets, the city being the gainer through serving twice as many people—20,000,000 instead of 10,000,000—and being saved the initial expenditure of $500,000 required to put its Frankford "L" in condition for municipal operation.
>
> If this plan be acceptable, I would suggest that a committee be now appointed consisting of Director of City Transit Twining, City Controller Hadley and City Solicitor Smyth for the city, and Vice Presidents Richardson and Dunbar and Counselor Joyce for the company, and that this committee shall agree upon the methods to be used in determining the division of earnings and expenses to be apportioned between the Frankford "L" and Market street system and make such changes in the operating agreement now before City Council as will make it conform to this proposed understanding.
>
> Transfers will be issued to Frankford "L" passengers as now issued to P. R. T.'s own passengers on the Market street "L" system.
>
> Transfers cannot be issued between the Frankford "L" and the connecting surface lines because if this were done 10,000,000 additional passengers would be diverted to the Frankford "L" and this would represent such a great additional loss to P. R. T. as could not be sustained, nor can it hope to secure payment of this loss from the city under present circumstances.

Mr. Mitten maintained that while no financial benefit would accrue to the city, nevertheless the elevated would serve more riders and furnish better service than was possible under municipal operation. He also emphasized the fact that the agreement would be temporary and would terminate six months after the conclusion of the valuation proceedings. The Frankford elevated, he said, would be charged for the use of the Market street subway and at the same time the Frankford rider would be enabled to go from Frankford to Sixty-ninth street for a single fare. That fare, he pledged, would be the same as at present, four tickets for 25 cents.

The issue of transfers from Frankford surface lines would necessitate the payment of additional compensation to the company by the city, he said, although the Frankford riders would be accorded the usual transfer privileges at West Philadelphia stations. The P. R. T., he added, was contributing 10,000,000 passengers to the elevated and taking back the financial loss resulting in the shape of rental for the Market street subway.

Buses Prove Popular

Auto and One-Man Car Are Saving Connection Suburban Line—Public Likes Autos

Judge J. Moss Ives, receiver of the Danbury & Bethel Street Railway, Danbury, Conn., has received permission from the Superior Court to purchase four more new cars of the one-man safety type. The order for the cars has been placed.

With the arrival of the new cars the road will have an entire new equipment of rolling stock, and it is the plan of the receiver to put into operation as soon after Jan. 1 as possible, the date depending upon the delivery of the new cars, a ten-minute service throughout the day and evening.

A new Graham motor bus, to replace a bus of the Bethlehem type, which has been in service on the West Danbury belt line, has arrived and been put into use. The Bethlehem bus was a second-hand vehicle when purchased.

The announcement that the road will have an entirely new equipment of rolling stock within another month is of especial interest in connection with the operation of the line under Judge Ives' receivership, as it is comparatively a short time ago that the prospect of finding means of procuring even a few new cars for the road seemed almost hopeless and there was even talk that it might be necessary to discontinue the operation of the road entirely.

Judge Ives says that patronage of the motor buses on the belt line is increasing gradually and that, so far as expression of opinion has been heard, the patrons of the buses are much pleased with that form of service, finding it even quicker and more certain than the former electric railway service.

Seattle Taxpayers Win

Residents There Successful in Their Contention Against City in Municipal Railway Case

The United States Circuit Court of Appeals at San Francisco, Cal., recently rendered a decision, refusing to enjoin the "fourteen taxpayers" headed by S. B. Asia, from bringing suit in the state court to prevent the city of Seattle, Wash., from delving into the general fund, for support of the municipal railway system. The decision is regarded as a material victory for residents of Seattle who have been opposing any move to force the city to set aside a special fund to meet interest on the $15,000,000 municipal street railway bond issue before paying operating expenses of the railway.

The Circuit Court's decision upholds the action of Federal Judge Jeremiah Neterer in District Court in dismissing the action brought by the Stone & Webster interests, from whom the street railway system was purchased, and refusing to restrain the taxpayers from trying the case in the state court.

The Circuit Court decision paves the way for an early trial of the "Taxpayers" suit in the Superior Court, and counsel for the city and for the taxpayers have agreed to request the earliest possible trial of the suit, which will be set by Presiding Judge Everett Smith. The main contention of the taxpayers is that a city utility must be self-supporting and not use city general fund money for defraying its expenses. Victory for the taxpayers in the Superior Court would mean the City Council could not use money from the general fund for support of the municipal street railway unless such action was approved by vote of the people, according to counsel.

A question which the State Supreme Court will be asked to answer, as a result of the Circuit Court's decision, is whether:

> The entire gross revenue of the municipal street railway is pledged to payment of principal and interest on the bonds issued to purchase the system, or are the bondholders entitled only to what is left after the cost of maintenance and operation has been paid?

The State Supreme Court, according to counsel, will be asked to place its own construction on the case of Twichell against the city of Seattle, a friendly suit carried to the State Supreme Court to test the legality of the bonds issued to buy the railway. Counsel for the Stone & Webster interests maintain the decision in this case holds that the gross receipts of the railway system are pledged to payment of principal and interest of the bonds. Counsel for the taxpayers contend the decision cannot be construed to hold that the bondholders are entitled to more than the balance left after maintenance and operation expenses have been paid. The only security the railway bondholders have, the taxpayers contend, is the utility itself.

As a direct result of the suit the sum of $83,000, taken from the general fund last December as a loan to the street railway, has been returned.

Hearings Completed for Year

Lawyers, Financiers and Traffic Expert Examined This Week—Valuations of the Properties of the Various Companies to Be Included in the Commission Plan Next to Be Taken Up

A hearing on Thursday, Dec. 23, at which anyone who wished to testify was invited to do so, closed the hearings of the New York Transit Commission for this year. It also completed the hearings of the present series. With the exception of certain matters of what the chairman called "a minor character" the next stage of the investigation in New York will take up valuations. This will be some time next year. The sessions of the investigation beginning on Dec. 14 were given up largely to the examination of other than operating men. They are reported below up to the session on Dec. 20. An account of the plan for rerouting submitted by Mr. Turner on that day is published on page 1109 of this issue. The remainder of the testimony on Dec. 20 and that presented on Dec. 21 will be reported next week.

THE first witness on Dec. 14 was John C. Cobb of Boston, chairman of the protective committee of the holders of income bonds of the New York Railways and a director, representing these bondholders, on the New York Railways. He said that his committee represented about $23,000,000, or about 70 per cent of these income bonds. Assuming that municipal control of the railways had been decided upon, the plan of the commission was a desirable one and perhaps the only practical way. He saw no objection in a combined control of the rapid transit lines and the surface lines because each served a different kind of traffic. The experience in New York had been that the construction of a rapid transit line above or under a street had not seriously hurt the surface line on that street. It would lose some long-haul business, but would gain short-haul business.

He thought it unwise to attempt to force holders of all the underlying securities to exchange their securities for new issues, but arrangements could be made for amortizing these issues when they matured. He believed the surface lines in New York, carrying a million passengers a day, were not "mere junk," as they had been characterized by some, but provided an absolutely essential public service. He had never had any fear that the lines would be discontinued or that the underlying security holders would not receive fair payment for their property.

The value of such properties should not be judged from their performance while in the hands of a receiver, but even before the appointment of a receiver the lines had not been operated as well as they could be. He criticised the Legislature for permitting a condition "which makes it possible legally to run the traction systems of this city through shoestring equities and holding companies and to capitalize prospective profits or contracts."

The next witness was R. E. McDougall, manager of New York & Harlem Railroad (traction division), who said that since this road had been returned to its owners by the receiver of the New York Railways about $50,000 had been spent on car overhauling and $150,000 on track improvements. Further improvements in the way of new cars, carhouses or power stations had been held up until the question of the future of the system could be determined.

Otto H. Kahn of Kuhn, Loeb & Company, bankers, was the next witness. He explained that his firm was a member of the protective committee for the Brooklyn Rapid Transit 5 per cent notes. His testimony related principally to the financial aspects of the proposed commission's plans. Everything, he said, depends finally on what offer in tangible realizable value is made to the security holders and what they are asked to give up. When the B. R. T. 5 per cent notes were sold to the public they were thought to be a wholly sound investment security. The speaker still believed that the security pledged for these notes was good and sound and nearly sufficient at this time to yield the interest on the bonds, and probably before very long entirely adequate so to do. There is nothing ahead of them except $18,000,000 in receiver's certificates and a certain amount of various bonds not of a very large amount, while behind them is $100,000,000 in city money. He did not believe that this particular noteholder, for instance, would come into a plan which took away from him the priority of his lien until possibly, after the lapse of some years, the new securities are found to be sound and to bring that return to which he feels himself entitled. He has seen a great many unpleasant things happen to him in putting his money into traction securities; he will not feel inclined to take another chance, but will say, "This is an admirable plan, but let me see how the thing will work out. In the meantime I want my property earmarked somehow as being a special equity pledged to me under the law, and I do not intend to give it up if I can help it."

Coming, then, to securities other than those covering principal priorities, the speaker was doubtful if bonds should be issued for them or whether it would not be better to have a security to represent what the equity would earn under good management in the future. As to new money, the difficulty would be that the new bonds under the proposed plan would not be sufficiently seasoned to make them salable at a price which the commission could afford to accept, and the commission would not want to sell them as a speculative security. The only other ways to raise money would be on the credit of the city or to leave the matter to the existing security holders.

George E. Warren, vice-president Columbia Trust Company, was the next witness. He said he was a member of several bondholders' committees of electric railway securities in New York City. He is prepared to recommend the commission's plan to the committees with which he is connected, provided the valuations are satisfactory and the new securities a safe form of investment. He urged, however, the application of the surplus from operation of the new company toward the reduction of the debt before the reduction of the fare; that is, to use a more rapid rate of amortization.

Frank D. Pavey, counsel for the stockholders' protective committee of the Broadway & Seventh Avenue Railroad, of the Columbus & Ninth Avenue Railroad and of the Atlantic Avenue Railroad, gave facts in regard to the liens in those bond issues and the conditions under which in each case the committee recommended the entrance of its security holders into the proposed reorganization. In general the Columbus & Ninth Avenue recommendation was in favor of the exchange, while the Atlantic Avenue and the Broadway & Seventh Avenue were for retention of the original lien. The speaker was sceptical also as to the desirability of providing a bonus for good management, to be payable either to the bondholders of the company or to the management, although if the bonus is to be used for providing an employees' benefit fund, as had been suggested by counsel, that might be proper. He also questioned the desirability of a 5-cent universal fare, certainly for the surface lines, and recommended for certain routes a bus service at a 10-cent fare.

MORE BONDHOLDERS ON THURSDAY

The first witness on Thursday morning was Alvin W. Krech, chairman of the committee of the Board of Directors of the Manhattan Railway, appointed to make a study of the traction situation and the lease of the Interborough, also chairman of the stockholders' protective committee of the Manhattan Railway. He said the successful operation of the plan depended to a large extent upon the valuation, but to balance the budget as compared with that at present, either the revenues must be increased or the facilities decreased. With revaluations there is a possible saving of fixed charges, and there might be some saving in unified management and in taxes, but he was sceptical about the proposed barometer fund and to any plan that did not contemplate the immediate increase of the revenue unit. As for the marketability of the proposed bonds, he thought the investing public would want some greater assurance than is furnished by the set-up of the barometrical fund out of borrowed money. He expressed the opinion of other speakers that some underlying bonds could very well be left undisturbed in the reorganization. Those who would be asked to put in new money would expect fair treatment.

A statement was then received from Mr. Garrison, receiver of the Brooklyn Rapid Transit Company, giving a statement of receivership expenditures from Jan. 1, 1919, to Oct. 31, 1921. They covered a total of $634,665, including the following items: "Compensation of receiver and counsel, $283,903; Stone & Webster, engineers, $126,623; Price, Waterhouse & Company, accountants, $47,223; special master's compensation, $37,500; Mr. Royce, $26,709." An accompanying letter said: "In order to reach the conclusion you state in your question you desire to reach, you should know that previous to the receivership Colonel Williams' salary was $75,000 a year, so that $225,000 approximately should be deducted on this account."

William Greenough, counsel for the South Ferry and the Broadway & Seventh Avenue bondholders' committee, pointed out that all the South Ferry bondholders had paid as high as 106[illegible] for their bonds and the Broadway & Seventh Avenue bonds sold as late as 1914 for 103½. He thought that a sliding scale rate for fare was desirable and the vesting of the title in the city would remove the tax question. He agreed with Mr. Kahn about the unwillingness of bondholders to change their lien to an unseasoned security.

John L. Wells, representative of the holders of the B. R. T. 5 per cent first mortgage bonds, in general favored the plan, if political influence could be kept out of the actual operation of the system. He pointed out the necessity of providing constantly new money for extensions. If the city's investment could be released from the debt limit, that would provide funds for extensions, otherwise some other provision would have to be necessary. He favored the Massachusetts plan of financing by stock.

Samuel E. Morrow, auditor Fifth Avenue Coach Company, then testified as to the figures of that company. He stated the operating costs per passenger for the year ended June 30, 1921, was 8.38 cent, or a total business of 51,237,442 passengers.

Julius P. Cotton, attorney and representative of the New York Railways real estate and refunding bonds, was another witness. He spoke as if the bondholders would prefer that the Manhattan surface lines be treated separately so as not to be overshadowed by the greater and more serious troubles in the Interborough. If they should be relieved from taxation and some other burdens it might be possible for them to work out the solution themselves, even with a 5-cent fare. Chairman McAneny said the commission would be delighted if this could be done, but he reminded the witness that the service on the New York Railways had been greatly cut within the last five years and there was a large element of deferred maintenance and unpaid taxes, etc., which would have to be met.

Another witness was Edward T. Maynard, president of the Brooklyn Trust Company and representative of certain bondholders' protective committee, said that in general the plan commended itself to him.

Grayson M. P. Murphy, chairman of the Interborough Metropolitan 4½ per cent bondholders' committee, was also a witness. Personally, he approved of the plan but could not definitely promise approval of his entire committee. He thought, however, that if the board which exercised supervision could be more definitely separated from the actual management of the property it would be desirable. He said that in the long run the man or the board that had control of the funds was bound to exercise a very substantial influence on the actual operation.

John A. Richie, president of the Fifth Avenue Coach Company, declared that the average operating cost in cents per passenger during the thirteen years ended June 30, 1920, was 6.77 cents, divided as follows: Maintenance, 1.59; transportation, 4.71; general, 0.47. In taxes the company pays a 5 per cent gross earnings tax to the city or 0.5 cent out of each fare and a total amount of taxes of 0.86 cents out of each fare. As reserves for injuries and damages 0.08 cent and for depreciation and obsolescence 0.6 cent are charged, leaving as gross income 1.69 cents from the 10-cent fare. Interest on the investment at 6 per cent amounted to 0.55 mills per passenger, leaving 1.14 cents. The operating cost in 1920 without taxes was 6.85 cents, and after taxes were paid the balance was 2.19 cents.

COST OF BUS EXTENSIONS

In estimating the cost of possible extensions the witness gave the cost of the bus as from $9,000 to $11,000 and garage cost as about $2,000 per bus. He said that they had recently constructed a new garage at 132d Street of three stories, which cost $1,200,000 and will accommodate about 300 buses. This is an investment of about $4,000 per bus, but is an unusual condition. About 92 per cent of the total number of buses owned are in operation, 2 per cent being reserved for general overhaul and 6 per cent for general inspection. In an estimate to determine how many buses would be required to carry the number of passengers on the surface cars, Mr. Richie used the following figures: On the cars the average passengers per car mile were nine, whereas on the buses it was six, so that 6,653 buses would be required. This, at an investment for buses and garage of $11,000 per bus, would mean an expenditure of $73,183,000. He criticised the design of certain buses in New York other than those owned by his own company as having too high a center of gravity.

The present cost of upkeep on his line is more than $2,000 per bus. On Fifth Avenue the neck of the bottle as regards congestion is at Fifty-seventh Street and Fifth Avenue. Buses reach that point at a rate of say 10½ to 11 m.p.h. Then they are slowed up to 4½ m.p.h., so that the company has practically reached its capacity on Fifth Avenue. The demand for service is probably for twice as many buses, but the service cannot be given. In the speaker's opinion there should be in addition an East Side line and a West Side line, the West Side line using Seventh Avenue and the East Side line Park Avenue for part of the distance. The speaker thought the bus did not cause more congestion, as has been charged. A street car occupies about 368 sq.ft. of street surface, but a bus only 184 sq.ft. It accommodates fifty-one passengers (with a double-deck bus), as against the same number for the street car.

BONUS IDEA FROM ARMY

At the beginning of the session on Friday morning, Counsel Shearn submitted reports for September of the different electric railway companies in Greater New York. On the whole they showed an improved condition as regards earnings. The first witness was Gerhard M. Dahl, vice-president Chase National Bank and a member of the B. R. T. stockholders committee. Mr. Dahl was the first street railroad commission under the Tayler plan in Cleveland. In commenting on the commission's plan Mr. Dahl said that he did not fear politics in the Board of Control, though he thought the private owners in the operating company might want more to say about the operation of this system, and he pointed out that each of the three directors selected by the investors in the Board of Control would represent only one company, that is each operating company would have only one director in the Board of Control, as against six on the other side. He also saw some difficulty in inducing security holders of prior securities to exchange them for the same kind of security as that received by the stockholder. He believed voluntary reorganization a more satisfactory plan. He was also asked his opinion in regard to the proposed bonus of an extra 1½ per cent for efficient operation, which Commissioner O'Ryan said had been based on a somewhat similar plan used in the army to encourage marksmanship. The amount to be allotted to the operating personnel, General O'Ryan explained, might be divided, for example, into five equal parts to be distributed to the same number of groups, one for the managing group, one for the supervision group, one for the foreman's group, one for the administrative or clerical group, and one for the labor group, and the reward to be sufficiently substantial so as to constitute a stimulus for at least the best 50 or 60 per cent in each group. In reply Mr. Dahl said it would be an interesting experiment.

The next witness was Charles E. Chalmers, receiver of the Second Avenue Railroad, who explained that he was both receiver and manager of the companies. Two receivers had preceeded him and both had died. The part of the city through which the Second Avenue lines run is very largely populated by foreigners. The road had done a large transfer business in the days when it was a part of the Metropolitan System, but the elimination of transfers greatly reduced the traffic. After being appointed receiver he first gave the cars a good coat of paint. After this was done he had a balance of $198, while his payroll per week amounted to $11,000. He sold forty cars to the city of New York for use on Staten Island for $150,000 last summer, but has not yet been paid for the cars. He has also transformed a number of his former two-man cars to one-man cars at a cost of $1,200 each. These cars make better speed and have fewer accidents, and are more popular with the employees. The saving in operating expenses is about 6 cents per car mile. These cars are popular also with the public. All improvements have been made out of the receipts obtained from the 5-cent fare, as the company has some receiver certificates outstanding on which no interest is being paid.

At the Monday morning session, Counsel Shearn explained that he had invited Mayor Hylan and Comptroller Craig to testify. Later a letter was received from the Comptroller specifying conditions under which he would testify. The city administration claims that the law under which the board acts is unconstitutional.

MR. UNTERMYER ON THE STAND

The first witness on Monday morning was Samuel Untermyer, a lawyer, who had been asked to give his views on the commission plan. The witness explained first that he had no interest personally, professionally or otherwise in any of the traction securities. He then explained that while he recognized the character, high purpose, and public spirit of the commission he did not agree with its plan, which he thought economically unsound. He thought the barometer system wrong in principle, and an incentive to extravagance and mismanagement, to make good the operating expenses and interest on the securities, whatever they may be, with the sky as the limit. Continuing, the witness said:

> When your valuations have been made, no matter how fair they may be, a deafening cry of assumed indignation and distress will go up from the ranks of the security holders in which they will denounce them as disastrously low no matter what may be the valuations.
>
> Under the law as it now stands they are not bound to sell. You, on the other hand, in order to carry out your purpose for which your commission is created, are bound to buy such of the properties as you believe will be needed for the unification of the system and you have no power to compel the sale at a fair price. There should be an immediate amendment of the law so as to permit you to take the property by the right of eminent domain, so if the owners will not sell at a fair price you can condemn it.
>
> I approve of the general plan of three operating companies and a holding company, and each operating company should issue its own securities based upon the purchase price of that property.
>
> I insist, however, first, that the city should have a clear majority of the directors of the holding company.
>
> Second—The holding company should be supreme over the operating companies except as to questions of mere physical operation.
>
> Third—The holding company should purcase all supplies.
>
> Fourth—The city should receive bonds for its present debt, which should rank *pari passu* with the bonds to be given in payment of the property, and with the same voting power per bond as is given to those issued for the property.
>
> Fifth—The directors of these companies should be elected by the system of cumulative voting, so that as the bonds are retired the city will get more and more representation in the holding companies.
>
> Sixth—In no event shall the city at any time have less than three of the seven directors in each of the operating companies.

The first witness in the afternoon session was William M. Chadbourne, attorney for the contract creditors of the New York Railways Company, representing in the main, materials and supplies furnished. Individually, he approved in general the plan of the Commission.

RESULTS ON NEW YORK'S MUNICIPAL RAILWAY

Grover A. Whalen, Commissioner of the Department of Plant and Structures was the next witness, and he was examined particularly about the operation of the Staten Island Midland Line, which this department of the city took over Dec. 1, 1920, under a contract with the company. Mr. Whalen described the line as consisting of about 32 miles of track with road-bed and equipment in poor operating condition and the line shut down when the city took it over. About $69,000 of improvements have been made in track, which, under the contract, was charged to receiver's certificates, but to put the track and overhead construction in good shape would require a large sum, perhaps $300,000, or with new paving, perhaps $1,000,000. The first twelve months, or for the period up to Nov. 30, 1921, showed a credit balance over operating expenses of $4,806, made up of:

Operating income		$401,953
Operating Expenses:		
Maint. of way and structures	$17,801	
Maint. of equipment	65,059	
Operation power plant (purchased power)	90,860	
Operation of cars	180,650	
Injuries and damages	4,132	
Traffic expenses	754	
General and miscellaneous	13,734	372,994
Balance		$28,959
Taxes		17,252
Income from street railway operations		$11,706
Income deductions		7,619
		$4,087

The commissioner explained that the contract provides that one-half of the profit goes to the city and half to the receiver after the payment of operating expenses and taxes. The interest deduction of $7,619 was an estimate for money invested by the city, principally for cars. The taxes included taxes on land and franchise taxes, but not the usual tax on gross earnings. This tax is payable to the city and was omitted for this reason. It was also brought out in the cross examination that there was no charge for paving because none was done, although the Borough President had required $134,000 of repaving during the past year from the other line on Staten Island, the paving between whose tracks was at least no worse than that on the municipally operated line. Analysis of other items showed that certain legal work had been done by men connected with city law departments. The charge passed in favor of the city for the amount which these services were considered to be worth included only $96 for legal expenses for seven months. There were some unsettled pending suits for damages against the city because of accidents, but it had not been determined whether the city was responsible. There was no allowance made also for depreciation for track. The 28 Birney cars purchased for $200,000 were paid for by the issue of special revenue bonds, but the second-hand cars had not been paid for yet, as it was considered the Second Avenue Railroad, from which they were purchased, had not lived up to its obligations to the city. The wages paid to transportation employees run from 57 cents to 72 cents, depending upon seniority of service. Mr. Whalen himself receives no compensation from the property.

The safety cars had given very good satisfaction. The witness saw no reason why a safety car could not be used anywhere in New York. He did not know of any place where the traffic was more intense than to the beaches in Staten Island during the summer, and as the passengers were on pleasure bent they had no respect for the rights of others, and crowded and pushed. The one-man cars handled these crowds very efficiently. The traffic on the Midland line is mostly a morning and evening business. The witness thought the installation should not be considered in any way as a municipal experiment in the operation of street railways. Operation was begun because the road had stopped some months previously and the people had no service. Service had been given, although the conditions were very unfavorable. He believed better results would be secured if all the lines in Staten Island were municipally operated.

The next witness was John J. Kuhn, receiver of the Richmond Light & Railroad Company, the other line on Staten Island. The witness said that when he was appointed the employees were on strike because they were receiving only 41 cents an hour and were demanding 75 cents an hour. On authority of the United States Court the fare was raised to 8 cents with ten tickets for 75 cents. At one time there was some competition from city buses, but their operation was enjoined by the court. Even at an 8-cent fare the company lost last year about $100,000, but had made money in operating its electric light plant. As yet neither the receiver nor the counsel had received any pay. Charges last year for paving amounted to $134,471, which is 60 per cent of the total sum paid all motormen and conductors. However, the company has not yet paid the bill for this paving which is owing to the city. One reason the company has not paid it is that it had no money. Another reason is that some time ago the authorities revoked the franchise. The witness was not willing to admit that the franchise was revoked, but if he had no franchise he had no obligations to pave. While the Midland road was not in operation some public official covered the rails over with asphalt paving so as to make the operation of buses more easy. After the city started operating the Midland it was necessary to remove this asphalt. The witness attributed recent falling off in traffic to the stoppage of work in the shipyards.

The final witness for the day was R. L. Rand, vice-president and general manager, Richmond Light & Railway and South Beach Railway, who testified that he had not seen any new track laid on the Midland Railway.

Additional Bus Routes Denied

By a two-thirds vote, the present Democratic minority voting with the majority members, the Common Council of Albany, N. Y., on Dec. 20 defeated the franchise conferring upon the Woodlawn Improvement Association Transportation Corporation the right to operate its motor buses on certain other designated streets in Albany.

The ordinance was in no respect a blanket franchise, but simply conferred upon the bus corporation the right to connect up some of its present routes by intersecting streets.

The United Traction Company and a number of representative citizens of Albany emphasized at the hearing on the subject the fact that the traction company is a heavy taxpayer of the city and that the proposed franchise would not add any revenue to the city's treasury or pay any appreciable cost of the upkeep of the pavements.

This apparently seemed to bear more weight than the argument put forth by the bus corporation that the franchise it requested was to enable the company to serve better the territory not now reached by the United Traction Company and into which the railway may never build an extension.

Jersey Transit Commission Suggested

At the recent Paterson conference called for the purpose of considering a unified transportation plan for New York and New Jersey a New Jersey Rapid Transit Commission which would work in unison with the New York Commission and with the Port of New York Authority was suggested. This solution to the traffic problems facing both these states was proposed by R. G. Hughes, chairman of Paterson's zoning commission. He asked for a committee of fifteen members to push forward the necessary legislation.

In a letter to the conference Samuel Rea, president of the Pennsylvania Railroad, told how impossible it would be in a few years for his company to handle any more rapid transit lines. A bi-state plan was proposed by H. S. Swann, who favored electrification of railroads in the vicinity of New York.

Seattle's Tangle Tragic

Expert Says All Must Pull Together and System Be Put on Pay-As-You-Go Basis

Peter Witt's report on the Seattle (Wash.) Municipal Railway has been presented to the Mayor and the City Council. His statement is dated Dec. 10. As indicated previously, the carrying out of Mr. Witt's recommendations would involve the expenditure of $2,000,000 for betterments to the railway. He says that "what the undertaking needs most, and surely has least, is a unity of purpose between the Mayor and the Council. Co-operation must supplant dissension."

Mr. Witt starts his report with a review of conditions that led up to the city buying the railway and engaging in municipal operation. All this is, of course, historical and has been covered fully in the ELECTRIC RAILWAY JOURNAL previously. Mr. Witt is not concerned with what might have been, but with what actually exists. The concern of the city must be with tomorrow. The march must be forward. As Mr. Witt sees it, "the success or failure of the present undertaking means more to the weal or woe of the people of the city than the success or failure of all other municipal activities combined." In his opinion, if the enterprise is to be made a success, the principle of "pay-as-you-go" will have to be established at once.

A considerable part of Mr. Witt's recommendations is taken up with suggestions for rerouting, economies in management through curtailment and rearrangement of service, etc., and if given in detail here would mean little or nothing except to those intimate with the topography of the city. Some of the other of his important recommendations follow:

> The elevated structure in East Marginal Way and Spokane Street, as the story comes to me, was erected as a war necessity in order to take care of the shipyard workers and to provide entrance into the city for the cars of the previously city-owned line to Lake Burien. The "war" necessity being a thing of the past, and the city being now the owner of the tracks in First Avenue, the route of the cars now using the elevated structure should at least from Spokane Street North be over the tracks in First Avenue. This recommendation is not only made in order that there may be saved the cost of maintenance of two tracks, but to avoid the heavy and extraordinary maintenance which soon must take place on the elevated structure itself.
>
> Your action in removing jitney competition, though highly commendable, has left the residents of Cowan Park without transportation. As a matter of right and fair play the people living in this district are entitled to street car service. It is therefore recommended that an extension of the tracks into the district affected should be made at once.
>
> Because of the increased safety to the car rider and greater economy of operation, all cars should be operated by one man. I therefore urge the speedy rebuilding of all cars now in service requiring two men for their operation, excepting, however, from this rebuilding program the cars of the 600 type.
>
> In my oral report I recommended the scrapping of the cars of this type, because of their excessive weight, slowness of speed, and inconvenience of boarding and alighting. For the same reasons I again urge their relegation to the junk pile and recommend as a substitute therefor the purchase of 200 low floor, light weight, high power, double truck cars.
>
> Instead of reducing wages and saving $100,000 per year, the wise thing to do is to reduce the number of employees and make the annual saving $800,000. To this sum can be added another saving in power consumption amounting to $100,000 per year, if the old cars are discarded and new ones of type as suggested are purchased.
>
> The Law Department having held that the raising of funds to purchase cars in the manner suggested in my oral report being contrary to the laws of the State, another way must be found in order that the saving of $900,000 per year may be made. To that end I offered for your earnest consideration the following:
>
> Permit the car rider to use the city's credit to the extent of the necessary down-payment for the purchase of the equipment on the car trust certificate plan. Using the savings as made to pay back the loan and to retire the car trust certificates as they fall due.
>
> That your cars may be speedily loaded, the convenience of the car rider increase, and the expense of the front-end collection eliminated, I suggest and recommend that your system of fare collection be made pay-enter when cars are inbound and pay-leave when out-bound.
>
> I am told that it is the habit of many of the platform men to work every day in the week. This is more than any man should be asked or permitted to work. There should be a department rule or ordinance of the city employed to correct this evil. Six days out of seven should be enough for any man.
>
> In the allotment of work as called for in the runs provided by the schedule, the older men in length of service have first pick. This is as it should be. In the matter of pay, however, the system of giving to the older men the higher pay, and to the newer men the lower pay, is all wrong. All that it has to commend it is that it has been the custom and is also the practice elsewhere. The record shows that some men report for work at 5:00 a.m. and remain on the cars until 12:35 p.m.—seven hours and thirty-five minutes of actual time for which they receive eight hours' pay. Other men report at 7:00 a.m., work two hours, and report again at 1:00 p.m. and continue on the cars until 7:00 p.m.; eight hours' work but spread over a twelve hour day. This cannot be avoided. Runs of this kind must be made. The men who make them are the valuable men to the department. They are on the job during the hours of greatest demand, and should therefore receive the highest pay.
>
> In my opinion the difference in pay between the good runs and the bad runs should be from 75 cents to $1 a day. What is here suggested will not meet with the approval of the older men. Let your answer to their objection be, that through the rule of seniority they still will have the best of it: The first pick is theirs, and they can elect to take the long hours with the high pay or the short hours with the low pay.
>
> The earnings of $17,000 from the car advertising privilege is far below what it should be. If this contract is of short duration, the remedy of course can be quickly applied. If, however, it has a long time to run, effort should be made with the beneficiaries of this privilege for a change in the terms of the contract.

Joint Operation Now a Fact

The city of Detroit and the Detroit United Railway took the first step towards the actual unification of the Detroit railway system on Dec. 15 when the cars of the municipal railway started operating alternately with Detroit United Railway cars on Trumbull Avenue line. The operation of the city's cars on the Trumbull Line brings the first Municipal Ownership service to the down-town section. The same transfer arrangements are adhered to as between cars of the Detroit United Railway system. One cent is collected for each transfer in addition to the regular 5-cent fare. Transfers are issued only to cars going in the same general direction as the car from which the transfer is issued.

The joint operation of cars will probably be extended within the next few weeks to include the Woodward Avenue, Fort Street, Grand Belt, Hamilton and Fourteenth lines. At the same time that municipal cars started operation on the Trumbull line, the Municipal Ownership lines on Fenkell and Davison were put into operation.

The joint operation is the outcome of negotiations started a few weeks ago. The ultimate aim of Mayor Couzens is to have the city take over all of the Detroit United Railway city lines on a day-to-day basis until such time as a plan can be formulated and placed on the ballot providing for purchasing the entire system. Under the present arrangements the city is to pay the Detroit United Railway 20 cents per car mile for the use of company tracks. Arrangements have also been made whereby the city will rent space in the company's carhouses and yards for the cars being operated over the lines being served by the barns.

Ontario Railroad Considers Electrification

The Temiskaming & Northern Ontario Railway Commission has decided to investigate the feasibility of electrifying the road with particular reference to the extension from Cochrane to Oil Can Portage, 70 miles further north. It is estimated that 500,000 hp. can be developed on the Abitibi River.

S. B. Clement, chief engineer of the Temiskaming & Northern Ontario Railway, and J. G. Kerry, consulting engineer, Toronto, have been authorized to report in three months as to the power possibilities. The plans, profiles and all matters pertaining to the extension of the road from Cochrane have been approved by the Provincial Government. Contracts have been let for 75,000 ties and a contract for 6,000 tons of rails for the first 40 miles of the extension has been awarded to the Algoma Steel Corporation of Sault Ste. Marie.

Bids for additional material will be received at the office of W. H. Maund, secretary-treasurer of the commission, North Bay, Ontario, until Jan. 9.

Ten Per Cent Wage Cut Recommended

A 10 per cent cut in wages was recommended by a board of conciliation in Vancouver, B. C., on Dec. 10 to the British Columbia Electric Railway and its employees. This, if accepted, will reduce the present maximum of 65 cents to 58½ cents an hour. The board recommended further:

> The substitution of time and a quarter instead of time and a half for Sunday work, although the board did not agree with the principle of paying extra for such work.
>
> Another feature was the recommending of a monthly minimum of $87.50 instead of a daily minimum of six hours pay.
>
> Payment for "spread-over" time is reduced from 25 cents an hour to 10 cents an hour.
>
> Track and carhouse men are to get time and a half for overtime except when such overtime amounts to more than five hours, in which case double time shall be paid for all time in excess of five hours.
>
> Ten per cent extra is recommended for operators of one-man cars when they are introduced by the company.
>
> "Box-time" is abolished by the report. This provision allowed the men ten minutes when making relief on the road, the idea being that they had to prepare themselves for the run.

The report says:

> A majority of the board were of the opinion that the company was justified in asking for a 15 per cent reduction, but they did not agree that so drastic a cut should be made at this time. They felt that any reduction necessary should be made as easy as possible for the men, and that they should keep pace as nearly as possible with the rate increases made previously. They are, therefore, prepared to recommend that a general reduction of ten per cent be made on all wages except as hereinafter mentioned as and from Dec. 1.

The employees affected are members of the Amalgamated Association. The men have not yet intimated whether they will accept.

Pittsburgh Makes Progress

New Traction Contract Passed by Council and Signed by Mayor and Philadelphia Company

The agreement between the city and the Philadelphia Company and Pittsburgh Railways for the reorganization of the railway has been formally executed. Mayor E. V. Babcock and A. W. Thompson, president of the Philadelphia Company, affixed their signatures to the document early in the week ended Dec. 24.

The agreement was executed under the ordinance approved finally by Council late during the week ended Dec. 17 and signed by the Mayor. The agreement will continue in force for ten years. It defines the rights and duties of the city and company in reorganizing the railways properties under the valuation of $62,500,000, with a fixed annual return of 6 per cent, and the supervision by the city, through the Traction Conference Board, of the service, facilities, extensions and finances of the company. The agreement becomes effective when $5,000,000 additional capital is provided by the company.

COMMISSION MUST APPROVE

A petition to the Public Service Commission by the city and company for approval of the reorganization plan and agreement has been taken to Harrisburg by Mr. Thompson, George N. Munro, Jr., special city solicitor, and A. W. Robertson, counsel for the Philadelphia Company, and filed with the commission. Following approval by the commission, steps will be taken within thirty days by the company for the termination of the receivership, under the agreement.

Following the execution of the agreement, Mayor Babcock said:

> This agreement will prove a benefit for the people and the company. It means the cessation of hostilities of years and substitutes co-operation by the city and company that is sure to result in better service and a lower fare. I want to congratulate the members of the Council for their efforts in reaching this plan. They spent much time and labor in studying this situation. Mayor-elect Magee assisted us before the plan was adopted and his suggestions were welcome, as would have been any assistance that would produce the best plan possible.

Mayor Thompson Scored for Delaying Transit Solution

Impatient of delay under Mayor Thompson's assurance that he would work out a solution of Chicago's transportation problem, Alderman U. S. Schwartz made public on Dec. 19 the outline of a plan under which he thought progress could be made. He proposes to acquire the surface and elevated lines under a plan by which the municipality would guarantee payment out of earnings to be based on a fluctuating rate of fare. As chairman of the local transportation committee of the City Council he appointed a subcommittee of eight members to hear from all interested parties. Representatives of the companies were invited to express their views at a meeting to be held Dec. 22.

Under the Schwartz plan an agreement would be made by the city that the charge for service would be high enough at all times to produce a revenue sufficient to meet all charges and accumulate sinking funds. By issuing city bonds it is expected that the interest charges would be lowered to a point where fares would be decreased. If an agreement could not be made as to purchase price he would have the lines acquired by condemnation.

The plan also contemplates the building of subways. In connection with his statement, Alderman Schwartz referred to the failure of the Mayor to make any headway under the full authority given him by the City Council although several hundred thousands of dollars had been spent in hiring lawyers and engineers. The only hope for further progress under the Mayor's plan is through a special session of the Legislature.

No announcement has yet been made by the federal court on the injunction proceedings against the 8-cent fare order of the Illinois Commerce Commission.

$200,000,000 Transit Program for New York

The New York Transit Commission expects to make public soon its plans for the immediate development of transit routes in the city at a cost of about $200,000,000. Manhattan, Brooklyn and Richmond lines are included in the plans.

Extension of the subway under Forty-second Street clear through to Lexington Avenue on the east and to Eighth Avenue on the west, and the construction of moving sidewalks parallel to the tracks between the Grand Central Terminal and Times Square are among the improvements which the commission believes must be undertaken at once.

Eighth Avenue is fixed as the western terminus of the Forty-second Street tunnel for the reason that the plans of the commission call for the eventual construction of a subway beneath that thoroughfare.

Another improvement which the commission deems to be of vital importance is the construction of a subway for passenger service to Staten Island.

For Brooklyn the plans call for lowering the Fulton Street elevated tracks to the Fourth Avenue subway at Ashland Place and the construction of a cross-borough subway to connect Long Island City with the Brighton Beach line at the Prospect Park station.

More than $300,000,000 has already been spent in building and equipping the present transit lines in the greater city and that program has not yet been completed.

Ottawa Will Vote Again

The voters at Ottawa, Ont., will have another opportunity on Jan. 2 to make known their wishes as to the future of the Ottawa Electric Railway. The present contract between the company and the city expires in August, 1923, and on Jan. 2 the voters will be asked to vote on (a) municipal ownership and operation, (b) another contract with the city, (c) service at cost. Last year the Ontario Legislature authorized the city to carry out the purchase upon approval by the voters. The possibility remains of all three questions being lost at the election. This might happen if more than 50 per cent of the electors do not want municipal ownership and split their yes! votes between another contract with the company and service at cost. The company has gone before the voters with a frank statement of why it favors service at cost.

Boston Elects Mr. Curley

Another Five-Cent Fare Advocate Rides Into Public Office Over Good Government Candidate

As in other recent municipal elections, the question of the electric railway fare played its part in the Boston mayoralty election on Dec. 13, when James M. Curley was elected to serve for the next four years. Mr. Curley, who several years ago filled the Mayor's chair for one term, received a majority of only about 2,000 votes over his nearest opponent. There were two other candidates who received a small scattering of votes.

ELECTIONS NON-PARTISAN

The elections in Boston are supposed to be non-partisan in that no party designation is printed on the ballot. Three of the candidates, including Mr. Curley and his nearest opponent, John R. Murphy, are Democrats by personal affiliation. Practically the entire strength of the Republican party, including Governor Cox and the present Mayor of Boston, was thrown in favor of Mr. Murphy in an unsuccessful endeavor to defeat Mr. Curley. The previous record of Mr. Curley as Mayor of Boston was not such as to commend him to voters favoring reform in civic administration.

The successful candidate made a strong plea, among other issues, on a promise to fight for the restoration of the universal 5-cent fare in Boston. The lines of the Boston Elevated Railway are now operated by Public Trustees, under State legislation passed in 1918. The fare is 10 cents, with 5-cent fares in certain suburban communities for short local rides. Just how the Mayor-elect proposes to carry out his plans for restoring the 5-cent fare was not made clear in his pre-election promises. To do this will apparently require the repeal of existing State legislation and the acceptance of the repeal by the stockholders of the Boston Elevated Railway.

PERSONAL POPULARITY A FACTOR

It is doubtful if this issue played such an important part in the Boston campaign as it did in the recent election in New York. Mr. Murphy, who ran within about 2,000 votes of winning, came out early in his campaign with a plain statement of facts concerning the inability of any Mayor of Boston to change conditions created under authority of the State Legislature. It is generally conceded that the personal popularity of Mr. Curley among certain elements of the population had much to do with the defeat of the "good government" candidate.

Hartford May Seek an Expert

The city of Hartford, Conn., has under consideration the hiring of statistical experts in an effort to secure a fare reduction on the local lines of the Connecticut Company. Before a petition is filed with the Public Utilities Commission asking for a fare reduction the municipality has declared that statistical testimony would be advisable in an effort to get a reduction. The city feels that it should be prepared to give detailed testimony should the Public Utilities Commission grant a hearing on the application of the city for a reduction of fare.

Financial and Corporate

Branch Lines May Be Abandoned

Communities Protest Plan of Interurban to Quit Service on Three Lines

Efforts on the part of the receiver for the Indiana, Columbus & Eastern Traction Company to lighten its financial burden by abandoning service on three single-track branch lines in Ohio are being bitterly contested by the various communities served by the branch lines. The application of the company, filed with the State Public Utilities Commission, is now before that body for investigation and an initial hearing was held on Dec. 14. Owing to the mass of evidence submitted and the desire of counsel for the various communities contesting the application to digest this evidence, the commission continued the hearing until Feb. 8 and 9, 1922.

The branch lines authorized by order of Judge Killitts of the federal district court at Toledo to be abandoned, but subject to the approval of the state commission, run between Lima and Defiance, between Columbus and Orient and between Carlisle Junction and New Carlisle. The Lima-Defiance line is the longest and most important of the three. It has a main track mileage of 39.92, with thirteen sidings whose combined length is 1.7 miles.

Figures submitted by the company covering operation of the Lima-Defiance branch show that in 1920 there was a deficit in operating revenues over operating expenses of $18,092 and during the first six months of 1921 there was a deficit of $5,910, while there has been an actual loss after deducting taxes, interest and depreciation charges ever since and including 1916. These "red ink" figures for the five and a half years beginning with 1916 are shown to be as follows; $99,581, $99,547, $106,125, $11,127, $136,095 and $64,893, the last figure being that for the six months ending June 30, 1921.

IMPROVEMENTS NECESSARY TO CONTINUE SERVICE

In order to continue operation of this line the company says it will be necessary to institute track and roadway improvements costing $47,000 in 1922, $22,500 in 1923, $20,000 in 1924 and $12,500 each year thereafter. It will also be necessary to spend $48,000 for power improvements.

This branch has an interesting history. Organized in 1899 under the name of the Columbus, Lima & Milwaukee Railway, the name was changed some time prior to the beginning of its operation in 1899 to the Columbus & Lake Michigan Railroad. It was operated as a steam railroad until its acquisition by the Indiana, Columbus & Eastern Traction Company on June 19, 1906, and thereafter until 1910, when it was electrified in so far as passenger service was concerned. Freight service continued to be handled by steam locomotives for about two years. On Feb. 13, 1913, electric locomotives were substituted for the old steam motive equipment in freight service.

The Columbus-Orient line is 12.11 miles long. It was built in 1898 by Adam Grant, the line extending between Columbus and Grove City only at that time. In 1900 the line was extended to Orient, service starting in June, 1902. About 1901, ownership of the road passed to the Appleyard syndicate and it was re-named the Columbus, Grove City & Southwestern Railway. In January, 1905, a receiver was appointed and on June 19, 1906, the road was sold to the Indiana, Columbus & Eastern Traction Company.

The New Carlisle branch is 4.22 miles long and was originally known as the Springfield & Western Railway. It was placed in operation in 1901, under the management of the Dayton, Springfield & Urbana Railway. In June, 1906, the Indiana, Columbus & Eastern Company acquired the Dayton, Springfield & Urbana Company.

The Indiana, Columbus & Eastern has been in the hands of a receiver since January, 1921, up to which time it was under lease in large part to the Ohio Electric Railway. The present receiver is James H. McClure, Springfield, Ohio.

Utilities Want Better Terms

Two Indiana public utilities have petitioned the Public Service Commission to permit more favorable terms for disposing of securities already authorized by the commission. The Interstate Public Service Company, a gas, electric and interurban utility, requested permission to sell $130,000 of its first and refunding bonds at 75 per cent of par. The Commission some time ago authorized the company to sell the securities at 80 per cent of par. The company avers that it cannot now market the bonds unless it gives a greater discount.

The Indiana Power Company, Vincennes, requested leave to increase from 7 to 8 per cent the dividend rate on $1,303,000 of unsold preferred stock. The Commission originally authorized the company to issue $1,590,000 of 7 per cent stock, but the company avers that it cannot now dispose of the remainder unless it pays a higher dividend. The company requested leave also for a technical change in a previous order authorizing it to issue $800,000 of 8 per cent notes, because of the increasing of the interest rate on some of its bonds from 6 to 7.5 per cent. The notes are convertible into the bonds.

Boston Elevated Eliminates Deficit

As was reported previously in the ELECTRIC RAILWAY JOURNAL the deficit of the Boston (Mass.) Elevated Railway had been reduced on Nov. 1 to $209,245. On Dec. 1 that deficit was eliminated and according to Edward Dana, general manager of the property, there is now $49,042 in the reserve fund, which under the terms of the public control act must be restored to $1,000,000. The favorable result obtained during November was accomplished, although the revenue during the month was $155,938 less than a year ago.

New Shore Line Plans

Details of Financing Are Given to Which It Is Planned to Rehabilitate Road

Further details are available with respect to the plans for the new company formed to operate the old route of the Shore Line Electric Railway from New Haven through Saybrook and Chester, Conn., to which reference was made in the ELECTRIC RAILWAY JOURNAL for Dec. 10, 1921, page 1047. As stated in the previous item the successor company will be known as the Shore Line Traction Company. It has been incorporated and will take over all the assets of the old operating company, the Shore Line Electric Railway, in the territory to be served. In this connection it is now learned that the statement was in error that Ford, Bacon & Davis would act as operating managers for the property. It is true that some time ago Ford, Bacon & Davis were requested to make an examination of the present physical condition of the properties, to report upon the cost of rehabilitation and to make a study of probable operating conditions. The report has been delivered and Ford, Bacon & Davis have announced that their work has been completed.

The line cost originally more than $3,000,000, but due to a favorable purchase contract the Shore Line Traction Company has been able to acquire it for a little more than $400,000. This amount includes the cost of practically everything except the power house equipment.

It is estimated that $450,000 will be needed to put in new power house equipment and to replace a certain few miles of track which have been taken up, to clear the surface of the roadway, put in transmission lines, etc. This means that the total cost for the purchase of the road and putting it into first-class operating condition will be $860,000 to $875,000, including the sum of $50,000 cash to be reserved as a working fund.

To cover the cost of the purchase of the line and the intended improvements the Shore Line Traction Company is selling $900,000 of first mortgage thirty-year 7 per cent gold bonds and also 6,500 shares of stock. Under the plan as now proposed the property goes to the holders of the stock and the bonds in the new company at less than one-third of the original cost and at an estimated cost of less than one-third of its present replacement value.

It has been figured that the net income of the road, after providing for operating expenses and depreciation, will be about $118,000. This estimate is based on the past revenue of the road over a period of three normal years and on savings to be effected by the elimination of an unprofitable 7-mile spur and based on additional freight and passenger revenue over and above that enjoyed by the old line. After deducting from the estimated net earnings the interest charges of $63,000 for bonds and about $5,000 for interest on car trust notes, the net income applicable to the common stock would show up better than $7.50 a share.

The securities of the new company are being sold in units of $3,000 in bonds and $2,000 in stocks, or a total par value of $5,000, for $3,250. This is in a sense equivalent to a price of $300 for three bonds and $25 for $200, par value, of stock.

One Year of Service at Cost at Rochester

Public Sentiment for the Railway Improved—Changes Result in Better Service

The report of Charles R. Barnes, Commissioner of Railways, City of Rochester, on the service-at-cost contract between the City of Rochester and the New York State Railways was submitted to the Mayor and Common Council on Nov. 30. The financial report follows:

SUMMARY OF OPERATIONS—AUG. 1, 1920, TO AUG. 1, 1921

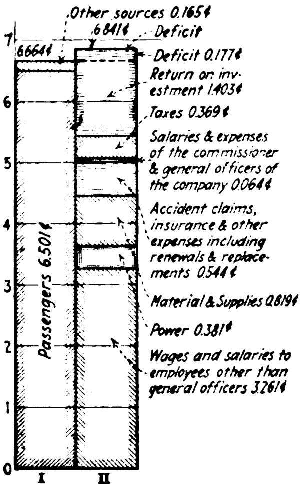
Miles of track	167.53
Miles of road operated	78.10
Car mileage	9,572,773
Car-hours	1,092,382

		Per Cent of Railway Operating Revenue
Revenue from transportation:		
Passenger revenues	$4,899,125.74	97.80
Chartered car revenues	4,965.00	.10
Miscellaneous transportation revenues	1,790.12	.04
Total revenues from transportation	$4,905,880.86	97.94
Revenues from other railway operations:		
Station and car privileges	$45,054.92	.90
Rent from track and facilities	47,449.28	.95
Rent from buildings and other property	10,910.85	.21
Total revenues from other railway operations	$103,415.05	2.06
Railway operating revenues	$5,009,295.91	100.00
Railway operating expenses:		
Ways and structures	$513,844.71	10.25
Equipment	483,239.27	9.65
Power	292,470.12	5.84
Conducting transportation	1,895,041.06	37.83
Traffic	9,348.34	.19
General and miscellaneous	480,733.59	9.60
Renewals and depreciation	145,833.33	2.91
Total railway operating expenses	$3,820,510.42	76.27
Net revenue from railway operations	$1,188,785.49	23.73
Auxiliary operations revenues	$7,493.88	.15
Auxiliary operations expenses	3,808.99	.08
Net revenue from auxiliary operations	$3,684.89	0.07
Net revenue from operations	$1,192,470.38	23.80
Taxes assignable to operations	278,016.23	5.55
Operating income	$914,454.15	18.25
Non-operating income	8,645.37	.17
Gross income	$923,099.52	18.42
Return on investment	1,057,098.00	21.10
Deficit	$133,998.48	2.68

In his accompanying report, Mr. Barnes says that to a material extent the contract has been effective in modifying public sentiment against the railway company and that this is as it should be, because the transportation system is now to all practical intents and purposes solely that of the people of Rochester. The rate of fare in force during the fiscal year except from Aug. 1, 1920, to Aug. 28, 1920, was 7 cents cash and tickets for 6½ cents. At this rate the return to the company is the minimum rate—that is, 6 per cent per annum. As the rate of fare is lowered the company secures the right to receive a higher fare, but in no case more than 8 per cent.

One of the first acts of the commissioner was to make a survey of traffic. This was completed during August, 1920, and beginning on Sept. 1 the rush-hour service was increased 22 per cent. Increases were also made as to the base schedule during non-rush hours. A reduction in vehicular obstruction of the tracks was also accomplished. A higher maintenance standard of equipment was introduced, and a track rehabilitation program was carried out, including the addition of loops. The track reconstruction work and construction of loops when completed will involve the expenditure of more than $400,000. Approximately 6,000 track repair jobs have been completed during the year and more than 6,000 ties installed in the suburban lines. In the distribution system 250 poles were reset or replaced with concrete poles, 2,500 ft. of underground cable was replaced and 5,000 bonds were installed.

The revenue passengers during the year were: City system, 72,855,320; suburban lines, 2,462,509. The revenue passenger per car-mile were: City, 8.0; suburban, 6.7. The average rate of fare in the city service-at-cost zone was 6.501 cents per revenue passenger. In this zone there was a decrease of 10 per cent in number of revenue passengers, carried, compared with last year.



RECEIPTS AND EXPENSES PER REVENUE PASSENGER—ROCHESTER

This decrease, in the opinion of the commissioner, was almost entirely due to business depression, and the increased fare had very little effect on any reduction in traffic. The commissioner believes that the worst period of street railway operation is passed, and with improved conditions it should soon be possible to wipe out the accumulated deficit. An accompanying chart shows graphically the distribution of expenses.

In discussing possible extensions the report says that the population of the city between 1910 and 1920 increased 35.6 per cent, but during that period there had been no material extension of the trackage of the street railway system. Additional crosstown connections seem necessary now, but their cost at present prices would be prohibitive, and probably these requirements can best be met by use of the trackless trolley. In fact, an experimental installation of this kind will be made shortly.

Will Sell Bonds.—The Illinois Public Utilities Commission has granted permission to the Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., to sell $49,000 consolidated and refunding mortgage bonds.

Connecticut Company Coming Back

$700,000 Surplus Predicted for Current Year Under Changed Economic Conditions

A surplus of about $700,000 in the treasury of the Connecticut Company, New Haven Conn., at the end of the current year is forecasted by returns filed with the Connecticut Public Utilities Commission for the eleven months ended Nov. 30. It will be practically the first time the company has shown a surplus since the war.

This reversal of last year's deficit of $1,436,000 is attributed to the increased fare, together with economies in operating methods, a gradual reduction in the cost of material and fuel, a slight recession in recent months in rates of pay and relief from unregulated jitney competition.

PERIOD OF TRUSTEESHIP EFFECTED MANY IMPROVEMENTS

The records show that during the period of trusteeship—seven years—trackage of 16 miles has been added to the Connecticut Company's system, $2,264,000 has been spent for new rolling stock and $1,100,000 for additional power house capacity and other necessary additions to the property. If the electric railway should not be returned to the ownership of the New York, New Haven & Hartford Railroad the property would be in fully as good condition, as far as can be seen by utility commission records, as it was when separated from the steam railroad under the federal dissolution decree of 1914.

Notwithstanding stringent financial conditions brought about by excessive costs that forced the discontinuance of payments of rentals and an extension of time for the payment of taxes to the extent that the Connecticut Company now owes the New Haven $3,443,000 for rent and the State $1,882,220 in back taxes, the trustees have refused to decrease the amounts spent for the upkeep of the physical property and so have been enabled to bring about material reductions in operating costs. In years prior to the trusteeship 21 per cent of the gross income was considered sufficient to keep the property in good condition. At no time since the trusteeship has the expenditure for that purpose been less than that percentage, and in 1920 more than 26 per cent of the gross income was so applied.

Dividends at the rate of 3¾ per cent were paid for the three years preceding the change of control in 1914. The most prosperous period in the company's history was the record year of the trusteeship, when the net income, over all charges, was a trifle less than $2,000,000. The operating costs for 1914, 1915 and 1916 varied from $5,185,000 to $5,643,000. The prevailing rate of fare then was 5 cents.

Operating costs, which were $5,643,000 in 1916, have more than doubled. In 1917 they increased $7,821,000, in 1918 to $8,150,000, in 1919 to $9,210,000, and in 1920 to $12,417,000. In other words, operating costs, taxes and fixed charges required 83 cents of each dollar revenue in 1916, 99 cents in 1917, 98 cents in 1918, 99 cents in 1919 and $1.11 in 1920. The Connecticut Company appears to be one of the first properties of its kind in the country to begin to "come back."

Receivers Sought for Three Massachusetts Roads

Petitions have been filed in the Massachusetts Supreme Court asking the court to appoint receivers for the Northern Massachusetts Street Railway, the Connecticut Valley Street Railway and the Concord, Maynard & Hudson Street Railway. The petitioners declare that if the court does not take jurisdiction individual creditors will assert their rights in different courts, so that there will be many suits.

Levies and attachments will be made upon cars, material and supplies of the companies and trustee processes will be begun which will tie up the finances so that the roads will be unable to maintain their properties.

These petitions have been filed in behalf of members of a firm of insurance brokers doing business under the name of Gilmour, Rothery & Company. They declare that the credit of the companies is so impaired that they cannot borrow money with which to meet maturing obligations, and that the Connecticut Valley Road owes them $7,060 in premiums overdue on insurance policies; that the Concord, Maynard & Hudson road owes $147 in premiums and the Northern Massachusetts company owes $850 in overdue premiums.

Judge Jenney of the Supreme Court has ordered the petitioners to give notice of these proceedings to the Massachusetts Department of Public Utilities and to the Selectmen of each town and Mayor of each city in which the three roads operate cars.

Purchase Recommendations Approved by Municipalities

At a conference of municipal representatives in the Niagara district of the Ontario province held in St. Catharines, Ont., the report of the Hydro-Electric Power Commission regarding the acquisition of the Niagara, St. Catharines & Toronto Railway was indorsed and the municipal representatives recommended to the councils of the various localities that by-laws be submitted at the coming municipal elections to take over the railway.

W. B. Burgoyne, president of the Niagara District Radial Union, explained that the meeting was merely a continuation of a conference held two years ago to discuss the proposed electric lines through the district when it was decided to ask Sir Adam Beck to secure an option on the Niagara, St. Catharines & Toronto Railway lines in the Niagara district. Chief Engineer Gaby of the commission said the railway could be bought for $3,544,374, to be paid by $2,446,374 of 4½ per cent fifty-year bonds of the Hydro-Electric Commission and the assumption by the commission of $1,098,100 outstanding 5 per cent bonds.

The property to be acquired consists of the main tracks connecting Niagara-on-the-Lake, Port Dalhousie, St. Catharines, Merritton, Thorold, Niagara Falls, Welland, Humberstone and Port Colborne, also the local railway systems in St. Catharines, Merritton, Thorold and Niagara Falls, Ont. These new lines would be reconstructed at a cost of $344,999, and an extension built in Thorold to the industrial district and to local lines in St. Catharines and Merritton. To place the line in first class condition would cost an additional $774,456.

Financial News Notes

Petitions Court for Receiver.—A bill of equity has recently been filed in court in Norristown, Pa., requesting the appointment of a receiver for the Montgomery Transit Company. This line operates between Norristown and Harleysville. It is said that the company is insolvent.

P. R. T. Realizes $1,447,394.—For the eleven-month period ended Nov. 30, 1921, the Philadelphia (Pa.) Rapid Transit Company realized a net income of $1,447,394, against a deficit of $45,429 for the corresponding period a year ago. The accumulated deficit for the twenty-three month period to Nov. 30, 1921, is $1,045,540.

Abandonment of Service Authorized.—The Ohio Service Company, New Philadelphia, Pa., by a decision handed down by the Public Utilities Commission has been granted the right to abandon its railway service between Uhrichsville and Dennison on Jan. 1. The application was based on the grounds that the line is now being operated at a loss.

Approval of $1,200,000 Issue Sought.—Formal application by the Eighth Avenue Railway, New York, N. Y., for a $1,200,000 bond issue secured by the company's real estate has been made to the Transit Commission. The purpose of this bond issue is to provide funds with which to take up certain bank loans and bring about improvements in the physical condition of the company's properties.

Extended Bonds Offered. — Dillon, Read & Company, New York, N. Y., offered for subscription on Dec. 19 at 100 flat to yield 7 per cent the remainder of $5,000,000 of 7 per cent extended gold bonds of the Minneapolis (Minn.) Street Railway and the Minneapolis, Lyndale & Minnetonka Railway not accepted by the original holders for extension. The issue was promptly oversubscribed.

Interurban Bondholders Organize.—Action has been taken by some of the larger bondholders of the Dayton, Springfield & Urbana Traction Company, Springfield, Ohio, to protect their interest and property. Failure of the company to pay its coupons on the first mortgage bonds due on Nov. 1, 1921, was the cause for the action taken. A bondholders' protective committee has been organized.

Taxes on Electric Railways Raised 15 Per cent.—Electric railway properties in Wisconsin will have to pay an aggregate tax of $1,594,242, or an increase of 15 per cent over that of 1920, on the basis of the preliminary valuation fixed by the Tax Commission. Their rate of taxation was increased from $18.53 a thousand to $21.06 a thousand, or more than 12 per cent; their valuation was increased from $71,360,000 to $75,700,000, or more than 5 per cent.

Bids Wanted for $680,000 of Bonds.—Bids will be received until Jan. 7, 1922, by Harry W. Carroll, City Comptroller of Seattle, Wash., for the sale of $680,000 of municipal street railway extension bonds, the bonds to be sold for the purchase of new street railway tracks on First Avenue, purchase of twenty-five new cars and paying of the city's debt to the Western Washington Power Company, incurred at the time of the purchase of the Greenwood Avenue carline in Ballard.

Mortgage Releases Being Arranged in Detroit.—Suit has been started before Judge Webster to arrange for the release of mortgages existing on the day-to-day lines of the Detroit United Railway, which the city has voted to take over and for which the city seeks title. The suit is against the Detroit United Railway and the Guaranty Trust Company, New York, which acts as trustee of the mortgage on the lines in question to determine who is to receive the money which the city is to pay for the lines under the terms of the arbitration. The day-to-day lines include the Grand Belt, Twelfth Street, Linwood, Kercheval and Hamilton lines.

October Showing Is Favorable.—The loss from operation at Findlay, Ohio, by the Toledo, Bowling Green & Southern Traction Company has been cut down to its lowest point for the month of October. The street car commissioners believe the new cost-at-service grant put into effect last March will ultimately succeed. The $20,000 stabilizing fund has been cut down to $10,286 since the new plan was adopted. The monthly loss has run as high as $2,000 but during the last month was only $325. No change in car fare is expected soon. Cash fare is 10 cents, tickets, two for 15 cents or seven for 50 cents.

$1,600,000 of Bonds Offered by Interurban.—Stone & Webster, Boston, Mass., are members of a syndicate which offered for subscription on Dec 20 $1,600,000 of first mortgage 5 per cent gold bonds of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md. The offering price was 78 and interest yielding 7.10 per cent. The proceeds of the issue are to be used for retiring at par and interest $1,400,000 of 7 per cent notes of the company. The company made a wonderful record of earnings during the war-time period of heavy traffic between Baltimore and Washington and even in 1920 and 1921 earned respectively $287,007 and $337,000 after payment of interest.

Bonds Paid at Maturity.—The Kentucky Traction & Terminal Company recently announced that the $191,000 of 5 per cent bonds of the Georgetown & Lexington Traction Company, due on Nov. 15, 1921, would be paid off at maturity at the office of the Cincinnati Trust Company, Cincinnati, Ohio, trustees. In connection with the payment the Kentucky Traction & Terminal Company issued $196,000 of 5 per cent first and refunding mortgage bonds dated Feb. 1, 1911, and due February 1, 1951. These $196,000 of Kentucky Traction & Terminal bonds have been exchanged with the Lexington Utilities Company for an equal amount of face value Lexington Utilities Company's first lien and refunding 6s, Series B, due April 1, 1936, which have all been sold. The $196,000 of Kentucky Traction & Terminal bonds have been pledged under the indenture executed on April 1, 1919, by the Lexington Utilities Company through the Commercial Trust Company, Philadelphia, Pa., trustee.

Traffic and Transportation

First Bus Order in Nebraska

Commission There Takes Cognizance of New Form of Transportation in Competition With Trolley

The Nebraska State Railway Commission has taken official cognizance of motor bus transportation. Its first order on the subject bears date of Nov. 25 and refers to a complaint filed with the commission by the Omaha & Lincoln Railway & Light Company against Frank Henry. The complaining company operates an electric railway between South Omaha and Pappilion. Mr. Henry operates a motor bus line between South Omaha and Ralston, following a route identical with part of the route of complainant, with one terminal identical and its other terminal at a midway station in use by the complainant.

BASIS OF RAILWAY'S OBJECTIONS

The railway alleged that the operation of the Henry buses was confined to that portion of its whole route where it never had been able to operate successfully from the revenues there received. Other allegations were made by complainant as to practices of respondent inimical to the safety of its own passengers and to the performance of its duty.

In its order the commission prescribed schedules of service which complainant and respondent shall observe. The commission further ordered that the management of the bus line shall install books of accounts which shall show:

(a) Financial statement, including in assets the cost of trucks, office furniture and fixtures, shop equipment, supplies, miscellaneous items and cash on hand, and in liabilities the actual investment by the owners, money borrowed and money earned, amount set aside for depreciation and the accrued surplus.

(b) Revenues from regular passenger schedules and separately from other sources.

(c) Expenses, to include gasoline and oil, drivers' wages, drivers' expenses allowed, tire repairs and renewals, repairs to buses, repairs to buildings and shop equipment, salaries of officers and clerical help, rent, heat, light, insurance, taxes, etc.

(d) Dividends paid on investment.

(e) Daily total of revenue passengers carried, non-revenue passengers carried and monthly and annual summaries of these.

BUS LIMITS PRESCRIBED

It is further ordered that the buses abstain from driving on interurban or street railway tracks, or near enough to obstruct the clearance to electric cars, except when traffic conditions on the highway make it temporarily unavoidable. The buses are to yield the right-of-way to any approaching electric railway car and are not to obstruct tracks until after electric car has passed.

The commission also ordered the bus line to secure liability insurance for the protection of passengers of not less than $10,000 for each bus operated as a common carrier, nor less than $500 for each passenger carried at any one time, the proposed policies to be submitted to the commission for approval.

A one-way fare of 14 cents was established by the commission for the 5-mile route of the bus line, with an intermediate fare of 7 cents.

An excerpt from the order reads:

> Regulation in the public interest which might as an incident materially reduce the earning power of this respondent does not violate his constitutional property rights. He is using the highway as a place of business. He operates entirely upon license, or, more properly, consent, and no vested right is involved. The fact that he has money invested in buses, which regulation of his schedules might jeopardize, is not material. The State may even prohibit this respondent and others like him from continuing to operate, if the reasons for its exercise of the police power are defensible as in the interest of the general public

T. A. Browne, member of the State Railway Commission, offered the following comment on the subject of motor bus regulation:

> This commission has not attempted regulation of motor bus lines in any degree except in so far as represented by the order in the Ralston case, which came before us on complaint. I cannot say just what is contemplated. There is no question that these buses are common carriers and are subject to regulation just as are other common carrier residents of Nebraska. While it is probably the commission's duty to do whatever regulating is essential, we have considered the provisions of the law as directory only and have been reluctant to embark into the field of regulation because of the great complexities surrounding the subject.

COMMISSION LACKS KNOWLEDGE

> These motor buses which operate intertown lines on country roads are subject to so many conditions over which they have no control that they must be more or less erratic as to schedules We attempted a rather comprehensive regulation of freight trucks, but were not very successful because of the lack of knowledge of the subject either in our possession or elsewhere.
>
> We do not know how many motor bus lines there are in this State. We have not required them to file anything in our office. We have not assumed that the commission's jurisdiction required them to obtain consent before beginning operation. We do know that some of them have been rather short lived and that others have tried out the business where their predecessors have failed. It is easy to go into the motor bus business. It is not a stable business and therein lies its chief menace, particularly if by operation it menaces the continuance of stable transportation.

Georgia Railway Redeems Rebate Slips

In accordance with a contract between the city of College Park, a suburb of Atlanta, and the Georgia Railway & Power Company, operating the city electric traction and suburban lines, by which a 5-cent fare was granted College Park with the original franchise, the railway has been compelled to make a refund of 2 cents each on 682,670 fares, amounting to $13,653.

When the company was granted a 7-cent fare in Atlanta some months ago the same fare also was charged in the suburbs of Decatur and College Park, but due to a suit being brought against the company on the old contract, rebate tickets were issued with each 7-cent fare to citizens of these two suburbs. Recently the Supreme Court ruled that the 5-cent fare would have to stand in accordance with the original contract, and the amount paid back by the company represents the refund on the rebate tickets issued in College Park. Such an order was not obtained for the Decatur line. This case has been referred to previously.

Electric Railways Upheld

Both Muskegon and Battle Creek Vote to Retain Their Electric Railways —Fight on in Grand Rapids

Two Michigan cities, Muskegon and Battle Creek, have voted to support electric railways in the latter's fight against encroaching jitney competition. In each city popular elections held during the week ended Dec. 17 resulted in an overwhelming indorsement of the stand taken by the railways that competition by buses on streets occupied by railway lines must be stopped in order to preserve the railways. The system in Muskegon, known as the Muskegon Traction & Lighting Company, is controlled by the American Light & Traction Company, while the lines in Battle Creek are operated by the Michigan United Railways.

TWO BUS LINES AFFECTED

In Muskegon two bus lines were affected. In that city the vote was 4,605 for the cars and 1,316 for the buses. Muskegon Heights, a large suburb, gave a majority of 430 for the electric railway. By the terms of the vote the Council there is authorized to pass ordinances denying use of the street to the bus lines affected. Three bus lines will not be affected by the vote. If the vote had gone the other way the railway planned to cease operation on the following day, permission to take such action having been granted the operating company by the Michigan Public Utilities Commission following a showing before the commission that the cars could not be operated at a profit in the face of the claimed unfair competition of the jitney lines. Even in districts served exclusively by the bus lines the vote was overwhelmingly in favor of the retention of the electric railway system.

The Battle Creek vote resulted in a ten to one victory for the street cars. The vote for the cars was 5,638 and for the jitney 568. The expenses of the Battle Creek election were borne by the electric railway. In this city both the electric railway and the jitney men carried on extensive publicity campaigns. The publicity for the railway was in charge of Henry Tinkham and was of a high order and exceptionally effective. In Muskegon, the other hand, the jitney men spent thousands of dollars in striving to persuade the voters to support them, while the railway spent not a cent, leaving the whole matter to public opinion. In both cities the newspapers supported the electric railways. In Battle Creek the railway employees appealed direct to the voters by circulars.

GRAND RAPIDS ALSO A BATTLEGROUND

These victories followed the partial one scored in Grand Rapids, where an ordinance requiring a $10,000 bond for jitney men was adopted. Following the adoption of this ordinance the bonding company refused to give the bonds and the jitney men found themselves unable to meet the city laws. Several operated as free lance drivers, announcing in placards on their cars that they would give free rides and asked for contributions. Such contribution customarily was left on the seat as the passenger alighted at the end of the ride. This practice has proved far from effective and now the bus men are asking that the amount of the bond be reduced appreciably, it being regulated by the capacity of the car.

Kansas City Jitney Problem Up Again

Operators There Seek to Take Advantage of Recently Enacted State Law —Whole Case Now Before Court for Settlement

Kansas City, Mo., is the battleground for a new attack by jitney operators upon the right of a municipality to control vehicles operated for hire. The occasion for the renewal of the contest between jitneys and city officials in Kansas City is the passage of a new traffic law by the State Legislature. This measure, the jitney men claim, relieves them from municipal control. This is the Bestor law, apparently intended to make uniform the regulation of traffic throughout the State. It has to do with the manner in which vehicles operating on public streets and highways shall be equipped and run.

THE jitney operators contend that since the State has assumed a certain control of motor vehicles, the cities have no longer any authority to regulate traffic. The jitney men have therefore reopened litigation on existing ordinances and are trying to secure a court decision invalidating the effect of the ordinances that have made present jitney operation illegal. A brief review of the Kansas City situation will make clearer the importance of the pending litigation.

ORDINANCE EFFECTIVE LAST MARCH

A city ordinance became effective in March, 1921, prohibiting jitneys from running on streets having electric railway tracks. The jitney men sought an injunction to prevent the city from enforcing this ordinance; the local court upheld the ordinance, and the jitney men appealed to the State Supreme Court. The appeal is still pending. This ordinance has been fairly well obeyed.

A second ordinance regulating jitneys was passed in August; this reaffirmed the prohibition against jitney operation on electric railway streets, and provided for designated jitney routes, applications for routes by jitney men to carry written consents of 51 per cent of resident-owned property on such routes. After lenient delay by the city, there was insistence that this ordinance be complied with. Several applications were filed by jitney operators for designated routes, with "consents" by property owners. But in no case, as checking of assessors' books revealed, were the consents sufficient.

Jitneys continued to operate, however, despite the ordinance, and the jitney association sought an injunction against the city, to restrain it from enforcing the measure. The city filed a cross bill, asking injunctive relief against threatened violation of the ordinance. A temporary restraining order was granted to the city, later made an injunction. The injunction was asked, and granted, against the jitney association, and also against fifty-one named jitney operators.

HOPE SEEN IN BESTOR LAW

The proposal in the State Legislature of the Bestor law and its passage gave jitney operators hope that the city control would be abrogated. As soon as the Bestor law became effective they sought a reopening of the injunction proceedings and full relief from effectiveness of the ordinance. It may be remembered that while the injunction proceedings on the ordinance prohibiting jitneys from so-called electric railway streets are pending in the State Supreme Court, the ordinance on which local injunction prevails covers the material of the first city law as well as that regarding consents of property owners and other matters.

In the presentation of their case to the local court recently, the jitney men have tried to show not only that the ordinance conflicts with the Bestor law, but that it is in itself unfair. They have in fact recovered the original ground of controversy, possibly to display the lack of necessity for any municipal action in regulation, additional to the regulation by the Bestor, the state law.

The Bestor law specifies the manner in which motor vehicles shall operate on the public streets and highways and provides for a state license for motor vehicles. It permits cities to levy license taxes on vehicles, which cannot be more than half the state license fee.

The city's counsel pointed out precedents both in Missouri and in other states for its contention that the Bestor law, like other similar laws, does not withdraw regulation of privileges from cities, and does not, indeed, prevent cities from passing and enforcing regulations of similar character to those of the state law, and in addition to the state's regulations.

Testimony by witnesses for the jitney men was intended to prove that jitney service was necessary in Kansas City as an adjunct to the electric railway service, since, it was claimed, the railway company could not handle the traffic.

RAILWAY FULLY PREPARED TO MEET TRAFFIC DEMANDS

Documents and evidence were introduced by the city demonstrating that the Kansas City Railways was able not only to handle the traffic which the jitneys sought, but an amount greatly in excess of that. The most striking evidence of this was the display of passengers handled during the American Legion convention, when, for the peak days, the railways transported more than 726,000 persons a day. The daily average carried by the street cars, cash and transfer, is about 550,000, so that the Legion figures displayed an ability to care for about 175,000 in excess of the usual number. These figures were made more impressive by comparison with the claims of the jitney witnesses, that the jitneys had been carrying about 50,000 passengers a day, who could not have been served except by jitneys.

D. L. Fennell, superintendent of transportation of the Kansas City Railways under the receivers, was called by the city as a traffic expert. He was asked to testify on subjects related to the reasonableness of ordinances regulating jitneys. He testified as to the damage to headways of street cars caused by jitneys operating on streets having tracks; that maintenance of schedules by street cars was improved 20 per cent after the jitneys had been prohibited from streets having tracks; on these streets, vehicle accidents had decreased 25 per cent since the removal of jitney routes.

Mr. Fennell testified that the operation of jitneys had caused a loss of $3,500 to $4,000 a day to his company, or about $1,000,000 a year, and was largely responsible for the fact that the company is now in receivers' hands.

Briefs are to be submitted and final decision by the court may not be given for several weeks. In view of the importance of the matter reflected in the extent of legal assistance, it is likely that appeal will be taken from the Jackson county circuit court, whatever the result here.

Special Master Now Hearing New Jersey Case

Former United States Judge Thomas G. Haight has started to take testimony at Newark, N. J., to settle the question as to whether the 8-cent fare is to continue on the Public Service Railway or whether it is to be set aside. The order of United States District Court Judges Rellstab and Woolley authorized the 8-cent fare only temporarily, or until the entire question as to the propriety of such an 8-cent fare could be fully investigated by a Federal tribunal.

Last July the Public Utility Commission fixed a fare of 7 cents with 2 cents for a transfer for the company. An appeal was taken by the company on the ground of confiscation of property and hearings were held before the special Federal statutory court, resulting in the company being granted a temporary injunction restraining the State commission from enforcing its order, and allowing the company an 8-cent fare pending final hearing.

The commission and the State appealed this decision to the United States Supreme Court. They were denied a stay of the lower court's ruling pending hearing. Their request for advancement of the date of hearing was made because they wanted their appeal disposed of as soon as possible.

City Wins Point Against Jitneys

The city of Seattle recently won another angle of its legal fight against jitney buses in the city, when Judge J. T. Ronald, in the Superior Court, denied the application of twenty residents of the Cowen Park district for a writ compelling the Sound Transit Company to operate its Cowen Park and Roosevelt Heights jitney stages. The Cowen Park people were seeking to compel the company to comply with a certificate of necessity issued by the State Department of Public Works, which the company has contended requires continuous service for the two districts.

T. J. L. Kennedy, first assistant corporation counsel, who appeared for the city as a friend of the court, declared the Sound Transit Company holds no franchise under which it is obligated to furnish transportation, and that only the State Department of Public Works, which issued the certificate, has jurisdiction to judge whether the company is fulfilling the terms of such certificate. Judge Ronald held that, there being no franchise, he could not compel the company to operate its buses. The case was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 17.

One-Man Car Experiences Related

The Capital Traction Company at Washington, D. C., has discontinued the use of the only one-man car which it has been operating in the city. The car has been transferred to a shuttle service at Tacoma Park, Md. Officials state that there is no significance to be attached to this change. This car was fitted up several months ago with the idea of seeing what could be done with some of the company's old equipment. It happens that the Capital Traction Company is not likely to be in need of new equipment for some time to come. If it were necessary to undertake a study of equipment types, it was stated that one-man cars certainly would come in for consideration. The car simply was withdrawn from city service because of its peculiar fitness for the only shuttle service which the company maintains.

The Washington Railway & Electric Company has constructed and is operating thirty-one one-man cars. This has given rise to considerable complaint. To one of these complaints the Public Utilities Commissioners have replied to the effect that the cars are equipped fully with safety devices.

City's Fare Complaint Answered

The answer of the International Railway, Buffalo, N. Y., to the city's complaint against the 7-cent fare charge and alleged inadequate service has been filed with the Public Service Commission by Herbert G. Tulley, president of the company. The company maintains that the 7-cent fare is insufficient to meet operating costs, make a reservation for surplus and contingencies, provide for maintenance and depreciation and pay a reasonable return on the value of the system. The commission is asked to allow a higher fare than now is charged.

It is conceded that if a 5-cent fare were charged it would have a tendency to increase the number of car riders, but the company contends that the increase would not be sufficient to make up for the loss in income. President Tulley says the gross revenue of the company would be less under a 5-cent fare than the 7-cent fare now charged.

With the complaint of the city answered, it is expected the Public Service Commission will fix a date for a hearing and proceed to take testimony in the rate case.

Decision Against Free Jitneys

Judge Harry O. Chamberlin has upheld the decision of the Indianapolis city court that the operator of a "free" jitney bus who exacts no stipulated charge from his passengers, but does receive whatever sum the passengers leave in the car, is guilty of violation of the city jitney ordinance. Judge Chamberlin affirmed the verdict of Judge Walter Pritchard, who, Nov. 28, found an operator of a "free" bus guilty of violating the ordinance and fined him $10 and costs.

Soon after the ordinance was adopted by the City Council and before it became effective several drivers brought an injunction suit in the Superior Court to prevent the city from enforcing the ordinance, but Judge Carter construed the measure to be constitutional and valid, and the police department was ordered to enforce it. In an attempt to escape the provisions of the ordinance many jitney drivers removed the customary signs and posted on their windshields a sign, "free" bus. This was construed to be a violation of the ordinance and the police were ordered to arrest all who were operating these "free" jitneys.

Judge Chamberlin said that the test was whether or not there was an implied contract for any sum and whether that fee finally would find its way into the driver's pocket. The court said:

> When a passenger gets into one of the cars it is implied that the driver will be paid something for hauling the passenger. Every one who rides expects to pay something and the driver has the same expectation. At least, he has such a strong hope that it amounts to expectation. I cannot find so much difference between that and carrying a sign announcing that a fare will be charged of those who ride. I think that it amounts to an implied contract.

Louisville Fare Case Returned to Lower Court for Action

Louisville's railway problem will have to be threshed out in the Circuit Court of Appeals as a result of the action of the United States Supreme Court on Dec. 16 in ruling that it was without jurisdiction to construe three questions of law certified to it by the lower court.

In order to determine the question of rate contract or no rate contract, the Circuit Court of Appeals for the Sixth Circuit certified three questions of law to the Supreme Court.

The court did not announce it was without jurisdiction until it had heard the arguments of Joseph S. Lawton, City Attorney, and had returned from its recess.

When the court returned from its recess Chief Justice William Howard Taft announced it was the opinion of the court that the case did not come within its jurisdiction and that the three questions should not have been certified to it.

As a result of this action the case will go back to the Circuit Court of Appeals for a final decision, without any opinion from the Supreme Court on the three questions which the lower court certified to it.

The Circuit Court of Appeals certified to the Supreme Court three questions of law. These questions, upon which arguments were heard before the United States Supreme Court on Dec. 16, were:

1.—Did the act of 1856 have the effect of making revocable that immunity from rate legislation evidenced by the 5-cent contract which was purported by the charter and by the contract of April, 1864?

2.—Did such immunity terminate with the end of the original charter term in 1894?

3.—Did the acceptance by the company of the Constitution of 1891 have the effect of making revocable any such existing immunity?

The controversy between the city and the company over fares dates back to 1918. Finally in January, 1921, a suit in equity was filed by the railway against the city in the United States District Court, to establish the right to collect a 7-cent fare and to prevent the city from interfering with the company collecting that fare. On Feb. 16 Judge Evans decided the case in favor of the company. In accordance with this ruling the 7-cent fare went into effect on Feb. 21. The city then appealed to the United States Circuit Court, which in turn returned three questions of law to the Supreme Court for answer.

New Jitney Regulations Passed in Camden

New regulations for the operation of jitneys in Camden, N. J., were included in an ordinance passed by the City Council recently. The ordinance provides that all buses must operate twelve hours a day, six days a week and make at least one trip each hour during the scheduled time of operation.

Provisions are made for excluding buses from operation in the event of accident or the necessity of making repairs. All bus owners must file with the city a designated route. They must also place signs on their cars designating the route over which they operate and the name of the owner of the bus must be painted on the side of the car.

The ordinance also compels the owners to file with the city a schedule of operation in which they must give their leaving time from the terminal for each trip. Cars operating beyond the city limits must also file a time schedule.

Supreme Court Denies Prohibition Writ Restraining Service Commission

With a remarkable degree of celerity concerning the importance of the question involved, Justice Harold L. Hinman of the Supreme Court on Dec. 18 denied the application for a writ of prohibition restraining the Public Service Commission from interfering with the franchise agreements as to street railway fares in Troy, N. Y., which application had been made to him and argued by Corporation Counsel Guy of Troy the week previous.

The writ was asked on the ground that the public service commissions law amendments passed last winter are unconstitutional, in so far as they delegate to the Public Service Commission the right to abrogate existing franchise agreements.

The basis of Justice Hinman's decision is that under the railroad law of the State and subsequent legislation, including the public service commissions law, the state never delegated to the city of Troy the right to fix a fare except in subordination to the power of the Legislature, which might at any time withdraw the rate regulating power from the city.

The remarkable feature about the decision is its brevity and that the matter is passed on to the higher court, which in the final analysis will at a very near future date be obliged to settle once and for all, so far as the courts of New York State are concerned, the constitutionality of last winter's amendments to the public service commissions law.

The Troy case was referred to at length in the ELECTRIC RAILWAY JOURNAL for Dec. 17, page 1090.

Seven-Cent Rate Authorized

The Empire State Railroad Corporation has received permission from the Public Service Commission to put a 7-cent fare in effect in Oswego, N. Y. This rate of fare is to be allowed until the commission has finally determined the proper fare to be charged in that city. The 7-cent fare will become effective on Jan. 1.

Restraining Order Granted in Owl Car Suit

Justice Charles H. Brown in the Supreme Court at Buffalo, N. Y., has granted an order temporarily restraining the municipal authorities of Buffalo from prosecuting an action against the International Railway brought to collect $139,750 in penalties for failure to operate owl car service on several local lines. The injunction will remain in effect until a decision has been reached in an action brought against the city by the railway to stop all suits on the ground that the ordinance is invalid.

In his opinion Justice Brown holds that the ordinance is invalid because it conflicts with the public service commissions law. He says the State Legislature gave the commission the sole power to determine a just, reasonable, safe, adequate and proper service to be given by electric railways in the State.

The ruling is in connection with a suit brought by the city to collect penalties of $250 a day for each day since the enactment of the ordinance in March, 1920. The company countered with a suit attacking the validity of the ordinance and then sought the temporary injunction. The city will appeal the decision of Justice Brown.

Second Five-Cent Fare Week Shows Improvement

The second week's trial of the 5-cent fare in Bridgeport, Conn., showed an increase of approximately $600 in receipts over the first week of the test according to figures obtained from the Public Utilities Commission at Hartford, Conn. The receipts for the week of Dec. 4 totaled $34,829, as against $39,261 in the last week of the 10-cent fare, the difference being $4,432. The first week's difference was $5,105. In the report to the commission President L. S. Storrs of the company says:

> During the week we carried a total of 433,948 5-cent passengers and 132,779 10-cent passengers. During the holiday shopping period the receipts of the last three weeks in December are normally materially higher than at any time during November.
>
> We will, therefore, expect to see less falling off during this period than has been true under the initial period of the test and that will be doubtless found to be true after Jan. 1.

Railway Will Co-operate with Buses

D. W. Henderson, general superintendent of the Seattle (Wash.) Municipal Railways, is co-operating with F. M. Peterson, who operates an automobile bus service under city permit, to give improved transportation to the residents of Cowen Park, Roosevelt Heights and North Ravenna districts. From 7 a.m. to midnight fast automobile buses will maintain a ten-minute service from East Sixty-fifth Street and Ravenna Boulevard and from East Eighty-fifth and 10th Avenue, N. E., to connect with the municipal cars at the north end of the University bridge. Superintendent Henderson has agreed to have an inspector at the bridge to see that cars are on hand to meet the buses and give speedy service into the city.

During rush hours extra buses and cars will be pressed into service.

Transportation News Notes

Opposed to One-Man Cars.—Resolutions denouncing the present mode of operation of one-man cars in Trenton have been adopted by the Mercer County Central Labor Union at Trenton. It is asked that the City Commission declare it unlawful to continue the operation of these cars.

Petition Rejected.—Electric railway rates on the lines of the Evanston (Ill.) Railway will not be increased from 7 to 8 cents. The Illinois Public Utilities Commission has permanently suspended the petition of the company, saying that there has been a decided decrease in the cost of labor and equipment.

Wants Trackless Trolleys. — The Georgia Railway & Power Company, Atlanta, Ga., will be asked by the Ansley Park Civic League of Ansley Park, an Atlanta suburb, to provide that community with trackless trolley service. The city is planning to repave most of its important streets within the next few months and the request will be made as soon as the paving is completed.

One-Man Cars and Unjust Rates Scored.—The Mayor of Syracuse, N. Y., has filed a complaint with the Public Service Commission against one-man cars and rates of fare on the Syracuse lines of the New York State Railways. In his petition he requests an investigation of one-man car operation and urges the abandonment of those now in use. He further recommends fare charges which would be reasonable, just and legal.

Will Appeal for Lower Fares.—The board of education of Atlanta, Ga., is preparing to make a direct appeal to the Georgia State Railroad Commission in quest of a lower railway fare for school children. A petition of the board for lower fares for school children recently was denied by Preston S. Arkwright, president for the Georgia Railway & Power Company, on the ground that reduced school fares would be discriminatory and impracticable.

31,842,317 Passengers in November.—The Public Service Railway, Newark, N. J., has filed its November report in the Federal Court in accordance with a ruling of the court. The report shows that 31,842,317 passengers were carried in November; number paying fare of 8 cents, 13,163,277; number of tickets or tokens sold at the rate of four for 30 cents, 11,885,342; number of passengers paying fares by tokens, 11,571,103; number of transfers issued at 1 cent each, 5,227,504.

Asks For Bus Changes.—The residents of Barrington, N. J., have prepared a petition to be sent to the Board of Public Utility Commissioners requesting that buses running from Camden to Berlin shall be allowed to take passengers between Haddon Heights and Magnolia. These buses can only receive passengers at the Camden terminal and after reaching Magnolia, thus causing hardship to the traveling public. It is claimed that there has been a curtailment of electric railway service between Camden and Clementon.

"Strain a Point to Please Them."—In order to establish the closest possible co-operative effort between street car men and the traveling public during the holiday shopping season, City Superintendent Cooper of the Portland Railway, Light & Power Company, Portland, Ore., has issued a special bulletin to all the operating forces of the traction company. He has urged the employees to do their best to lighten the burdens of all shoppers by helping them on and off the cars. He further requests the men to strain a point to please patrons.

Safety Campaign Started.—The jitney drivers of Newark, N. J., have started a campaign to reduce accidents to a minimum, guided by a suggestion offered them by Traffic Supervisor Crawford. Mr. Crawford told the drivers that of the 100 jitney accidents reported by insurance companies in the past eight weeks, sixty have been styled "step accidents." He told the drivers that if they reduced the number of accidents the insurance companies would reduce the premiums on jitney policies. He warned drivers about stopping their cars too far from the curb line.

Wants Bill Prepared on Fare Issue.—On the recommendation of Frank C. Perkins, municipal commissioner of public affairs, the City Council of Buffalo, N. Y., has directed the corporation counsel to prepare a bill for introduction at the next session of the State Legislature prohibiting the charging of electric railway fares in excess of 5 cents in any first or second class city of the State. Free transfers also must be furnished. Copies of the bill will be sent to the secretary of the state conference of Mayors and other officials, urging the co-operation of that organization in the 5-cent fare fight.

Double-Berth Cars to Be Used.—The Dallas (Tex.) Railway has proposed to the Supervisor of Public Utilities of the city that a system of double-berthing street cars for loading in the downtown district be arranged as a means for speeding up traffic during the rush hours. The suggestion has been approved by the City Commission and instructions have been issued to the traffic bureau of the Police Department to remark the safety zones on all downtown street corners so that two street cars may take on passengers at the same time. The safety zones are being lengenthened. It is expected that the double-berthing plan will be put into effect about Jan. 1.

New Electric Line Proposed.—An electric road between Wildwood and Pennsgrove, connecting with Wilmington, Del., and passing through Millville and Woodstown, N. J., will be built by Philadelphia capitalists, according to an announcement recently made by Mayor Smith of Wildwood, N. J., before the Municipal League. He said plans for the proposed road had been completed, and that high-powered electric trains will be operated over the line. It is proposed to complete the line within the next two years, Mayor Smith announced. He said that he regretted that he could not disclose the various details of the proposed project.

Personal Mention

A Youthful but Popular Manager in Lynn, Mass.

The Nahant & Lynn Street Railway, Lynn, Mass., one of the smallest independent electric railway lines in the country, is a fine example of efficiency and service. This property, on which the same rate of fare is charged as when service was instituted fifteen years ago, is managed by one of the youngest railway executives. This youthful operator, Joseph P. Hines, is but twenty-eight years old. Manager Hines succeeded Caleb S. Harris of Nashua, N. H., late in October of this year.

The new manager, who is a resident of Nahant and a former resident of Lynn, has a familiarity with the service desired between the two points and for that reason his appointment met with high approval from both patrons and employees of the road.

Manager Hines entered the service of the electric railway company as auditor and paymaster after leaving the war service in 1919. He was not then familiar with the practical side of electric railway work, but by close application and observation and by keeping in contact with the employees, the company officials and the patrons of the railway he developed into an able executive.

Relations between residents of Nahant and the electric railway which provides the only public transportation between that place and Lynn are most cordial.

Clevelanders Step Up

Messrs. Wilson and Mead Appointed Secretary and Treasurer Respectively of Cleveland Railway

Directors of the Cleveland (Ohio) Railway at a meeting Dec. 12 elected Paul E. Wilson secretary of the company and W. J. Mead treasurer to fill the vacancies caused by the death of Henry J. Davies early in the month. Mr. Davies had acted as both secretary and treasurer.

Mr. Wilson, who has been acting as assistant secretary of the Cleveland Railway for the past two years and who has been, since March 1, 1910, secretary to John J. Stanley, president of the company, is one of the youngest executive officers of a public utility company in the country the size of the Cleveland Railway. Mr. Wilson is still under thirty-five.

While still attending high school, Paul Wilson worked for the railway as office boy and clerk for two summers. Upon his graduation he was for three years clerk to the superintendent at the operating headquarters of the company. He attended law school at Western Reserve University for two years and did newspaper work for the Cleveland *Leader* and the Cleveland *Press* for two years before becoming secretary to Mr. Stanley.

Throughout his connection with the Cleveland Railway since its operation under the Tayler grant he has been in charge of the publicity work for the company. As a member of the traffic committee of the Transportation & Traffic Association of the American Electric Railway Association he has done considerable work in a national way. He has also contributed a number of articles to the ELECTRIC RAILWAY JOURNAL on skip-stops and other traffic matters.

PAUL E. WILSON

Since 1910, Mr. Mead has been assistant treasurer of the company. His connection with the railway industry, however, dates back to horsecar days. He was auditor of the Broadway & Newburgh Company at the time of its consolidation by the Stanley interests with the Johnson-Everett lines forming the Cleveland Electric Railway. He was cashier of this company for seven years, resigning to become auditor of the water works department of the city, which position he held two years, resigning to engage in practice for himself as a certified public accountant. When Mr. Stanley formed his organization in 1910 to commence operations under the Tayler grant, Mr. Mead became assistant treasurer.

Paul S. Schreiner, for eighteen years an assistant in the office of the secretary-treasurer of the Cleveland Railway, has been elected assistant treasurer of the company.

Philip N. Cristal has been appointed secretary to the president of the Cleveland Railway. Mr. Cristal graduated from the Massachusetts Institute of Technology in 1917 as civil engineer and in the fall of that year entered the officers' training school at Fort Leavenworth, Kansas, was commissioned lieutenant, and a few months later captain. He resigned from the army in April of last year and shortly after joined the Cleveland railway organization.

W. J. MEAD

Colonel Kealy Severs Connection with Kansas City Railway

Col. Philip J. Kealy has completely severed his connections with the Kansas City (Mo.) Railway by announcing his retirement from the presidency of that company. Colonel Kealy had continued in this office without salary after the appointment of the receivers in October, 1920. Since that time he has ceased to have any direct participation in the operation of the property, but has been retained by the receivers as a consultant and in an advisory capacity. C. W. Armour was elected president to succeed Colonel Kealy.

Colonel Kealy, as well as R. J. Dunham and Frank Hagerman, also made known his retirement from the board of directors at the meeting of the stockholders held on Dec. 7. Although the company is now operated by receivers, the action of the stockholders in electing new directors and officers to continue the organization is assumed to indicate expectation that the property will eventually, perhaps at no very distant period, be returned to them.

The three directors have been succeeded by John G. Forrest of Clay Robinson & Company, live stock commission merchants; Herman P. Harbison, president of the Harbison Manufacturing Company, and Edward P. Moriarty, president of the Moriarty Motor Company, all Kansas City business men. These are company members of the board of directors. The city members of the board continue as before—William T. Kemper, chairman of the board of the Commerce Trust Company; John H. Wiles, vice-president of the Loose-Wiles Biscuit Company; D. M. Pinkerton, president of the Board of Eduction and vice-president of the Gate City National Bank; Frank C. Niles, president of the Niles & Moser Company; and John Wagner, bank president and undertaker. J. A. Harder was re-elected secretary and treasurer and L. M. Boschert assistant.

Mr. Anderson the Good Relations Promoter in the Twin Cities

F. A. Anderson, social service director of the Twin City Rapid Transit Company, Minneapolis, Minn., is the author of a paper dealing with the activities of the employees' association of his company, published on another page of this issue. Mr. Anderson received his college education at Monmouth, Ill., and at the University of Minnesota, where he specialized in sociology and economics. After finishing his studies he was engaged for seven years as secretary of religious work with the Y. M. C. A., during which time he was principally occupied in extension work. In this connection he became personally acquainted with a large body of the wage earners of Minneapolis and this brought him to the attention of Horace Lowry, president of the electric railway of that city. In October, 1913, Mr. Lowry employed him to devote all of his time to the work among the electric railway employees, the plans being left very largely to his own ideas.

During the eight years succeeding, a benefit association, a co-operative association among the trainmen and a veteran employees' club of 300 members have been formed. Having found the management to be in hearty accord with the principle of good will and square dealing in all its transactions, he has been able to extend the activities of these several organizations and develop a very wholesome attitude on the part of employees. Mr. Anderson has endeavored to make friends and to be friendly with people generally as a fundamental and basic principle of his work in promoting the good relations between the company's employees and public. He has spoken before nearly every organization in Minneapolis.

Obituary

Henry Clay Evans, Chattanoga, Tenn., for the last three score years prominent in the business and public life of the south, died early last week. While still more or less active in business, he had retired a few years ago from his larger manufacturing operations. For many years he headed the Chattanooga Car & Foundry Company, builders of car wheels. He previously headed the Roane Iron Works. He built the first electric incline railway up Lookout Mountain. He served as first assistant postmaster-general under John Wanamaker. He was a candidate for Governor of Tennessee during a close election some years ago, but was never seated, his friends claiming that he was counted out by the Democratic machine of that day.

Alex W. Carey, conductor for the Southern Pacific Company and the Puget Sound Electric Railway, Tacoma, Wash., died recently at Tacoma. Mr. Carey, after graduating from the University of Nevada, where he studied law, became assistant agent with the Southern Pacific Company, later transferring to the auditing department. Shortly thereafter his health failed, and Mr. Carey, in order to have outdoor work, became a brakeman for the company. He later became conductor, transferring finally in that capacity to the Puget Sound Electric Railway, where he was for a time brakeman, and later was in the claim department.

Robert H. McKean, manager of the credit department of the McGraw-Hill Company, Inc., died at his home on Dec. 17, 1921. He was forty-seven years old at the time of his death. Mr. McKean's services began with the *Engineering & Mining Journal* in April, 1902, as assistant in the accounting department. About a year after the purchase of the *Engineering & Mining Journal* by the Hill Publishing Company Mr. McKean was appointed manager of that publication, which position he held until he was elected a director and secretary of the Hill Publishing Company. At this time he assumed the management of the credit department of the company. After the consolidation of the Hill Publishing Company with the McGraw Publishing Company he became manager of the combined credit departments and held this position until his death.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE
MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Deliveries Good on Fenders and Wheel Guards

Buying of repair parts for car fenders and wheel guards by electric railways is proceeding on a nearly normal basis, though orders are being placed on a basis which by no means indicates that the industry has got back to its normal kind of buying. Orders come in spasmodically and their bulk shows that this part of car equipment, in common with all others, is being kept in service until its last bit of usefulness has been realized. The market for complete equipment has also been rather quiet. If the sales had depended entirely on the number of new cars constructed, the demand would not have been very heavy. The buying of new rolling stock is still at a low point; however, the manufacturers do report that all along they have been favored with orders for new parts which the railways are using to rehabilitate their present equipment. Also there is a fairly strong demand resulting from complete renewals of older and obsolete safety appliances with up-to-date developments in this line.

Conditions of supply in this market are all that could be desired as the most important factors of labor and raw material are favorable for maintaining production on a normal basis. Fenders and wheel guards for safety cars, which some time ago became practically a standard article, can be shipped from stock. For this equipments there is also carried a heavy reserve of repair parts sufficient to care for all needs immediately. However, this favorable status exists only with respect to standardized safety car parts, for equipments for other cars cannot be shipped from stock as their manufacture is special and according to specification. The deliveries on these made-to-order equipments vary, of course, with the conditions to be conformed with, but as labor and material conditions are very good, manufacturers are able to give these orders prompt attention. Prices have received a downward revision, though it is difficult to give a composite figure for the reduction.

Manufacturers expect during the coming year a substantial increase in business to come especially from the purchase of new rolling stock. Some state that a fair volume should be the result of junking many fenders and wheel guards whose usefulness has long since passed. Also fixtures of this sort have been interchanged between active and idle cars so that a good market exists in supplying this deficiency.

Harbirshaw Company Explains Receivership

Habirshaw Electric Cable Company, Yonkers, N. Y., recently placed in the hands of receivers, has sent out a circular reviewing the conditions that led up to the court action by creditors. It emphasizes the fact that the proceedings were part of a reorganization plan contemplated for some time, to best meet the situation created by the reaction in business after the armistice had led to wholesale cancelation of Government contracts. The company, says in part:

"Since and including last June the company has not increased its borrowing one cent. It has reduced administration, operating and miscellaneous expenses 58 per cent compared with January, 1921, this while increasing its business, and has wiped out most of the stock accumulated previous to the depression in business.

"It has made a net profit since and including June, and each month has shown a substantial gain over the previous ones. Except for a possible seasonal slowing down in December and January, there is every reason to believe monthly gain in net profit will continue. When we consider the desperate situation which existed six months ago and the changes that have taken place since then, confidence is amply justified."

Lackawanna Again Asks for Electrification Bids

The Delaware, Lackawanna & Western Railroad has again requested the General Electric Company and the Westinghouse Electric & Manufacturing Company to prepare estimates for the electrification of about 40 miles of track in the anthracite region near Scranton, Pa. Officials of the railroad are reported to have said that the cost would total between $5,000,000 and $6,000,000. This is the second time that bids have been asked for. Estimates were received by Gibbs & Hill, consulting engineers for the road, in July, but were found unsatisfactory. It is felt that more satisfactory estimates can be secured now that prices are lower. It will probably be some months before these new estimate figures can be prepared.

New Rules for Purchase of Materials by Chinese Railways

The Department of Commerce at Washington has issued a set of regulations adopted by the Chinese Minister of Communications governing the purchase of materials by the Chinese Government Railways. These regulations were passed July 27, 1921, and promulgated Aug. 8, 1921. Among other things the rules provide that where anything is purchased of the same material or several similar materials which will amount to more than $5,000, Chinese currency, tenders are to be called for, unless there is only one manufacturer, or when a manufacturer has a long-term agreement with any railway to furnish a certain material. Whenever the estimated cost of the material is $50,000, a delegate or delegates of the Ministry of Communication must be present at the time of opening the bids. The result of the opening of the several bids must be recorded by the Ministry, and before the signing of the contract it must be sent to the Ministry for approval. If it is discovered that the bidders have raised their prices by general agreement, or attempted in any other way to hold up the government, the railway should report to the Ministry of Communications to have the tenders submitted by those bidders disqualified.

A full text of the regulations just quoted were forwarded to the Department of Commerce by Commercial Attaché Arnold.

2,000 Miles of Japanese Railways Designated for Electrification

A fundamental policy for the electrification of Japanese railways has been formed by the Electrification Investigation Commission. The *Japan Times and Mail* of Sept. 9, 1921, published the following list of sections which have been designated for conversion into electric lines, comprising an aggregate length of over 2,000 miles.

(1) All sections in the suburbs of cities where there is a heavy railway traffic, such as Kyoto-Knobe, 47 miles; Kobe-Himeji, 34; Minatomachi (via Kitsu) Kyoto, 51; Moji-Hakata, 48; and Osaka-Tennoji, 6 miles.

(2) Sections of high gradient where there are many tunnels and also those where abundant water power can be utilized, such as Odawara-Numazu, 26 miles; Maibara-Imasho, 47; Hachioji-Shioiiri, 116; Nagoya-Shinooi, 151; Fukushima-Yonezawa, 26; Yashiro-Kashima, 94; Kameyama-Nara, 46; Utsunomiya-Nikko, 25; Koriyama-Niigata, 172; Oguda-Shinjo, 58; Takasaki-Yokokawa, 18; and Karnisawa-Naoetsu, 92 miles.

(3) Sections where shortening of the line is required and where water power can be utilized, such as Numazu-Kyoto, 244 miles; and Omiya-Fukushima, 151 miles.

(4) Sections where increase of transportation capacity and shortening of the line are required, such as Himeji-Shimonoseki, 295 miles.

(5) Sections where available water power can be utilized, such as Imasho-Naoetsu, 181 miles; Nagoya-Kameyama, 38; and Ohmila-Takasaki, 46.

(6) Sections where increase of carrying capacity is required and where coal can be obtained at a low price, such as Kokura-Wakamatsu, 56 miles; and Muroran-Yubari, 90 miles.

Rolling Stock

Charleston (W. Va.) Interurban Railroad recently purchased eight safety cars from the Cincinnati (Ohio) Car Company.

Danbury & Bethel Street Railway, Danbury, Conn., through its receiver, Judge J. Moss Ives, has received permission from the Superior Court to purchase four safety cars. The order for the cars has been placed and it is expected that they will be delivered about Jan. 1, 1922.

Hudson & Manhattan Railroad Company, New York, is inviting proposals for furnishing motors and control equipment for twenty-five multiple-unit passenger cars. The company is also asking for bids on twenty-five motor-type and 25 trailer-type M. C. B. trucks. Specifications with accompanying drawings are available at the company's office at 30 Church Street, New York City.

Hydro-Electric Power Commission, Ontario, Can., has recently made available the complete specifications for twenty-five safety cars which were ordered several months ago. As was announced in the ELECTRIC RAILWAY JOURNAL of Dec. 3, seventeen of these cars are to be used on the Essex division in Windsor, Ont., while the remaining eight will be operated on the Guelph (Ont.) Radial Railway. Following are the details of this equipment:

Number of cars ordered	25
Name of road	Hydro-Electric Power Commission, Ontario, Canada
Date order was placed	Sept. 28, 1921
Date of delivery	Jan. 28, 1922
Builder of car body	Canadian Brill Company, Preston, Ontario.
Type of car	Single truck, one-man safety
Seating capacity	34
Weight:	
Car body	12,710 lb.
Trucks	5,200 lb.
Equipment	5,590 lb.
Total	23,500 lb.
Length over all	30 ft. 3½ in.
Truck wheelbase	9 ft. 0 in.
Width over all	8 ft. 4 in.
Height, rail to trolley base	10 ft. 7 5/16 in.
Body material	All steel
Interior trim	Birch
Headlining	Agasote
Roof	Arch type
Equipment:	
Air brakes	Westinghouse A. B. & Safety car control
Armature bearings	Sleeve type
Axles	3¾ x 7-in. Standard Aera No. Ea4
Bumpers	4-in. 5½-lb. channel
Car signal system	Ohio Brass
Car trimmings	Finished in gold bronze throughout
Conduits and junction boxes	Crouse-Hinds
Control	Type D.B. 1 K 4, English Electric Company
Couplers	Yoke
Curtain fixtures	National Lock Washer Company
Curtain material	Pantasote, double-faced
Designation signs	Boothe illuminated
Door operating mechanism	National Pneumatic
Fare boxes	Cox
Fenders	H. B. fenders
Gears and pinions	Helical, one-half equipment have Nuttal B.P., other half tool steel
Handbrakes	National staffless
Heaters	12 600-volt double-coil Cutler-Hammer, 8 cross seat, 4 truss plank
Headlights	Crouse-Hinds, dash type
Journal bearings	3¾ x 7 in. Area Standard
Journal boxes	Brill for 79-E2 truck
Lightning arresters	Type B, Form A, English Electric Company
Motors	2 English Electric, type DK-84, 40-hp. vent., inside hung
Paint	Krakno system enamel and varnish
Registers	None
Sanders	O. W. Meissener sanding system modified
Sash fixtures	National Lock Washer Company
Scrapers	Root
Seats	Brill Waylo
Seating material	Rattan
Slack adjuster	None
Springs	Brill
Step treads	Mason carborundum filled
Trolley retrievers	Ohio Brass
Trolley base	Ohio Brass Form 1
Trolley wheels	H. E. P. C. wheels and harps
Trucks	Brill 79-EZ
Ventilators	8 Railway Utilities Company
Wheels	Rolled steel 26-in. diam., 3-in. tread. Aera and interurban contour
Special devices	M28 brake valve, furnished by Westinghouse, is supplied with attached door-selector valve. Cars are equipped with double doors, one for entrance and one for exit at each end. Selector valve gives independent operation of both the in and out doors.

Track and Roadway

Burlington County Transit Company, Hainesport, N. J., has announced through Armitt H. Coate of Moorestown, N. J., treasurer of the company, that his company will make a number of changes and improvements in the road between Burlington and Moorestown.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has informed the Mercer County Board of Freeholders that it will reconstruct the line on South Broad Street from the city line to the White Horse road, a distance of ¾ of a mile laying new ties, raising the tracks, etc.

The Lackawanna & Wyoming Valley Railroad, Scranton, Pa., has installed block signals between Connell Junction and Wilkes-Barre. Thirty signal lights are placed at an average of every 1½ miles. The three-light mechanism is the type installed. The installation cost $80,000.

East Toronto, Ont—It is expected that the Toronto Transportation Commission will shortly commence laying the double set of electric railway tracks on the new Main Street bridge. The line, which is to be a continuation of the present Gerrard Street service, will extend north on Main Street to Danforth Avenue.

Power Houses, Shops and Buildings

Philadelphia (Pa.) Rapid Transit Company will erect a new terminal at Willow Grove for Doylestown passengers.

Portland Railway, Light & Power Company, Portland, Ore., is perfecting plans for a hydro-electric generating station on the Clackamas River, near Oak Grove, Ore. The initial installation will have a capacity of about 200,000 kw.

Indiana Service Corporation, Fort Wayne, Ind., will use the new West Main Street bridge recently opened over the St. Mary's River. The bridge is a double-tracked, concrete structure. It was built at a cost of $160,000.

Pittsburgh (Okla.) County Railway, McAlester, Okla., operating city and interurban lines, has purchased a site on Grand Avenue in McAlester for new terminal buildings. The present terminal, shops, etc., of the company are in a badly congested section of the city.

Los Angeles (Cal.) Railway is now working on a high-voltage transmission line to run from the new Edison transforming station at Florence and Western Avenues to the substation at Centinella. High-tension lines are also being run from Western and Florence Avenues to the University substation at South Santa Barbara Street. It is expected that the construction of both of these lines will be completed about the first of the year.

Trade Notes

American Car & Foundry Company, New York, is planning extensions and improvements at its branch plant at Huntington, W. Va., which are estimated to involve an expenditure of about $200,000.

Bridgeport Brass Company, Bridgeport, Conn., announces the appointment of C. L. Hancock as sales engineer for its Phono-Electric trolley wire. Mr. Hancock has been connected with the sales department of the Bridgeport Brass Company for the past two years, recently having had charge of the company's factory branch in Philadelphia. Prior to becoming associated with the Bridgeport Brass Company. Mr. Hancock was for twelve years an assistant of the superintendent of electrical transmission on the New York, New Haven & Hartford Railroad, which position he accepted after serving the Westinghouse Electric & Manufacturing Company during the electrification of the New Haven road from Woodlawn to Stamford. Mr. Hancock has therefore had opportunity to become fully acquainted with the characteristics of different trolley wires, as well as Phono-Electric in actual service.

New Advertising Literature

Sanford Riley Stoker Company, Worcester, Mass., is distributing a circular covering the "Riley" underfeed stokers, safety shearing pin, moving grates, rocker dump and two-speed gear box.

Roach Stoker Company, 221 South Fifteenth Street, Philadelphia, is distributing a booklet describing the "Roach" stoker. The company has also issued a pamphlet covering the "Simplex" type of the Roach stoker.

Wheeler Condenser & Engineering Company, Carteret, N. J., has issued catalog 108-C, covering its centrifugal pumps, including double-suction, single-stage, horizontal and vertical types and multi-rotor types for every purpose.

I. L. Lee, 61 Broadway, New York, has published a 20-page pamphlet, the "Future of Prices and Wages." It gives some extracts from a book entitled "Price Changes and Business Prospects" by Leonard E. Ayres, vice-president of the Cleveland Trust Company, and recently published by that company.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

HENRY W. BLAKE and HAROLD V. BOZELL, Editors HENRY H. NORRIS, Managing Editor
HARRY L. BROWN, Western Editor N. A. BOWERS, Pacific Coast Editor H. S. KNOWLTON, New England Editor C. W. SQUIER, Associate Editor CARL W. STOCKS, Associate Editor
G. J. MACMURRAY, News Editor DONALD F. HINE, Editorial Representative R. E. PLIMPTON, Editorial Representative PAUL WOOTON, Washington Representative

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Rigid Regimen Prescribed for Seattle

PETER WITT has delivered himself of a broadside in Seattle and presumably has hurried back to Cleveland. The principal thought that he left behind him in Seattle was that co-operation must supplant dissension in the conduct of the Seattle Municipal Railway. Mr. Witt did not worry much about the past in Seattle. He was concerned for the future. And well he might be. With all due respect to Mayor Caldwell, the tendency with him has been to charge the past with most of the misfortunes which loom up in the future.

Mr. Witt has built or recommended for the future from the sound basis that "the entire traction transaction is and morally must by all honorable men be considered a closed incident." His doctrine also is sound that if the enterprise is to be made a success, the principle of "pay as you go" will have to be established and that the time for its establishment is now. Mr. Witt has not been lenient with labor, either. The suggestion which he made in this respect would not, if carried out, promote the political fortunes of those who applied them, but it surely would be wiser to reduce the number of employees and make an annual saving of $800,000 than to reduce wages and save only $100,000. With the people of Seattle paying an 8⅓-cent fare; with a decrease of 3,054,669 in pay passengers in September, 1921, over September, 1919; with the necessity confronting the city of spending $2,000,000 for trolley improvements; with political dissension quite general, the real need in Seattle is evident. It should be for those in authority to give heed to the advice of the diagnostician by following the rigid regimen prescribed if they would escape the use of the knife by the surgeon in a major operation in the not distant future.

Pittsburgh's Traction Problem Settlement Bright

RESIDENTS of Pittsburgh have a real reason to be happy at the prospect for the new year. They may confidently look forward toward improved transit and the settlement of the thirteen-year controversy between the city and the Pittsburgh Railways. The agreement for the settlement has been duly signed, but two important steps remain to be taken before the plan can become operative. The state Public Utilities Commission must approve the agreement and the company must raise $5,000,000 of additional capital for use as stipulated in the new grant. There is every reason to believe that it will be possible quickly to meet both of these requirements.

The conduct of the negotiations certainly reflects great credit on all who participated in them. The spirit of live and let live was constantly in evidence. This was particularly true of the entrance, at almost the last minute, of Mayor-elect Magee into the negotiations. He received a prompt audience, with the result that the ordinance as slightly amended after passage on first reading is understood to have his full approval. This is particularly beneficial, for it will be during his administration of the affairs of the city that the new measure will go into effect.

Mayor Babcock regards the action of the Council of that city in approving the new traction ordinance as the biggest thing accomplished by his administration. In this he most certainly is correct. It is a real achievement. With the prospect almost certain that the new grant will soon go into effect, it is sincerely to be hoped that the administration of the measure by the city may be carried out in the same broad way that has marked the progress of the settlement negotiations.

Transfers Should Not Confer Stop-Over Privileges

THE design of a transfer ticket, or whatever it is termed locally, presents to practically all railways an ever-present problem, due to attempts to prevent its fraudulent use as fare collection methods are changed or new types of equipment are introduced.

Since the day of its inception each railway has probably tried a large portion of the fifty-seven varieties of transfer design and still there seems to be no universal type. There are all sorts and sizes of transfers—small, medium and large—with a multiplicity of schemes for showing the time limit and the conditions under which they can be used. And, strange as it may seen, each operator believes his own design better than that of any other. Perhaps the best advice that can be given to any company planning to inaugurate a system of transfer is that which Mr. Punch gave to persons contemplating marriage, namely, Don't!

Some companies apparently feel this way, for a study of the situation brings to light that New Bedford and Holyoke have abolished transfers as a part of their fare schemes at present in effect. The Boston Elevated has also adopted a similar rule in connection with the inauguration of the 5-cent fare lines. The abolition of transfers is therefore one way by which a lower initial fare may be granted. Not every company, however, is able for one reason or another to rid itself of transfers. In such circumstances the only course is to make them as fraud proof as possible and at the same time eliminate all possible delays in connection with their issuance by the conductor.

A distinguished salesman in an allied electrical field, but not with practical transportation experience, advised recently on the score of better public relations and salesmanship that the time limit on transfer tickets should be abolished. In other words, he saw no reason why transfers should not permit stop-over privileges for the whole day if a passenger was so disposed. However admirable may have been the intentions of this gentleman, it is inconceivable that such a plan could be put into effect in connection with any flat fare system without great losses to the company. Railway operators would view with askance any plan by which the morning rush-hour passengers could get transfers and then swap them at their place of business for others from another quarter of the city, thereby getting a round trip for one fare each.

Where transfers must be issued there is every reason that they should not carry any privilege that is not allowed the passenger who crosses a junction point without a change of car. Any other plan than having tranfers good on the first car leaving that junction would be discriminatory. But there is no good reason why the transfer system should be so complicated that it cannot be worked with a fair degree of speed to the benefit of both the operator and the traveling public. The scheme used in Davenport and described in an article elsewhere in this issue appears to accomplish this result.

Improvements, Like One-Man Car, Boost Wages

IN A recent study on "price changes and business prospects" Leonard E. Ayres, vice-president of the Cleveland Trust Company, points out that while the Napoleonic Wars and the American Civil War were accompanied in this country by a series of very high prices, these prices were followed, after a comparatively short time, by a period of gradually falling prices, and that there is much evidence to indicate that the general trend of prices now, for the same reason, will be irregularly downward for a period of years to come. Wages, however, do not seem to have followed exactly the same fluctuations. Statistics in this country are available only since 1820, so that the records during and immediately following the Napoleonic Wars or our own war of 1812 are not available. However, during the Civil War wages rose 50 per cent and then kept on rising until 1869, when there came ten years of decline to about the 1865 level. Here they kept for twenty years, or until about 1900, when they rose for fifteen years gradually, but increased rapidly during the World War.

An important reason often given for the fall of prices following the Napoleonic Wars is the general introduction of machinery in factories during the early part of this century, and Mr. Ayres points out that the Civil War in turn brought the beginning of quantity production and was followed by the general employment in factories of automatic and semi-automatic machinery, electricity and high-speed steel. To these economic advantages in production he attributes largely the fact that wages did not decline with prices because the productivity of the worker was greater. As to whether we are to see wages shrink materially during the next few years, he believes, is largely a question of what happens to the efficiency and productivity of industry. If output per worker does not come up, then wages cannot permanently retain the gains they have made.

Readers of history will remember the fight made by the laborers against the introduction in textile and other factories of machinery. The same arguments were used against its use as are employed today against the one-man car; that is to say, it reduces the number of operators required to do certain work and consequently is a bad thing for the workmen, hence the use of these machines must be stopped. Nevertheless, if we read history aright, the one-man car and similar labor-saving devices are the great hope for the payment of high wages in the future. The position of the workingman will be bettered, not lessened, by these improvements.

New York Is Thinking Seriously of Staggered Hours

IT IS satisfactory to know that an effort is being made in New York to secure some system of staggering working hours and thus increase the capacity of the transit systems. Admittedly the task of obtaining sufficient support of the principle to produce any appreciable effect will be a difficult one. This is not because the difficulty of changing by an hour or so the habits of a community as to the hours of commencing and discontinuing work is a serious one. This is done each year when the daylight saving time goes into force and again when it stops. The difficulty lies in changing the habits of part of the community—often of part of a family—but not of all. This introduces complications in regard to hours of meals and social activities if the span of time between industries is of any great length, yet it must be if any material gain in transit facilities is to be obtained. Thus Mr. Turner, consulting engineer for the New York Transit Commission, estimates that if it was possible by staggered hours to spread the present rush period in New York so that the subways would be utilized for two hours as they are at present during the existing fifteen-minute rush period, it would increase the capacity of these lines of travel 60 per cent. Gain to the company from the double use of rolling stock during rush hours, however, does not come unless the spread is sufficient so that some of the cars can make a round trip within the specified time.

Up to now the principle of staggered hours has been applied in two ways. One is the plan described above as being considered for New York and best exemplified in the past perhaps by its use during the latter part of the war in the city of Washington, and also during the influenza epidemic in New York City in October, 1918. In both there was a partial spread over two hours, and a less crowded condition of the cars was secured. Both, however, were brought about by a great exigency, and the introduction of the plan in Washington was undoubtedly greatly facilitated by the fact that the working hours of a very large proportion of the population could be determined by one employer—the government. After the armistice, when the number of office workers in the various government departments decreased, the city reverted to its former working hours. The same result followed in New York soon after the influenza epidemic had begun to subside.

While there is not now in New York a crisis of war or disease, there is a very serious lack of transit facilities, and in no other way can the capacity of the subway lines be increased for five years, even if new construction was commenced tomorrow. Hence, it may be that the situation can be brought home so clearly to all concerned, employer and worker alike, that some degree of relief will be obtained. If this is done, steps should be taken to bring the schedules of the commuters' lines into accord with the proposed plan. This was not done in the previous trial of staggered hours in New York.

A variation of the staggered hours plan which is possible when the more extended use of the principle is impracticable for one reason or another remains to be considered. This is the limited staggering of hours of beginning and ending work at different factories located on any particular railway line or of the various departments of a single large factory. This plan has been successfully carried out in Detroit in connection with the largest Ford plant.

Selling the Employee on Salesmanship—II

Creating a Pleasant Environment, Forming Correct Habits in Car Operation and Developing Morale Are the Subjects of Mr. Bigelow's Remaining Three Talks to Employees on Making Themselves Better Salesmen of Transportation

By B. R. Bigelow
Sales Manager of Transportation, Department of Street Railways, Detroit, Mich.

In the first article Mr Bigelow briefly outlined the scope of his duties as a sales manager of transportation. Two of the series of five talks on salesmanship appeared in conjunction with that article in the Dec. 24 issue of the Electric Railway Journal.

Sales Talk III—Environment

INDUSTRIAL democracy bears the same relation to our business life that home environment does to our domestic life. When we think of home environment we think of many things, but what appeals to us most is the congeniality of the place made possible by loving companionship. When the home folks are away we discover how loudly the clock ticks, how large the rooms are, and that the place we live in is just a house after all. But when the folks come back it is once more a home. Can't you see that every one of us has the privilege of creating that same environment here in our business life by making of ourselves congenial companions to those around us?

A pleasant "good morning" costs nothing but the effort of saying it. Those two words imply much more than that it is a good morning. They imply becoming personal interest in the welfare of the person greeted. Every one of us is more than a stone in the street or a brick in the walk, and our whole being revolts at being passed as such by an associate. We make memories by adhering to these every-day home-like courtesies.

Did you ever think that we make memories every day for our own use in the future? We should try to make such memories to-day that we will enjoy having them recalled on the morrow. It should be our aim to make the kind we will be proud of, and not ashamed of—memories that will bring comfort and not heartache.

Keep in mind that the memories of to-morrow are being made today. Monuments of granite or marble bring to our minds the lives and deeds of the illustrious men to whose memory they have been erected, but it is not possible for the great majority of us to so inspire posterity that we will be so remembered. It is possible, however, for every one of us by honest deeds and considerate acts to erect for ourselves living monuments in the hearts of our associates—living monuments that will inspire right living and honest labor.

We perhaps little realize in our daily lives how many times a day we unconsciously give inspiration to some person because of the efficient manner in which we perform our own work. We, as railroad men, are constantly serving the public, and our opportunities to give inspiration are almost unlimited. It is perfectly natural, at times, to feel as if our efforts are wasted because we receive no visible response from those we serve. Yet we would not stop seeding a newly made lawn because we could not see the seeds develop and grow. On that account we must be constant in our courteous service to the public and the visible response will surely appear.

We are mutually dependent beings; we must give and take in this battle of life. Among ourselves we must be socially magnanimous and, by so doing, we will be able to find ourselves and help others to find themselves. It must be plain to you that in close association we can gain a degree of wisdom because of one another's experiences.

Simultaneous with the development of transportation service, we must strive to develop our serving capacity in order that this railroad, as operated by us, will just naturally be known as the "Courtesy Line."

Sales Talk IV—Habit

Did you ever think of the force of habit? There is an old and true saying that fire is a good servant but a terrible master. The same could be truly said of habits. Habits are good servants but terrible masters.

neighboring tree to be thrown across your path. You unconsciously and intuitively step over the obstruction. You do not know or realize just how high you lift your foot in the accomplishment of the act because the intuitive feeling which you possess gives you just the proper perception which makes your action almost involuntary.

MAKING HABIT A VALUABLE ASSET

It is so in car operation. After careful instruction you will be possessed of that instinctive feeling which will give you perception without process of thought. Let me illustrate. You have a car under operation, an automobile whirls in front of that car, you instinctively throw off power and apply the brake. Force of habit perfected by practice eliminates process of thought, and the same becomes intuitive of accomplishment.

I wish just to touch on another phase of force of habit in order to prove conclusively that whatever you do, day after day, over and over again, has a certain hold on you, which is just naturally called force of habit.

By way of illustration, we will assume that in the living room of your home hangs a mirror. Some member of the family decides that the light will strike to better advantage in some other part of the room You move the mirror, so you know it is moved; however, you instinctively go to its old position on more than one occasion, and it is with a mingled feeling of humiliation and surprise that you gaze at the blank wall. This is but one simple illustration of force of habit.

I remember as a boy I came into the old farmhouse kitchen one day and mother said to me, "When you wash your face and hands empty the basin of water into a pail as the waste pipe under the sink is broken" I presume I did a boy's usual good job at performing my ablutions, and force of habit won, because over went the water into the sink and so onto the floor It was a rule in our household that if any member of the family disturbed its tranquillity by careless or thoughtless action he must pay the penalty by putting things to rights. In this case I carefully hand-mopped the kitchen floor. Then I had to wash my hands again and over went the water again. You see what force of habit will do.

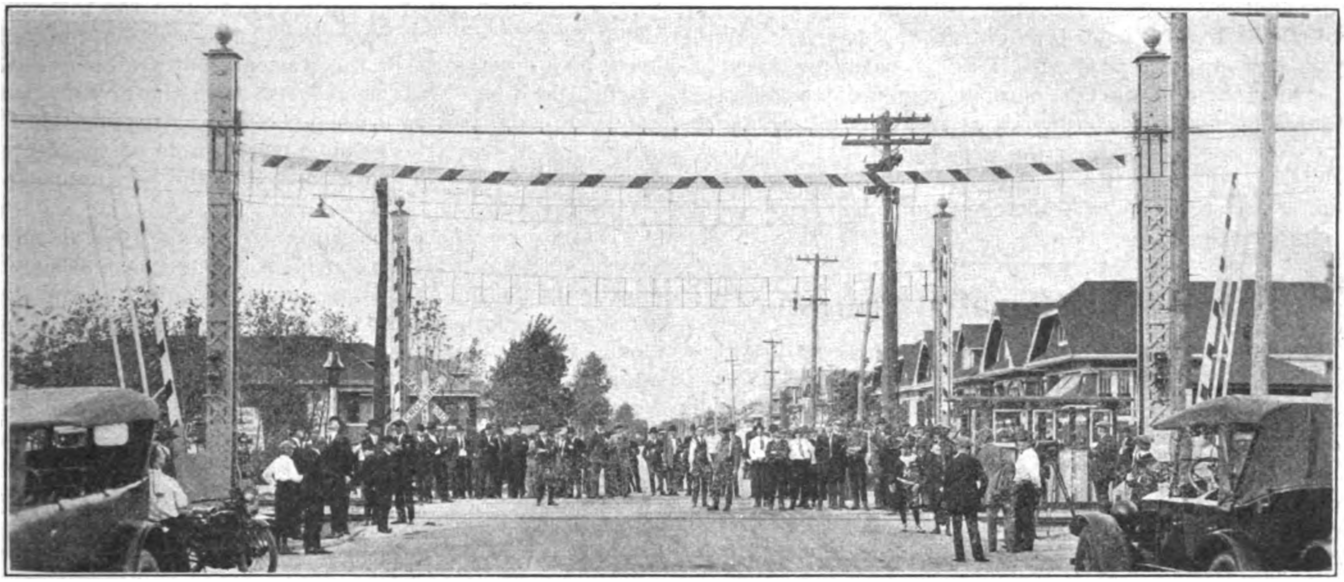
Form correct habits in car operation if you would be a successful operator.

dents than it is to suffer pains because of them. Presence of mind insures safety. Whenever we are confronted by imminent danger, if we can act with vigilance, care and promptitude, we are distinctly on the side of safety first.

There is an old and true saying that "Self-preservation is the first law of nature." One reason why I am a stanch champion of the Birney safety car is that it is automatic in its operation. If an operator leaves his post of duty the car will stop. However, we must train ourselves to realize our full responsibility for the safety of others by cultivating self-control, and not depend upon automatic devices. As an illustration: Just after a snowstorm last winter a Birney safety car was being operated through the main street of a neighboring city. A snowplow had preceded the car, pushing the snow into a high ridge, with utter disregard to adjacent driveways and walks. In order to clear the space in front of an express office snow had been thrown back onto the tracks, and, with no evil intent perhaps, a section of plank had been buried beneath the snow at this point. The operator of the car, thinking he would be able to speed through the obstruction, put on full power. This carried the car through the snow, but the plank came into contact with the valve of the air tank, which was opened. Thereby the air brake and all automatic devices were made useless. An interurban car was just crossing the intersection beyond the express office as the Birney car emerged from the snow obstruction. The operator coolly reversed power, bringing the Birney to an abrupt stop as the interurban speeded by. The operator, possessed of morale, had averted a serious accident.

I am extremely loath to finish this particular talk, because no man can have too many of the qualities that provide for morale. Remember that a plea of ignorance of car operation will never take away your responsibility in case of an accident. When caution becomes a habit accidents will be few. In closing, I wish to impress upon you that the best safety device on any car is a careful operator.

For the investigation of the standards of practice and methods of measurements of public utilities such as gas, electric light, electric power, water, telephone, central station heating, and electric railway service, the Bureau of Standards is requesting a continuance during the next fiscal year of the $85,000 appropriation with which it has been carrying forward this work.



STEEL-BARRIER TYPE CROSSING GATE THROUGH WHICH AUTOMOBILES CANNOT DRIVE

Positive-Stop Crossing Gates

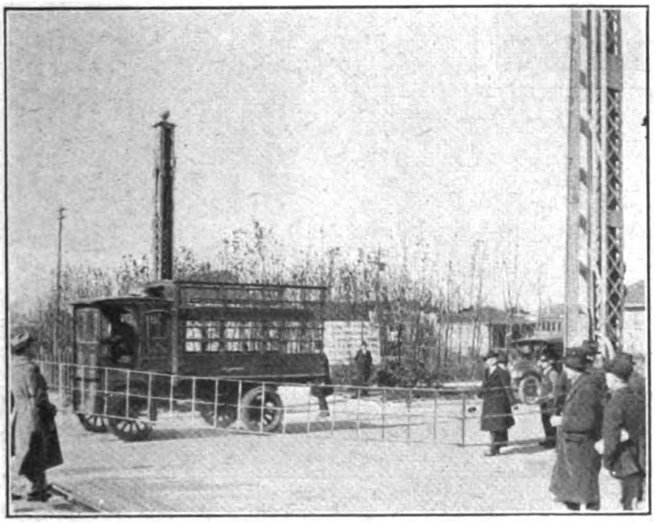
Unique Steel Cable Barrier Being Tried Out by Chicago Elevated Railroads Will Stop Vehicles Striking It Before They Reach Crossing

THE Chicago Elevated Railways has made one installation of a unique new type of crossing gate where the Douglas Park line crosses Austin Avenue at grade in Cicero, Ill. This new type of gate is built with the idea that even though a careless driver may run into a lowered gate, an occurrence which often happens, the gate will not be broken but will function as a mechanical means of stopping the car as well as a warning to the driver.

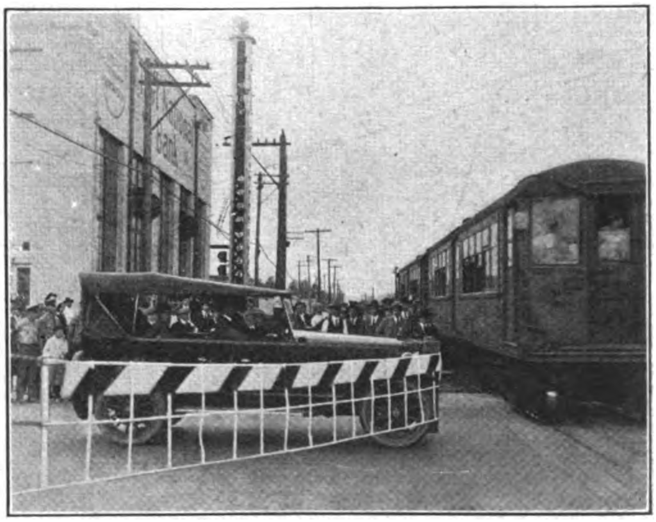
The gate consists of a barrier formed by three ½-in. steel cables attached to a mechanism in a fabricated steel column erected at either side of the road. The entire barrier is lifted vertically in a horizontal position by means of a motor-driven chain mechanism in each column. A plain sheet-metal strip on which alternate black and white bars are painted is attached to the top cable and serves as the usual warning when the barrier is lowered. To lower the barrier, the operator simply throws an electric switch which brings it down into the stop position. Attached to the chain mechanism in each column is a heavy counterweight which raises and lowers with the barrier; that is, the weight is down when the barrier is down.

If an automobile fails to stop and strikes the barrier the first pressure effected is taken up by the raising of these heavy weights. A braking mechanism is connected with the weights so that the higher they are raised the more braking pressure is exerted. When the weights get up to a certain predetermined height, which is governed by the distance between the normal position of the barrier and the track, the weights strike against heavy coil springs which exert the last braking pressure on the motion of the automobile. When these springs are compressed, the automobile must have come to a dead stop just before reaching the track. The cables are claimed to be strong enough to stop any automobile or truck striking the gate at any speed. Successful test stops are pictured below.

The device was designed by the Strauss Yielding Barrier Company, Chicago, J. B. Strauss being the designer of the Strauss bascule bridge, and the installation on the Chicago Elevated Lines is the first to be made. It is probable that several more of these gates will be installed on the Garfield Park branch of the elevated at important intersections, and the further



7,000-LB. TRUCK UNABLE TO REACH THE RAILS WHEN DRIVEN INTO BARRIER AT 15 M.P.H.



WHERE THE AUTOMOBILE WAS STOPPED AFTER BEING DRIVEN INTO THE BARRIER AT 18 M.P.H.

installations will be equipped with five cables instead of three to give added height to the barrier. While crossing protection of this kind is naturally very expensive, B. J. Fallon, general manager of the elevated lines in Chicago, looks upon it as affording a high degree of protection for which the expense is justified at important crossings, particularly where there may be an influence working to force elevation, for draw-bridge approaches, etc.

Attractive Elevated Stations

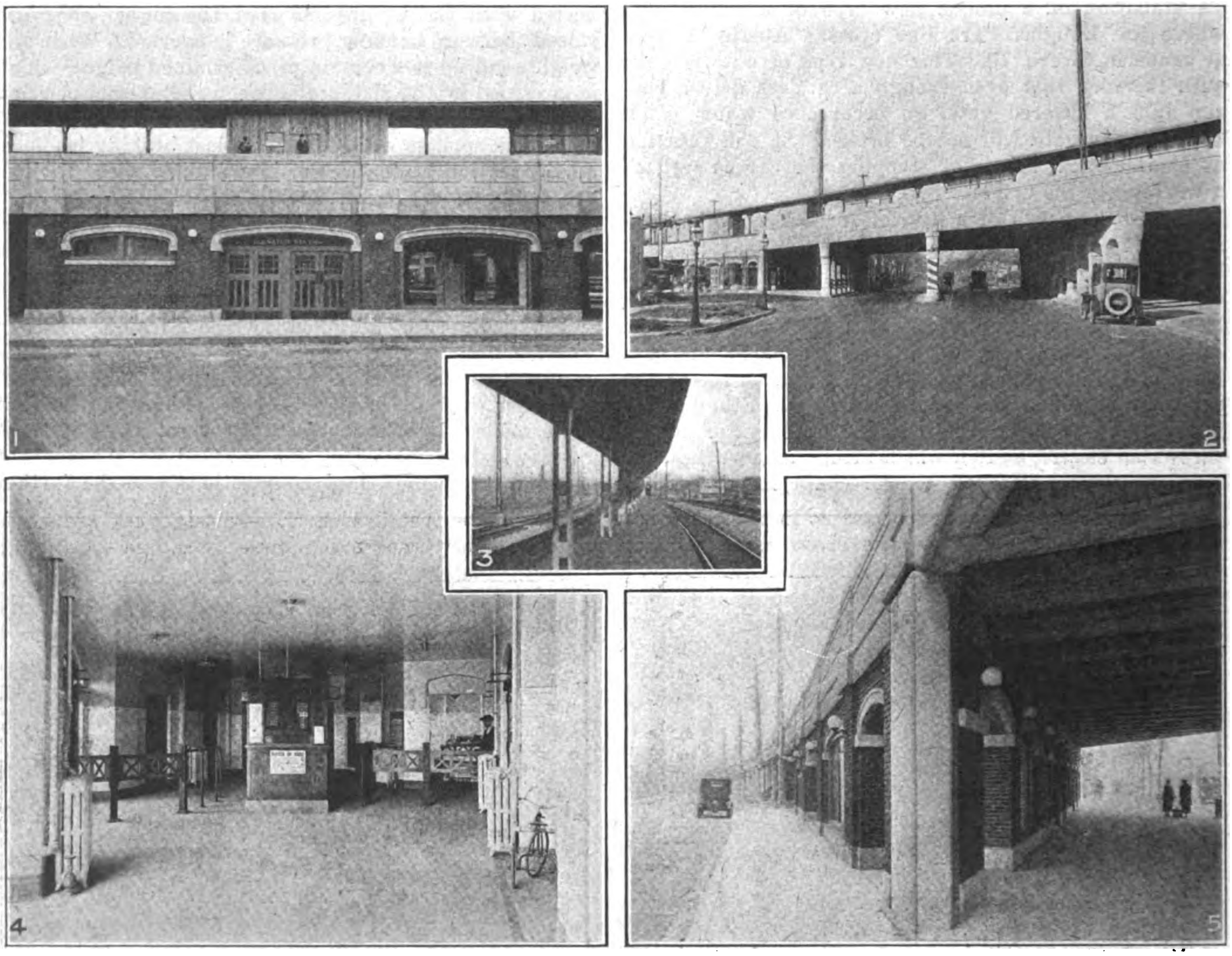
Pleasing Appearance of Stations Being Constructed on Elevated Portions of Chicago & Northwestern Are Helpful Toward Merchandising Service

THE accompanying pictures tell better than words can describe the story of the type of stations which are being built along the portion of the Chicago & Northwestern Elevated Railroad between Wilson Avenue and Howard Avenue, the northern city limits. This part of the road has been in the process of elevation during the past few years by the Chicago, Milwaukee & St. Paul Railroad, which owns the right-of-way. The construction is of the so-called noiseless type with concrete retaining walls on either side and earth fill between. The stations and facilities other than the actual right-of-way are being built by the Northwestern.

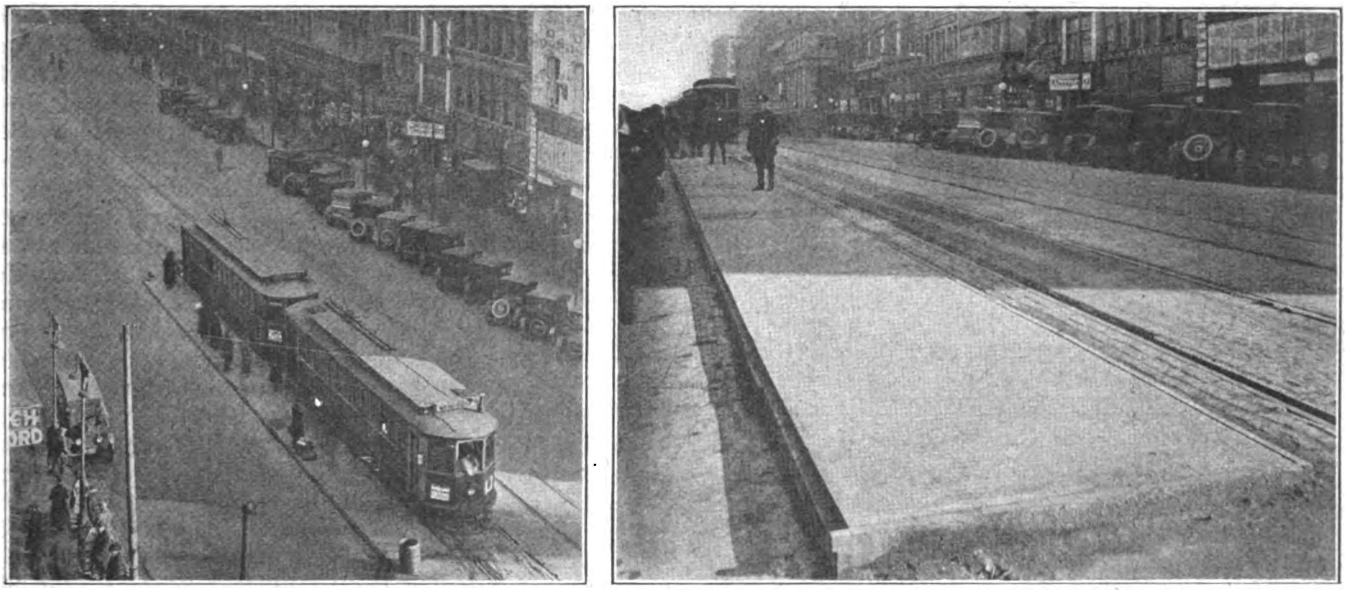
The particular station pictured herewith is known as Loyola and is located at an intersection of the line with Sheridan Road. The appearance, construction and general plan are typical of the stations that are being built along the line. The ticket booth is on the ground floor and one agent serves both directions of travel. Up on the right-of-way, the loading platform is of the center type located between tracks and with the roof supported on center columns.

Temporary wood structures are being used at most of the stations, but the permanent construction, as shown in the illustrations, is being put in gradually at one station after another as rapidly as finances permit. Similarly, work of putting the track and overhead construction in permanent shape is being gradually pushed forward. All of this extensive elevation work and the accompanying building of temporary and permanent stations have been done practically without a moment's delay to traffic or inconvenience to passengers. The fine facilities and conveniences that are afforded with the completion of these new stations are obvious and are a matter of very favorable comment from patrons, and undoubtedly have substantial merchandising value.

In one of the pictures it will be noted that the column which stands in the road has been prominently painted with black and white stripes and supplied with a night light to avoid vehicles running into it. This practice has been followed throughout the city as one of the safety measures of the elevated lines.



Five Views of the Construction and Finish of the Loyola Station on the Northwestern Elevated Railroad, Which Are Typical of the New Stations Being Built in Connection with the Elevation of the Line from Wilson Avenue, the Original Terminus, to Howard Avenue, the Present City Limits



TWO VIEWS OF ONE OF THE NEW LOADING PLATFORMS AT INDIANAPOLIS

City of Indianapolis Builds Loading Platforms

THE city authorities of Indianapolis, Ind., have apparently been convinced of the desirability and practicability of street loading paltforms for street car patrons. As evidenced by the two illustrations shown herewith the city is now building loading platforms at locations of heaviest loading in the center of the city.

The platforms are arranged for double berthing of the large double truck Indianapolis cars and are similar in many ways to those in Washington, D. C. They are constructed directly on top of the street paving and are made of concrete, with cement, or sidewalk, tops. A curb is not set, as has been done in other places, but a steel band is built into the edge of the platform and bears the brunt of any blows which may be received from passing vehicles.

It is planned to erect lighting standards at each end of the loading platform.

Two loading platforms were placed in service on Saturday, Dec. 3, and it is planned to build more of them in the future. The interesting feature of the present installation is that it is entirely a city inspired and city financed undertaking.

Tear Check Form of Transfer

The Use of a Special Cutter that Eliminates Hand Punching of Transfers When Issued Proves a Time Saver in Loading One-Man Prepayment Cars

A NEW type of transfer and transfer cutter has recently been developed and placed on all the cars of the Tri-City Railway of Davenport, Iowa. This new transfer was adopted to speed up the loading of the one-man cars. It has proved a great time saver and has overcome some of the many transfer abuses.

A separate and distinguishing color transfer is used for each line. The date, the lines on which it is good for fare and the condition under which it will be accepted are printed on the transfer. Although the month has to be punched by the operator, this can be done in large quantities when the operator is at leisure.

For convenience in making fare collections each car is equipped with a portable change box that has three compartments. It can be carried from one end to the other and is used to hold transfers received, tickets collected, cash for making change, etc. On the top of this box, as shown in the illustration, is placed a transfer cutter, made of ⅛ x ½-in. steel with one sharp edge, held down by a 1 x 2-in. steel roller, and thereby always gives uniform tension on the cutting edge. This cutter can be made at a small cost.

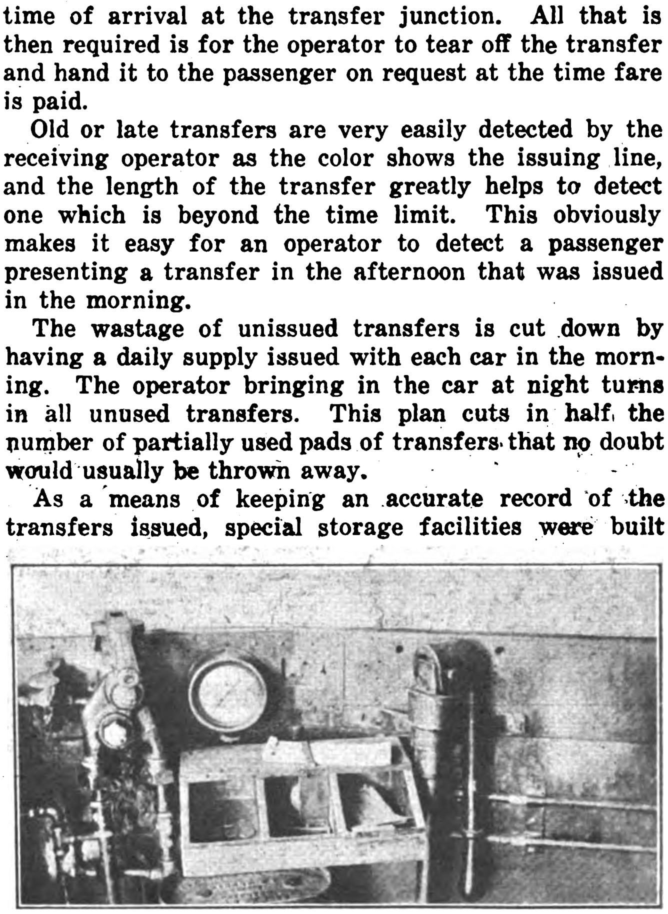
HOW THE DEVICE WORKS

On leaving the ends of the line the operator sets his pad of transfers, which have already been hand punched to indicate the proper month, under the cutter for the time of arrival at the transfer junction. All that is then required is for the operator to tear off the transfer and hand it to the passenger on request at the time fare is paid.

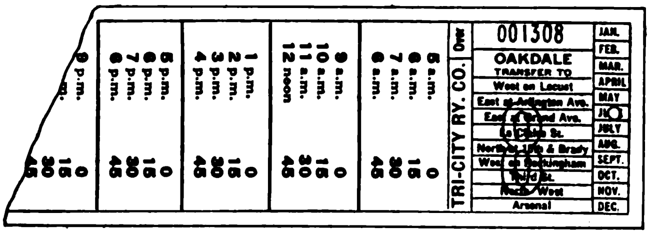
Old or late transfers are very easily detected by the receiving operator as the color shows the issuing line, and the length of the transfer greatly helps to detect one which is beyond the time limit. This obviously makes it easy for an operator to detect a passenger presenting a transfer in the afternoon that was issued in the morning.

The wastage of unissued transfers is cut down by having a daily supply issued with each car in the morning. The operator bringing in the car at night turns in all unused transfers. This plan cuts in half the number of partially used pads of transfers that no doubt would usually be thrown away.

As a means of keeping an accurate record of the transfers issued, special storage facilities were built



THREE COMPARTMENT CHANGE BOX WITH STEEL CUTTER MOUNTED ON TOP with thirty-one shelves, one for each day of the month. Each shelf then was divided so as to hold a deck of a thousand transfers for each regular car run. These decks were numerically arranged and the lowest numbers always issued, with the result that when transfers are returned they can be placed on top of the deck from which they were taken and unless punched for the month can be reissued to the same car the following month. This plan makes the record keeping easy as the transfer stock is always arranged in consecutive numbers.

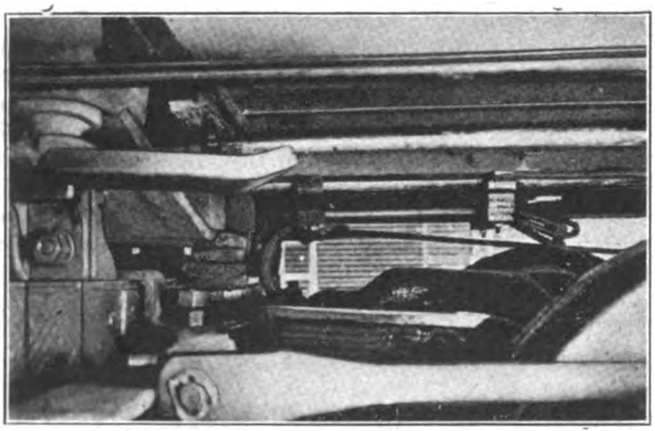


SAMPLE FORM OF ROUTE TRANSFER SHOWING HOW TIME LIMIT, MONTH AND DAY ARE INDICATED

This system has been used for some time and has been found very economical.

Bringing Leads from Motor to Car Body

MOTOR leads and their proper installation play a very vital part in the successful operation of the car and in the reliability of the service rendered. Improper installation or inadequate attention to these details on many roads has caused much trouble, and inspection of some cars discloses the fact that the motor leads are lying on top of the motor shells in a disorderly manner so that they are subjected to unnecessary wear with every movement of the truck. Such wear soon injures the insulation and sometimes exposes the bare wire which results in a ground and failure, if not an accident. The use of tape on leads is but a makeshift for preventing failure and is not a satisfactory or safe method of repair. On some types of trucks the motor leads rub on the brake levers and truck rods. All these classes of failure can be materially reduced by a little attention to the method of bringing out the connections from the motor casing and in their arrangement as they are brought up to the car body. A liberal use of cleats will assist in this arrangement, and the leads should be brought out as close to the center line of the center plate as conditions will permit. This insures the smallest movement of the leads due to the swiveling of the truck on curves. The slack in the leads should be just sufficient to take care of the expansion and compression of the truck springs and provide for the movement on the shortest radius curve of the system. When this length has been determined the leads should be cleated to the motor shell or truck transom with wooden cleats supported on an iron bracket.



CLEATING MOTOR LEADS TO CAR BODY

It has been found very desirable to have all motor leads of one standard length for all types. Some roads use a patented connecting box for their motor lead connections, but experience has shown that knuckle-joint connectors covered with fiber or rubber tubing give satisfactory results and they are much cheaper to install. An accompanying illustration shows an arrangement of motor leads and their method of cleating and attaching to the car body as used by the International Railway, Buffalo, operated by the Mitten Management Incorporated. The knuckle-joint connectors are placed between the two car-body cleats and are covered with fiber or rubber tubing to prevent short circuit or grounding from water or snow.

Handy Truck for Oxyacetylene Equipment

HANDY TRUCK MOUNTING FOR MOVING CUTTING TORCH

A HANDY truck for the tanks and equipment used in connection with an oxyacetylene cutting torch is shown in an accompanying illustration. This was built in the shops of the Portland Railway, Light & Power Company, Portland, Ore. The truck is made entirely of iron, the frame being of light angle iron with the ends forged round and bent to shape for handles. The tanks are held securely in place by two screw clamps, a flat iron strap extending across the two tanks, while the screw passes between the tanks and into the frame of the truck. The equipment is balanced so that one man can handle it very easily.

Injury and Damage Costs

FOLLOWING is a tabulation of the recent costs in per cent of gross income and per 1,000 passengers carried for the item of street railway expense covering injuries and damages as experienced by the companies operating in ten of the larger cities. This is seen to vary for the strictly surface line companies from a minimum of 2.92 per cent of the gross income to 7.14 per cent.

INJURY AND DAMAGE COSTS FOR VARIOUS COMPANIES

Company	Peroid		Per cent of Gross Income	Cost per 1,000 Passengers Carried
Chicago Surface Lines	Year ended	1-31-21	3.28	$1.343
Chicago Surface Lines	8 months ended	9-30-21	2.92	1.314
St. Louis	10 months ended	10-31-21	6.00	2.72
Kansas City	10 months ended	10-31-21	3.34	1.705
Milwaukee (city lines)	Year ended	12-31-21	5.52A	2.35
Milwaukee (city lines)	10 months ended	10-31-21	5.94A	2.60
Philadelphia	Year ended	12-31-21	3.47	1.50
Boston	10 months ended	10-31-21	2.17B	2.13C
Third Avenue (N.Y.)	Year ended	6-30-21	5.00	2.78
Twin City	Year ended	12-31-20	3.83	1.57
Buffalo	10 months ended	10-31-21	6.22	3.45
Cleveland	10 months ended	10-31-21	7.14	3.08
New York Railways (S. L.)	Year ended	6-30-21	6.50	3.04

A — Per cent of operating revenue.
B — 28 per cent rapid transit car mileage.
C — For revenue passengers only.

Letters to the Editors

Further Comments on the Bus and "Bus Transportation"

IN THE issue of Dec. 10 some remarks regarding the extension of the service of ELECTRIC RAILWAY JOURNAL by the issuing of BUS TRANSPORTATION were given. It is believed that the following will also prove of interest in this line.

C. D. Emmons, president United Railways & Electric Company of Baltimore, Md., in discussing this question says:

"I saw an advance copy of your new publication, BUS TRANSPORTATION, and I then expressed my opinion that there should be a large field for such a journal.

"Undoubtedly, the bus is going to prove very useful in the question of transportation, and its economical usefulness must undoubtedly be in the hands of those operating the street railways themselves.

"It has been proved, I believe, in this country, and certainly in the cities and towns of England, that in order to have the best and most economical resultant transportation for their communities it is necessary to have them co-ordinated under one head, as the low rates of fare required by the public cannot support two systems, and thus ultimately the entire transportation mediums of the community become demoralized.

"I wish you much success in your new venture."

Edward Dana, general manager of the Boston Elevated Railway, writes as follows:

"I wish you to know that personally I am heartily in accord with your constructive step to create a forum, as it were, for the discussion of bus transportation whether by trackless trolley, gasoline motor, or however driven. I feel that you will perform a real service for the transportation industry.

"Personally I am glad that the association at this time did not permit a large influx of bus operators or interests into the association, as I do not think that the time was ripe. I do regret, however, that unnecessary feeling should have been aroused by this action, which is a perfectly logical one and does not, to my mind, indicate any lack of appreciation of the necessity for giving the bus its place in the sun, but is a business-like decision not to make a false move until more definite knowledge is had as to just what that place in the sun is. I can hardly conceive how any business interests or street railway operators can ever feel that the gasoline bus can take the place of the systems now devoted to mass transportation. It has already shown what it can do in smaller cities in the form of a guerrilla warfare, but the future, it seems to me, demands of us a conservative, intelligent study of all of the factors and an amalgamation of that which is economical, efficient and proper for bus service into a unified transportation system in order that cities may have the best possible transportation facilities. That information we have not at the present time. The bus can never do what the electric car did to the horse car, but there are many opportunities, as I see it, to create traffic in order that the load factor of traffic on existing trolley lines may be improved and new traffic served quicker than would be the case if it need wait for rail transportation. I feel it a great mistake for railway operators to classify the legitimate development of bus service in the same category as the ruinous jitney which has flourished over the past few years. The great need is to prevent false development and waste and to work along intelligent, comprehensive lines.

"If the bus has an economic field in conjunction with the rail systems, talk cannot stop its performing this function, and if it can only go so far in assisting local transportation, talk cannot put it any further."

James P. Barnes, president Louisville Railway, discusses the new publication as follows:

"I have carefully read the editorial in the ELECTRIC RAILWAY JOURNAL of Oct. 29 and my understanding of it is that the policy of publishing BUS TRANSPORTATION has been definitely decided upon. Any discussion on the publication of such a journal would therefore be purely academic. I shall of course be very glad to look over the new publication and to have it in our files for the usefulness of its subject matter.

"I would be the last to attempt to minimize the importance of the bus question to the transportation industry. I believe there is a very definite field of application for the motor bus, and perhaps for the trolley bus, and I believe most firmly that when the limits of that field are determined the existing transportation companies should be the operating agencies to take advantage of new facilities. All the information we can get about bus operation we should have, but we must not lose sight of the fact that the great bulk of our mass transportation will continue to be handled by the trolley car, rather than by the bus, as long as conditions continue substantially as at present. So much is being said and published about bus transportation that I think there is a tendency to regard the bus as a more far-reaching transportation agency than will eventually be found to be the case. We must learn and discuss all the features of bus operation and at the same time avoid the hysteria of overdiscussion or overemphasis. I certainly feel that no agency in the field is better able to hold its balance in those discussions than the editorial staff of the ELECTRIC RAILWAY JOURNAL and shall watch for the BUS TRANSPORTATION announcement with great interest."

From Cleveland, J. H. Alexander, vice-president the Cleveland Railway, writes as follows:

"I am very glad indeed to note the possibility of the new publication to which you refer in your letter. The development of the bus is something in which just now every one of us is keenly interested, and I am highly in accord with your view that such a publication is needed and will pay."

Comments have also come from the consulting engineers who are connected with the industry. T. Fitzgerald, consulting electric railway engineer of Pittsburgh, writes:

"I have enjoyed and gained a great deal of benefit from your present method of handling trackless vehicle material in the ELECTRIC RAILWAY JOURNAL.

"I have been wondering how you were going to cover the trackless vehicle field and thought maybe you would take the bull by the horns and change the name of the ELECTRIC RAILWAY JOURNAL in some way as to include all of the matters vital to urban, suburban and interurban passenger and light freight transportation. Don't ask me for suggestions as to the proper name for such a journal.

"Your staff is undoubtedly the best equipped for leadership in the sound economic development of transportation methods in the field which has heretofore been looked upon as the electric railway field. There is no question in my mind about the necessity for including the trackless vehicle as a vital factor in the proper development of our electric railway systems.

"I react against the separation of these two fields, but if the separation must take place in order to bring about the co-ordinated development of both, it can best be done by having your present staff supervise both publications. Of course your activities in promoting the sound development of the trackless vehicle must be profitable and this may require a separate paper. If so, I am heartily in accord with the proposed plan.

"In our study of the freight situation here, bare possibilities of using trackless vehicles in conjunction with freight haulage by electric railways have arisen. Would you want to take into account such possibilities and name your new magazine so as to include any developments through which the activities of trackless vehicles and electric railways can be co-ordinated to provide better and cheaper distribution of materials?"

Edward A. West, general superintendent the Denver Tramway Company, writes:

"There is no doubt that bus transportation is here to stay, and there is no doubt that the McGraw-Hill Company, Incorporated, is eminently qualified, through its highly trained and efficient news-gathering and editorial staff, to prepare and publish a journal that will compass the ground covered by the auto bus.

"The advent of the trolley bus into the urban transportation field is due to there being a growing demand for that form of transportation, and it is my impression that a very rapid development of this type of transportation will be noted in the next few years. To my mind this fact makes it necessary that a competent organization handle the matter in an unbiased and broadminded manner, and again I repeat that the McGraw-Hill Company is better qualified to do this than any other technical publishing house in the country.

"I could go on in this manner for an hour or so longer, but from the foregoing you will gather what my ideas are. In closing I can only say that if you people don't start handling this matter somebody else will, and as you yourself have put it, others might not have the interests of the electric railway people as much at heart as you have and advocate the application of buses to transportation business economically unsound."

In a letter from B. J. Denman, president Tri-City Railway & Light Companies, Davenport, Iowa, he says:

"With reference to the new publication BUS TRANSPORTATION, which you have announced, I will state that I believe it much better for the McGraw-Hill Company to start such a publication than to have it done by interests identified with the automobile business, as in that case the policy would be controlled from the commercial standpoint, rather than from the standpoint of the real economics of transportation. With the wide interest of the McGraw-Hill Company in utility companies in general, I feel quite sure that there would not be a serious conflict of editorial policy between BUS TRANSPORTATION and the ELECTRIC RAILWAY JOURNAL, and, as stated, unless you do start such a paper, some one else will surely do so.

"I have no question but that there is a field for bus transportation, supplementing existing transportation agencies, but this must be a supplemental service, and not a competitive service, unless the competition is put on a fair basis. The railways in small and medium sized communities cannot provide their track and pay for the paving and continue service in competition with buses which do not pay to the municipalities a compensation strictly comparable with that paid by the street railway companies, including general, city and county taxes, and paving taxes. The business must also be put on the same basis with respect to service requirements, and unless this is done the result will be the absolute destruction of the street railway business without building up a system which is equally satisfactory and reliable.

"The same thing is going to apply to the interurban and steam road competition, so far as the use of our improved highways is concerned. The present competition in some states is absolutely inequitable and unjust.

"From my knowledge of the policy of the McGraw-Hill Company publications, I will welcome its entrance into this new field."

Daylight Color Light Signals Installed in Liverpool

THE signal system of the Liverpool (England) Overhead Railway, which was the first elevated railway in the world to be worked electrically, has been re-equipped so that it is now the largest installation of daylight color light signals outside of this country. The new equipment was described in a recent issue of the *Railway Engineer*. At each station there is a home signal with an overlap of about 300 ft., the latter terminating just in the rear of the station. There is also a starting signal immediately at the outlet of the station and this also has an overlap of about the same distance. Even in the brightest sunshine the signal can be distinctly seen for 3,000 ft. The basis of the signaling arrangement was to allow for a two-minute service, although actually one of 100 seconds was provided for. The speeds were taken at 20 m.p.h. with an acceleration leaving the station at 0.75 miles per hour per second and a deceleration approaching the station of 1.4 miles per hour per second. Tests made showed that the overlap of 300 ft. was more than sufficient to stop a train in the event of an automatic application of the brake should a signal be over-run.

A Record of Sixty Years of Electrical Progress by English Paper

THE *Electrician* of London, which first appeared on Nov. 9, 1861, celebrated its diamond jubilee last month. In its sixty years of life it has recorded many epoch-making inventions and has seen the genesis of electric traction, electric lighting and the telephone and widespread adoption of the electric motor for industrial purposes. Its "diamond jubilee issue" contains congratulatory messages from Thomas A. Edison, Sir Oliver Lodge, Senatore Marconi and others. It also contains historical and technical accounts of the development of telegraphic and other applications of electrical energy to industry.

The New Jersey Commuter in New York Subway*

The Commuter Traffic to New York Amounts to 359,000,000 Passengers Annually and Is Growing Rapidly—Steps to Develop a Rapid Transit Plan Are Recommended

By DANIEL L. TURNER
Consulting Engineer to the Transit Commission of New York City

ON every working day during the year 1920, from north, east, south and west, from as far away as 20 miles or more, and in the morning hours, nearly one and one-quarter million people were delivered into lower Manhattan by all of the rapid transit lines in New York and by all methods of commuter travel leading to the city. More than 200,000 of this traveling multitude were New Jersey commuters. This number is 17 per cent of all the travelers.

Although it is true that Manhattan is an island, the waters surrounding it have already been passed under by thirty single-track passenger tunnels and eighteen of these have been constructed by New York City. Therefore, physical barriers are no longer an obstacle to the realization of your aspirations for a more convenient transportation service between your homes and your work places in Manhattan. The difficulties are entirely political.

In order properly to emphasize the importance of dealing with our local transportation problem as a metropolitan rather than as a city problem, some figures will be given with respect to city transit and then with respect to commuter traffic.

THE ENORMOUS TRAFFIC INCREASES IN NEW YORK CITY

In the past the traffic on the street railway lines, subway, elevated and surface, in New York City, has nearly doubled every fifteen years. The average daily traffic on all lines is now more than 6,500,000 passengers.

The total traffic carried during the year of 1920 on all lines was approximately 2,365,000,000 passengers—approximately double the number of passengers carried on all of the steam railroads in the country. This was an increase over 1919 of nearly 285,000,000 passengers. Reduced to months, this means that during the average month in 1920, 23,000,000 more passengers were carried than during the average month of 1919; or reduced to days, it means that during the average day in 1920, 763,000 more passengers were carried than during an average day in 1919. Expressed in another manner, this means that on every day during 1920 nearly 4,200 more passengers were carried than on the preceding day—or it means that the equivalent of nearly four additional ten-car express trains must be added to the service every day to carry the increase in traffic each day.

In 1913, the year the dual contracts were signed, the rapid transit lines alone in Manhattan, the Bronx and Brooklyn—subway and elevated lines together—carried 810,000,000 passengers. In 1920 these same rapid transit lines, together with the new lines which had been placed in operation, carried about 1,332,000,000 passengers during the year. This means an increase of 64 per cent in seven years. It would have been utterly impossible to accommodate this enormous increase in traffic had it not been for the large additions to the transportation facilities which were opened for operation during the last two or three years. To keep pace with this enormous traffic increase, New York City must build more subways at once, and must formulate a plan for continuous construction.

STEAM RAILROAD COMMUTERS

The steam railroad commuters are assumed to include regular commuters, trip-ticket passengers and other short distance or suburban riders. In 1920, the total commuter traffic in and out of New York City was about 73 per cent of the total passenger travel on all steam railroads entering the city. It amounted approximately to 153,000,000 passengers. This number included passengers using the Grand Central terminal, the Long Island terminals and all traffic via the New Jersey roads. The total traffic or the commuter traffic and regular through railroad traffic together was about 210,000,000 passengers for the year. About 56 per cent of the total steam railroad commuter traffic, or about 87,000,000 in and out, used the New Jersey roads.

Neither the rapid transit traffic nor the commuter traffic is distributed evenly throughout the day. On the rapid transit lines, approximately 21 per cent of the total twenty-four-hour traffic in both directions is carried in three hours in one direction past the maximum load point. On the commuter lines, about 30 per cent represents the corresponding concentrated travel. The three heaviest traffic hours are either from 7 to 10 a.m. workward, or from 4 to 7 p.m. homeward. The real traffic problem is to take care of the traffic during these three hours morning and night. The daily steam railroad commuter traffic from New Jersey is approximately 272,000 and the daily rapid transit traffic approximately 4,162,000 passengers. Applying the preceding percentages to the daily traffic figures we find that the maximum daily traffic, one way, during three hours, from 7 to 10 a.m. or from 4 to 7 p.m., on all of the commuter lines together, amounts to about 82,000 passengers; on the rapid transit lines during the same three hours, the traffic is about 874,000 passengers. The ratio between these two figures is 1 to 10.7. In other words, during the one-way three-hour periods of greatest congestion, there is one steam railroad commuter from New Jersey for nearly every ten rapid transit passengers carried on the rapid transit lines.

TOTAL COMMUTER TRAVEL

The total commuter travel, including (1) steam railroad, (2) tunnel and (3) ferry commuters, aggregated approximately:

	Passengers
For the year 1920	359,000,000
For the day, both ways (478,000 + 115,000 + 528,000)	1,121,000
For the maximum three hours in one direction. (143,000 + 35,000 + 158,000).	336,000

Comparing this last figure with the 874,000 three-hour, one-direction, rapid-transit traffic, we have the ratio of 1 to 2.6. This ratio means that during the most congested three hours one way, the rapid transit travel is only a little more than two and one-half times the total number of commuters of all kinds coming into or going out of New York City.

In the case of New Jersey separately, there were 203,000 commuters during the maximum three hours in one direction. This gives the ratio of 1 to 4.3, as compared with the corresponding rapid transit traffic, or expressed in another way, during the maximum three hours in one direction there are nearly one-quarter times as many New Jersey commuters as there are rapid transit riders.

All of the foregoing figures are approximate, but they are sufficiently accurate to present the picture I have been endeavoring to portray, which is: That the importance of the commuter traffic with respect to the New York City transit problem cannot be overestimated.

THE COMMUTER TERMINALS IN NEW YORK

Of all the commuters, 336,000 in the maximum three hours in one direction, 10 per cent originate via the Hudson tunnels, 47 per cent via the ferries and 43 per cent over the steam railroads. Nearly one-half, or 46 per cent, of the steam railroad business passes into or out of the city through the Grand Central and Pennsylvania terminals in Manhattan and the Flatbush terminal in Brooklyn. This business amounts to approximately 66,000 passengers in three hours in one direction. These terminals also accommodate 120,000 through passengers in both directions daily. However, the through passengers are distributed throughout the day and therefore do not impose a heavy burden on the terminals. But from the preceding figures it appears that there must be taken care of through the three terminals in three hours in one direction more than one-half as many commuters as there are through passengers traveling in twenty-four hours in both directions. The concentration of commuter traffic at the Grand Central, Pennsylvania and Flatbush terminals, therefore, is the real passenger problem which the railroads have to contend with. This concentration of travel amounted to 21,000 passengers at the Grand Central Terminal, 22,000 at the Pennsylvania, 23,000 at Flatbush and 35,000 at the Hudson & Manhattan terminals.

Many of these people walked to and from the terminals but a large proportion of them used the subways. In the morning the subway trains coming workward are carrying their maximum loads when they reach the terminals, so that passengers have to struggle to get aboard. This delays the trains and reduces the capacity of the subways. At night, returning passengers almost have to fight their way out of the trains. The introduction into the subway of such a large volume of traffic at already congested stations is disastrous to service. It is most important to eliminate such conditions wherever possible.

But this is not the worst of the situation. The commuter traffic at the terminals is growing at a terrific rate. During the last ten years it has increased about 117 per cent at the Grand Central. During nine years the Long Island commuter traffic has increased 141 per cent at Flatbush and 275 per cent at the Pennsylvania Station. The capacity of the Flatbush terminal has practically been reached.

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*Abstract of paper read at the Bi-State Rapid Transit Conference under the auspices of the City Plan Commission, held at City Hall, Paterson, N. J., Dec. 15, 1921.

The Pennsylvania Station has really become a Long Island terminal, since two-thirds of the business through it is Long Island business, and also since the Long Island Railroad used it for 40 per cent of its own business coming into the city. The Long Island Railroad is operating from the terminal under a two-minute interval service during the rush hours. At this time the terminal has nearly reached its capacity to Long Island. It is all due to commuter traffic. Here we have a terminal only eleven years old, and it has become so seriously congested that steps are being taken to determine what can be done to relieve the situation.

The New Jersey commuter traffic has increased also but not as rapidly as the Long Island, Westchester and Connecticut traffic. The commuters on the New Jersey Central, Lackawanna and Erie increased approximately 40 per cent during the last ten years.

CONCLUSIONS

The foregoing figures are important in that they all point in one direction. They emphasize the fact that the commuter traffic has really become a very great factor in our urban transit problem. They also emphasize the fact that the commuter traffic is increasing at a terrific rate. The growth of the traffic is so stupendous that the consequences will be very serious if immediate steps are not taken to deal adequately with the problem. The commuter service must be transformed into a metropolitan rapid transit service. The only difference now between our city rapid transit and this metropolitan rapid transit is that the latter requires a longer haul and operates both inside and outside of the city limits. The metropolitan service is even now operated on an interval basis, as instanced in the case of the Long Island Railroad. All of which means that a Metropolitan transit plan must be developed.

Commuters, under the proposed new order of things, should be brought into and distributed through the business center of the city as far as it is practicable to do so. At least they should be brought to points where by easy transfer from one line to another they may reach almost any objective point within the city. Commuters should not be delivered to terminals. The commuter does not need a terminal any more than a city rapid transit rider does. He only buys a ticket once or twice a month, he has no baggage to check. He does not desire to wait for trains. He expects frequent service amounting almost to interval service and times his movements so as to make quick connections. So what the commuter requires is a frequent, quick, regular and through service from his home to his work and back again with the minimum amount of transferring in transit.

The underlying principles of a suitable plan to accomplish this are briefly: there must be a pooling of railroad interests, an extension of electrification, additional tubes must be constructed under the Hudson and East Rivers, the commuter lines themselves must be articulated together so that a more convenient interchange of traffic between them can be effected and the commuter traffic must be carried into and distributed through the business center.

It has been suggested that the Port Authority might be utilized as the agency to develop such a plan, but I do not believe the law is broad enough to permit this. The functions of the Port Authority are restricted to a freight project. Similarly, the Transit Commission in New York is without power to deal with the question. Its activities, by reason of the political division of the Metropolitan area already alluded to, are restricted to the territory east of the Hudson. Consequently all of its efforts have been directed toward developing rapid transit facilities for New York City exclusively.

A new agency must be created, but it is believed that another interstate authority would be a mistake at this time. It is suggested that the best and quickest way of dealing with the situation is to create a New Jersey Transit Commission with all the necessary authority to study the question of interstate transportation of passengers and to develop the necessary plans to effectuate such a project. Such a New Jersey commission would undoubtedly receive the hearty co-operation of the Transit Commission of New York to the end that its plans might properly conform to the city's new transit plan.

In any Metropolitan transportation project, either for freight or for passengers, in the interests of economy the existing New Jersey and New York railroad facilities must be utilized to the greatest extent possible consistent with the best development of a plan. The same railroads are involved in either case. Therefore the freight plans and the passenger plans must both fit in with the existing railroad conditions, and also must fit in with each other. Consequently, when the construction of the project is to be begun, it will be a great advantage to carry out the work under the same authority. Under such circumstances, since it is already vested with power to carry forward its freight project, the Port Authority would seem to be the natural agency to undertake the combined project.

In the interim, while the New Jersey Transit Commission is developing the plans, the feasibility of the suggested method of procedure can be resolved.

American Association News

Mid-Year Conference Plans

Tentative Program Includes Discussion of Matters of Interest—Notable Speakers for the Dinner

THE committee on subjects of the American Electric Railway Association, C. D. Emmons chairman, has announced the following tentative program for the Mid-Year Conference at Indianapolis on Feb. 28. The meeting and dinner will be held at the Claypool Hotel.

PROPOSED PROGRAM

Morning Session, 10 a.m.

1. Opening Address of Welcome by Governor McCray, of Indiana.
2. The Co-ordination of Trackless Transportation in the Future Service of the Electric Railway Industry.

This discussion will be started by the following four speakers:

- (a) "City Service and English Conditions," C. D. Emmons.
- (b) "Co-ordination of Service, the Unified System," E. B. Whitman.
- (c) "The California Situation," Paul Shoup.
- (d) "From the Interurban Viewpoint," Harry Reid.

Discussion.

3. Report of special committee on co-operation of manufacturers in the interest of electric railways, presented by E. F. Wickwire.

Discussion.

Afternoon Session, 2 p.m.

4. Address by J. W. McCardle, chairman Public Service Commission of Indiana.
5. Drill of the Chicago Elevated Safety Team, preceded by explanation of the purpose of the organization, by B. I. Budd.
6. "Unfair Taxation Burdens on the Street Car Riders and How They May Be Eliminated," by Fielder Sanders, Street Railway Commissioner of Cleveland.

Discussion.

Evening Dinner, 6:30 p.m.

7. Introductory address of President R. I. Todd.
8. Address on "Public Relations," by Samuel Insull of Chicago.
9. Address on "Private vs. Public Ownership of Public Utilities," by Carl B. Jackson of the Wisconsin Public Utilities Commission and president of the National Association of Railway and Public Utility Commissioners.*
10. Address, by President Harding.

Attractive entertainment features will be interspersed with the above.

The Special Dinner Committee, Harry Reid, chairman, has announced the following chairmen of its sub-committees. The Regional Representatives of the Transportation committee were announced in last week's issue.

Seating Arrangements — J. P. Barnes, president Louisville Railway, Louisville, Ky.

Entertainment — Harry Reid, president Interstate Public Service Company, Indianapolis, Indiana.

Ladies' Committee—Mrs. R. I. Todd.

Transportation—H. J. Kenfield, president *Electric Traction*, Chicago, Ill.

Publicity — Myles B. Lambert, manager railway department, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.

Reception — S. W. Greenland, vice-president Indiana Service Corporation, Ft. Wayne, Ind.

Christmas Cards to Committee Members

PRESIDENT L. H. PALMER of the Transportation & Traffic Association sent during the past week to each committee member of that association a card bearing the following sentiment: "The momentous conference in our capital is striving to make real for all the world the peace of Christmas. So this year it is peculiarly fitting that the president and the executive committee of the Transportation & Traffic Association send you, with their hearty Christmas and New Year's greetings, the earnest hope that you will do your part in the work of our committees. Thus will you help our industry to be a factor in the return to normal business relations to a world at peace." The card, so far as its mechanical features are concerned, was got up by the Collier Company.

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* Mr. Jackson has been invited, but his acceptance has not yet been received.

News of the Electric Railways

FINANCIAL AND CORPORATE :: TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

California Commission Reports

San Francisco and Los Angeles Valuations Among Outstanding Features of Work of That Body

The peak in public utility rates has definitely passed and a substantial decline has set in, the State Railroad Commission of California announced on Dec. 12 in giving out a letter to Gov. William D. Stephens, transmitting its annual report for the year ended June 30, 1921. It pointed out that in the year covered in the report material reductions were made in gas and electric rates, and the commission adds that there is every reason to hope that the trend of prices toward normal will make further reductions possible.

The commission declares that the advance in utility rates during the war and the reconstruction period was relatively small as compared with soaring commodity prices, and in this connection says the contrast between regulated and unregulated business is illuminating and "of itself would be sufficient justification, if justification were any longer needed, for the enlightened policy of state regulation." It is shown that if public utility rates had been advanced equally with commodity prices, the people of the state last year alone would have paid in the neighborhood of $100,000,000 more than they did to the public utilities.

REGULATION NOT A HINDRANCE

In discussing rate reductions and rate investigations under way, the commission informs the Governor that a basis for rate adjustments will soon be established for all the large power companies of the State. This will mark another definite advance in the program of effective regulation, the letter says.

The assertion that regulation tends to hamper industry is declared by the commission to be a fallacy, and it points out that the public utilities under regulation are keeping pace with the rapid growth of the State. This is especially true in the development by the power companies of the hydro-electric resources of California's mountain streams.

The letter reviews the legislative investigation of the commission, declaring that the Inman committee performed a valuable public service in correcting certain popular misapprehensions as to the procedure and rulings of the commission. The two most widespread errors, the commission declares, were that it allowed returns on capitalization and that it was restricted in its investigations by rigid court rules. On the contrary, it is shown, the powers conferred on the commission give it a large latitude of initiative and independent research.

The letter reviews in detail the work of the commission, which has doubled in the past two years, and discusses also the financial status of the utilities.

In addition to the work in connection with other departments, the engineering department of the commission completed two notable valuations—those of the United Railroads, San Francisco, and of the Pacific Electric, Los Angeles. The valuation of the United Railroads was made in connection with the application of the utility for approval of its reorganization plan. The reproduction cost new, less depreciation of the system was placed at $41,000,000. In this connection it may be stated that the inventory prepared by the engineering department was used as a basis in the subsequent valuation made by the city of San Francisco and an engineer from the commission assisted by the City Engineer's office in the work. The results obtained closely approximated each other.

The valuation of the Pacific Electric Railway was the most extensive piece of work of its kind ever undertaken by the engineering department. Begun in June, 1919, it was completed near the close of the present year. Findings were made of the historical reproduction cost new and the reproduction cost new. With a condition per cent determined the cost less depreciation was arrived at for each valuation. The historical reproduction cost was found to be $71,194,759, and less depreciation $56,372,096.

Complementary to the valuation report an exhaustive survey was made of the service conditions obtaining on the system, including an analysis line by line of the entire system, with a discussion of revenues, expenses and operating schedules. Containing many suggestions designed to overcome present financial difficulties, the report also looked to the future and proposed means of meeting in permanent fashion growing problems of traffic congestion. In this connection the recommendations made in the terminals cases were repeated and emphasized. Made a part of the survey was a special study of automobile transportation and the suggestion offered that the choice between trolley and motor transportation facilities must ultimately be made by the people and the communities affected.

Other service reports, including valuations, were made on the Sacramento, the San José and the Peninsular electric lines.

W. C. K. Alumni Association Formed

One hundred and forty former employees of Westinghouse, Church, Kerr & Company met on Nov. 30 and organized the "W. C. K. Alumni Association." The object of the association is the maintenance of the friendships formed by the members during many years of service with Westinghouse, Church, Kerr & Company. The periods of this service run anywhere from three years to twenty-five years, three years being the minimum requirement for membership.

The secretary, A. H. Tummel, 131 Warwick Street, Brooklyn, N. Y., will be glad to hear from any former employees who are desirous of joining the association.

Bus Regulatory Ordinance Passed

City and Railway at Des Moines Start to Put Into Effect Provisions of New Franchise Grant

The City Council of Des Moines, Ia., during the week ended Dec. 24 sounded what is thought will be the death knell of the buses when an ordinance was passed setting out the routes which buses must use if they are to continue to operate. The ordinance practically eliminates buses from streets where electric railways operate and to a very large extent from the loop district of the business section.

BUSES MUST RESPECT ORDINANCE

Bus men who appeared before the City Council protested that bus provisions were not regulatory but meant complete elimination. Arguments against the routes were made by Charles W. Lyon, attorney for the bus men, and B. Frank Prunty, a suburban banker who has become financially interested in one of the larger bus companies. The City Council refused to rescind its action and the bus men are now holding almost daily conferences to determine whether or not they will attempt court procedure to protect their rights.

One of the provisions of the routing against which the bus operators make their chief complaints is forcing them off the Seventh Street viaduct for the Ft. Des Moines and Sevastapol lines. This was one of the conditions sought by the Des Moines City Railway and the business men's committee which advised the City Council. F. C. Chambers, general manager of the Des Moines City Railway, agreed to station a flagman at the railroad crossings which the bus men will be forced to use in the event that they cannot run over the viaduct.

Although the new ordinance has been published and is, therefore, nominally in effect no actual effort has been made yet by the city to force the buses from the routes they have been using, but action looking toward this end is expected within the next few days.

As a matter of fact the City Council delayed for more than a week passing the ordinance on the basis of the agreement which it made some time ago that the buses would be regulated as soon as the Des Moines city railway had placed thirty additional cars in service. For nearly ten days the railway has been operating ninety-two cars, which is more than the number specified by the Council.

APPEAL TO BE HEARD JAN. 13

The Iowa Supreme Court has set Jan. 13 as the date for hearing the appeal made by the city on the decision of Judge Hume of the Polk County District Court, which granted the North Des Moines Improvement League's petition for a temporary injunction restraining the franchise election. It is now thought that the Supreme Court will handle the appeal before Judge Hume rules on making the injunction permanent.

Service-at-Cost Idea Sound

Cleveland's Street Railway Commissioner Reviews His Six Years in Office—Says Franchise Has Proved Elastic Enough to Work Under All Conditions

Fielder Sanders, street railway commissioner of Cleveland, Ohio, has reported to the City Council an account of the accomplishments under service-at-cost in that city. The report is dated Dec. 14. It covers the entire six years during which Mr. Sanders has held office. The document is especially significant because of the great interest in the service-at-cost plan in Cleveland, because of the historical facts enumerated by Mr. Sanders, because of the recommendation that the Cleveland Railway use buses and because of Mr. Sanders' advice that the company attempt to collect back income taxes which it has paid.

ACCORDING to Mr. Sanders the real outstanding development of the last six years is the complete demonstration of the soundness of the underlying principles of the Tayler grant. He says that the franchise has proved elastic enough to work under all sorts of conditions, has kept the railway and its administration out of political campaigns, has carried the company successfully through unusual adversities and has also protected the public. Credit is given by Mr. Sanders in these words:

> Your honorable body is entitled to much credit for the manner in which emergencies have been met and for the readiness with which you have raised the rate of fare and granted the company relief when necessary. The public of Cleveland is entitled to much credit. The car riders have demonstrated their confidence in the Tayler grant by their continual co-operation by riding, by paying increased rates without objection and by their steady support of the company and the city.

REMARKABLE CHANGES SINCE 1916

Mr. Sanders says that the years since 1916 have been marked by striking events and remarkable changes. During that time the city of Cleveland has increased in population from 700,000 to 850,000 and the Cleveland Railway system has increased from 288.6 miles of single track to 303.6 miles. More than 102 miles of track have been removed, 281 new passenger cars have been added and 167 old ones retired, a net increase of 114 cars. The gross income of the company has been $83,435,960. It has spent for maintenance, depreciation and removal of track and equipments $17,330,378. In the six years property to the value of $3,839,924 has been retired on account of obsolescence, the reproduction value thereof paid for out of the earnings and the proceeds thereof used for the acquisition of new property.

Particular attention is called by Mr. Sanders to the fact that the operating allowance of the Cleveland Railway has been increased from 12.6 cents to 26 cents per car-mile; the maintenance depreciation and renewal allowance from an average of 4.9 cents to 12 cents per car-mile. Notation is also made of the fact that the motormen and conductors' wages have been increased from 29 cents an hour during the first year and 32 cents an hour thereafter, to the present rate of 55 cents an hour for the first three months, 58 cents the next nine months and 60 cents an hour thereafter, reaching the highest point of 70 cents, 73 cents and 75 cents an hour in the period between May 1, 1920, and May 1, 1921. In addition extra compensation for unusual working conditions, and a six-hour minimum day have been put into effect. The rate of fare has increased from 5 cents with a 1-cent charge for transfer to the present maximum rate of the franchise, 6 cents cash fare, nine tickets for 50 cents with 1 cent for transfer, or from an average fare of 3.417 cents in 1916 to 6.03 cents in October, 1921.

POWER CONTRACT FORTUNATE

Mr. Sanders next reviews the trying conditions imposed on the railway of war-time operation and changed economic conditions and says:

> The Cleveland Railway, due to its careful management, to the co-operation of the city, the confidence of the people, and the peculiar provisions of its franchise has been enabled to operate successfully, render adequate service to the public at as low a rate of fare as there is in the United States and maintain its property in such shape as to place it now in a position to continue its public duty successfully and this notwithstanding that the period of high prices, inflated values and heavy traffic during the war has been followed in the year 1921 by a depression and falling off of traffic such as to cause the gravest apprehension.

According to Mr. Sanders the railway was particularly fortunate in contracting with the Cleveland Electric Illuminating Company for power, in furtherance of which plan the largest single piece of property of the company, the Cedar Avenue generating station, producing power at an excessive cost, of the value of $1,265,585 was scrapped and written out of the capital account. Mr. Sanders estimates the total savings of the power scheme as now in force as compared with the old one in 1916, have been more than $2,000,000 in the last four years in the price of power alone, disregarding altogether the saving in copper cables, the gain in the transmission of power short distances and the increased operating efficiency of the cars through high voltage.

MODIFIED ZONE SYSTEM IN USE

Of the modified zone system put into effect in the downtown district, July 10, 1921, lasting fifty days, with a 3-cent cash fare, two tickets for 5 cents, Mr. Sanders says that when the experiment was made traffic was falling off decisively; there was no pleasure riding of any kind and economic conditions were such that the unnecessary spending even 3 cents was a matter of considerable importance to a great number of the car riders. He suggests that this matter be carefully studied with a view to further trial under more favorable conditions.

The tremendous growth in the number of automobiles and other causes have increased the amount of money paid out as expense of operation in payment of personal injury claims and property damaged from $575,795 in 1915 to $1,320,179 in 1920 and $1,050,155 for the first ten months of 1921. On Sept. 6, 1918, the commissioner wrote the railway suggesting that it establish as a part of its organization a department with its necessary personnel to have sole charge of the task of preventing accidents. In response to that letter, the railway first, through its operating department, tightened up its discipline with the idea of making the men more careful. This not proving as successful as anticipated, the railway then installed a complete and scientific school for its new motormen and conductors in which the men were given a long course of training, not only in the operation of cars but in the prevention of accidents before being sent out on the road. Finally, in addition to these methods, the company has now established, by way of an experiment, a special department with a separate department head who is charged with the duty of doing all that is humanly possible to prevent accidents of all kinds on the system. As a result of the co-operation of all the interests concerned this department is working out with a very great degree of success.

On the matter of tax recovery Mr. Sanders says:

> The expense by way of taxation has been assessed against and paid by the Cleveland Railway in the last few years, which in my judgment is wholly unjust. This is the matter of the federal income tax. The United States Government for some years past, has collected an income tax of 10 per cent on net earnings of corporations. Applying this income tax law to the Cleveland Railway, the return of whose stockholders is limited, exactly as to a corporation with unlimited returns, the federal government has collected from the Cleveland Railway the sums of $344,337 for 1918 tax, $392,038 for 1919 tax, $74,000 for 1920 tax and $255,400 for 1921 tax. These sums have actually been paid by the car riders out of their own money. That part of this money upon which this tax has been levied, which is in excess of the amount required for the return to the stockholders, has been in no sense an earning of the corporation. It cannot keep it for itself or for its stockholders. Under the ordinance, it gets this money only as a trustee for the car riders.
>
> As the money accumulates it is the company's obligation to hand it back to the car riders, either in reduction of fares or in increased service. The underlying idea of the grant is service-at-cost. If service-at-cost could be exactly, mathematically carried out, so that the car rider pays the exact cost of his ride on the day that he rides, this tax could not be assessed because there would be no surplus accumulated. The fact that this is impossible, since there must be from time to time a surplus in the interest fund so as to regulate the fare over periods of time, is seemingly no reason why the patron, the car rider, should be fined 10 per cent of his own money, trusteed to the company for his benefit, under a law which is intended to tax only the income to the owners of the property.

As a result of his study of this matter Mr. Sanders has recommended to the Council that every effort should be made to present this situation to the federal authorities on behalf of the city of Cleveland and its car riders to secure relief for the future and if possible a refunding of the sum paid in the past.

The opinion of Mr. Sanders is that the size of the city necessitates an immediate attempt to supplant or supplement the surface cars by some faster form of transportation. He says:

> Even if confined to transportation on the ground, it is a fact that many people prefer automobile or bus facilities to street cars. Other cities, notably New York, Detroit and Baltimore are recognizing that fact at the present time. I am wholly of the opinion that when these new forms of transportation, bus, subway, elevated or otherwise, are added that they should be operated by the Cleveland Railway or its successors, under the same close city control as at present, so that the car riders may have a uniform transportation system, which we can watch. I believe that within

the very near future, the Cleveland Railway, whenever it can increase its capital stock, should recognize the preference of the people and should establish at least bus line transportation itself at such rates as Council may permit.

In carrying out the city control of the railroad service and of its expenditure under direction of the Council Mr. Sanders expended the following amounts:

Year	Amount Expended	Amount allowed (1% of operating allowance, excluding extensions)	Surplus
1916....	$27,770	$44,927	$17,148
1917....	30,181	51,942	21,761
1918....	34,595	64,302	29,707
1919....	48,045	76,770	34,725
1920....	53,254	103,398	50,143
1921....	55,110	95,868	40,757

Mr. Sanders deplores the fact that the very difficult task of securing new money so as to enable the company to carry out its public duty remains unsolved. He regards this as the first of the two great problems not yet settled, despite the efforts of the administration to accomplish this settlement. The second of these he sees as the great need for rapid transit. For this reason, beginning January, 1917, and continuing until the present time, Mr. Sanders has spent a great part of his time outside of the routine duties in an attempt to secure rapid transit. He says:

> A Rapid Transit Commission, of which I was a member, aided by expert advice of outside engineers, and the faithful work of the assistants in this office, developed a scheme of downtown terminal subways and recommended to the Council and to the people their building, at an expense of $15,000,000, by the city but to be operated by the Cleveland Railway. The results of three years' study, submitted to the voters of Cleveland in April, 1920, were not approved; whether because of the financial situation or otherwise, is not important to discuss at this time. They would have relieved the paralysis now increasingly apparent in the operation of surface cars through the congested district.

Efforts were continued, notwithstanding, to improve the existing facilities. Several lines were rerouted and more cars turned away from the congested district by new loops. A proposition was also presented to the Council to cut some of the long lines, but after much discussion by the Council, it was agreed that the action was too radical, although it promised advantages.

In conclusion Mr. Sanders says that with better industrial conditions now appearing probable for the immediate future Council should take up these two great problems—enable the railway to finance—enable it to expand and give the people the rapid transit so essential to Cleveland.

New Wage Scale in Effect in Fresno

A new pay schedule for trainmen of the Fresno (Cal.) Traction Company went into effect on Dec. 1.

Following are the new and old rates of pay in cents an hour:

	Old Rate	New Rate
First year	51	47
Second year	52	48
Third year	53	49
Fourth year	53 plus $5 per month—bonus	51

In addition to the above rates, the annual twelve days vacation with full pay, which is equivalent to approximately 2 cents an hour, will be continued.

Four cents an hour in addition to the above scale allowed for one-man car operators.

The bonus payments will be discontinued.

Establishes Pension System

Eastern Massachusetts Street Railway Will Provide for Employees Serving Twenty Years or More

By the unanimous vote of its board of public trustees the Eastern Massachusetts Street Railway, Boston, Mass., has adopted a system of pension for its employees, to go into operation on Jan. 1, 1922, under which employees who already have reached the age of seventy years will be retired on that date. The employees will not be required to contribute toward the plan. The terms of the plan, as announced by the trustees, are as follows:

> Eligibility for a pension will be determined by the age of each employee and the years of continuous service with this company or any of its predecessors.
>
> Employees who have been in the service of the company twenty-five years or more who have reached the age of seventy will be retired on Jan. 1, 1922, and become entitled to a pension.
>
> In order to take care of special cases, the pension board may, in its discretion, retire with pension any employee sixty-five or more years old who has been in the service of the company twenty years.
>
> No provision has been made for disability pension, but the public trustees recognize that particular instances may arise meriting consideration and action.
>
> Payments will be based upon the following schedule:
>
> For twenty years of service, $35 per month or $420 a year.
>
> For each additional year there will be added $1 a month or $12 a year, so that the pension will be, for example:

	Month	Year
25 years continuous service.	$40	$480
30 years continuous service.	$45	$540
35 years continuous service.	$50	$600
40 years continuous service.	$55	$660
45 years continuous service.	$60	$720
50 years continuous service.	$65	$780

The pension board, appointed by the public trustees, is composed of three trainmen of the company, one general foreman, one track foreman, one public trustee, and R. B. Stearns, vice-president and general manager of the company.

$89,825 in Bonus Money Awarded

Christmas bonus amounting to $89,825 was paid by the Los Angeles (Cal.) Railway to 1977 trainmen on Dec. 15. The payment was made under the merit and bonus system operated by railway since April 1, 1920. The full bonus is $60 on a basis of $5 a month. Records are kept from Dec. 1 so that ratings may be checked up and bonus awarded just before Christmas.

Special prizes were awarded seventy-seven trainmen. The extra awards ranged downward from double bonus and were awarded the seven most efficient conductors and motormen at each of the company's five divisions. From the list of 105 safety car operators, the seven most efficient men were selected and received similar awards. In selecting the men for the special efficiency awards the company took into consideration not only the actual percentage ratings but such points as personal appearance, promptness in reporting for duty and making written reports where necessary, uniform safety and courtesy records and willingness to help new men.

When a trainman has been in service six months he is entitled to participate in the merit and bonus system. His record starts with 100 per cent and he is then subject to credits or demerits, five points counting as 1 per cent. Credits are given for acts of special efficiency outside the usual line of duty. Ten credits are given for a clear courtesy record for a month and a like award is made for a clear safety record. Acts noted by supervisors, officials of the company, by passengers who communicate with the main offices or by trainmen themselves bring credits.

Demerits are given for such causes as failure to make relief, dangerous operation, discourtesy, inaccurate reports, untidy appearance, etc. If a man brings his efficiency rating below 75 per cent he is discharged automatically.

The railway considers that the bonus awards are not mere Christmas presents, but represent payment for specially efficient service rendered the company and the public.

Sault Ste. Marie Differences Adjusted

The department of Labor of Ottawa, Can., has received the unanimous report of the Board of Conciliation, which has adjusted differences between the International Transit Company, Sault Ste. Marie, Ont., and some of its employees.

The document recommends the recognition of the union, a nine-hour day and a wage award of 40 cents an hour, increasing at the rate of 1 cent an hour each six months with 45 cents after two years' service.

Ten Per Cent Wage Cut on Boston & Worcester Property

The board of arbitration recently reduced the wages of the employees of the Boston & Worcester Street Railway, Boston, Mass., 10 per cent, the reduction being retroactive to Sept. 1. The maximum rate for the blue uniform men was 60 cents an hour, and therefore the maximum rate for these men is now 54 cents. All other schedules of wages were reduced 10 per cent. The old and new rates of pay in cents per hour for the blue uniform men are as follows:

	Old Schedule	New Scale
For first three months..	50½	45½
For next nine months..	52	47
After first year.........	60	54

The award recognizes that the company is entitled to a further reduction next year, if the cost of living is not increased. The company did not ask for a cut of 10 cents an hour. It offered to pay 53 cents for the maximum blue uniform wage without arbitration.

Jamestown Wages Cut Nine Cents

The Jamestown (N.Y.) Street Railway, on Nov. 16, put into effect an approximate 9-cent reduction in the wages of conductors and motormen. The former and present wage scales in cents per hour are as follows:

	New Scale		Old Scale
First six months........	36		45
Second six months......	38		47
Second year............	39		49
Third year.............	41	Two years and above	50
Five years and above....	43		

Employees of the Chautauqua Traction Company and the Jamestown Westfield & Northwestern Railway are included in the 9-cent wage cut. Announcement of the reduction was made by A. N. Broadhead, president of the three lines.

New York Commission Prepares for Valuations

Bus Accident Data, Power Costs, Queens County Lines and Municipal Operation in the Grist Last Week

Late during the week ended Dec. 24 the New York Transit Commission adjourned its hearings until after the first of the year, when the chairman announced that valuations would be taken up. A portion of the testimony on Dec. 20 and that on Dec. 21 was presented too late to be reported in last week's issue of this paper. The greater part of the late testimony on Dec. 20 related to statistics of bus accidents in New York and repair maintenance by the New York & Queens County Railway.

COUNSEL SHEARN GIVES SOME FIGURES ON JITNEY BUS ACCIDENTS

Following the presentation of the proposed rerouting plan of Daniel L. Turner, Counsel Shearn said that he thought it would be desirable to gather evidence on the number of accidents which the jitney buses in New York had had since they had been placed in operation in November, 1919. The work of gathering these data has been difficult, he said, because it has been the policy of the Police Department, acting under orders, to refuse all access to the police blotter records which set forth the troubles of the jitney buses. Mr. Shearn said he had done as well as he could, however, by having recourse to newspaper reports of accidents and reports turned in by the surface lines of collisions with buses, etc. He then first submitted what he called "an incomplete and imperfect" record of jitney bus accidents in Manhattan from Sept. 23, 1919, to June 26, 1920, made up from records of collisions between buses and cars of the New York Railways Company. These records showed 148 accidents, with personal injuries in thirty-four and in all but one some property damage. In addition he presented a tabulation made up from notes published in the *Brooklyn Daily Eagle*, from Nov. 7, 1919, to Sept. 7, 1921, showing a total of eight persons killed and 298 injured in accidents to jitney buses. He suggested that it would be well for the commission to summon the owners or operators of these bus lines and ascertain whether they have paid anything to the injured persons, what they have done in the way of upkeep of their cars and similar data.

The Fifth Avenue Coach Company then submitted statistics of its accidents. These figures showed that during the period from Jan. 1, 1919, to Dec. 18, 1921, there had been no one killed, six persons were injured seriously and thirteen persons suffered minor injuries. From 1907 to date, or during fourteen years, the company has operated 64,000,000 miles and has had only two turnovers.

Reuben E. Fielder, mechanical engineer of the Fifth Avenue Coach Company, was then questioned about the design of the Fifth Avenue buses. This testimony was introduced because of an alleged statement by the Mayor that the Fifth Avenue buses were unsafe. Mr. Fielder testified that in the model L bus the center of gravity, when the bus is fully loaded, is about 52 in. above the ground. In the model A, which is an earlier design, the distance is 73 in. The greater part of the equipment now is model A, but model L buses are being put on. When asked about a bus operated by a different company in another part of the city he said he thought this bus had a center of gravity about 100 in. above the ground.

Charles E. Chalmers, receiver of the Second Avenue Railroad, was then recalled to give information in regard to the charges for power paid by that company to the Interborough Rapid Transit Company and New York Railways. It developed that when the Second Avenue Company was part of the Metropolitan Street Railway system it had contributed $750,000 to the construction of the power station of that company at Ninety-sixth Street, with the understanding that thereafter it was to get power at cost, but when the Metropolitan system broke up the property was foreclosed and the plant shut down, hence this investment was lost. Mr. Chalmers testified that he was now purchasing power from the Interborough Rapid Transit Company through the New York Railways and is now paying 2.6045 cents per kilowatt-hour for it. The Interborough charged the New York Railways 1.7012 cents per kilowatt-hour for direct current, claiming there was a 10 per cent profit only in that charge. The witness estimated that the profit of the New York Railways in the sale of power was 53.1 per cent at this price. A memorandum dated Jan. 14, 1920, giving the basis of charges for power at that time was submitted in evidence as follows:

Basis of charges per kilowatt-hour to Second Avenue:

	Cents	Cents
To cost per kilowatt-hour from I. R. T. to New York Rys.......		1.1197
To Transmission Charges		
To losses........................	0.0205	......
Operation and maintenance.......	0.0197	......
Fixed charges.....................	0.2130	0.2532
To Conversion Charges		
Losses...........................	0.1110	......
Operation and maintenance.......	0.1110	......
Fixed charges.....................	0.3290	0.5510
		1.9239
To profit at 18.7 per cent.................		0.3601
		2.284

Statistics of the New York & Queens County Railway, New York & Long Island Traction Company and Long Island Electric Railway were then presented, showing poor physical condition of the car equipment. It was stated that some of the cars on the New York & Queens County Railway had operated over 150,000 miles without overhauling and only eleven cars had been overhauled since January, 1921.

DR. WILCOX PRESENTS HIS VIEWS

At the proceedings on Wednesday, Dec. 21, at which volunteers were to be heard, the principal witness was Dr. Delos F. Wilcox, who criticised various provisions in the plan of the commission and argued in favor of municipal ownership. He claimed that service at cost as tried in Cleveland, Montreal, Boston and Cincinnati had been unsatisfactory, and he thought that "the power of the 'traction trust,' so called, in past years has been in some ways moderate in comparison with the power that will be exercised by the gigantic operating monopoly which the commission sets up as the goal of its endeavors."

Other witnesses who testified on Dec. 21 were President George B. Cromwell of the Borough of Richmond; Frederick Van Z. Lane and Robert W. Higbie.

Railway Will Be Exempt from 1922 Tax

To relieve the public from the necessity of paying a higher rate of fare for the first six months of 1922, the city of Cincinnati (Ohio) has approved a plan of William Jerome Kuertz, Director of Street Railways, whereby the Cincinnati Traction Company will not pay its annual tax to the city of $350,000 for 1922. With the recommendation of Mr. Kuertz and the indorsement of the city's executives, it is said the adoption of the plan by the City Council is assured.

While the plan takes away from the city $350,000 at a time when the city government is in serious financial condition, without a definite plan to raise the $800,000 needed to complete its appropriations in full, it is justified by Mr. Kuertz and the city administration on the following grounds:

> 1. That under the provisions of the "service at cost" franchise, an annual tax of $350,000 is made payable to the city only when the revenues of the traction company are sufficient to pay the operating expenses and such other items as are made a prior charge upon the gross receipts.
> 2. That other large cities of Ohio do not charge their street railway companies such a tax, and
> 3. That if the tax was charged for 1922 it would necessitate an increase in fare, which Mayor John Galvin and Mr. Kuertz believe would be incompatible with the present tendency toward lower prices everywhere manifested.

In regard to the street railway situation here, Mr. Kuertz said that there were but two courses open to the city:

> 1. It may pass an ordinance similar to the one passed last June with reference to the city's tax for the year 1920 and 1921, providing that the failure of the present rate of far to produce revenue sufficient to pay the city's tax for the year 1922 shall not operate to increase the rate of fare now in effect, or
> 2. Allow the provisions of the revision ordinance to operate, which will automatically cause fares to be increased.

The advantages and disadvantages of the two courses were explained by Mr. Kuertz in a report to Mayor Galvin.

City Names Expert to Examine Transit Plan

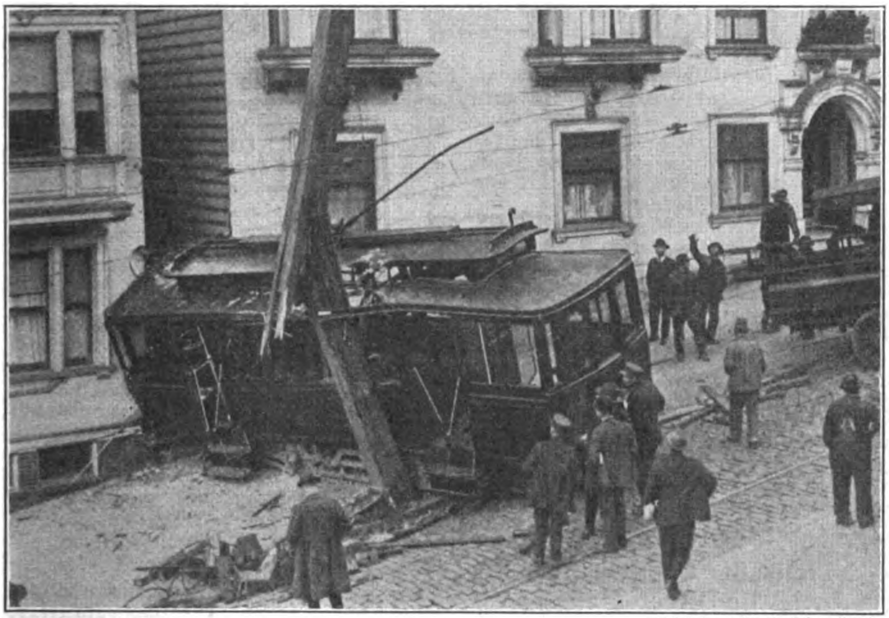
Corporation Counsel John P. O'Brien of New York City has appointed William A. DeFord a special assistant to analyze for the city the plan of the Transit Commission for the consolidation of all the traction lines and their transfer to municipal control. Mr. O'Brien stated that the appointment in no way affected "the soundness of the contention by the city" that the act creating the commission and vesting it with its powers was unconstitutional, Mr. O'Brien said:

> I have retained William A. DeFord as my special assistant to make a comprehensive survey of the plan of readjustment which you may finally adopt, to analyze carefully the contracts and other means which it proposes to employ for the execution of that plan, and to accumulate such information as I deem essential to enable the city authorities to consider it intelligently.
>
> The Transit Commission will greatly facilitate the making of the proposed survey, and will expedite the formulation of the views of the city authorities with respect to the plan, if it will grant Mr. DeFord access to all information and data in its possession, inclusive of the reports of its engineers, appraisers and accountants, which he may deem of value to his inquiry.
>
> I deem it my duty (while having the fullest confidence in the soundness of the contention that the act is unconstitutional) to take such steps as will enable the city authorities, in any eventuality whatsoever, to safeguard, the city's interests.

Proposed Electric Line in Upper New York Under Consideration

Plans are under way for the construction of an electric railway from Buffalo to Wellsville, N. Y., over the abandoned roadbed of the Buffalo & Wellsville line owned by C. A. Finnegan, Buffalo. Representatives of the cities and villages along the line have held several conferences with Mr. Finnegan and a group of Buffalo bankers over ways and means of financing the proposed electric freight and passenger line. It is proposed to finance the road with a bond issue of about $1,000,000.

The proposed line would cost close to $1,100,000, according to estimates given by electric railway interests. The estimates for various equipment are: rails, $250,000; ties, $125,000; laying track, $80,000; bridges, $150,000; ten booster stations, $60,000; poles and wires, $200,000; equipment, $125,000, and incidentals, $60,000.



POLE HALTS RUNAWAY CAR

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It has been suggested that arrangements could be made to enter Buffalo over the tracks of the Buffalo & Lake Erie Traction Company, connecting near Hamburg. Among the larger communities along the proposed line are Wellsville, Belmont, Centerville, Arcade and Springville. The Buffalo & Wellsville line was abandoned during the war and Mr. Finnegan sold all the equipment to the French government.

The new company will probably be known as the Buffalo, Arcade & Wellsville Electric Traction Company. The promoters are represented by J. S. Joyce, 75 West Huron Street, Buffalo, N. Y.

Galesburg Company Asks for Franchise

The Galesburg Railway, Lighting & Power Company has asked for a new franchise in Galesburg, Ill., and accompanied the ordinance which it presented to the Council with frontage petitions signed by a majority of property owners on all streets except West Main Street.

The difficulty in securing a majority of West Main Street signers was said to be that many people objected to any railway on the street, and also that the owners objected to the paving clause. In answering the attack on the paving clause, R. F. Carley, manager of the traction company, called attention to the recent decision of the Public Utilities Commission in the Chicago street railway case, in which the principle was laid down that the city of Chicago must hereafter pay for paving to be done between the rails. He stated that the Galesburg company was asking nothing that would not soon be general practice in this respect.

Cable Car Runs Wild

Fillmore Street in San Francisco, Cal., has a combination cable and electric line, one of the very few in the country. The line is a very short one and for a distance of two blocks the grades are as high as 24 per cent and 25.4 per cent, respectively. Two cars are operated on the line, connected by an underground cable, so that one balances the other. The excess power required for operation is furnished by electric motors on the cars so that the system is a combined cable and electric system.

On Nov. 16 the cable on this line broke when one of the cars was near the top of the hill and it sped furiously down, finally leaving the track and splintering an overhead pole. Six persons were injured.

Estimate Moving Platform Cost

The proposed river to river moving platform, intended to care for cross-town traffic in New York city, would carry approximately 32,000 persons an hour, which would equal the capacity of seventy-two ten-car subway trains. Daniel L. Turner, chief consulting engineer of the Transit Commission, presented these statistics to municipal engineers recently. Estimates place the cost of construction at $7,500,000 and cost of equipment for operation at $3,000,000. The operating cost on the basis of 15,000,000 passengers a year would be $500,000, with an additional $25,000 for each extra million.

New York Denied Municipal Trolley Line

The right to operate a municipal trolley line as a shuttle over the Williamsburg Bridge without first obtaining a certificate of convenience was denied New York City in a decision of the Appellate Division of the Supreme Court, Second Department, which reverses the order of the lower court of last July. That order allowed the city to operate local service over the bridge in competition with the lines of the Brooklyn Rapid Transit Company.

The matter of municipal operation of a trolley line across the bridge has been hanging fire for several months. Grover Whalen, Commissioner of Plant and Structures for the city, early in the spring announced that service would be started on March 1. He assembled materials for a carhouse to be built in Brooklyn and for the tracks connecting it with the bridge tracks. These would cross the tracks of the Brooklyn Rapid Transit, and that company immediately got out an injunction against the city, making the points that the proposed crossing would become a source of danger; that the city had no constitutional right to run cars over the bridge, and that the city had no certificate of convenience.

At the same time the injunction was sought the city asked that a board of three commissioners be appointed to condemn the transit company's right-of-way and chose the point of crossing for the tracks. Both motions were granted, but the commission appointment was delayed for so long that operation of the municipal line had to be postponed beyond April 1.

The Brooklyn Rapid Transit Company, which had announced that it would discontinue its through service over the bridge on that date, continued its lines when the municipal service was delayed. The threatened abolition of the Rapid Transit Company's service would have thrown a great burden upon the local bridge line, but Commissioner Whalen promised that the city would meet the situation.

It was estimated that the municipal shuttle service over the bridge would have been given to the public for 1 cent a ride.

Through Electric Interurban Proposed

Negotiations are under way for financing the construction of a bridge across the International River connecting Buffalo, N. Y., with Bridgeburg, Ont. Private interests in the United States and Canada are organizing a syndicate to apply to the federal government in Washington and the Dominion authorities at Ottawa for permission to bridge the river at this point.

It is proposed to have the Canadian hydro-radials in the Niagara frontier district enter Buffalo via the proposed structure. This would give a through electric interurban line connecting Buffalo with Toronto, Ont., by way of Welland, St. Catharines and Hamilton. This line also would connect with the proposed Canadian lake shore line to Port Colborne, which has been under consideration for several years. Towns along the proposed raight-of-way already have given authority to construct the line, which would serve the north shore summer colony.

Improvement Program Being Arranged

Work has been started on the schedule of improvements laid out recently for the Dallas (Tex.) Railway. This is in accordance with the agreement between officials of the Dallas Railway and the Supervisor of Public Utilities, John W. Everman, that as soon as the company elected a president to succeed the late Col. J. F. Strickland both the city and the officials of the company would prepare a program of improvements and betterments covering the next few years.

Although the complete programs have not been announced, Mr. Everman says he will provide for the building of the Lindsley Avenue extension to Mount Auburn, as well as some additions to the Terrell interurban line over which cars will be run to Parkview.

Much pressure is being brought to bear on Mr. Everman to include the proposed viaduct over the Trinity River bottoms. Mr. Everman has explained that such viaduct, if built, would have to be built by the Northern Texas Traction Company, which owns the Oak Cliff lines and the Dallas-Fort Worth Interurban line. Under the terms of the franchise and the lease agreement between the Dallas Railway and the Northern Texas Traction Company, the Dallas Railway would have to take over the viaduct when built and pay the Northern Texas Traction Company 7 per cent interest annually on the investment. Mr. Everman says it would cost $500,000 to build the viaduct, and that this would mean an interest charge of $35,000 annually on the Dallas Railway or about $100 a day. Such an interest charge would make a 7-cent fare necessary, Mr. Everman says, and he is not in favor of such an increase in fares.

The Dallas Railway now has approximately $100,000 in reserve to be spent for street improvements, this amount having been realized over and above the authorized earnings of 7 per cent during the last few months, during which earnings have been around 8 per cent.

It is expected to be a month or more before the schedule of improvements is completed and finally agreed on.

Agreement Reached in Fresno

Franchise conferences at Fresno, Cal., have resulted in an agreement between officials of the Fresno Traction Company and the City Council as to the terms to be granted to the company. Under the proposed plan a fifty year franchise will be allowed the company. The city will be given an option on the purchase of the road at ten year intervals, paying the railway the value of the property at the time the exercise of the option may be desired. The proposed agreement provides that the company will pave the street between the rails and a foot on each side of the rails.

The Fresno Traction Company is controlled by the Southern Pacific Company. Paul Shoup, vice-president of the property, in commenting on the conference, made the following statements:

> The Fresno Traction company has not been a paying investment due to development of the automobile, but, with the growth of the city and a lesser inclination because of downtown congestion, to use machines when a street car is available, I believe it should be possible to demonstrate that the public can be usefully served by street car transportation without loss to owners.
>
> The city can help by relieving transportation from unnecessary burdens, making possible certain and prompt adjustment of fares up and down to meet actual needs under supervision of the State Railroad Commission and granting such franchise tenure as will assure safety of investment aside from the question of fares.

New Company Incorporated in Franchise Case

Initial steps in making two systems of the Aurora, Elgin & Chicago Railroad were taken at Springfield, Ill., on Dec. 13 when the Aurora, Elgin & Fox River Electric Company, Aurora, was incorporated to furnish electric light and power. The capital stock of the new company is $20,000. It is held by Joseph K. Choate, New York, receiver, to the amount of $4,950; Benjamin F. Alschuler, Aurora, $25, and Edwin C. Faber, general manager for the receiver, $25.

The organization of the new company was necessary to carry out provisions of an order, issued by Judge Evan A. Evans, instructing the receiver of the Aurora, Elgin & Chicago Railroad, to incorporate a new company and take all the stock in his own name and the name of his nominees for the purpose of providing a company to take out new franchises in the Fox River valley. It is explained that under the law a franchise for operating a public utility can be issued only to a corporation, and not to a receiver. In other words, the new organization came into existence under the general incorporation act, to apply for franchises in its own name and not in the name of the Aurora, Elgin & Chicago railroad, avoiding possibility of legal entanglements.

Louisville Employee to Be Director

A director for the Louisville (Ky.) Railway is to be chosen from among the ranks of the workers. Announcement to this effect was made at a meeting of the motormen and conductors tendered them recently by J. P. Barnes, president of the company. The dinner was given the men of two carhouses which were winners in a contest for those carhouses having the smallest number of accidents per milage.

Every man in the company's employ, to the number of approximately 1,500, is to have a voice in the election of the new director who will sit for the first time at the annual meeting of the board on Feb. 15. He will be elected at a date in January to be set by the Co-operative Welfare Association. The entire force of the Louisville Railway employees for two years past has been organized in a Co-operative Welfare Association which meets monthly to consider matters of interest to employees.

No date for the election can be set until the Co-operative Welfare Association meets and formally receives and accepts the company's announcement. The January meeting of the association will be Jan. 9, but the election may be held at the next monthly meeting, Feb. 12, in ample time for the successful man to take his seat at the annual election of the board of directors three days later.

News Notes

Will Vote on Franchise.—A new franchise for the Menominee & Marinette Light & Traction Company, Menominee, Mich., will be submitted to a vote of the people at a special election probably in January. This decision was recently made by the City Council at a meeting called to discuss terms for the new franchise.

Picking Up Passengers Scored.—In the symposium entitled "Truth," published daily by the Memphis (Tenn.) Street Railway to educate the Memphis public, the receivers, T. H. Tutwiler and F. Elgin, say a word to the automobile owners about picking up chance passengers and taking that much revenue away from the company.

Health Rules to Be Published.—Because of numerous inquiries and complaints about the ventilation of cars of the Cincinnati (Ohio) Traction Company, William Jerome Kuertz, Street Railway Director has announced that after the Christmas rush the railway will post in every car a copy of the Board of Health Regulations governing the ventilation of cars.

Will Study Situation.—A committee composed of Council representatives of Wheeling, W. Va., and Ohio towns will hold a conference on the passenger transportation situation in the Wheeling district. The matter has become acute recently over the efforts of the Ultimate Bus Company to secure a permit from the city of Wheeling. The Wheeling Traction Company has opposed the grant. It is believed that a plan is being worked out which will be acceptable to railway and buses.

Pacific Electric Out of Terminal Project.—The Pacific Electric Railway, Los Angeles, Cal., is not required to join the steam roads, including the Southern Pacific, the Salt Lake and the Santa Fé, in building a union terminal at the Plaza site. The order for the construction of the union passenger station is contained in a decision on rehearing of the so-called Los Angeles terminal cases and is a reaffirmation of the commission's former decision. The commission held that there was not sufficient justification for including the Pacific Electric interurban lines in the project. The company will be required to solve certain grade crossing problems.

To Dismiss Employees, Railway's Right—An arbitration commission recently handed down a decision upholding the right of a railway to dismiss an employee. The Eastern Pennsylvania Railways, Pottsville, Pa., dismissed a motorman, John Dormer, after a wreck in which seventeen persons were injured. The Amalgamated Association took up the complaint of the motorman in question and claimed that he should be re-employed. The railway claimed that it had the right to dismiss an employee, but agreed to submit the matter to an arbitration commission. The commission's opinion against Dormer was unanimous and his complaint was thrown out.

Financial and Corporate

Financial Readjustment Proposed

A special meeting of shareholders of the Federal Light & Traction Company, New York, N. Y., has been called for Jan. 11 to consider changing capitalization and readjustment of finances. It is proposed:

To increase the capital stock by $10,000,000 to $21,000,000, new stock being in form of cumulative first preferred 8 per cent stock, having priority over present preferred and redeemable at any time at $110 a share.

To amend certificate of incorporation to permit issuance of 55,000 shares no par common stock to be exchanged share for share for present common.

To modify terms of company's thirty year first lien 5 per cent bonds to permit from 5 per cent to not exceeding 7½ per cent interest rate on all or any part of such bonds heretofore or hereafter issued; provide that such additional interest shall be entitled to the benefit and security of any future mortgage; that all or any part of such bonds be made callable at price above present call price as may be fixed by directors; that company, at its option, can spend for betterments of properties, moneys accruing to sinking fund under said mortgage.

To authorize issuance of preferred stocks by subsidiaries without subjecting such stocks to lien to said mortgage.

To authorize refunding Springfield Railway & Light 5 per cent bonds and Central Arkansas Railway & Light 5 per cent bonds by issuance of Federal Light & Traction Company 30-year 5 per cent bonds (but bearing interest at not exceeding 7½ per cent of such increased interest on such bonds be authorized as recommended), and to authorize directors at their discretion to do such action as may be necessary.

To authorize execution of a general and refunding mortgage to secure bonds, notes or debentures which may be issued from time to time in series bearing interest not exceeding 8 per cent.

$9,685,000 Railway Bonds Mature in January

Public utility bonds maturing in January, 1922, amount to $14,708,300. The principal railway properties included are the following:

Company	Rate	Amount
Columbus Railway Power & Light Company, notes	8	$2,500,000
Little Rock Railway & Electric Company, 1-year	8	700,000
Springfield & Eastern Railway 1st	5	330,000
Cent. Market Street Railway 1st	5	325,000
Eastern Massachusetts Street Railway, ref.	6	300,000
New Bedford & Onset Railway 1st	5	280,000
Virginia Railway & Power Company, notes	6	250,000
Minn. Street Railway, joint cons.	7	5,000,000
	Total	$9,685,000

Seeks Abandonment—Blames Ford

The Interurban Railway & Terminal Company, Cincinnati, Ohio, has petitioned the State Public Utilities Commission for permission to abandon its two lines. One line runs from Cincinnati to Lebanon and the other from Cincinnati to New Richmond.

According to F. Dinsmore, counsel for the company, who ascribes the failure of the road to the Ford, it would be cheaper to sell the road as junk than to continue service.

The deficit in 1918 was $18,000; 1919, $13,000; 1920, $20,000; 1921, so far $18,000.

The receiver of the road is Charles M. Leslie.

Toledo Outlook Improved

Company Hopes Soon to Put on Fifty One-Man Cars to Combat Autos

The increased patronage of the Community Traction Company, at Toledo, Ohio, and the improvement of the physical condition of the property, together with economies in management effected since the operation of the service-at-cost ordinance, will probably enable the company to purchase fifty new one-man cars in the near future. At least, Wilfred E. Cann, street railway commissioner has made some tentative plans in that direction. He believes that the new equipment may be a step toward better business and also help to meet motor bus competition.

The report of the railway for November, made to the board of control at its meeting during the week ended Dec. 17 indicates that the property is continuing to turn a surplus into the stabilizing fund.

As for December, the commissioner's daily reports the first half of the month show an increase of $7,036 in fare receipts as compared with the same period last month.

After payment of all operating expenses, interest charges and taxes in November, $17,708 was placed in the sinking fund, which goes toward the purchase of the lines by the city, and there was a balance of $8,200 applicable to the fare stabilizing fund, bringing it up to $63,544. It was expected that the surplus for November would be about $25,000, but the company was forced to set aside $15,762 for half of the state excise tax of 1½ per cent on gross earnings of public utilities. The allotment for maintenance has also been increased and cars are being overhauled at the shops at a rate of ten a month instead of three as heretofore.

The total amount now in the sinking fund, set aside for ultimate ownership of the traction property by the city, is $177,083. Part of this sum is invested in bonds of the railway which are participating in the earnings of the property.

The operating expense has been decreased from 42.86 cents per car-mile in February, the first month under the present plan, to 36.50 cents per car-mile last month. The average income per car-mile in February was 44.5 cents. In July it fell to 38.1 cents, but for November was 45.26 cents. The ratio of operating expense to income last February was 92.21 per cent. It is now 72.82 per cent.

There was a small decrease in November in the number of passengers carried as compared with October and a corresponding decrease in car-mileage due to the difference of one day between October and November, but the daily car-mileage and the number of passengers carried were a little larger than the previous month. The total of revenue passengers in November was 4,699,809.

Cleveland Stock Not to Be Sold at Discount

The directors of the Cleveland, Ohio, Railway on Dec. 22, refused to accept a resolution adopted by the City Council authorizing the company to sell $160,000 par value of its stock at $87 a share, for the purpose of building a new extension along Broadview Road in South Brooklyn.

The franchise under which the company operates in Cleveland calls for the sale of the company's stock at $87 because the company's dividends are held to 6 per cent annually and voters of the city a year ago refused to sanction an increase to 7 per cent.

John J. Stanley, president of the company, said:

> The main reason why the Council's resolution is not acceptable to the company is because it is a makeshift financing scheme. The intentions of the company's franchise is plain that stock must be sold at not less than par and the city faces the problem of putting our stock above par and keeping it there not for one extension alone, but for all the extensions and additions which the continued growth of Cleveland demands. Half-way measures and makeshift expedients are unsound economically, but are especially unwise financially for this system.

Successor Company Organizes

The Olean, Bradford & Salamanca Railway, Olean, N. Y., the successor company under foreclosure to the Western New York & Pennsylvania Traction Company, has organized with officers as follows:

President, C. N. Mason; vice-president, J. P. Quigley; secretary and treasurer, L. W. Osborne; auditor, D. S. Nicholas; general manager, R. H. Wheeler; general superintendent, I. W. Miller; chief engineer, W. K. Page; traffic manager, W. P. Bailey; master mechanic, W. I. Berryman.

$28,935,655 Lost by New Haven Railroad on Its Rhode Island Trolleys

Losses sustained by the "New Haven" road through the forced sale of the electric railways in Rhode Island caused the steam railroad to have a deficit of $31,824 in 1920, the loss from the sale of the electric railways alone aggregating $28,935,655, according to the annual report which the Connecticut Public Utilities Commission submitted to Governor Lake at Hartford, Conn., on Dec. 17. During the past year this loss has been charged off to profit and loss, the commission points out. The 1920 deficit of more than $31,000,000 is contrasted with the surplus of $2,078,352 which the "New Haven" road had in 1919.

A feature of the report is an increase of $2,411,363 in the Connecticut Company's investment in road and equipment, which at the close of 1920 was $55,457,931. The total investment, including some other sources, was $55,529,430. The capital stock remains the same, at $40,000,000.

According to the report on Nov. 30, 1921, the Connecticut Company had a total deficit of $1,436,091. The total operating revenue was $13,089,317, showing an increase of $2,045,512. Of the increase $1,913,979 was from passenger transportation.

The total deficit of the Hartford & Springfield Street Railway Company, since it went into receivership in 1919 is $118,958 according to the report.

Cleveland's Accumulated Deficit Now Only $145,610

Business conditions in Cleveland, Ohio. continue to improve, slightly it is true, but nevertheless steadily. This is shown in the November report of the Cleveland Railway, received by the directors at their meeting on Dec. 22.

The November report showed that the deficit in the interest fund, the fare barometer, had been reduced by $26,596 during the month. This cuts the accumulated deficit to $145,610 in this fund. The surplus balance in the company's operating fund is so great that if business conditions continue to improve there is little doubt but that there may be a reduction in fare by the middle of next summer, as predicted by Fielder Sanders, the city street railway commissioner.

The number of car riders carried by the Cleveland Railway in November totaled 31,992,555, a decrease of 11.72 per cent over last year. This is a marked improvement, as recently the decrease in the number of riders, month by month, had been running as high as 17 per cent.

The directors adopted a memorial extolling the late Henry J. Davies, who up to his death on Dec. 3 last had been secretary and treasurer of the company for many years.

Cape Fear Railways Is Successor

The North State Power Company, Raileigh, S. C., which on Aug. 16, 1921, bought the Cumberland Railway & Power Company when the receivership of that company was terminated, sold its railway holdings on Dec. 7 to the Cape Fear Railways, Inc. This company is a new corporation, with its home office in Fayetteville, but with its general offices in Raleigh. The capital stock is $50,000 an the extension of the present system to a total length of 20 miles is immediately contemplated. Previous sale of the Cumberland Railway & Power Company to a company of bondholders was recorded in the ELECTRIC RAILWAY JOURNAL for July 30, 1921.

Receiver for Houghton Company

A federal receiver was appointed Nov. 29 for the Houghton County Traction Company, Houghton, Mich. Samuel B. Tuell is now in charge of the company's interests.

Young Men's Club Operates Cars

The company organized some time ago at Brunswick, Ga., by the Young Men's Club of that city to operate the electric railway system there took formal possession of the properties on Dec. 1 and is now running the cars. The Brunswick property, known as the City & Surburban Railway, failed some time ago and abandonment of the system followed.

The new company is known as the Brunswick & Interurban Railway. The present fare is 7 cents, but it is believed that as soon as the necessary legal arrangements can be made the fare will be reduced to 5 cents. Previous references have been made in the ELECTRIC RAILWAY JOURNAL to the activities of the Young Men's Club in trying to keep railway service in this city.

Financial News Notes

Railway Pays Back Taxes.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., is now paying the city of Trenton back taxes for the past four years, the sum of $150,000 having been paid into the city treasury thus far. The company was unable to pay the back taxes until an 8-cent fare was granted.

Receiver Authorized to Settle Claims.—Federal Judge John M. Killits at Toledo, Ohio, has authorized B. J. Jones, receiver for the Ohio Electric Railway, to defend at his discretion all suits against the bankrupt railway brought before his appointment as receiver. He authorized the receiver to settle claims also in case they are for small amounts. All claims must be brought before the court for approval.

Part of Dividend Arrears Paid.—The board of directors of the West Penn Traction & Water Power Company, Pittsburgh, Pa., has declared its regular quarterly dividend of 1½ per cent on its 6 per cent cumulative preferred stock, payable on Feb. 15 to stockholders of record of Jan. 16, 1922, and also a dividend of 1½ per cent on account of dividends in arrears accumulated upon its preferred stocks prior to 1917.

Mexican Property Transferred.—The Chihuahua Electric & Railway Company, Chihuahua, Mexico, has been taken over by R. Lopez Negrete, Durango, and his associates. The holdings include the local electric light and power plant and street railway system. The new owners plan to install new machinery and equipment and to rehabilitate and extend the electric railway lines. During the revolutionary period in Mexico the property underwent heavy losses.

Railway Patrons Seek Tax Reduction.—Citizens along the Defiance branch of the Indiana, Columbus & Eastern Traction Company, which the company has petitioned to abandon, will soon file a petition with the State Tax Commission of Ohio asking for a reduction in the valuation from approximately $800,000 to about one-third that amount. It is claimed that such a reduction will mean a saving in taxes to the Indiana, Columbus & Eastern Traction Company of $10,000 and will so reduce expenses that operation of the branch may continue.

Court Authorizes Payment of Back Interest.—The bondholders' protective committee of securities and corporations included in the Pittsburgh (Pa.) Railways system announces that the United States District Court for the western district of Pennsylvania has signed an order authorizing the receivers of the Pittsburgh Railways to pay one year's back interest on the United Traction Company general mortgage 5 per cent bonds. The two instalments to be paid are July 1, 1919, and Jan. 1, 1920.

Memphis Reports Profit.—The Memphis (Tenn.) Street Railway in November made a profit of $5,276 over and above the 6½ per cent allowed by the Public Utilities Commission. A report of November operations shows a total of 3,709,558 revenue passengers was carried as compared to 4,147,553 in November of last year. Gross income was $261,514 against $287,844 for November, 1920. Cost of service in November, 1921, was only $256,238 while in 1920 the cost was $314,507. During the month of November, 1920, the report shows there was a deficit of $26,663.

Hudson & Manhattan Issue Authorized.—The application for the issue of $1,046,000 of first lien and refunding mortgage bonds by the Hudson & Manhattan Railroad, New York, N. Y., on or before June 30, 1922, has been approved by the Public Utility Commission. The previous utility commission issued on June 3, 1919, a certificate of approval for this issue at face value of the bonds payable on Feb. 1, 1957, bearing interest at 5 per cent. The object of the issue according to the report, is to reimburse the company for expenditures made for the construction, completion, extension or improvement of its facilities or for the discharge of its obligations.

Hearing on Receivership Application Postponed.—Judge Julius M. Mayer in the United States District Court on Dec. 21 heard the postponed application by Clarence Venner for the appointment of a receiver for the Interborough Rapid Transit Company, New York, N. Y. Judge Mayer set Jan. 30 as the time when arguments on the application will be heard. He also set Jan. 20 as the date when all answers to bills must be filed and Jan. 26 when reply affidavits should be served on J. L. Quackenbush, attorney for the Interborough. Mr. Quackenbush reported to the court the following conditions on Interborough notes: $36,155,900 deposited for extensions, $38,144,400 total, showing that 94.79 per cent have been deposited, leaving $1,988,500 outstanding. He also stated that since the hearing before the court on Oct. 27, $712,900 of notes have been deposited and that $7,144,000 have been deposited since the application for the appointment of a receiver was first made by Mr. Venner.

$5,000,000 Columbus Issue Offered.—Harris, Forbes & Company, New York, N. Y., and Elston, Allyn & Company, Chicago, Ill., offered for subscription on Dec. 22 $5,000,00 of refunding mortgage gold bonds, 6 per cent series, due 1941, of the Columbus Railway, Power & Light Company, Columbus, Ohio. The subscription price was 93½ and interest, yielding about 6.60 per cent. The proceeds, it was announced, would be used to take up floating debts and to provide other funds. The bankers explained that the gross earnings of the company for the year ended Nov. 30, 1921, were more than $6,900,000, and the net earnings more than three times the annual interest charges on funded debt with the public, including this issue. More than 59 per cent of the net earnings were derived from the electric light and power business, and such net earnings alone amounted to more than three times the annual interest charges on all first refunding and extension bonds outstanding with the public and this issue of refunding mortgage bonds.

Traffic and Transportation

Improvements in Prospect

Detroit Mayor Suggests a Combination Bus-Railway Service for Rapid Transit and to Relieve Congestion

With the joint use of certain of the street car lines arranged between the city of Detroit, Mich., and the Detroit United Railway, and the universal transfer effective between the company's lines and the M. O. lines, Mayor James Couzens announced some views as to methods which he believes will further improve Detroit's street car service. Among the further steps advocated by the Mayor are the establishing of city bus lines and the turning of interurban cars and interurban buses at local terminals to be established at the city limits.

The new idea is to combine buses and street car service all under municipal control. Electric railway lines are to be maintained on the main thoroughfares as at present. In between the main lines would be bus lines taking parallel streets, or zig-zagging along the same general direction. The latter, it is cited, would serve more people by covering more territory. The long distance traffic would be handled by street cars and the short by buses, making fewer stops necessary for the cars within a two-mile radius from the city hall. This, it is believed, would result in more rapid service and relieve congestion.

If the city acquires a bus system, it is planned to issue transfers from the cars to the buses. The buses may also be used during the rush hours to augment street car service on the main arteries of traffic, branching out to the parallel streets during other periods of the day.

It is the Mayor's belief that the bus lines could be operated more economically by the city than by the private companies, with both cars and buses operated by the M. O. general operating staff. He further believes that it will be possible under the governing conditions to reduce the bus fare from 10 cents to 7 or 8 cents.

Nothing Succeeds Like Safety Contests

A plan started the early part of this year for the purpose of reducing accidents on the railway systems operated by the Southern Public Utilities Company, in Greenville, S. C., and Charlotte and Winston-Salem, N. C., has actually worked out very satisfactorily in reducing accidents.

Early in 1921 the company announced that prizes totaling $500 would be awarded to members of various teams among the electric railway employees of the cities above named, the awards to go to the teams with the best records. The initial contest was to run over a period of three months. Results of this contest proved so satisfactory that two other contests were then arranged, and results of the latter two are all the more remarkable considering the fact that no prizes were offered in these contests.

Results are noted by the reduction in accidents in the three cities during the third contest, completed only recently, as compared with the first contest held early in the year. At Charlotte there were ninety-six accidents during the first contest and fifty during the third. Thirty men came through with a perfect score during the first contest, and fifty-one during the third. At Winston-Salem there were 125 accidents during the first contest and fifty-one during the third; nineteen men came through with a perfect score in the first contest, and thirty-four in the third. At Greenville there were 184 accidents during the first contest and only nineteen during the third; only four men came through with a perfect score in the first contest, while twenty-six had a perfect score during the third.

All men having a perfect score in the third contest were presented with raincoats by President E. C. Marshall, who announced that results were so successful that similar safety contests will be held during 1922.

St. Paul Fare Rise Set Aside

Judge F. M. Catlin of Ramsey District Court in Minnesota on Dec. 27, set aside the order of Aug. 30 by the State Railroad & Warehouse Commission granting the St. Paul City Railway an increase in fare to more than 6 cents.

After the St. Paul City Railway had been granted an emergency rate of 7 cents by the Minnesota Railroad & Warehouse Commission, Judge J. C. Michael issued an order last September restraining the company from collecting the increased fare. The railway appealed from this order, and arguments were made on Nov. 27. This decision temporarily blocks a renewal of appeal to the Federal Court for an injunction to prevent the city from stopping collection of the higher rate. Another hearing will be held on Jan. 14. The judge held that the commission had no facts on which to base the order.

The city contended that the commission had made no effort to learn whether the costs and expenses mentioned in the application by the company were reasonable. The rate of fare has been 6 cents. Details of the case were given in the ELECTRIC RAILWAY JOURNAL for Nov. 12, page 883.

Interurban Belt Railway Urged

The construction of an interurban belt railway around Indianapolis, Ind., is being urged by prominent financiers in the vicinity. It is believed that such a line would mean a bigger future for the city for it would provide a better distribution of the freight business handled by the railway and would save millions of dollars to the interurbans and ultimately to the people of Indianapolis. Especially interested in this proposal is G. J. Marott, who claims the financing of the project would be simple if the city backed the bonds. In outlining the plan Mr. Marott said in part:

> My plan would be first to construct an interurban belt that would connect with all traction lines entering the city. All interburban freight would be distributed over this railroad, say to four stations situated at points on the belt of easy accessibility. This belt would be operated by the present street car company, under direct supervision of the city government.
>
> It would be my plan to establish a freight station at a certain point where country produce, such as potatoes, cabbage, poultry, eggs and perishables could be received and sold direct to our retailers and grocers. This station would be in charge of some one appointed by the city who would have authority to represent the consignor and sell at the best market price. Or the consignor himself could accompany his shipment and sell his own goods.

Low Fare Measure Lost

Seattle Councilmen Desert Mr. Fitzgerald in His Plea for a Five-Cent Fare

By a vote of six to two, the City Council of Seattle, Wash., has rejected the proposed ordinance prescribing a 5-cent fare for the Municipal Railway. The ordinance was proposed by C. B. Fitzgerald, chairman of the finance committee of the Council. The vote of the Council revealed the fact that the only supporter of the measure was Councilman Fitzgerald himself. Councilman Moore voted with Mr. Fitzgerald against indefinitely postponing the measure, but announced he would not cast a ballot for the ordinance, but would favor referring it to the voters at the spring election.

Mr. Fitzgerald, in explaining his ordinance, stated that the only change it provided from the existing fare rate was a reduction from 8⅓ to 5 cents, with an addition of a transfer charge of 2 cents. Under the proposed measure, however, only trainmen in uniform would be carried free instead of all employees of the utilities department.

Mr. Fitzgerald said:

> I should like to see the fare effective now and I think it was a mistake ever to increase the fare. I know there is considerable difference of opinion on the matter in the city. I believe the 8⅓-cent is more than the traffic will stand.

The reduction in fare would result in a deficit estimated by Peter Witt at $1,500,000. Mr. Witt also stated that with an expenditure of approximately $2,000,000 for new cars, tracks and improvements to the municipal railway system, a permanent saving of $1,700,000 could be effected.

D. W. Henderson superintendent of the Municipal Railway, agreed that such improvements are necessary to the system, but in connection with a reduction in fare, pointed out that if the money was available for purchase of such new cars, it would take at least a year to obtain these cars and put them in operation. Mr. Henderson favors the use of lighter cars than the ones now in use, and does not favor converting the present heavy cars into one-man cars.

Before the 5-cent fare ordinance was acted upon, leading lawyers throughout the city were consulted in regard to the legal aspects of such a move. Representatives of the firms questioned concurred in the opinion of Corporation Counsel Walter F. Meier that an inadequate fare on the railway would make the city liable to damages which would place the general fund of the city behind the $15,000,000 of bonds given to Stone & Webster for the car system. This would bring the securities up to par value, and result in a loss estimated at $7,500,000 to the people of Seattle. Counsel Meier's opinion is also concurred in by Mayor Hugh M. Caldwell, who has strongly opposed the reduction in fare, with concurrent danger of invading the general fund.

Disapproves of Overlap System

The Department of Public Utilities has dismissed the petition of the Board of Aldermen of Chicopee, Mass., for a rearrangement of the fare zones on the lines of the Holyoke Street Railway. The petitioners sought overlaps between the towns of Chicopee Falls and Chicopee Center.

It was also suggested that the fare limit on the Fairview line from Hartford Street, at the town line between South Hadley Falls and Chicopee, be moved to Montcalm Street in Chicopee, permitting a ride from Holyoke city hall of about one mile farther than at present afforded.

In dismissing the petition the department said in part:

> We have made a careful study of the situation in Chicopee as related to the entire area served by the street railway, and we think it inadvisable to establish a system of overlaps. The establishment of such overlaps necessarily would call for like treatment in other parts of the system and would postpone the time when the street railway company would be able to reduce its fares applicable to its fare limits from 6 to 5 cents. As to the situation on the Fairview line, while it is true that the fare limit from the city hall to the line between South Hadley Falls and Chicopee is somewhat short, nevertheless it is no shorter than in two other instances within the city of Holyoke.

Ten-Cent Rate Authorized

The Montana Public Service Commission has authorized the Missoula Street Railway to put a 10-cent cash fare into effect on Jan. 1. The decision also provides for the sale of tickets at 6¼ cents.

The present rate is 8 cents cash and a 7-cent ticket charge. This schedule the company claimed was inadequate. The new 10-cent fare is the same in effect in Helena and Butte.

Public Service Asks Rehearing in Jitney Case

The Public Service Railway, Newark, N. J., has asked the Court of Errors and Appeals to rehear the jitney case in which the Chancery Court was practically sustained in a decision that the railway had no right in court in seeking an injunction to prevent the alleged illegal operation of jitneys.

Because the court was equally divided in its vote on the appeal from the Chancery Court ruling, Robert H. McCarter, counsel for the company, held before the Court of Errors on Dec. 22 that "a constitutional question of great importance and affecting the right of the railway company to defend in the courts its franchise rights and privileges against illegal encroachment" has gone unanswered. Mr. McCarter said:

> By reason of the even division of the court, there is no authoritative declaration of the law, and it remains unsettled in this court where a matter of this importance should be settled, and your petitioner submits that the matter is of such great importance that there ought to be a decision in the cases that will be binding.

In his petition for rehearing Mr. McCarter pointed out that the cases were argued in the highest court during the March term and that memoranda were filed on Dec. 5 last which virtually affirmed the decree of the Court of Chancery because of the equal division. He declares, however, that one of the present judges of the court, the one that could break the tie one way or the other, was not a member of the court when argument was made and took no part in the decision.

The form Mr. McCarter took in getting the case before the court was to ask for the retention of the records in the case in the court, pending the rehearing. This was allowed upon motion of Justice Swayne. Mr. McCarter informed the court that he had filed with the sergeant-at-arms a petition for rehearing.

Separate Seniority for Safety Operators

A recent survey made by the Los Angeles (Cal.) Railway showed that in 62 per cent of a week's accidents involving safety cars the operator had worked a two-man car within a week. Twenty-nine per cent of the accidents were with cars in charge of operators who had worked on another type within twenty-four hours.

As a result of this research, all safety cars will be operated out of one division and a separate seniority list will be maintained for safety-car operators, enabling them to work on this type of car exclusively. Heretofore the safety cars have been operated out of four of the company's five carhouses.

Another step toward greater safety is being made by the Los Angeles Railway by eliminating the quarterly general choice of runs and introducing the "bid" system. The choice of runs was made according to seniority of service of trainmen, and figures of the safety bureau showed that after each choice there was an average increase of 14 per cent in accidents. This is ascribed to the fact that trainmen moved from one line to another just at the time when they were becoming familiar with the danger points and traffic conditions.

Motormen, conductors and safety-car operators made the last general choice of runs before July 1, when the "bid" system was introduced. The trainmen will hold the runs they select until a run becomes open by promotion or resignation of an employee. Then any one who wants the run may bid for it, and the man with the highest seniority will get it.

Suburban Fares Go Down in Kentucky

The Kentucky Traction & Terminal Company, Lexington, Ky., reduced fares on its suburban lines on Dec. 1. All cash fares were cut from 3.60 cents to 3.25 cents per mile, regular cash fares reduced from 3.60 cents to 3 cents per mile, and all special car rates, school tickets and commutation rates also reduced proportionately.

The new rates, given in cents, are as follows:

	Cash	Ticket
Lexington & Frankfort	90	84
Lexington & Paris	60	54
Lexington & Versailles	45	40
Lexington & Georgetown	40	35
Lexington & Nicholasville	40	35
Versailles & Frankfort	50	45

The following rates were in effect prior to Dec. 1, 1921:

	Cash	Tax
Lexington & Frankfort	$1.01	8
Lexington & Paris	0.65	5
Lexington & Versailles	0.50	4
Lexington & Georgetown	0.47	4
Lexington & Nicholasville	0.47	4
Versailles & Frankfort	0.54	4

Transportation News Notes

Tokens in Durham.—The Durham Public Service Company, Durham, N. C., will put into effect the token system of fare collection. This change is for the convenience of the patrons and for increasing the service and speed of cars.

Rehearing Scheduled.—A rehearing on the complaint of the city of Reading, Pa., against the increased fares on the lines of the Reading Transit & Light Company will be held on Jan. 3 according to a recent ruling of the Public Service Commission. In its ruling the commission has postponed the effective date of the new rates until Feb. 1.

New Schedules Deferred.—The Interstate Commerce Commission has suspended until Feb. 12 the operation of certain schedules published by the Chicago, Rock Island & Pacific Railroad and the St. Louis-San Francisco Railroad, which proposed to cancel rules providing for the absorption of switching charges assessed by the Kansas City Railways.

Wants Higher Fare.—The Sault Ste. Marie Traction Company, Saulte Ste. Marie, Mich., has petitioned the State Public Utilities Commission for a straight 7-cent fare or better. Last April the commission authorized the 7-cent fare with twenty tickets for $1. On this rate the company claims it is unable to meet expenses. It also claims a great slump in patronage.

Rehearing Granted.—The Tennessee Railroad & Public Utilities Commission has granted to the Nashville Interurban Railway a rehearing of its case, which will be heard at Nashville. The company recently filed a petition for a rehearing of its case, in which the commission ordered changes of rates and additional cars for its lines. It operates an interurban from Nashville to Franklin, Tenn., a distance of 19 miles.

Higher Fare Upheld.—The court has upheld the decision of the Public Utilities Commission in permitting the Boise Valley Traction Company, Boise, Idaho, to increase its rates on the Hill Crest loop and the Cole school line from 5 cents to 10 cents. The ruling was appealed by residents of the localities affected. Judge Reddock in his finding defended the right of the state commission to regulate and control rates. The case has been under consideration for several weeks.

Commission Reduces Special Service Rate.—In a report of the Pennsylvania Public Service Commission concerning rates charged by the Philadelphia Rapid Transit Company for operating a special funeral car, the commission holds that the charge of $25 for 4 or 5 miles is not reasonable, in comparison with a base charge of $35 for operating the same car 25 or 30 miles. In accordance with its finding, the commission ordered on Feb. 21, 1921 (report 940 just published), that the Philadelphia Rapid Transit Company reduce its rates to $45 from $60 for the service to Hillside cemetery from Philadelphia.

Legal Notes

FEDERAL DISTRICT COURT—*Federal Court Authorized to Issue Temporary Injunction Against Enforcement of Rate by State Commission.*

An uncontradicted showing that an interurban railway was losing money, though it was charging a higher rate in its interstate traffic and traffic in another state than was permitted by a state Public Service Commission's order, is sufficient, in the absence of a satisfactory explanation why the business within that state should be more profitable than the other business, to authorize a temporary injunction against the enforcement of the order prescribing the rate. The purpose of such an injunction is to maintain the status quo pending a final hearing, where the questions of law and fact are intricate and difficult and where the rights of all parties can be easily safeguarded if the injunction is wrongfully issued, while the injury to complainant would be irreparable if the injunction were wrongfully denied. [Joplin & P. Ry. Co. vs. Public Service Commission of Missouri, et al, 267 Federal Rep., 584.]

FEDERAL DISTRICT COURT — *Federal Court Cannot Fix Rate in Suit Attacking Rates Established by State Commission. Valuation on Pre-war Basis is Erroneous.*

In a suit in the federal court attacking as confiscatory rates of a public utility fixed by a state commission, the court has no rate-making power but is limited to an adjudication of the reasonableness or unreasonableness of the rate ordered. A valuation by a state public service commission of a public utility's investment, based on the original cost where that was ascertainable, and otherwise upon prices during the pre-war period, is not a reasonable method of fixing the valuation in view of the greatly increased costs since the war and of the greater rate of returns earned by other enterprises. [St. Joseph Railway, Light, Heat & Power Co. vs. Public Service Commission of State of Missouri et al., 268 Federal Rep., 267.]

INDIANA—*Last Clear Chance Doctrine Inapplicable to Passenger Standing Too Near the Track.*

An intending passenger, who took a position so near the track that he was liable to be injured and had knowledge of the approach of the car and could have retired from his dangerous position at any time before being struck, cannot recover under the doctrine of last clear chance, as the opportunity of the motorman to prevent the accident was not later in point of time than that of the intending passenger. [Union Traction Co. of Indiana vs. Smith, 127 Northeastern Rep., 308.]

MICHIGAN—*A Passenger on an Interurban Line May Assume that Tracks Intervening Between a Car and the Station Will Be Kept Safe While He Is Crossing.*

While a passenger must exercise due care for his own safety, he has a right to assume that the tracks intervening between the place where he alights from a car and the station will be kept safe while he is crossing. The mere fact that he fails to look and listen before attempting to cross does not as a matter of law constitute contributory negligence. [Terrill vs. Michigan United Traction Co., 183 Northwestern Rep., 46.]

NEW YORK—*Admission of Photograph of Mangled Body of Deceased in Death Action Manifestly Prejudicial Error.*

To admit in evidence in an action for wrongful death the photograph of the deceased lying dead in a mangled condition is error manifestly prejudicial. [Mormille vs. Brooklyn Heights Ry. Co., 183 N. Y. Supp., 87.]

NEW YORK—*Petition for Mandamus to Require Mayor to Act Need Not Show Relator Has Private Interest. Inadequacy of Car Service No Excuse for Not Enforcing Law Requiring Bus Line to Have Consent of Local Authorities.*

Petition for mandamus to compel the mayor of a city to enforce the transportation corporations law, sec. 26, so far as prohibiting bus lines operating on streets without obtaining consent of local authorities, need not show that the relator has any special interest, except that of the general public; the primary purpose of the section being protection of the streets and the local public. The operation of bus lines without the consent of the local authorities is a misdemeanor. It is no excuse for the mayor not to enforce the law mentioned that a street car company does not furnish adequate service. [People ex rel. Weatherwax vs. Wath, Mayor, 188 New York Supp., 559.]

PENNSYLVANIA—*A Motorman May Assume Pedestrian Will Avoid Danger.*

A motorman on a street car is not expected to anticipate that a pedestrian crossing the street between crossings will suddenly place himself on the track. He has also a right to believe that pedestrian will recognize superior right of travel in the car. [Gavin vs. Philadelphia Rapid Transit Co., 113 Atlantic Rep., 832.]

WISCONSIN—*Franchise Held to Permit Carriage of Freight Within City Limits.*

Where a carrier had a franchise for carrying freight to a certain street, which was the city limits, it had the right to continue carrying freight to the same street after the city limits were extended. [City of Milwaukee vs. Milwaukee Electric Railway & Light Company, 181 Northwestern Rep., 821.]

New Publications

Fire Brigades and Industrial Ventilation

Nos. 36 and 37 in the series of "Safe Practices" pamphlets issued by the National Safety Council, Chicago, Ill.

Stabilization of the Bituminous Coal Industry

Extracts from the award and recommendations of the United States Bituminous Coal Commission. 1920. 16 pp. Distributed by the Bureau of Mines in cooperation with the Council of National Defense. United States Bureau of Mines, Washington, D. C.

The Federal Water Power Act

With a history of water power legislation and a topical synopsis. Presented by Black, McKenney & Stewart, engineers, Washington, D. C.

In this pamphlet is printed an abstract from H. R. Report No. 61, 66th Congress, first session, committee on water power; a topical synopsis of the federal water power act arranged for convenient reference and the act itself.

Underground Conditions in Oil Fields

By A. W. Ambrose. Bulletin 195, Petroleum Technology 62, United States Bureau of Mines, Washington, D. C.

This compilation will be of interest to electric railway men who are dependent entirely or in part upon oil as a fuel supply, especially if they desire to be familiar with the conditions surrounding the business of oil production.

Proceedings Canadian Railway Club

Meeting of February, 1921, Montreal, Canada.

These official proceedings include the full text of the paper by D. E. Blair, superintendent of rolling stock Montreal Tramways, abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 26, entitled "Some Engineering Features of Tramway Operation," together with the discussion thereon.

Structure in Paleozoic Bituminous Coals

By Reinhardt Thiessen. Bulletin 117, United States Bureau of Mines, Washington, D. C.

This 296-page illustrated treatise on the physical characteristics of soft coal will be of interest to all coal users who wish to be informed as to the fundamental principles underlying the subject. While it is scientific in character the bulletin contains much information of a practical bearing.

Heat Transmission, Corkboard and Air Spaces

Bulletin No. 30. Pennsylvania State College, Harrisburg, Pa. 140 pages.

This bulletin is a report of work completed during the past year and a half at the thermal testing plant of the Pennsylvania State College. It includes a statement of the problem of heat transmission as applied to insulating and building materials. An extended bibliography is a part of this bulletin.

Personal Mention

Joins Mexico Road

C. K. Bowen, Engineer of the Pacific Electric, Enters the Service of Southern Pacific of Mexico

Charles K. Bowen, assistant engineer of the Pacific Electric Railway, Los Angeles, Cal., has been appointed special engineer of the Southern Pacific of Mexico, as was announced in the ELECTRIC RAILWAY JOURNAL for Dec. 10. Only recently H. B. Titcomb, former vice-president of Pacific Electric Railway, was made president of the Southern Pacific of Mexico.

Mr. Bowen will have charge of all reconstruction and new construction of Southern Pacific lines in the Southern Republic, on which work, it is understood, several million dollars will be spent almost immediately.

Mr. Bowen started service with the Pacific Electric Railway in 1903 as a draftsman. Prior to that he was with the Santa Fé Railroad.

He graduated from the Agricultural and Mechanical College of Texas as a civil engineer in 1899. Entering the Santa Fé service, he worked his way up until in 1902 he was assistant engineer in charge of construction.

In 1903 he joined the engineering staff of the Pacific Electric Railway as draftsman. From 1906 to 1908 he was chief draftsman. From 1908 to 1913 he was field engineer on location and construction. In 1913 and 1914, as acting chief engineer, he had charge of the construction of the Riverside-Colton-San Bernardino line, Riverside-Corona line, and other extension work, which cost in the aggregate several million dollars.

Several years later he was transferred to the maintenance of way department, in charge of general engineering matters.

In 1918 he was commissioned captain of engineers, U. S. Army, and attended officers' training school at Camp Humphries, Virginia. When the armistice was signed Captain Bowen was commanding officer of Company D. 81st Engineers, at Fort Benjamin Harrison. Mustered out, he resumed his connections with the Pacific Electric Railway, from which he now is going up a notch in the railroad ladder, following his former chief, H. B. Titcomb.

Mr. Bowen will be located at Tucson, Ariz.

New President of Kentucky Utilities Association

L. B. Herrington, the newly elected president of the Kentucky Association of Public Utilities, enters that position with much experience in the problems of the utilities. After serving as president of the Richmond Electric & Power Company, Richmond. Ky., Mr. Herrington joined the Kentucky Utilities Company, Louisville, Ky. He has twice represented Madison County in the Kentucky Legislature and was presidential elector from the Eighth Congressional District in 1916. Mr. Herrington is now president of the Electric Transmission Company of Virginia, operating extensively in the coal fields of Lee and Wise Counties; president of the Kentucky Light & Power Company, which operates five utilities in western Kentucky, and also vice-president in charge of operations of the Kentucky Utilities Company, which serves thirty-seven cities and towns in Kentucky and the coal fields of the southeastern and western part of the state.

John Stoll, Lexington, is the new first vice-president and W. H. Harton, general manager of Cincinnati, Newport & Covington Railway, Newport, Ky., was elected second vice-president.

Elected to Vice-Presidency

Frank Karr, Chief Counsel of Pacific Electric Railway, Was Also Made a Director

FRANK KARR

Frank Karr, who for the past seven years has been chief counsel of the Pacific Electric Railway, Los Angeles, Cal., was elected a director and second vice-president of the company at a meeting of its board of directors on Dec. 13. Mr. Karr has been in the service of the company for many years, having been actively identified with the consolidation of the predecessor electric lines into the Pacific Electric Railway in 1911. He also handled the legal questions growing out of the period of construction immediately following the consolidation.

Since his appointment as chief counsel, he has had control of the very involved and extensive litigation that necessarily falls to the lot of a public utility company, and it is generally known in railroad circles that his unusual fairness in handling these matters has increased the railway's circle of friends and had a great deal to do with his selection for the new office.

Mr. Karr was born and reared at Hayworth, Ill. After completing his preliminary education in the Illinois State Normal School, he taught school in Illinois for four years. He came to California in 1898 and studied law at Stanford University for three years. He was admitted to the bar of California in 1901 and late that year located at San Pedro, where he was city attorney from May, 1902, until May, 1906.

Albany Operators Promoted

Ernest Murphy Becomes Assistant General Manager and R. A. Nash Superintendent of Equipment

Albert E. Reynolds, general manager of the United Traction Company, Albany, N. Y., on Dec. 7 announced the appointment of Ernest A. Murphy to the newly created position of assistant general manager in charge of the mechanical, electrical and roadway departments. Mr. Murphy has been superintendent of equipment for the company since 1917.

Mr. Reynolds also announced the promotion of Robert A. Nash, superintendent of shops, to succeed Mr. Murphy as superintendent of equipment. In creating the new position which Mr. Murphy will fill, Mr. Reynolds pointed out that the extensive territory of the traction company necessitates a vast amount of engineering work of highly technical character and the appointment of Mr. Murphy will co-ordinate the work under one head.

Mr. Murphy is well known in railroad and engineering circles and has had extensive experience. He is a graduate of Manchester Institute, England, from which he obtained degrees of electrical and mechanical engineering. He began his career with the London Metropolitan Railway and figured prominently in the electrification of the London tramways.

His first position in this country was with the Chicago Elevated Railroad, where he specialized in automatic train control and installed that system on the "L" trains. This work completed, Mr. Murphy became a member of the engineering staff of the Illinois Traction System and later assisted in equipping the Pittsburg, Harmony, Butler & New Castle Railway, Pittsburgh, Pa. Mr. Murphy was appointed superintendent of the electrical department of the Interborough Rapid Transit Company, New York, in 1913, from which position he came to Albany. As head of the equipment department of the United Traction Company, Mr. Murphy organized a car building plant which constructed a number of cars now in service on various lines. He also introduced many improvements in shop methods.

Robert A. Nash, Mr. Murphy's successor as superintendent of equipment, has been with the United Traction Company since his graduation as a mechanical engineer from Rutgers college in 1916. He has held the positions of chief inspector of equipment and superintendent of shops. During the war Mr. Nash served in the navy, graduating from the Naval School of Steam Engineering with the rank of ensign, later being assigned to the U. S. S. Cuyama as engineering officer. Mr. Nash is nationally known as a football player. As a member of Rutgers team he was Walter Camp's selection for all-American tackle for two seasons.

W. F. Finley, Jr., vice-president of the American Water Works & Electric Company, New York, was elected a manager of the American Society of Mechanical Engineers at its annual meeting held in New York in December. Mr. Finley was formerly connected with the Interborough Rapid Transit Company, New York, entering the service of the company soon after his graduation with the degree of mechanical engineer from Cornell University in 1904. His first work with the Interborough was in connection with the construction of the Fifty-ninth Street power station. He later assisted in experimental and research work in connection with schemes for the development of that station and the promotion of its efficiency. In 1909 Mr. Finley left the Interborough to go into engineering work with the New England Engineering Company, and subsequently became associated with his father in commercial work, returning to the Interborough company in 1915 to take charge of the installation of turbines and of auxiliary mechanical equipment necessitated by the extensions to the subway and elevated systems. He was subsequently appointed superintendent of motor power of this company, and in addition to supervising operation of its power-generating system he had charge of the engineering and construction work coming within the scope and control of the department. In 1920 he resigned from the Interborough to become vice-president of the American Water Works & Electric Company.

Obituary

Thomas L. Childs, the sole promoter of the Canton-Akron Railway, Akron, Ohio, died recently in Akron. He was born in Leeds, England, in 1850, but came to the United States in 1864. The electric railway which he promoted is one of those which were later consolidated into the Northern Ohio Light & Traction Company.

Edward W. Fitzgerald, sixty-five years old, for many years associated with the claims department of the South Covington & Cincinnati Street Railway, Covington, Ky., died at his home in Covington, Ky., after a prolonged illness. He retired from business life last August, just about the time he was to receive an appointment in the internal revenue department in Kentucky.

John Wheeler Duntley, fifty-five years old, founder of the Chicago Pneumatic Tool Company, was killed in Chicago on Dec. 15 by an automobile truck. Mr. Duntley was one of the first men to bring pneumatic tools into use, working with Charles M. Schwab to place them on the market. He established the Chicago Pneumatic Tool Company in 1884 and was president of the company until 1909.

George Herpick, age sixty-nine, a former Indianapolis resident and for thirteen years superintendent of the old Citizens' Street Railway, died recently at his home in Miami, Fla. Mr. Herpick was born in Cumberland, Md., May 8, 1852, and spent most of his early life in that city. He moved to Indianapolis in 1878 to accept the position of superintendent of the Citizens' Street Railway. Later he was appointed Street Commissioner by Thomas Taggart, Mayor of Indianapolis, and he served in that capacity during Mr. Taggart's administration. Following that he became engaged in a general contracting business which he had founded, and later was connected with Myers & Herpick, a coal company. About a year ago he moved to Miami.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Large Copper Merger Planned

Plans for what is thought to be one of the most important mergers affecting the electrical industry in some years were announced recently when large stockholding interests of the Anaconda Copper Mining Company and the American Brass Company met in New York to discuss a merger of the latter company with the Anaconda company. This will be accomplished, according to John A. Coe, president of the brass concern, through the offering to American Brass shareholders of an opportunity to obtain in the near future an option to dispose of their holdings to the Anaconda company at $150 cash per share and three shares of Anaconda. Figuring each share of Anaconda worth $50, the transaction will involve a total payment to American Brass shareholders of $45,000,000.

This offer, it was stated, will be conditional upon the deposit of at least 51 per cent of the outstanding American Brass capital stock. The period in which these shareholders may signify their assent to the deal will probably last through January.

Representatives of the stockholders unanimously approved the merger plan, subject to working out of the details. If and when the consolidation is completed. the American Brass working organization will continue as at present.

The American Brass Company, it was stated by John D. Ryan, chairman of the board of the Anaconda company, is the largest single consumer of copper and zinc in the world, while the Anaconda is the largest single producer. American Brass in its peak year turned out 600,000,000 lb. of the metal, or 40 per cent of the country's entire output. Negotiations for the acquisition of the brass company have been going on for the past six months, he said, and a letter will soon be sent out to Anaconda stockholders, asking them to approve the transaction.

Would Settle Reparations with Electrification Material

Reports forwarded by Assistant Commercial Attaché Osborne of Rome indicate that the Director-General of the Italian State Railways is suggesting that the government have the reparations account settled in part by requiring the Germans to hand over the material which could be used in electrifying the government railways. The office of the auditor-general is said to oppose this means of settlement and to consider it preferable to have the adjustment of reparations made on a strictly money basis. Plans, according to the report, have been completed for the electrification of the Bologna-Verona-Brenner, the Pisa-Leghorn and the Venezia-Giulia lines, as well as for a shortened route between Rome and Naples. Studies are being made for the possible electrification of the Naples-Reggio, Calabria and Paola-Cosenza lines. The director of railways is negotiating with the ministry of the treasury to obtain necessary funds to carry out this extensive program. According to a report received from Commercial Attaché H. C. MacLean of Rome, the *Official Gazette* of Oct. 1 published law decree No. 1,298, whereby the State Railway administration is authorized to expend the sum of 160,000,000 lire (about $6,400,000 at present exchange) for the purchase of 120 electric locomotives.

Friction Tape Market Outlook Brighter

Signs of increasing confidence in the friction tape market are apparent and the outlook for next year is very promising. Business began to pick up well in September and with some fluctuations has continued to hold good gains since. Buying is somewhat more free. Some manufacturing is being done for factory stocks in order to make prompt shipments. Orders from abroad are gaining somewhat, Australia and other points having made commitments regardless of the exchange situation. Raw materials are more costly than earlier in the year, and some stiffening in prices is not unexpected.

Large Increase in Number of Idle Cars

Reports just received by the car service division of the American Railway Association showed that 531,337 freight cars were idle because of business conditions on Dec. 15. This was an increase of 31,689 cars within a week.

Of the total, 371,221 were surplus freight cars, cars in good repair which would be placed in immediate service if necessary, compared with 339,532 on Dec. 8, while the remaining 160,116 were idle cars which are in bad order.

Surplus box cars totaled 130,214, an increase of 8.219 compared with the total on Dec. 8 while surplus coal cars numbered 186,508, an increase of 20,445 within the same period.

Street Railway Improvements in Lyon, France

Enlargements and betterments of the trolley system of Lyon have been proposed to the Municipal Council by the Compagnie des Omnibus et Tramways de Lyon, according to an announcement in *Commerce Reports*. The estimated cost is from 35,000,000 to 40,000,000 francs. It is planned to guarantee the loan of the necessary capital by the imposition of a tax of 5 centimes on each car fare, and it is estimated the tax will bring returns of from 6,000,000 to 7,000,000 francs annually.

Railway Electrification in South Africa to Proceed

Cable advice from Trade Commissioner P. J. Stevenson, Johannesburg, South Africa, according to *Commerce Reports*, states that the railway board has decided to go ahead with the electrification of the Durban-Glencoe line at a cost of £5,000,000 ($24,332,500).

Rolling Stock

Community Traction Company, Toledo, Ohio, now has under way tentative negotiations for the purchase of fifty one-man safety cars, according to a report made on Dec. 15 by Commissioner Cann to the board of control.

Cincinnati & Dayton Traction Company, Hamilton, Ohio, has in prospect the purchase of twenty new one-man cars following the application of George P. Sohngen, receiver, in the Court of Appeals for the necessary authority to buy the new rolling stock.

Georgia Railway & Power Company, Atlanta, Ga., has furnished the following equipment details of four double-truck interurban motor cars which were ordered last year but were not delivered until several months ago:

Number of cars ordered	4
Name of road	Georgia Railway & Power Company
Date order was placed	Feb. 17, 1920
Date of delivery	May, 1821
Builders of car body	Cincinnati Car Company
Type of car	Double-truck interurban motor car
Seating capacity	60
Weight:	
Car body	21,720 lb.
Trucks	18,520 lb.
Equipment	16,000 lb.
Miscellaneous	2,500 lb.
Total	58,740 lb.
Bolster centers, length	27 ft. 0 in.
Length over all	50 ft. 0 in.
Truck wheelbase	6 ft. 6 in.
Width over all	8 ft. 2½ in.
Height, rail to trolley base	11 ft. 4 in
Interior trim	Natural cherry
Body	Steel
Headlining	Nevasplit
Roof	Arch
Equipment:	
Air brakes	Westinghouse Traction Brake AMM
Armature bearings	Sleeve
Axles	M. C. B. 6-in. wheel fit
Car signal system	Westinghouse 8 T pneumatic
Car Trimming	Dayton Mfg. Co.—Bronze, oxidized
Center and side bearings	Symington
Conduit & junction boxes	Westinghouse
Control	Westinghouse HL
Couplers	Van Dorn
Curtain fixtures	Curtain Supply Co., No. 89
Curtain material	Fabrikoid
Destination signs	Keystone
Door operating mechanism	None
Fare boxes	None
Fenders or wheel guards	Pilot, Cincinnati Car Co.
Gears and pinions	Westinghouse
Hand brakes	Dayton door handle
Heater equipment	Consolidated Car Co., Thermostat
Head lights	Ohio Brass Arc
Journal bearings	M. C. B.
Journal boxes	J. G. Brill
Lightning arresters	Westinghouse
Motors, type and number	Westinghouse 548-C-B-8, 100-hp., 4 per car
Motors, outside or inside hung	Inside
Paint, varnish and enamel	Oil and varnish
Registers	Ohmer
Sanders	Ohio Brass Co.
Sash fixtures	O. M. Edwards, Locas
Seats	Hale & Kilburn, 400 AWD
Seating material	Rattan
Slack Adjusters	Anderson
Springs	J. G. Brill
Step treads	Mason safety treads
Trolley catchers or retrievers	Knutson Retriever
Trolley bases	Ohio Brass
Trolley wheels	Sleeve wheels
Trucks	Brill 27 M. C. B.
Ventilation	Utility
Wheels	type or size 33 in steel tire

Georgia Railway & Power Company, Atlanta, Ga., has given out the following data on eight double-truck city prepayment cars which were received during 1921:

Number of cars ordered	8
Name of road	Georgia Railway & Power Co.
Date order was placed	Feb., 1920
Date of delivery	During 1921
Builder of car body	Cincinnati Car Co.
Type of car	Double-truck, double-end city prepayment
Seating capacity	48
Weight:	
Car body	16,000 lb.
Trucks	13,000 lb.
Equipment	11,000 lb.
Total	40,000 lb.
Bolster centers, length	20 ft. 6 in.
Length over all	44 ft. 6 in.
Truck wheelbase	4 ft. 10 in.
Width over all	8 ft. 1 in.
Height, rail to trolley base	11 ft. 6⅜ in.
Body, wood, semi-steel, or all steel	Steel
Interior trim	Natural cherry
Headlining	Nevasplit
Roof, arch or monitor	Arch
Equipment:	
Air brakes	Westinghouse Traction Brake Company
Armature bearings (if ball or roller)	Sleeve
Axles	J. G. Brill
Car signal system	Farraday
Car trimmings	Dayton Mfg. Co., Bronze
Center and side bearings	Symington
Conduits and junction boxes	Flexiduct
Control	K-35 and K-6 with line switch
Couplers	Van Dorn 21
Curtain fixtures	Curtain Supply Co.
Curtain material	O'Bannon
Designation signs	Keystone-Hunter
Door Operating mechanism	Cincinnati Car Co.
Fare boxes	None
Fenders or wheelguards	H. B. life guards
Gears and pinions	Westinghouse
Hand brakes	Door handle
Heater equipment	Consolidated L-5 Thermostat
Headlights	Electric Service Supply Company, SR-95 Golden Glow
Journal bearings	Sleeve
Journal boxes	J. G. Brill
Lightning arresters	Westinghouse MP
Motors, type and number	Westinghouse 514-C, 40-hp. 4 per car
Motors, outside or inside hung	Outside hung
Paint, varnish or enamel	Flat color and Ry. finish varnish
Registers	Ohmer
Sanders	Ohio brass
Sash fixtures	O. M. Edwards, Bronze
Seats	Hale & Kilburn, 400-A-O-W
Seating material	Wood frame, rattan panel seat
Slack adjuster	Anderson
Springs	J. G. Brill
Step treads	Mason
Trolley catchers or retrievers	Keystone
Trolley base	Ohio brass
Trolley wheels or shoes	Wheels
Trucks	Brill 76 F.E.&I.
Ventilators	Railway Utility Company
Wheels (type and size)	Cast iron, 33 in.

Track and Roadway

Hydro-Electric Commission, Ont., Canada, will remove tracks on Wellington Avenue, Windsor to the center of the street and will repair the tracks on East Sandwich Street.

Pacific Electric Railway, Los Angeles, Cal., has been granted a permit to construct and operate certain railroad spur tracks across Mission Road and Elliott Street in Los Angeles.

Cincinnati & Dayton Traction Company, Hamilton, Ohio, is seeking authority through its receiver, George P. Sohngen, to spend $9,300 for repairs to track and equipment.

New Orleans Railway & Light Company, New Orleans, La., will relay the Carondelet tracks from Canal Street to Howard Avenue. The work will start immediately after the holiday season and will cost approximately $78,000.

Indiana Service Corporation Fort Wayne, Ind., has started extensive repairs on its Pontiac Street line in Fort Wayne. Only temporary repairs will be made this winter as the line will probably be moved in the spring.

Los Angeles (Cal.) Railway is installing a new intersection at Twelfth and Maple Streets. The Melrose track from Heliotrope to the end of the line is being rebuilt with new ties and ballast, and similar work is being done on Ascot Avenue between Vernon Avenue and Forty-eighth Street.

Municipal Railway of San Francisco, Cal., is to proceed with the construction of the Taraval and Masonic Avenue extensions of its system. The engineering department has drawn up specifications and bids are to be called for very shortly on ties, rails and other track material.

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., will build an extension from Rushville, Ind., as soon as business conditions warrant. The Rapid Transit Commission has for some time had assurance from C. L. Henry, president of the company, that a connection would be built into Cincinnati as soon as the rapid transit loop was completed. The Henry plan is to utilize the old Cincinnati & Westwood Railway in making the connection with the loop near Brighton, a suburb of Cincinnati.

Power Houses, Shops and Buildings

Miami Beach Electric Railway, Miami, Fla., will build "courtesy stations," 20 ft. wide and 10 ft. deep, provided with seats, where there will be comfort and shelter for patrons.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has announced that it has received a contract from the city of Philadelphia, Pa., amounting to approximately $100,000 for the furnishing and installing of rotary converters and transformers for two substations on the line of the Frankfort Elevated. This equipment will be built at the East Pittsburgh works.

Professional Notes

Leo Hudson and John P. Myron have formed a partnership for the practice of engineering under the firm name of Hudson & Myron, Engineers, with offices at 808-810 Wabash Building, Pittsburgh, Pa. Mr. Hudson has been in private practice for the last fifteen years, principally on waterworks, sewerage, power plants, valuations and rates. Mr. Myron, until recently, was, for a period of over seventeen years, connected with the Pittsburgh Filter & Engineering Company as secretary and engineer.

Albert W. Smith, formerly dean of Sibley College, Cornell University, is now connected as consulting engineer with the firm of Henry R. Kent & Company, engineers and constructors, of New York and Boston. Dean Smith's work will be particularly in consulting on thermodynamics and mechanical engineer of chemical plants. He was for twelve years professor of mechanical engineering in Leland Stanford, Jr., University in California, leaving there in 1904 when he was called to Cornell as dean of Sibley College. During the interval between the resignation of President Schurman and the recent inauguration of President Farraud, about a year and a half, Dean Smith was acting president of Cornell.

Trade Notes

Combustion Engineering Corporation, New York, has opened a new branch office at 806 First National Bank Building, Pittsburgh, Pa. This office will be in charge of W. C. Stripe, formerly manager of the Philadelphia office of the company.

Wilson Welder & Metals Company has moved its general offices and Bush Terminal factory to 132 King Street, New York. Improved special equipment has been installed in the new location to enable the company to handle its arc-welding metals more efficiently. Also a room has been equipped for demonstration purposes.

Okonite Company, Passaic, N. J., manufacturers of insulated wires and cables, tape and loom, has opened a branch office at 1513 Candler Building, Atlanta, Ga. The branch is to be in charge of John L. Phillips, while E. A. Thornwell will be Southeastern sales representative. The territory served by this office includes North and South Carolina, Georgia, Tennessee, Alabama, Florida and the city of New Orleans.

New Advertising Literature

Pawling & Harnischfeger Company, Milwaukee, Wis., has just issued Bulletin No. 4F, describing its new horizontal boring, drilling and milling machine, which was recently described in detail in this publication.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., is now distributing Catalogue 12-A, the subject of which is "Safety Switches and Panel Boards." This catalogue is illustrated with views of installations of safety switches in the shop, in the office and in the home. Some of the subjects that are discussed are the railway type safety panel boards, the safety-car lighting panels, the auto-lock control panels, the dead-front and dead-rear safety switchboards, the live-front knife switches and many other devices.

ELECTRIC RAILWAY JOURNAL

JAN 3 1922

Guaranteed Not to Fail

What a source of satisfaction it must be to a railway manager to know that his "safeties" are Boyerized throughout with brake pins and bushings!

Yes, and what's more,

the largest railways in the U. S. are specifying Boyerized products because it enables them to cut down accident expense and to lower the cost of upkeep.

One trial order will convince you.

Bemis Car Truck Company
Electric Railway Supplies
Springfield, Mass.

Boyerized Specialties

- **Brake Hangers**
- **Lever Pins**
- **Bushings**
- **Wearing Plates**
- **Brake Heads**
- **Door Fixture Pins**

New Years Resolutions

"JOE" said the Vice President, "I want to get your comments on the resolutions I have drawn up for the whole organization for the coming year. Here they are:

1. Better service to the public.
2. Full and open publicity.
3. Closer cooperation with all civic bodies in the communities we serve.
4. More scientific maintenance methods and records.
5. More scientific analysis and planning of car routes, greater use of train operation and safety cars.
6. Thorough engineering analysis on the use of trackless trolleys and auto buses as auxiliaries to our regular service.
7. Thorough business analysis of our freight haulage possibilities with Baldwin-Westinghouse electric locomotives.
8. Greater interest in the collection of data requested by our Association for the general good of the Industry.
9. Encourage our Master Mechanics and Supervisory Staff to attend Association conferences and exchange data with others.
10. Develop in our Staff greater and keener knowledge in the art of operation and maintenance, and depend on the manufacturers for material, supplies and renewal parts.
11. Continue and strengthen our policy of buying all renewal parts from the manufacturer who developed and furnished the apparatus.
12. Give preferential consideration in purchases to the manufacturer who renders us the best service.

"Boss" remarked Joe, "That's a masterpiece. It will stimulate everyone in the organization."

Westinghouse Electric & Manufacturing Co.

Sales Offices in All Large American Cities

East Pittsburgh, Pa.

Vol. 58, No. 27 New York, December 31, 1921 Pages 1137-1166

Electric Railway Journal

Henry W. Blake and Harold V. Bozell, Editors Henry H. Norris, Managing Editor

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Use of Graphic Records Improves Line Maintenance

The methods employed in maintaining high-tension, trolley, telephone and signal lines on the Illinois Traction system are successful and the results obtained are highly satisfactory. Graphic records form an important part of the scheme. ....Page 1139

Selling the Employee on Salesmanship

Creating a pleasant environment, forming correct habits in car operation and developing morale are the subjects of B. R. Bigelow's remaining three talks to employees on making themselves better salesmen of transportation. Page 1143

The New Jersey Commuter in the New York Subway

The commuter traffic to New York City amounts to 359,000,000 passengers annually, of whom more than 200,000 are from New Jersey, and is growing rapidly, says Daniel L. Turner. Steps to develop a rapid transit plan are recommended. ....Page 1151

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Change of Address—When change of address is ordered the new and the old address must be given. Notice must be received at least ten days before the change takes place.

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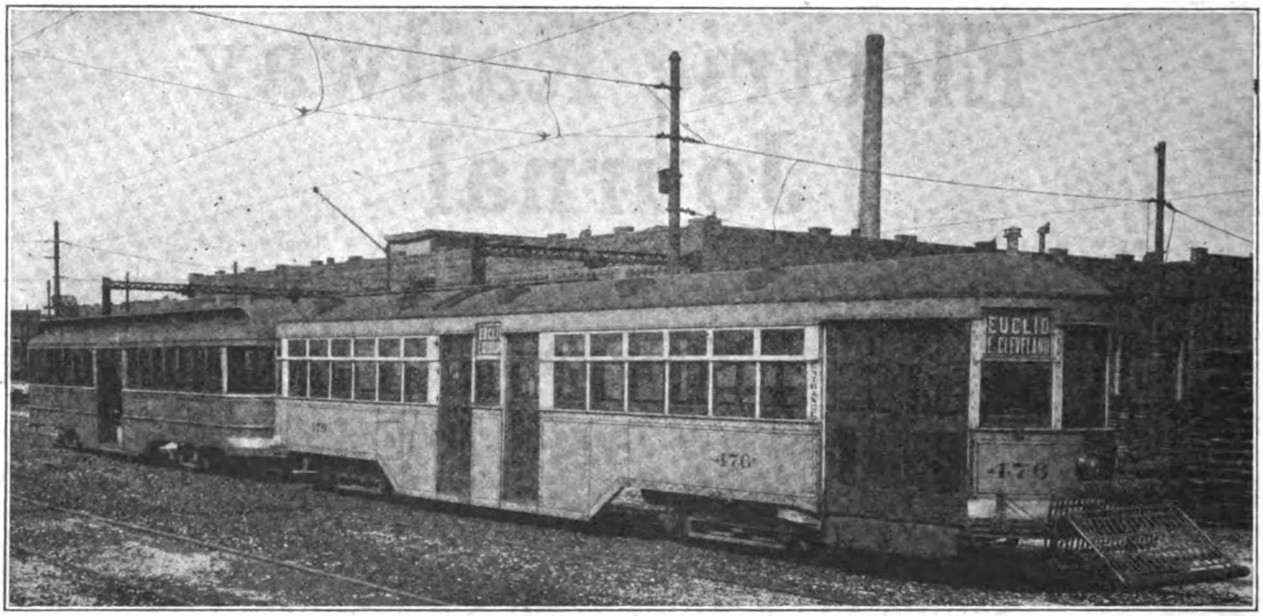


Meeting Modern Conditions

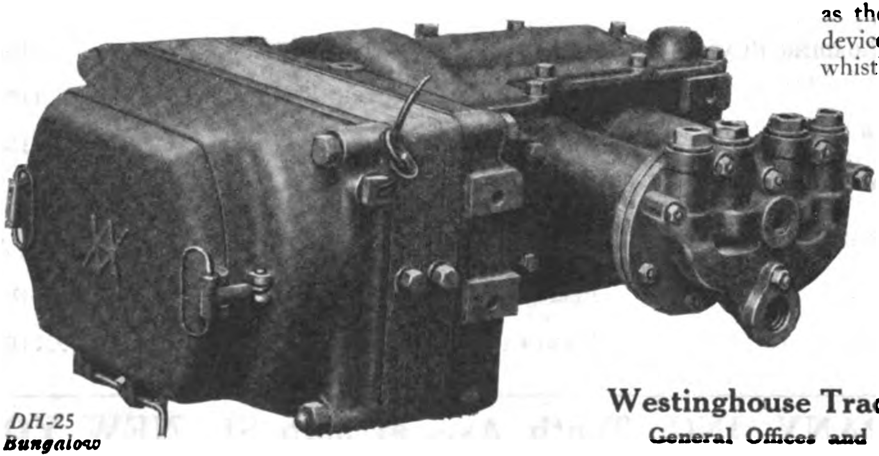
Westinghouse Bungalow Compressors were developed to meet the exigencies of street railway operation under present-day conditions.

Thus they are particularly, though not exclusively, adapted for the modern low-built car which is now generally preferred for heavy traffic lines where quick loading and unloading is an essential consideration.

In construction they combine simplicity with ruggedness, and embody new mechanical features, including a system of positive lubrication, which reduce maintenance and operating costs in a manner consistent with the prevailing urge for extreme economy.

They provide a dependable air supply sufficient in volume to meet the demand for almost constant brake manipulation in congested districts, as well as the operation of auxiliary pneumatic devices such as door engines, sanders, whistles, etc.

There is a Bungalow Compressor for every class of service. For heavy cars, operated singly or with trailers, the DH-25 is recommended as a machine which has given highly satisfactory results in every instance.



DH-25
Bungalow Compressor

Westinghouse Traction Brake Company
General Offices and Works: Wilmerding, Pa.

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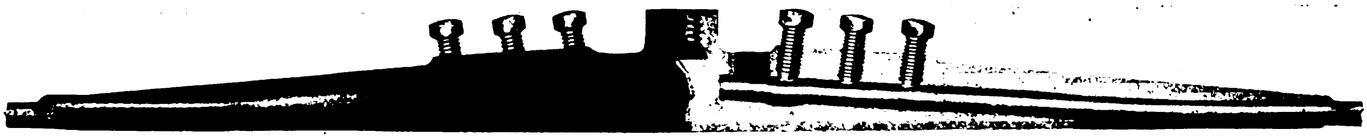
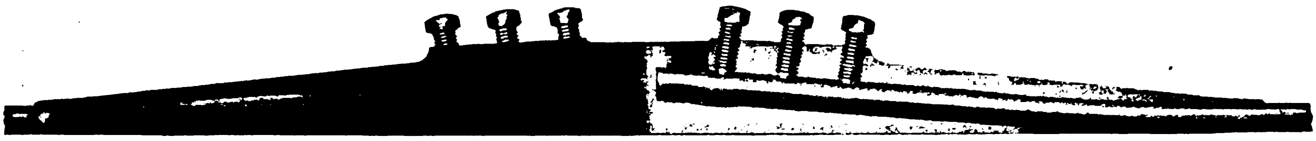
WESTINGHOUSE TRACTION BRAKES



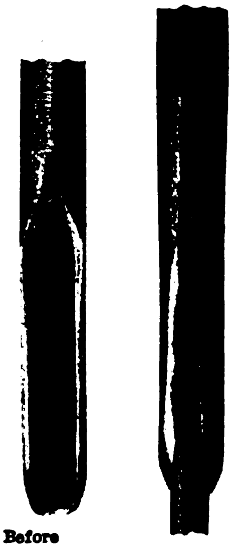
O-B Type C Splicing Ear—21 inches long—(Patented)
Shown on 2-0 Round Wire—made for all sizes of round, grooved and Figure 8 Wire.



O-B Type C Splicer—20 inches long—(Patented)
Shown on 4-0 Round Wire—made for all sizes of round, grooved and Figure 8 Wire and to take two kinds of wire.

More life, more strength, more value in O-B Improved Type C Splicers

O-B Patented Approach



Before Peening **Wire Installed**

Expect more than ever from Improved Type C Splicers—there's more value in them.

Metal has been added to the running surface—and added with scientific certainty. Enough wearing section has been provided to make the Improved C last as long as the wire. The amount of metal to be used was determined by a comparison of the physical characteristics of splicer bronze and hard drawn copper wire based on Brinnell hardness tests. A ratio was established which gives the necessary wearing life to the splicer as compared with the trolley wire itself.

Extra metal has not changed, at all, the straight away wire entrance which has always distinguished the O-B Type C. Trolley wire still enters without kink. Because the wire enters straight, a shorter approach has been made possible. This adds life and increases even more the speed of installation which is one of the main virtures of the Type C.

There have also been added to the Improved Type C, peep holes which show when the wire is clear in.

O-B Improved Type C Splicer has holding power greater than the strength of the trolley wire. It has a low center of gravity—stands upright in the span.

Worn wire can be kept in service by the Improved Type C which requires no kink and which is easy on the trolley. It has the patented O-B approach—a straight smooth underrun. Wheel clearance is excellent.

Prompt shipment.

The Ohio B Brass Co.
Mansfield, Ohio, U.S.A.

New York Philadelphia Pittsburgh Charleston, W. Va. Chicago Los Angeles San Francisco Paris, France

Products: Trolley Material, Rail Bonds, Electric Railway Car Equipment, High Tension Porcelain Insulators, Third Rail Insulators

Factors Which Govern the Proper Selection of Rail Joints in Paved Streets

Forest Hills, Mass., where Thermit Insert Welds installed nine years ago are still in excellent condition.

10—Co-operation of Rail Welding Service Organization

We have spared no efforts to build up an organization, composed of experienced track engineers, which can be called on at any time to render service and advise in all matters regarding the

THERMIT INSERT RAIL WELD

The weld which absolutely eliminates the joint, prevents cupping at this point and cuts out maintenance costs.

Our organization is also at your service for giving expert instruction in—

1. Constructing Thermit welded frogs and crossings.

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Our customers are urged to take full advantage of this opportunity for free service and instruction, as we realize fully that their interests and our interests are identical. In dealing with the Metal & Thermit Corporation you are dealing with a concern whose interest in your welfare does not cease when the order is obtained; our interest only really begins at that point and you can count on our continued efforts and earnest co-operation to turn that order into one of the most profitable investments you ever made.

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Metal & Thermit Corporation

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Save $16573.60 per mile.
"The completed track showed a saving of $3.12 per single track foot."— Mr. A. J. Stratton in The Electric Railway Journal.

Labor Costs Less With Steel Ties.
"Use of Steel Ties cuts down the amount of grading both in width and depth."—Mr. W. R. Dunham, Jr., in Maintenance of Way for Street Railways.

Track Laid in 1911 in Excellent Condition.
"There is difficulty now in finding these joints and not a single joint has given trouble."— Mr. A. S. Wolfe in The Electric Railway Journal.

Partial List of Cities in which Steel Twin Tie Track has been laid or is being laid this spring.

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Poughkeepsie, N. Y.
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Syracuse, N. Y.
El Paso, Texas
Milwaukee, Wis.
Baltimore, Md.
Cleveland, O.
Detroit, Mich.
Highwood, Ill.
Toledo, Ohio
Youngstown, O.
Cincinnati, O.
Jackson, Mich.
Pueblo, Colo.
Denver, Colo.
Salt Lake City, Utah
Charlottesville, Va.
Birmingham, Ala.
Lexington, Ky.
Louisville, Ky.

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International Products:—STEEL TWIN TIES; STEEL CROSSING FOUNDATIONS; and STEEL PAVING GUARD; are manufactured and sold for us in Canada by The Sarnia Bridge Co., Ltd., Sarnia, Ont.

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Insurance plus
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Representatives of Marsh and McLennan act as your confidential insurance advisers. They are men who have the confidence and the standing among insurance companies to plead your case, whenever they are satisfied that your rates are not a true measurement of relative fire hazards.

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Bulletin No. 167

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Railway Material and Electrical Supplies

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Faraday Car Signals
Trolley Catchers
Shelby Trolley Poles
Samson Cordage
International Fare Registers
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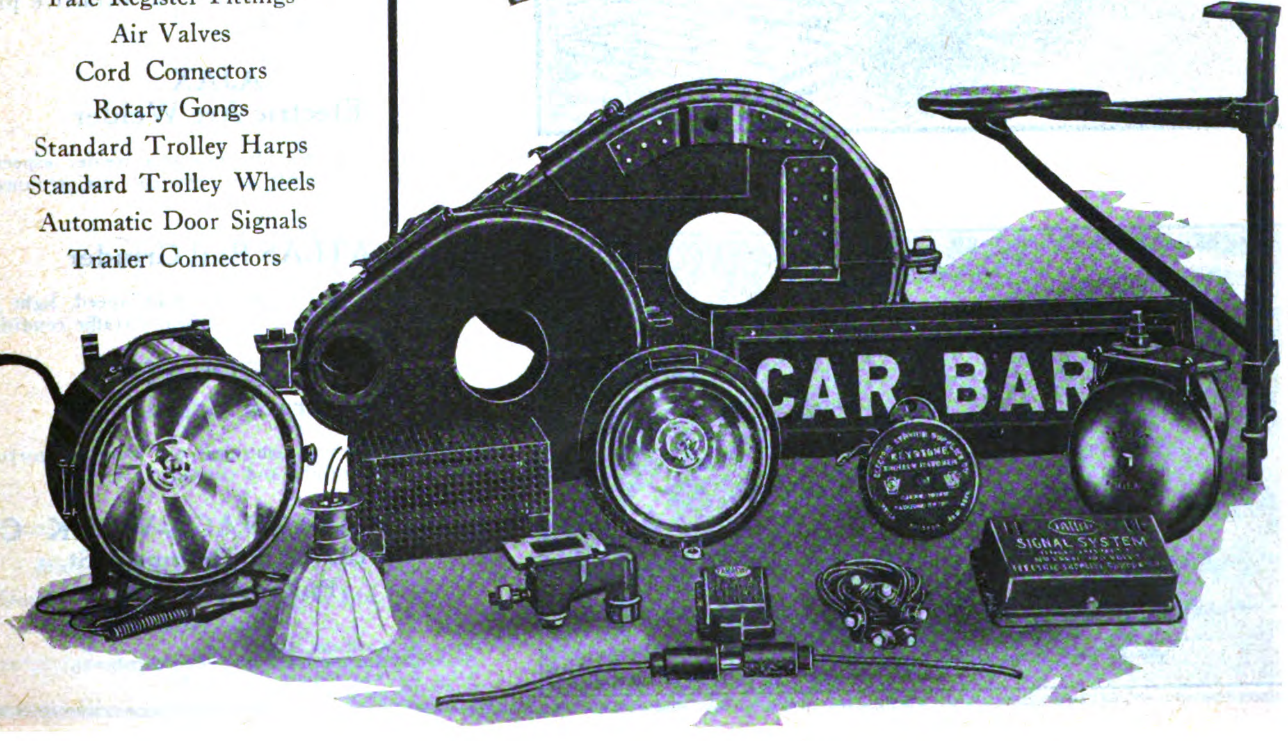
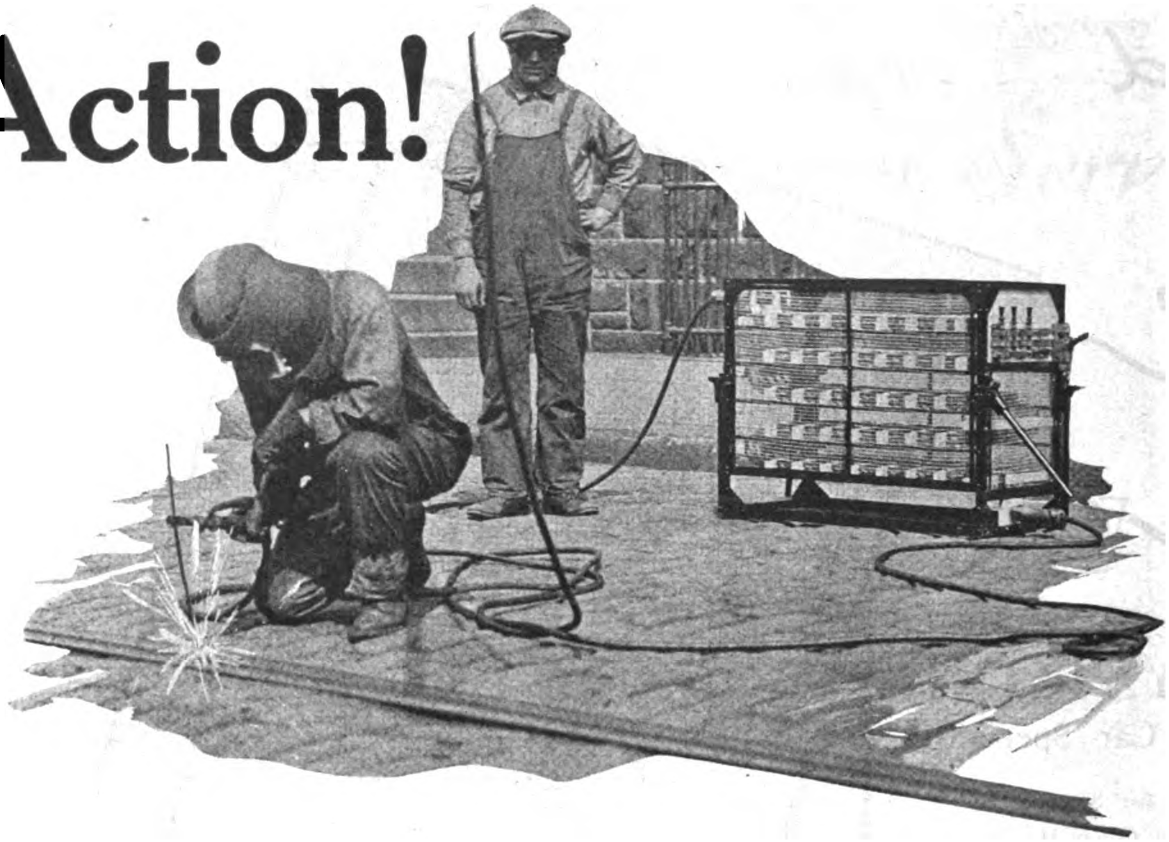
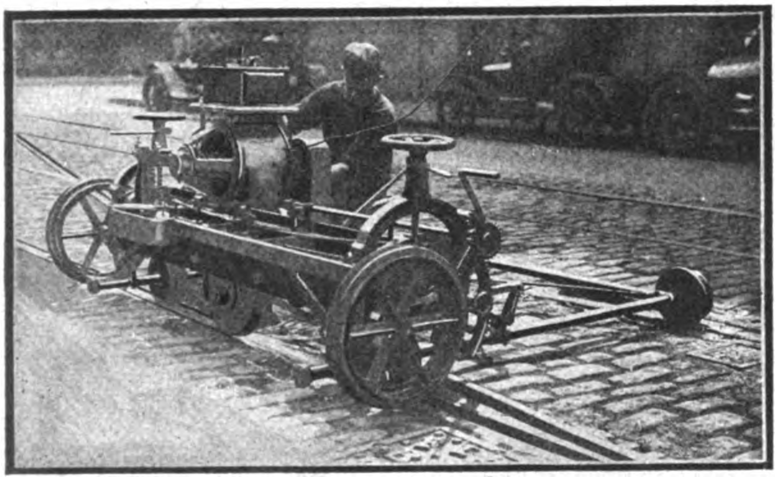
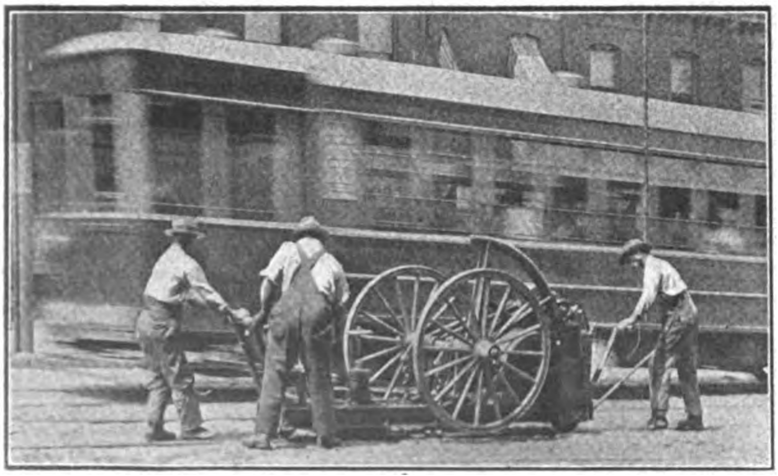
Air Valves
Cord Connectors
Rotary Gongs
Standard Trolley Harps
Standard Trolley Wheels
Automatic Door Signals
Trailer Connectors



Action!







Get Busy Now!

Don't delay that track rehabilitation any longer!

The public now expects better quality service and the rubber-tired motorbus looks pretty good in some places. Start putting your tracks in shape at once. Extra gangs can be employed now at reasonable wages and additional highest-grade welding and grinding equipment can be secured at attractive prices and for quick delivery.

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Electric Arc Welder

A 155 lb. high capacity resistance welder, especially designed and built for efficient maintenance of railway track.

ATLAS Rail Grinder

An efficient rotary grinder, high speed, light and suitable for working under heavy traffic conditions.

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Track Grinder

Unsurpassed for removing all trace of corrugations from straight and curved track.

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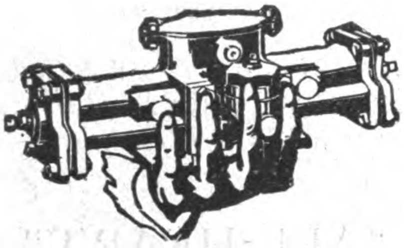
?

Modernize! *Pneumatize!*



Been to an Auto Show Lately?

How many hand-cranked cars did you see?

Not many, if any.

Seems foolish even to mention hand-cranking today, eh?

You know, we know, the people know this is the Automatic Age.

But how about the street cars in which you want to keep carrying those people for their every-day doings?

Are those cars still hand-stepped, hand-doored, hand-signalled?

If so, they're not going to "pull" people of the Automatic Age, are they?

Can we give those cars the pulling power they need?

We can, and to whatever degree of automatizing and pneumatizing your conditions may require.

Just tell us what kind of cars you have and the jobs you use 'em for so we can get together on your choice of:

National Pneumatic

Door and Step Control **Door and Step Operating Mechanisms**
Motorman's Signal Lights **Safety Interlocking Door Control**
Multiple Unit Door Control

Then, and then only, will you have YOUR 1922 car for a 1922 public!

Manufactured in Canada by
Dominion Wheel & Foundries, Ltd.
Toronto, Ont.

National Pneumatic Company, Inc.
50 Church St., New York Edison Bldg., Chicago
Works: Rahway, N. J.

WHEN RAILWAY MEN

in general, study the question of *wood durability* for other purposes, as carefully as *Railway Signal* men have studied it for *Trunking* and *Capping,* there will be a lot more

"ALL-HEART"
"TIDE WATER"
CYPRESS
"THE WOOD ETERNAL"

used for *Fencing, Ties, Crossarms, Car Material, Station Construction* and similar railroad requirements, *to the very great economy of the companies using it.*

The long service which *"All-Heart" Cypress* gives,

SAVES LABOR COSTS
FOR RENEWALS AND
REPLACEMENTS

—big items in themselves.

"All-Heart" Cypress comes nearer being decay-proof than any other wood.

This Mark S C M A
TRADE MARK REG. U.S. PAT. OFFICE

on every timber, board and bundle of Cypress is your *insurance of true replacement economy.*

The data in support of these facts will be promptly furnished upon request.

Southern Cypress Manufacturers' Association

1265 Poydras Building
New Orleans, La.

or

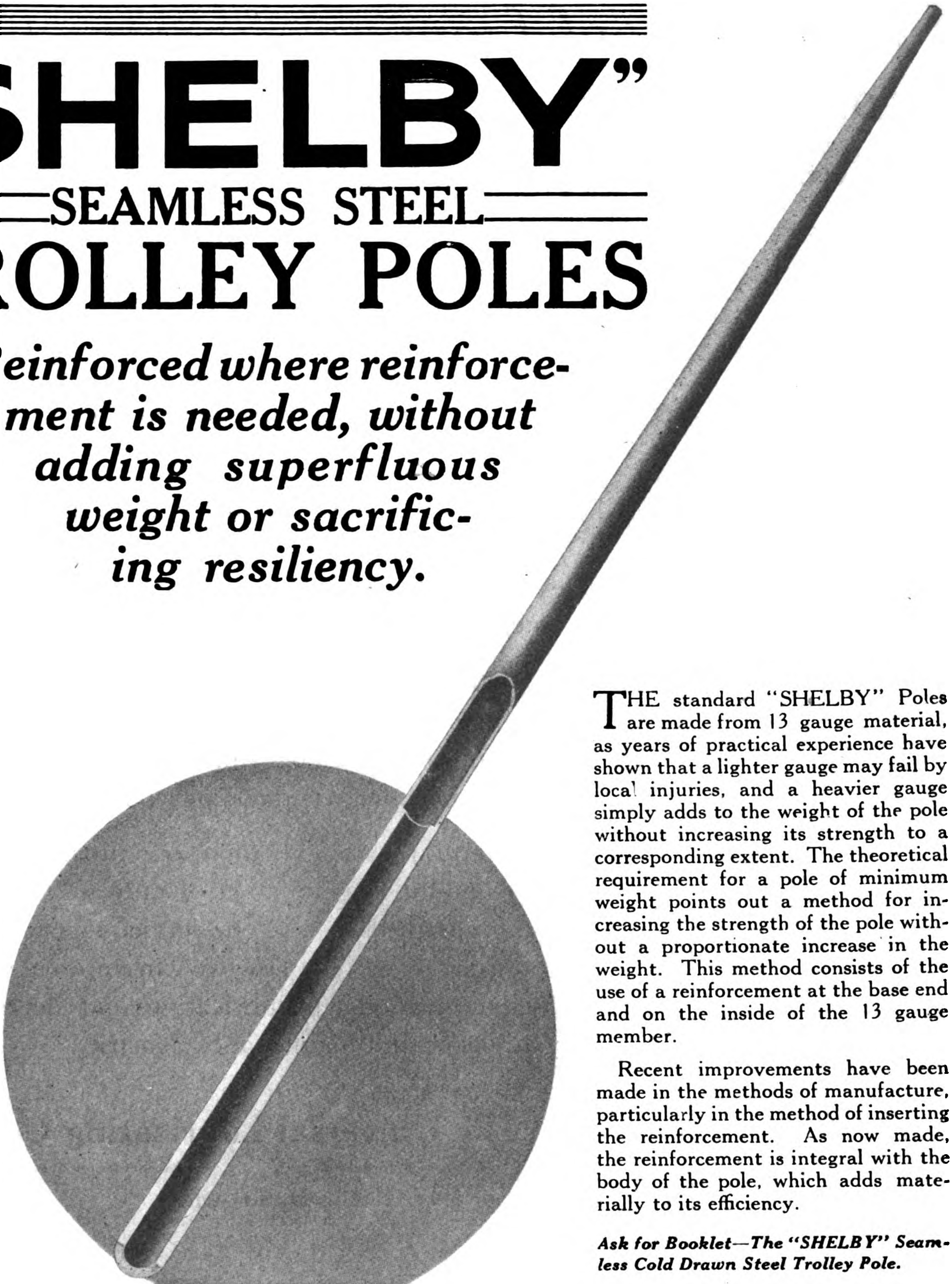
1265 Graham Building
Jacksonville, Fla.

"SHELBY"

SEAMLESS STEEL

TROLLEY POLES

Reinforced where reinforcement is needed, without adding superfluous weight or sacrificing resiliency.



THE standard "SHELBY" Poles are made from 13 gauge material, as years of practical experience have shown that a lighter gauge may fail by local injuries, and a heavier gauge simply adds to the weight of the pole without increasing its strength to a corresponding extent. The theoretical requirement for a pole of minimum weight points out a method for increasing the strength of the pole without a proportionate increase in the weight. This method consists of the use of a reinforcement at the base end and on the inside of the 13 gauge member.

Recent improvements have been made in the methods of manufacture, particularly in the method of inserting the reinforcement. As now made, the reinforcement is integral with the body of the pole, which adds materially to its efficiency.

Ask for Booklet—The "SHELBY" Seamless Cold Drawn Steel Trolley Pole.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

General Sales Offices: Frick Building

DISTRICT SALES OFFICES

Atlanta Boston Chicago Denver Detroit New Orleans New York Salt Lake City Philadelphia Pittsburgh St. Louis St. Paul

PACIFIC COAST REPRESENTATIVES: U. S. Steel Products Company San Francisco Los Angeles Portland Seattle

EXPORT REPRESENTATIVES: U. S. Steel Products Company New York City

Positive Proof from Progressive Properties Proves the Superiority of TULC

We don't ask you to accept Tulc, on your property, just because it has proven that it is superior to all other lubricants on other progressive properties.

The secret of our success has been due to the *individual, special* and *concentrated* lubrication service that is back of every sale and which is an integral part of our sales policy.

We believe in the importance of personal service intelligently rendered. We maintain a highly efficient specialized organization who base their calculations on tests made on your property.

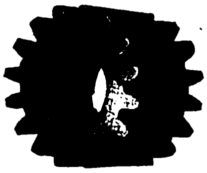
It is on our past reputation, our broad experience and the large number of railways that are using our product and our service that we ask you to let us tell you how we can improve your present methods of lubricating and decrease your labor and maintenance expense.

***The* Universal Lubricating Co.**
Offices: Schofield Bldg. **Works: Sweeney Ave.**
Cleveland, Ohio

TULC
A
LUBRICANT

—scientifically and accurately compounded to reduce lubricating costs

Standard Helical Gears



Ground Pinion Bores
assure a correct fit on armature shaft and prevent injury to the shaft taper.

NUTTALL 619 BP 2642
NUTTALL 619 BP 584

The Big Four

1—Drop Forged Pinion Blanks
2—Nuttall Workmanship
3—$7\frac{1}{2}$ deg. Standard Helical Teeth
4—BP Treatment

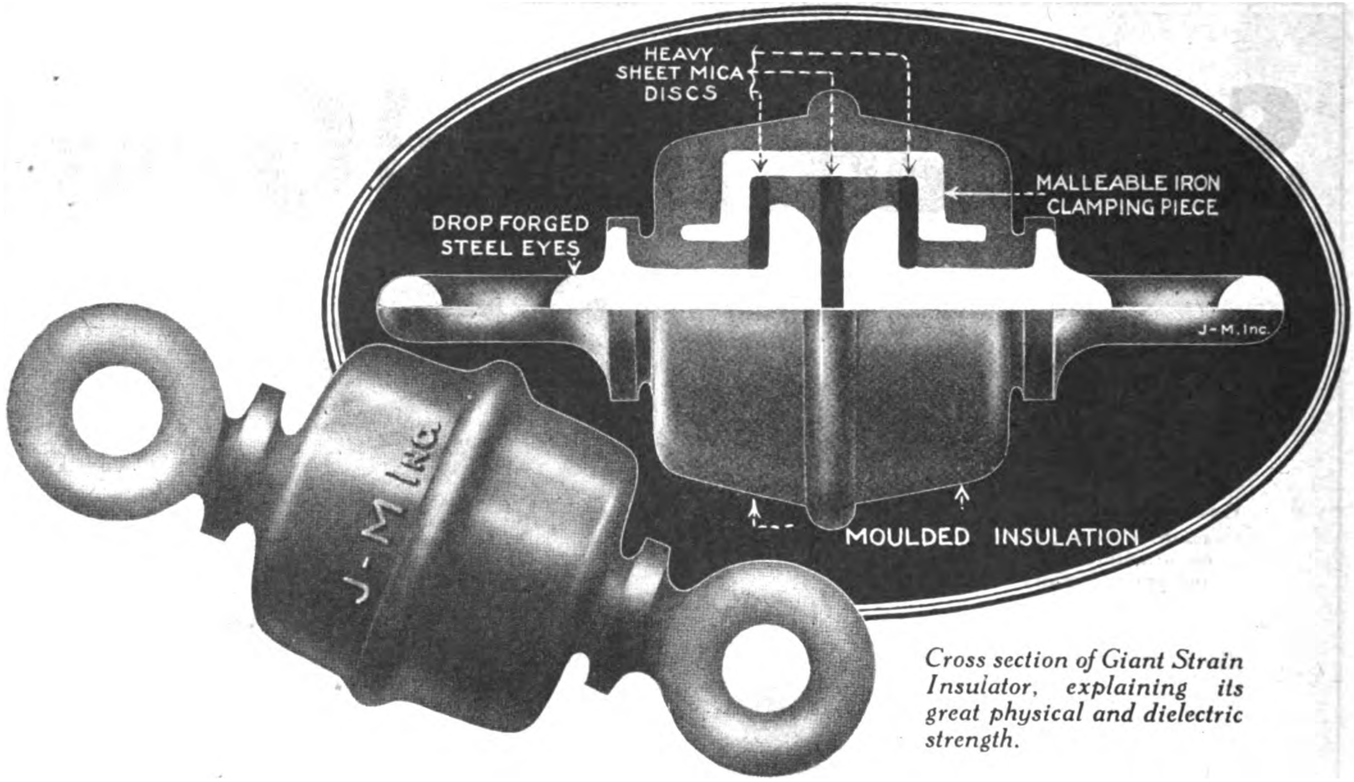
Forged Steel Gears cost more to buy, but less to operate.

R.D.NUTTALL COMPANY
PITTSBURGH PENNSYLVANIA

All Westinghouse Electric and Mfg. Co. District Offices are Sales Representatives in the United States for Nuttall Electric Railway and Mine Haulage Products.

In Canada: Lyman Tube & Supply Co., Ltd., Montreal and Toronto.

Nuttall



Cross section of Giant Strain Insulator, explaining its great physical and dielectric strength.

Put a Giant on the Job

OUT in all kinds of weather, often subjected to blows from trolley poles or acting as targets for small boys—if there's any job that takes physical and electrical strength, it's the work a strain insulator has to do.

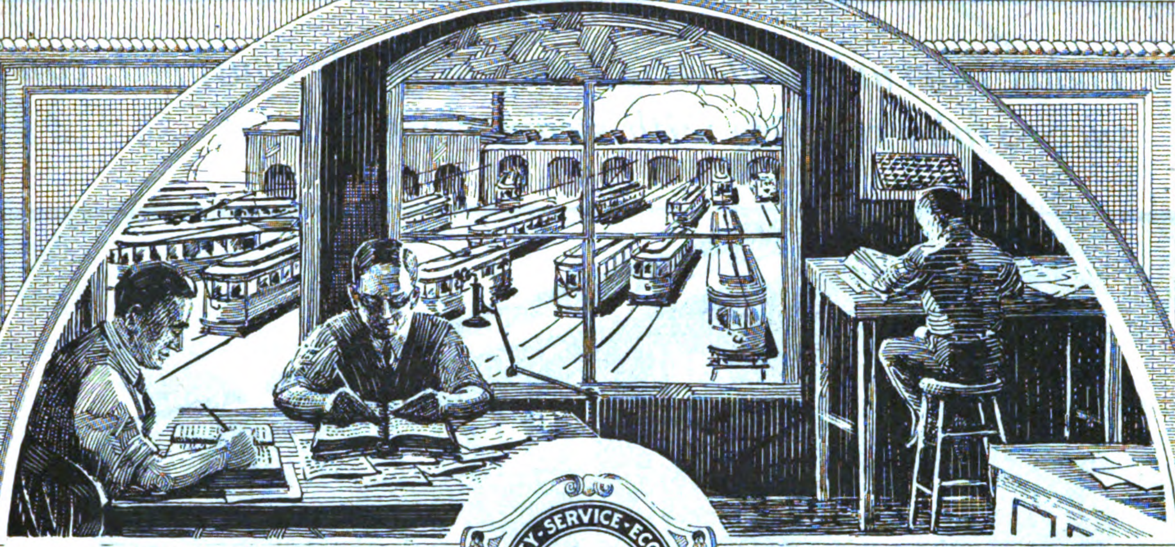
That's why thousands of Giants are on the job—for a Giant Strain Insulator 2⅝ in. diameter and 4⅛ in. center to center of eyes has an average breaking strain of 11,500 lbs.

Ask the nearest Johns-Manville branch for the booklet that gives complete details about Giant Strain Insulators.

JOHNS-MANVILLE
Incorporated
Madison Ave., at 41st., New York City
Branches in 60 Large Cities
For Canada:
CANADIAN JOHNS-MANVILLE CO., Ltd.,
Toronto

JOHNS-MANVILLE SERVICE
COVERS THE CONTINENT
Through
ASBESTOS
and its allied products
Electrical Materials
Brake Linings
Insulations
Roofings
Packings
Cements
Fire Prevention Products

JOHNS-MANVILLE
ELECTRICAL MATERIALS



QUALITY · SERVICE · ECONOMY
G S O
GALENA-SIGNAL OIL CO.

Testimonials That Count

Cost Records!

"Why keep records of mileage, lubricants used, and the like?" exclaims the salesman of the "good as Galena" oils. "It is expensive and unnecessary. Buy our oils on a straight gallonage basis, and save this useless trouble and expense."

Reasoning that comes straight from the heart! The cost record is truly a stumbling block to the use of inferior materials — their *real cost* is then bound to show. Where no cost records are kept, cheap oils can "get by", and claim a saving on every gallon used. But this little joker has a disagreeable habit of showing conditions as they really are. Modern business efficiency will permit of no lopsided bookkeeping; it is just as essential to know the details of expenses as receipts.

It is the authentic figures of cost records on hundreds of electric railways that testify to the economy of GALENA OILS. They show that the gallon of Galena gives about double the mileage of other oils; that repairs and replacements of bearing parts are kept at a minimum, through their protective ability; that the time losses and annoyances due to hot boxes practically disappear.

The evidence of the cost record is the testimony that counts. Its figures show not only the cost of *oils,* but the cost of *lubrication.* And surely it is lubrication service — not oil — that the railway uses.

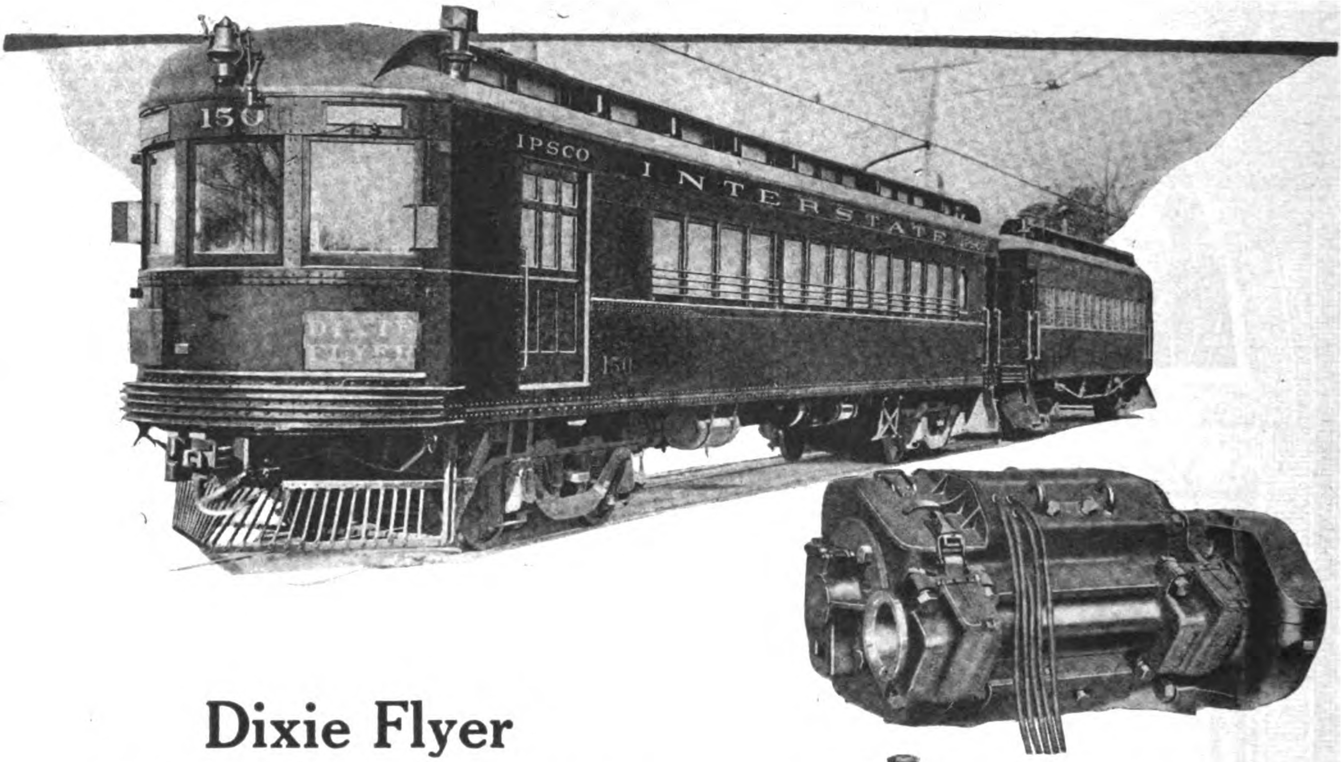
Galena Quality Is Our Bond and your Security!

QUALITY · SERVICE · ECONOMY
G S O
GALENA OILS

Galena-Signal Oil Company
New York - Franklin, Pa. Chicago
and offices in principal cities

QUALITY · SERVICE · ECONOMY
G S O
GALENA OILS

Today interurban electric lines, properly equipped, can successfully compete with steam railroads



G-E 254 Motor

Dixie Flyer

THE Interstate Public Service Company has recently equipped its lines with the most modern high speed cars, designed to provide maximum passenger comfort and to make the run between Indianapolis and Louisville with a material saving in time over the fast steam trains.

General Electric substations, G-E-254 motors and PC-12 control are contributing to the success and reliability of this service.

Master Controller

Motor Controller with cover off

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in
all large cities

25-107

PEACOCK URGES

Try the Life-Boats!

Consider the Sailor's Ways

Maritime rulings very wisely require frequent drills on shipboard. At specified intervals, though the sea may be calm and the sky all clear, the call is given to man the life-boats. Then every jack-tar learns to hop to his station, tackles are tested and gear is over-hauled. Why? To be sure that "Jack" will know his job, and to ensure that blocks won't jam when a real emergency comes.

Would Your Motorman "Abandon Ship"?

How about your own case on dry land? Does Motorman "Jack" know what to do if his air-brake fails? Will he shift to his hand-brake with the quick precision of a well-trained blue-jacket? Or will he "abandon ship" by jumping panic-stricken over-side?

And if he does try to use his hand-brake—will it work? There's the rub!

Why not make a standard practice of one hand-brake stop on every trip, at some specified point? Then you will be sure that your men are trained and familiar with the equipment. And you will soon find out whether the hand-brake equipment will work satisfactorily or not. Your motormen will tell you in plain unvarnished words of one syllable, what they think of it.

If hand brakes are unsatisfactory, let's figure on Peacock equipment. The first cost is not great, and the results in safety and economy of maintenance will pay generous returns on the investment.

The Peacock Staffless

National Brake Company, Inc.

890 Ellicott Sq. Buffalo, N. Y.

Bankers and Engineers

Ford, Bacon & Davis
115 BROADWAY, NEW YORK
Detailed Examinations by Experts
REPORTS FOR FINANCING COVERING
Valuation Turnover
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UTILITIES INDUSTRIALS SHIPPING

STONE & WEBSTER
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ALBERT S. RICHEY
ELECTRIC RAILWAY ENGINEER
WORCESTER POLYTECHNIC INSTITUTE
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Consultant
FARES, BUSES, MOTOR TRUCKS
More revenue from *more* riders
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EUGENE KLAPP W. J. DOUGLAS
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Appraisals and Reports
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NEW YORK
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Consulting Engineers
Specializing in Utility Rate Cases and Reports to Bankers and Investors
1017 Olive St., St. Louis, Mo.

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HUDSON TERMINAL, 30 CHURCH STREET, NEW YORK

Manufacturers of Steel Structures of all classes, particularly
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Atlanta, Ga.............Candler Building
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Detroit, Mich...Beecher Ave. & M. C. R. R.
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Estimates
220 BROADWAY, NEW YORK

KELLY, COOKE & COMPANY

Engineers

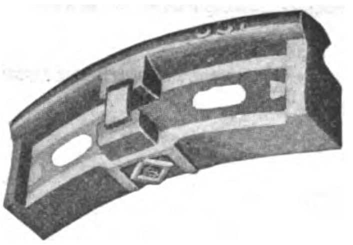
149 BROADWAY
NEW YORK

424 CHESTNUT STREET
PHILADELPHIA

Brake Shoes

A. E. R. A. Standards

Diamond "S" Steel Back is the Best Type



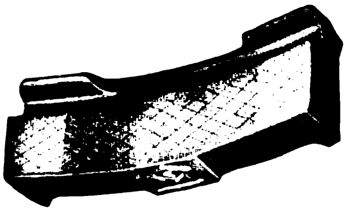
Standard

Patterns

for

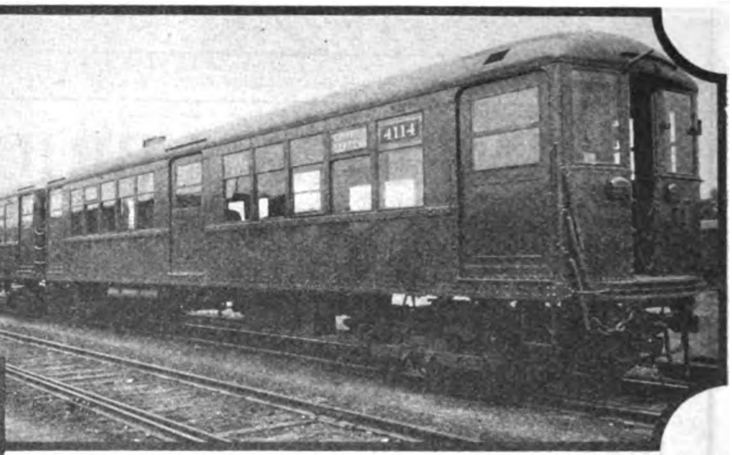
SAFETY

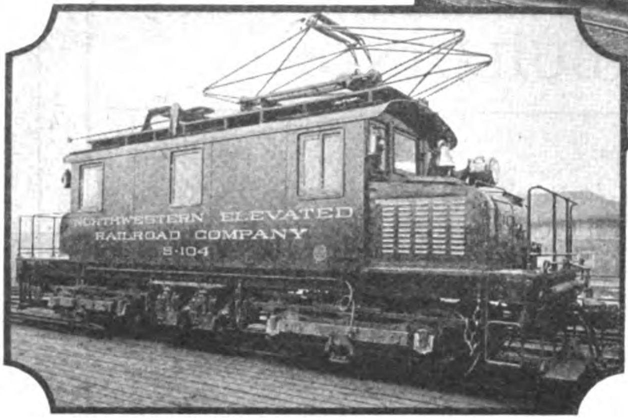
CAR



D-67 for Narrow Treads
D-87 for Wide Treads

American Brake Shoe and Foundry Co.
30 Church Street, New York
332 So. Michigan Ave., Chicago **Chattanooga, Tenn.**





In Chicago and Outside!

On the long, fast elevated passenger trains, and the heavy electric switching locomotives of the Northwestern Elevated Railroad of Chicago, they use reliable, long-wearing "Standard" Rolled Steel Wheels. And then too, on that high-speed interurban line,—the Chicago & Milwaukee Electric Railway—now famous for superlative service, speed and safety they also use them.

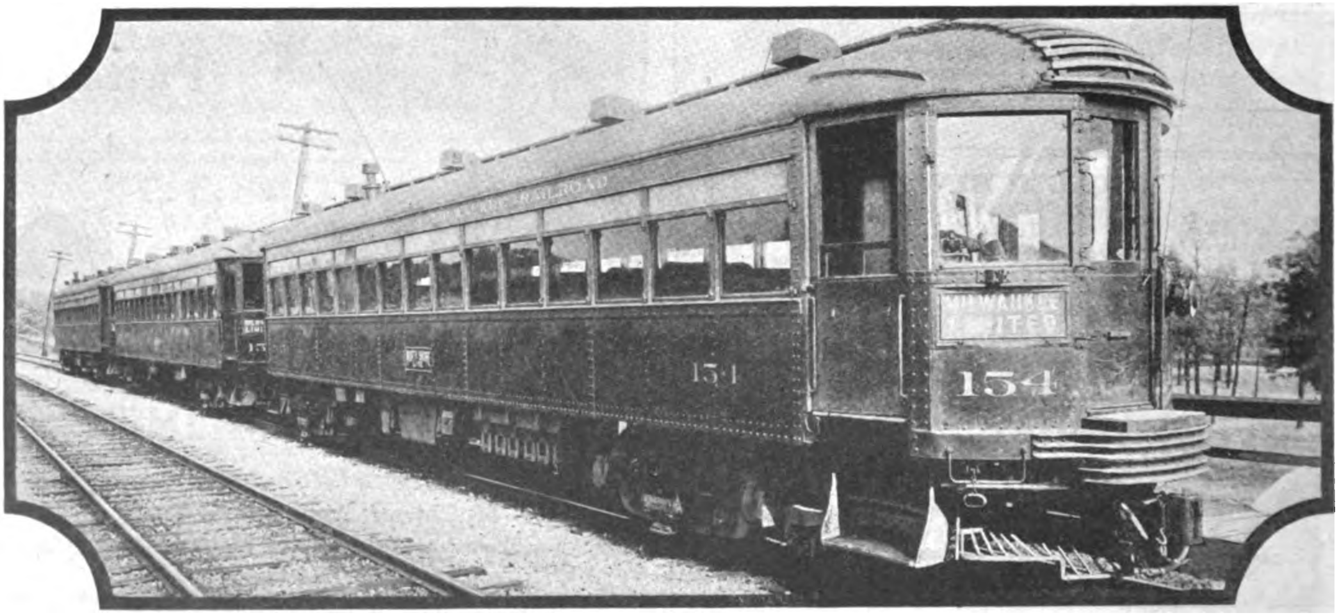
"STANDARD"

Steel Tires
Steel Tired Wheels
Solid Rolled Steel Wheels
O. H. Steel and Malleable Iron Castings
Solid Forged Gear Blanks
Steel Forgings **Iron Forgings**
Forged and Rolled Steel
Pipe Flanges
Ring Dies
Rings
Roll Shells **Steel Springs**

SS BRAND **"The 'Standard' Brand on your material is an assurance of eventual economy."** SS BRAND

Standard Steel Works Company
500 North Broad St., Philadelphia, Pa.

CHICAGO
ST. LOUIS
HAVANA, CUBA
ST. PAUL
RICHMOND
SAN FRANCISCO
NEW YORK
HOUSTON
PORTLAND, ORE.
MEXICO, CITY
BOSTON, MASS.
PITTSBURGH, PA.



Suffaith

In the altar of every Persian temple is set a brick-shaped stone, jet black in color.

Although scientists declare these stones to be aerolites, tradition has it that they came direct from heaven, *suffaith*, or whiter than milk in color, and that they were turned black by the sins of those who touched them; further, that on the Day of Judgment these stones would speak and would bear witness in favor of, or against, the folks who kissed them.

It will be a wonderful day for the Irish. They'll say it with bricks.

Many motor brushes, were they given a chance to speak, would exclaim in loud voices—"WE ARE MISFITS!" Translated into English, that is what they say when they begin chattering and sparking like a lot of high-strung individualists loaded with unsuitable jobs.

Insure against misfit brushes by having a Morganite engineer *prescribe* them. No more brush trouble after that.

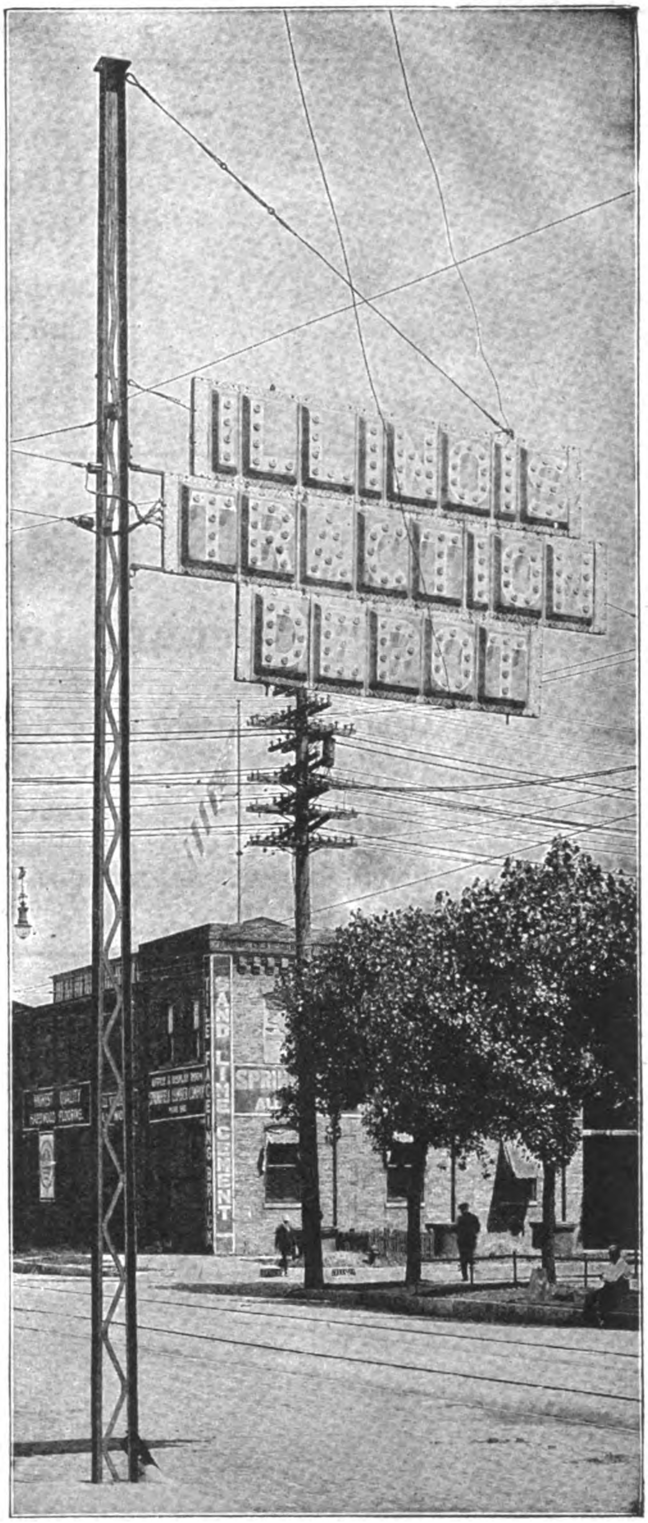
Morganite Brush Co., Inc.

Main Office and Factory:
519 West 38th Street, New York

DISTRICT ENGINEERS AND AGENTS:

Electric Power Equipment Corp., 13th and Wood Sts., Philadelphia.
Electrical Engineering & Mfg. Co., 909 Penn Ave., Pittsburgh.
R. W. Lillie Corporation, 176 Federal Street, Boston, Mass.
W. R. Hendey Co., Hoge Bldg., Seattle.
Herzog Electric & Engineering Co., 150 Steuart St., San Francisco.
Special Service Sales Company, 502 Delta Bldg., Los Angeles, California.
Railway & Power Engineering Corporation, Ltd., 131 Eastern Ave., Toronto, Ontario, Canada.

MEMBER AMERICAN ELECTRIC RAILWAY ASSOCIATION 1921



Bates One-piece Poles Are Artistic

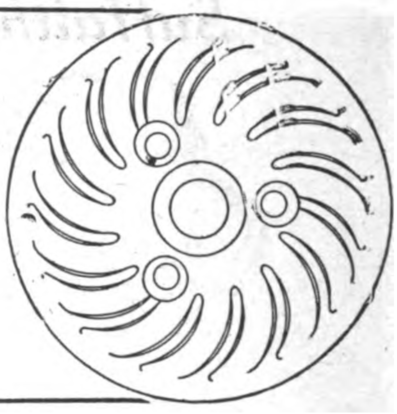
Perhaps Art is a secondary consideration when you plan your pole line construction, but it cannot be disregarded—especially when these poles are to be installed in exclusive residential districts or on your business blocks.

The combination of great utility and art with the lowest first cost makes the Bates Poles desirable for all types of pole line construction.

Our New 1921 TREATISE AND HANDBOOK sent upon request.

Bates Expanded Steel Truss Co. 208 South La Salle Street
CHICAGO, ILLINOIS

Griffin Wheel
Company
McCormick Building
Chicago, Ill.



GRIFFIN F. C. S. WHEELS

For Street and Interurban Railways

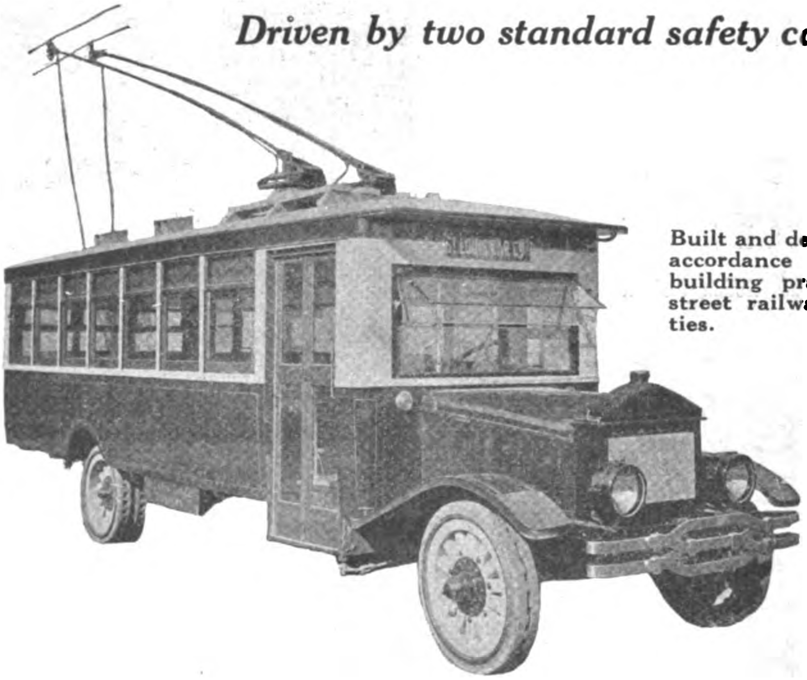
All of our plants have adequate facilities for fitting wheels to axles

FOUNDRIES:

Chicago
Detroit
Denver
Boston
Kansas City
Council Bluffs
St. Paul
Los Angeles
Tacoma

"St. Louis Tracklesstrollicar"

Driven by two standard safety car motors



Built and developed in accordance with car building practice for street railway properties.

ST. LOUIS CAR COMPANY, St. Louis, Mo.

"The Birthplace of the Safety Car"

It may safely be said

that Business Paper Advertising is the foundation upon which almost all successful General Advertising has been built. Important as the latter is to manufacturers on many lines, it is essential only to a comparative few, whereas Business Paper Advertising is essential to large success in almost every line.

THE Power of Business Paper Advertising is almost unbelievable. Large businesses, whole industries in fact, have been built up without a line of advertising anywhere but in Business Papers. Almost every manufacturer of outstanding importance today grew from small beginnings. A great majority of these first learned of the business building power of publicity through advertising in the papers of their respective trades and industries. To this day they continue to maintain this class of advertising under any and all business conditions.

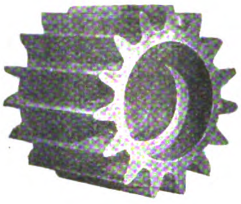
SELECTIVE in the character of its circulation, the Business Paper enables the advertiser to choose readers of any given class or occupation; makes it possible for him to talk to his "market" in its own language and upon the points in which it is interested.

A PERSONAL experience with Business Paper Advertising covering a period of over twelve years has proven to me that the progressive men in any industry, profession or trade, from the biggest and the most commanding figures down, read Business Papers.

W. L. RICKARD
President Rickard & Co.
in Advertising & Selling

Another

"Up to the minute" test on
"Tool Steel"
vs.
Special Quenched



The "Tool Steel" pinion wore out after 239,136 miles.

Special quenched pinions wore out in 50,000 to 60,000 miles.

The History of the Test:

In Dec., 1917, test was started to demonstrate if "Tool Steel" could meet the guarantee of 50% greater life. (Guarantee has since been increased to 75% greater). Car No. 14 was equipped for test with "Tool Steel" gear and pinion on one motor and quenched gear and pinion on another. Micrometer measurements were taken and in the first 29,778 miles, the relative wear on the pinions was .020 in. to .078 in. The quenched pinion was removed and scrapped between 50,000 and 60,000 miles. (Exact record was lost. This mileage checks with the fact that it was half worn in 29,778 miles, also with average mileage they were obtaining for similar pinions on other cars). The "Tool Steel" pinion was worn out in 239,136 miles.

4 to 1
and we guaranteed 75% greater life!

The Tool Steel Gear & Pinion Company
Cincinnati, Ohio

American Rail Bonds

CROWN
UNITED STATES
TWIN TERMINAL
SOLDERED
TRIPLEX

Arc Weld and Flame Weld

Send for new Rail Bond book

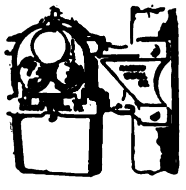
American Steel & Wire Company
CHICAGO
NEW YORK

ANACONDA
Copper Wire
111 W. Washington St., Chicago

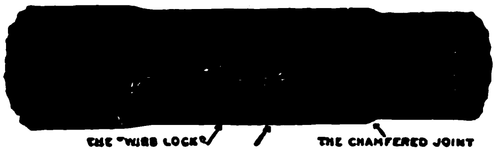
FLOOD CITY
Rail Bonds and Trolley Line Specialties
Flood City Mfg. Co., Johnstown, Pa.

Transmission Line and Special Crossing Structures, Catenary Bridges
WRITE FOR OUR NEW DESCRIPTIVE CATALOG
ARCHBOLD-BRADY CO.
Engineers and Contractors SYRACUSE, N. Y.

AUTOMATIC SIGNALS
Highway Crossing Bells
Headway Recorders
NACHOD SIGNAL COMPANY, INC.
LOUISVILLE, KY.



ELRECO TUBULAR POLES



COMBINE
Lowest Cost Lightest Weight
Least Maintenance Greatest Adaptability
Catalog complete with engineering data sent on request.
ELECTRIC RAILWAY EQUIPMENT CO.
CINCINNATI, OHIO
New York City, 30 Church Street

Chapman
Automatic Signals
Charles N. Wood Co., Boston

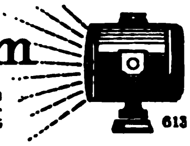
AETNA INSULATION LINE MATERIAL
Third Rail Insulators, Trolley Bases, Harps and Wheels, Bronze and Malleable Iron Frogs, Crossings, Section Insulators, Section Switches.
Albert & J. M. Anderson Mfg. Co.
289-93 A Street, Boston, Mass.
Established 1877
Branches—New York, 135 B'way.
Philadelphia, 429 Real Estate Trust Bldg. Chicago, 105 So. Dearborn St.
London, E. C. 4 38-39 Upper Thames St.

U. S. ELECTRIC SIGNAL CO. WEST NEWTON, MASS.
U. S. Electric Contact Signals
for
Single-track block-signal protection
Double-track spacing and clearance signals
Protection at intersections with wyes
Proceed signals in street reconstruction work
United States Electric Signal Co.
West Newton, Mass.

COPPER CLAD STEEL COMPANY
COPPERWELD
OFFICE AND WORKS: RANKIN, PA. BRADDOCK P. O.
WESTERN SALES REPRESENTATIVES: STEEL SALES CORPORATION, CHICAGO, ILL.
NEW YORK SALES OFFICE: 30 CHURCH STREET, NEW YORK CITY
COPPERWELD Wire—*made by the Molten Welding Process*
Bare—Weatherproof—Strand—Twisted Pair—Nails

Electrical Wires and Cables
JOHN A. ROEBLING'S SONS CO., Trenton, N. J.

Compare Them
The faint light of a candle and the strong rays of a searchlight. They represent the comparative efficiency of other ways of finding what you want and advertising for it in the
SEARCHLIGHT SECTION
Employment Equipment Business Opportunities
613



SPECIAL TRACKWORK
Of the well-known WHARTON Superior Designs and Constructions

Steel Castings
Converter and Electric

Forgings
Drop. Hammer and Press

Gas Cylinders
Seamless Steel

Wm. Wharton Jr. & Co., Inc., Easton, Pa.
(Subsidiary of Taylor-Wharton Iron & Steel Co., High Bridge, N. J.)
ORIGINATORS OF
MANGANESE STEEL IN TRACKWORK

AMELECTRIC PRODUCTS
BARE COPPER WIRE AND CABLE
TROLLEY WIRE
WEATHERPROOF WIRE AND CABLE
PAPER INSULATED UNDERGROUND CABLE
MAGNET WIRE

Reg. U. S. Pat. Office
Galvanized Iron and Steel Wire and Strand
Incandescent Lamp Cord

AMERICAN ELECTRICAL WORKS
PHILLIPSDALE, R. I.

Boston, 176 Federal; Chicago, 112 W. Adams; Cincinnati, Traction Bldg.; New York, 233 B'way; San Francisco, 612 Howard; Seattle, 100 1st Ave. So.

BARBOUR-STOCKWELL CO.
205 Broadway, Cambridgeport, Mass.
Established 1858

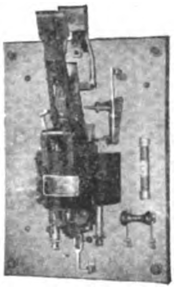
Manufacturers of
Special Work for Street Railways
Frogs, Crossings, Switches and Mates
Turnouts and Cross Connections
Kerwin Portable Crossovers
Balkwill Articulated Cast Manganese Crossings

ESTIMATES PROMPTLY FURNISHED

RAMAPO
Automatic Safety and Automatic Return Switch Stands for Passing Sidings. Tee Rail Special Work for Interurban Lines and Private Rights of Way. Manganese Construction a Specialty.
Ramapo Iron Works
HILLBURN, NEW YORK
Plants at Hillburn, N.Y. and Niagara Falls, N.Y. New York Office, 30 Church Street

BAKELITE-DILECTO
The fields of usefulness for Bakelite-Dilecto are many and varied because of its superior merit over materials heretofore available in sheets, tubes or rods. The exceptional qualities of Bakelite-Dilecto are satisfying electric railways all over the country. Investigate.
The Continental Fibre Co., Newark, Delaware
Branch Offices:
CHICAGO, 332 S. Michigan Ave. NEW YORK, 233 Broadway
Pittsburgh Office, 301 Fifth Ave. San Francisco Office, 525 Market St.
Los Angeles Office, 411 S. Main St.
CANADIAN OFFICE, 89 Wellington St., W., Toronto, Ont.

The Circuit Breaker with Brains



Makes Feeder Control Automatic
LET'S GET ACQUAINTED
THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY
COLUMBUS, OHIO
DISTRICT SALES OFFICES:
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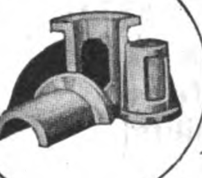
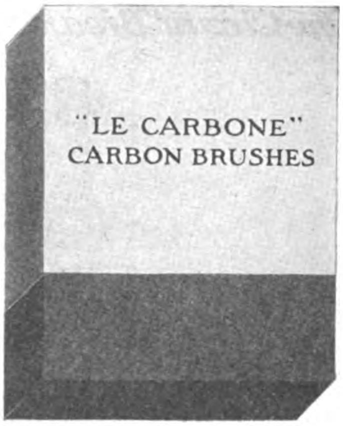
Philadelphia, 1613 Chestnut St.
Charleston, W. Va., 110 Hale St.
Birmingham, 510-512 Brown-Marx Bldg.
St. Louis, 401 National Bank of Commerce Bldg.



MORE-JONES "TIGER-BRONZE" AXLE AND ARMATURE BEARINGS
Not always the cheapest, but ever lowest in ultimate cost
MORE-JONES BRASS & METAL CO.
St. Louis, Missouri.

Peirce Forged Steel Pins with Drawn Separable Thimbles
Your best insurance against insulator breakage
Hubbard & Company
PITTSBURGH, PA.

RWB DYNAMOTORS
FOR
CARBON ARC RAIL JOINT WELDING
CARBON ARC RAIL BONDING
CARBON and METALLIC ARC GENERAL WELDING
Rail Welding and Bonding Co., Cleveland, O.



They are uniform in quality

They talk for themselves

W. J. Jeandron
227 Fulton Street
New York City

Pittsburgh Office:
636 Wabash Building

Canadian Distributors:
Lyman Tube & Supply Co., Ltd.
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High-Grade Track Work

SWITCHES—MATES—FROGS—CROSSINGS
COMPLETE LAYOUTS
IMPROVED ANTI-KICK BIG-HEEL SWITCHES
HARD CENTER AND MANGANESE CONSTRUCTION

New York Switch & Crossing Co.
Hoboken, N. J.

ERICO

ECONOMICAL
EFFICIENT

RAIL BONDS

THE ELECTRIC RAILWAY IMPROVEMENT CO.
CLEVELAND, OHIO

THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK

Builders since 1868 of Water Tube Boilers of continuing reliability

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PHILADELPHIA, North American Building
PITTSBURGH, Farmers Deposit Bank Building
CLEVELAND, Guardian Building
CHICAGO, Marquette Building
CINCINNATI, Traction Building
ATLANTA, Candler Building
TUCSON, ARIZ., 21 So. Stone Avenue
FORT WORTH, TEX., Flatiron Building
HONOLULU, H. T., Castle & Cooke Building

THE BABCOCK & WILCOX COMPANY
STEAM

WORKS
Bayonne, N. J.
Barberton, Ohio

Makers of Steam Superheaters since 1898 and of Chain Grate Stokers since 1893

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NEW ORLEANS, 521-5 Baronne Street
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DENVER, 435 Seventeenth Street
SALT LAKE CITY, 705-6 Kearns Building
SAN FRANCISCO, Sheldon Building
LOS ANGELES, 404-6 Central Building
SEATTLE, L. C. Smith Building
HAVANA, CUBA, Calle de Aguiar 104
SAN JUAN, PORTO RICO, Royal Bank Building

SPECIFY

THE TERRY TURBINE

For Driving Your Auxiliaries

TERRY STEAM TURBINE CO.
Hartford, Conn.

THE CUTTER ELECTRICAL AND MANUFACTURING CO. PHILADELPHIA
CIRCUIT BREAKERS
I-T-E

I. T. E. Circuit Breakers

for heavy street railway work are the best obtainable. Write for New Complete Catalogue.

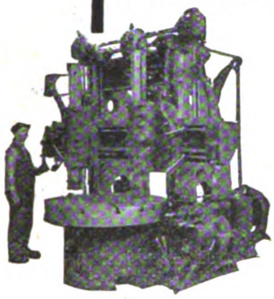
FOSTER SUPERHEATERS

A necessity for turbine protection, engine cylinder economy and utilization of superheat for all its benefits

POWER SPECIALTY COMPANY, 111 BROADWAY, NEW YORK

Boston Philadelphia Pittsburgh Kansas City Dallas Chicago San Francisco London, Eng.

NILES-BEMENT-POND CO.
111 BROADWAY, NEW YORK



MACHINE TOOLS

FOR ELECTRIC RAILWAYS

Axle Lathes
Wheel Presses
Car Wheel Lathes
Boring Mills
Lathes
Hammers
Cranes
General Machine Tools

193
IN
10224

Type R-10

International Registers

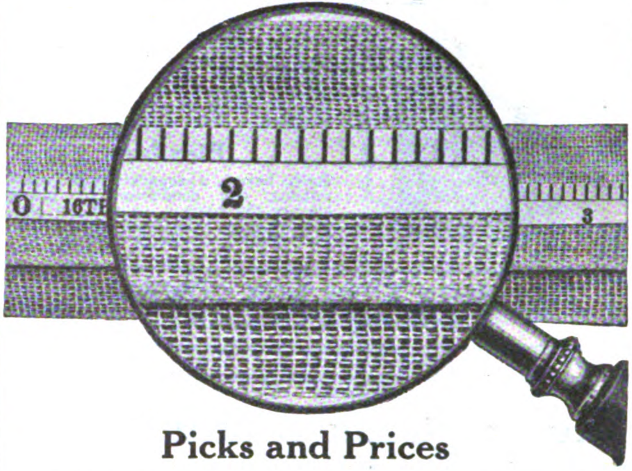
Made in various types and sizes to meet the requirements of service on street and city system.

Complete line of registers, counters and car fittings.

Exclusive selling agents for HEEREN ENAMEL BADGES.

The International Register Co.
15 South Throop Street, Chicago, Illinois

Beldentape
TRADE MARK



Picks and Prices

This unretouched photograph shows Beldentape and two other brands of electrical tape magnified to two diameters. Beldentape has 40 threads, called picks, to each inch of length and 80 threads, warps, to each inch of width. The others are 30 x 72 and 26 x 60.

The quality of electrical tape depends upon the weave. Before passing judgment on values count the picks.

BELDEN MANUFACTURING COMPANY
Electrical Wire, Cable and Cordage.

Main Office and Factory: Chicago, Ill.
Eastern Warehouse: Metuchen, N. J.

Car Seating, Broom and Snow Sweeper Rattan, Mouldings, etc.

AMERICAN RATTAN & REED MFG. CO.
Brooklyn, N. Y.

AMERICAN means QUALITY
RATTAN SUPPLIES OF EVERY DESCRIPTION

A Single Segment or a Complete Commutator

is turned out with equal care in our shops. The orders we fill differ only in magnitude; small orders command our utmost care and skill just as do large orders. CAMERON quality applies to every coil or segment that we can make, as well as to every commutator we build. That's why so many electric railway men rely absolutely on our name.

Cameron Electrical Mfg. Co., Ansonia, Connecticut

ELECTRIC HEATER EQUIPMENTS

GOLD CAR HEATING & LIGHTING CO.
NEW YORK CITY
PATENTED
GOLD
HEATING & LIGHTING
NEW YORK
U.S.A.

THERMOSTAT CONTROL EQUIPMENTS

Address All Communications to
BUSH TERMINAL
(220 36th St.)
Brooklyn, N. Y.

Literature on Request

W & B "Railroad Special" Wrench
7 Sizes, 6 to 21 inches
Screw Wrench Book?

J. H. WILLIAMS & CO.
"The Wrench People"

BROOKLYN 143 Richards St.
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SUPER-SEASONED FIBRE

S-S
TRADE MARK

Peerless Insulation Paper has 25 to 50 per cent higher electrical resistance.

Hornflex Insulation Paper has no grain. Folds without cracking.

NATIONAL FIBRE & INSULATION CO.
Box 319, Yorklyn, Delaware.

BUCKEYE JACKS

high-grade R. R. Track and Car Jacks.

The Buckeye Jack Mfg. Co.
Alliance, Ohio

WE-FU-GO AND SCAIFE

WATER
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

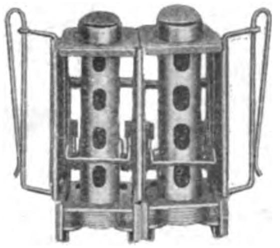
WM.B.SCAIFE & SONS CO.PITTSBURGH.PA.

FORD TRIBLOC

A Chain Hoist that excels in every feature. It has Planetary Gears, Steel Parts, 3½ to 1 factor of Safety. It's the only Block that carries a five-year guarantee.

FORD CHAIN BLOCK CO.
Second and Diamond Sts., Philadelphia

JOHNSON Universal Changer



Adjustable

The only changer on the market which can be adjusted by the conductor to throw out a varying number of coins, necessary to meet changes in rates of fares.

Flexible

Each barrel a separate unit, permitting the conductor to interchange the barrels, to suit his personal requirements and to facilitate the addition of extra barrels.

JOHNSON FARE BOX COMPANY
Ravenswood, Chicago, Ill.

Reduce Commutator Wear and Losses Due to "Tie-Ups"

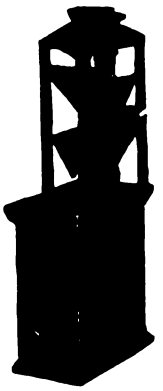
To be absolutely safeguarded against excessive commutator wear—assured of real mileage day in and day out—and to obtain lower operating costs, use

National Carbon Brushes

the brushes that were made to suit the commutator and the service.

You name the job—we'll name the brush

National Carbon Company, Inc.
Cleveland, Ohio



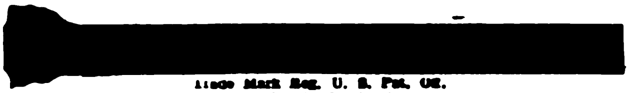
Cleveland Fare Boxes

have no bolts, nuts or screws, that can be removed from the outside. Let us tell you of other good features.

Let us explain.

The Cleveland Fare Box Co.
Cleveland, Ohio
Canadian Cleveland Fare Box Co., Ltd.
Preston, Ontario

SAMSON SPOT WATERPROOFED TROLLEY CORD



Trade Mark Reg. U. S. Pat. Off.

Made of extra quality stock firmly braided and smoothly finished. Carefully inspected and guaranteed free from flaws. Samples and information gladly sent.

SAMSON CORDAGE WORKS, BOSTON, MASS.

HORNE MANUFACTURING CO.

Mercer and Colgate Streets, Jersey City, N. J.

Hand Brakes—Air Purifiers for Compressors—Lighting Fixtures—Electric Vibrating Bells—Thermostats—Switches, Receptacles and Plugs—Junction Boxes, Portables and Reflectors.

Waterproofed Trolley Cord

SILVER LAKE A

Is the finest cord that science and skill can produce. Its wearing qualities are unsurpassed.

FOR POSITIVE SATISFACTION ORDER SILVER LAKE

If you are not familiar with the quality you will be surprised at its ENDURANCE and ECONOMY

Sold by Net Weights and Full Lengths

SILVER LAKE COMPANY
Manufacturers of bell, signal and other cords.
Newtonville, Massachusetts

B. A. Hegeman, Jr., President
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National Railway Appliance Co.

50 East 42nd St., New York City

Hegeman-Castle Corporation
343 So. Dearborn St., Chicago, Ill.

National Railway Appliance Co.
Munsey Bldg., Washington, D. C.

National Railway Appliance Co.
Little Bldg., Boston, Mass.

RAILWAY SUPPLIES

- Tool Steel Gears and Pinions
- Anderson Slack Adjusters
- Genesco Paint Oils
- Dunham Hopper Door Device
- Feasible Drop Brake Staffs
- Flaxlinum Insulation
- Anglo-American Varnishes, Paints, Enamels, Surfacers, Shop Cleaner
- Johnson Fare Boxes
- Perry Side Bearings
- Drew Line Material and Railway Specialties
- Hartman Centering Center Plates
- Economy Power Saving Meters
- H & W Electric Heaters
- Garland Ventilators
- Pitt Sanders
- National Safety Car Equipment Co.'s One-Man Safety Cars
- Central Equipment Company's Hand Holds

PROVIDENCE FENDERS H-B LIFE GUARDS

The Consolidated Car Fender Co., Providence, R. I.
Wendell & MacDuffie Co., 61 Broadway, New York
General Sales Agents

N-L

Indicating Signals
Mechanical Sanders
Ventilators, Smokestacks
Pneumatic Sanders
Selector Switches, Lanterns, etc.

THE NICHOLS-LINTERN CO.
8404 Lorain Ave., Cleveland, Ohio

KASS SAFETY TREADS

Lowest initial and upkeep costs. Cannot break or disintegrate. Positively anti-slipping. Used by more than 100 steam and electric railway systems.

Manufactured and Sold by
Morton Manufacturing Company
CHICAGO, ILL.
Let us send to you our Bulletin No. 6

Heating and Ventilating

Let us demonstrate to you how we can heat and ventilate your cars at the lowest possible cost.

The Cooper Heater Company
Carlisle, Pa.

ELECTRIC RAILWAY JOURNAL

Think "SEARCHLIGHT" First

ADVERTISING RATES

POSITIONS VACANT—Business Opportunities and other undisplayed ads, 8 cents a word, minimum $2.00 an insertion.

POSITIONS WANTED—Evening work wanted, tutoring and other undisplayed ads of individuals looking for employment, 4 cents a word, minimum 75 cents, **payable in advance.**

ADD 5 WORDS for box number in undisplayed ads if replies are to any of our offices. There is no extra charge for forwarding replies.

DISCOUNT OF 10% if one payment is made in advance for 4 consecutive insertions of undisplayed ad.

ADS IN DISPLAY TYPE—Space is sold by the inch (30 in. to a page), the price depending upon total space used within a year, some space to be used each issue.

RATE PER INCH for ads in display space:

1 to 3 in., $4.50 an in.	15 to 29 in., $3.90 an in.
4 to 7 in., $4.30 an in.	30 to 49 in., $3.80 an in.
8 to 14 in., $4.10 an in.	50 to 99 in., $3.70 an in.

POSITIONS VACANT

ROADMASTER wanted to take charge of city and interurban railway tracks in middle western city. Must have had experience in brick paving and special work. P-373 Elec. Ry. Journal, Old Colony Bldg., Chicago, Ill.

TECHNICAL graduate of experience wanted, to take charge of Engineering Department of Electric, Gas and Street Railway. Send photograph, state age, education, qualifications and salary desired. P-375 Elec. Ry. Journal, Old Colony Building, Chicago, Ill.

Unusual opening for Superintendent of Transportation with New England Street Railway Company, in community of 100,000 population

Technical man wanted who can qualify for the above position. Preference will be given to applicant who is not over 35 years and married. Good living conditions, modern equipment, union labor and Company is in excellent financial condition. Man wanted who can handle problems outside his departmet and who can eventually work up into position of Assistant General Manager.

Opportunity for advancement unlimited for man of ability who can take his place in the community and go ahead with a progressive company.

Give full details of past experience, references, salary, and state when available. Reply to:

P-368, Electric Railway Journal
10th Ave. at 36th St., New York City

"SEARCHLIGHT" IS Opportunity Advertising

—to help you get what you want.

—to help you sell what you no longer need.

Take Advantage Of It

For Every Business Want

"Think SEARCHLIGHT First"

0167

In Replying to "Blind" Ads

be careful to put on envelope the key number in the ad and also local address of office to which reply is sent.

10th Ave. at 36th St., New York.
935 Real Estate Trust Bldg., Phila.
533 Leader-News Bldg., Cleveland.
1570 Old Colony Bldg., Chicago.
531 Rialto Bldg., San Francisco.

Important

Original letters of recommendation or other papers of value should not be enclosed to unknown correspondents — send copies.

0195

POSITIONS WANTED

INDUSTRIAL engineering, maintenance or construction. Ten years superivision on construction and maintenance of buildings, power plants and equipment. Seven years betterment work, on production, organization, appraisals, costs. Age 35. PW-374 Elec. Ry. Journal.

SUPERINTENDENT of transportation, with a proven record of seventeen years on large city and interurban properties, desires a change. Capable and progressive with high grade references as to character and ability. Capable of taking over details of trasportation of any property and getting results. PW-360, Elec. Ry. Journal, Old Colony Bldg., Chicago, Ill.

SUPERINTENDENT of Transportation with a proven record of 17 years on large city Suburban and Interurban properties desires a change and will consider any good size city and suburban property that requires a practical superintendent of wide experience. Capable of handling all details of transportation and getting results from employes. Personal reasons for desiring a change. High grade references. PW-372, Elec. Ry. Journal, Old Colony Bldg., Chicago, Ill.

SALESMEN AVAILABLE

HIGH grade electric specialty salesman, either street railway or general supplies. Traveling out of Chicago preferred. At liberty Jan. 1. AS-371, Elec. Ry. Journal, Old Colony Bldg., Chicago, Ill.

For 20 Years

we have been

Buying and Selling

Second-Hand Cars

Trucks and Motors

At Your Service

ELECTRIC EQUIPMENT CO.
Commonwealth Bldg., Philadelphia, Pa.

A Good Purchase

6—Sets Sprague Multiple Unit Control, together with large number of repair parts that are new and which can be purchased at a low price and effect a large saving.

2—Second-Hand K 14 Controllers with large number of repair parts.

Let us have you inquiries.

A. W. MUNSTER
Purchasing Agent Boston & Maine R.R.
Room 142 North Station, Boston, Mass.

USED CARS

For Every Service

Railway Motors

Standardize Your Equipments at Minimum Cost

TRANSIT EQUIPMENT CO.
501 Fifth Avenue, New York

ROTARY CONVERTERS

1—2200 KW. Westinghouse 6 phase, 60 cycle, A.C., 600 volt D.C. with speed limit and end play device, speed 450 R.P.M. and 3-900 KVA. 13200/6600-368 volt transformers and panels complete.

1—1000 KW. Westinghouse 6 phase, 60 cycle A.C. 600 volt D.C. speed 900 RPM. complete with 1000 KW. 3 phase, 60,000 volt transformer with 5 and 10 per cent taps, also A.C. and D.C. switchboard panels.

2—300 KW. Stanley 3 phase, 25 cycle, 360 volts A.C., 600 volt D.C. speed 500 RPM. complete with suitable transformers, also panels.

DIRECT CONNECTED ENGINE UNIT

1—850 KW. Gen. Elec. 575 volt compound wound 100 RPM. generator direct connected to 28 and 54 x 48 Greene Wheelock cross compound heavy duty 4 valve engine complete with Surface Condensing equipment and panel, price f.o.b. cars........$9,500

Archer & Baldwin, Inc., 114 Liberty St., New York City
Telephone: 4337-4338 Rector

WHAT AND WHERE TO BUY

Equipment, Apparatus and Supplies Used by the Electric Railway Industry with Names of Manufacturers and Distributors Advertising in this Issue

Advertising, Street Car
- Collier, Inc., Barron G.

Air Purifiers
- Horne Mfg. Co.

Anchors, Guy
- Electric Service Sup. Co.
- Ohio Brass Co.
- Westinghouse E. & M. Co.

Armature Shop Tools
- Elec. Service Supplies Co.

Axles
- Bemis Car Truck Co.
- Cambria Steel Co.
- Midvale Steel & Ordnance Co.
- St. Louis Car Co.

Axles, Car Wheel
- Bemis Car Truck Co.
- Brill Co., The J. G.
- Standard Steel Works Co.
- Westinghouse E. & M. Co.

Axle Straighteners
- Columbia M. W. & M. I. Co.

Babbitt Metal
- More-Jones Br. & Metal Co.

Babbitting Devices
- Columbia M. W. & M. I. Co.

Badges and Buttons
- Electric Service Sup. Co.
- Internat'l Register Co., The

Batteries, Dry
- National Carbon Co.

Bearings and Bearing Metals
- Bemis Car Truck Co.
- Columbia M. W. & M. I. Co.
- General Electric Co.
- More-Jones Br. & Metal Co.
- St. Louis Car Co.
- Westinghouse E. & M. Co.

Bearings, Center and Roller Side
- Stucki Co., A.

Bells and Gongs
- Brill Co., The J. G.
- Columbia M. W. & M. I. Co.
- Electric Service Sup. Co.
- St. Louis Car Co.

Benders, Rail
- Niles-Bement-Pond Co.
- Railway Track-work Co.

Bending Apparatus
- Railway Track-work Co.

Boilers
- Baboock & Wilcox Co.

Boilers, Tubes
- Cambria Steel Co.
- Midvale Steel & Ordnance Co.
- National Tube Co.

Bond Testers
- American Steel & Wire Co.
- Rail Welding & Bonding Co.

Bonding Apparatus
- American Steel & Wire Co.
- Electric Ry. Improv. Co.
- Electric Service Sup. Co.
- Ohio Brass Co.
- Rail Welding & Bonding Co.

Bonds, Rail
- American Steel & Wire Co.
- Copper Clad Steel Co.
- Electric Ry. Improv. Co.
- Electric Service Sup. Co.
- General Electric Co.
- Ohio Brass Co.
- Railway Track-work Co.
- Rail Welding & Bonding Co.
- Westinghouse E. & M. Co.

Book Publishers
- McGraw-Hill Book Co.

Boring Tools, Car Wheel
- Niles-Bement-Pond Co.

Brackets and Cross Arms (See also Poles, Ties, Posts, etc.)
- American Bridge Co.
- Bates Exp. Steel & Tr. Co.
- Electric Ry. Equip. Co.
- Electric Service Sup. Co.
- Hubbard & Co.
- Ohio Brass Co.

Brake Adjusters
- Hamilton & Hansell, Inc.
- National Ry. Appliance Co.
- Westinghouse Tr. Br. Co.

Brake Shoes
- Amer. Br. Shoe & Fdry. Co.
- Barbour-Stockwell Co.
- Bemis Car Truck Co.
- Brill Co., The J. G.
- Columbia M. W. & M. I. Co.
- St. Louis Car Co.

Brakes, Brake Systems and Brake Parts
- Allis-Chalmers Mfg. Co.
- Bemis Car Truck Co.
- Brill Co., The J. G.
- Columbia M. W. & M. I. Co.
- General Electric Co.
- Horne Mfg. Co.
- Johns-Manville, Inc.
- National Brake Co.
- St. Louis Car Co.
- Westinghouse Tr. Br. Co.

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- American Bridge Co.

Brooms, Track, Steel or Rattan
- Amer. Rattan & Reed Mfg. Co.

Brushes, Carbon
- General Electric Co.
- Jeandron, W. J.
- Le Carbone Co.
- Morganite Brush Co., Inc.
- National Carbon Co.
- U. S. Graphite Co.
- Westinghouse E. & M. Co.

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- Anderson Mfg. Co., A. & J. M.
- Columbia M. W. & M. I. Co.

Brushes, Graphite
- National Carbon Co.

Bunkers, Coal
- American Bridge Co.

Buses, Motor
- Brill Co., The J. G.

Bushings
- Nat'l Fibre & Insulation Co.

Bushings, Case Hardened and Manganese
- Bemis Car Truck Co.
- Brill Co., The J. G.

Cables (See Wires and Cables)

Carbon Brushes (See Brushes, Carbon)

Car Lighting Fixtures
- Elec. Service Supplies

Car Panel Safety Switches
- Westinghouse E. & M. Co.

Cars, Dump
- Differential Car Co.

Cars, Passenger, Freight, Express, etc.
- American Car Co.
- Brill Co., The J. G.
- Cambria Steel Co.
- Kuhlman Car Co., G. C.
- Midvale Steel & Ordnance Co.
- National Ry. Appliance Co.
- St. Louis Car Co.
- Wason Mfg. Co.

Cars, Second Hand
- Electric Equipment Co.
- Transit Equipment Co.

Cars, Self-Propelled
- General Electric Co.

Castings, Brass, Composition or Copper
- Anderson Mfg. Co., A. & J. M.
- Columbia M. W. & M. I. Co.
- Eureka Co.
- More-Jones Br. & Metal Co.

Castings, Gray Iron and Steel
- American Bridge Co.
- American Steel Foundries
- Bemis Car Truck Co.
- Columbia M. W. & M. I. Co.
- Standard Steel Works Co.
- St. Louis Car Co.

Castings, Malleable and Brass
- Amer. Brake Shoe & Fdry. Co.
- Bemis Car Truck Co.
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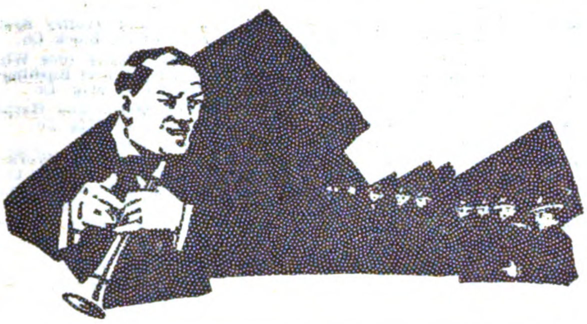

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Amer. Steel & Wire Co.
Anaconda Copper Mining Co.
Copper Clad Steel Co.
Roebling's Sons Co., John A.

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Brill Co., The J. G.
St. Louis Car Co.

Tubing, Steel
National Tube Co.

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Turbine, Water
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Railway Track-work Co.
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Westinghouse E. & M. Co.

Welders, Rail Joint
Ohio Brass Co.
Railway Track-work Co.
Rail Welding & Bonding Co.

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Wheel Presses (See Machine Tools)

Wheels, Car, Cast Iron
Bemis Car Truck Co.
Griffin Wheel Co.

Wheels, Car, Steel and Steel Tire
American Steel Foundries
Bemis Car Truck Co.
Standard Steel Works

Wheels, Rolled Steel
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Wheels, Trolley
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Columbia M. W. & M. I. Co.
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General Electric Co.
More-Jones B. & M. Co.
Nuttall Co., R. D.
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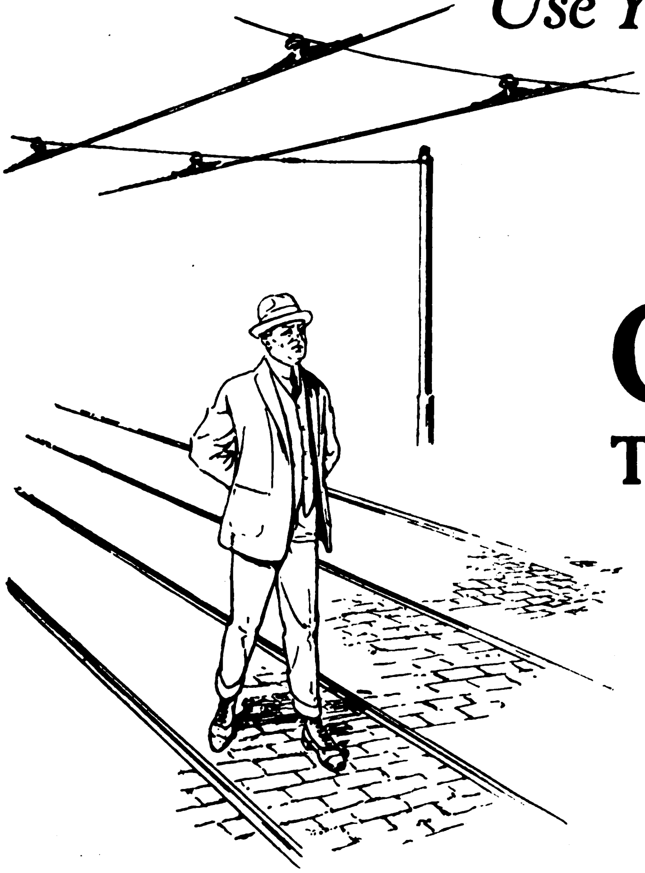

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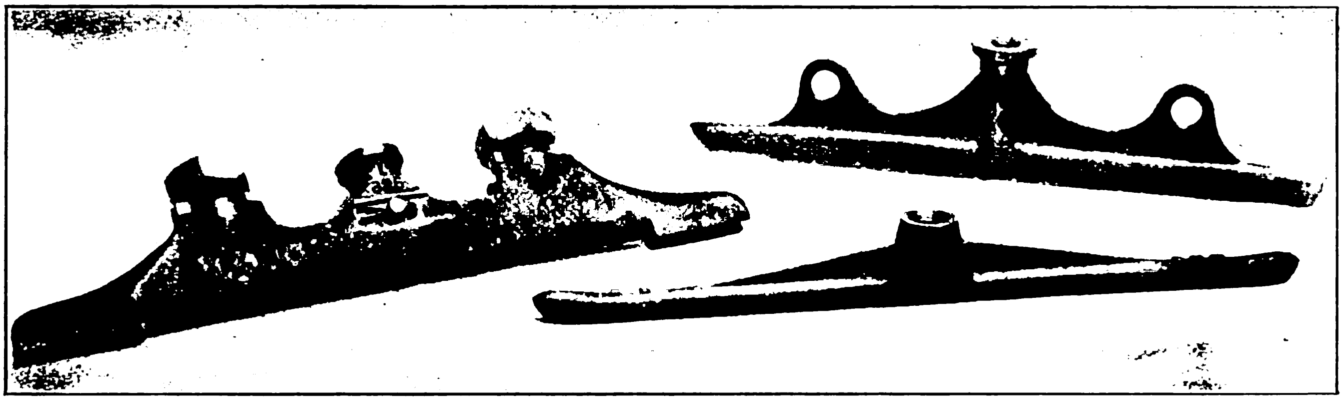

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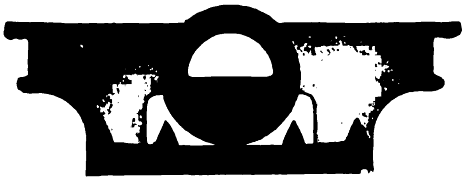

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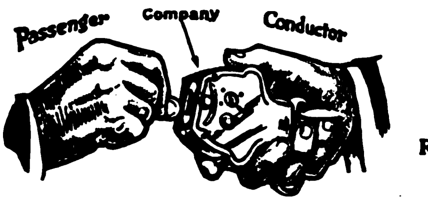

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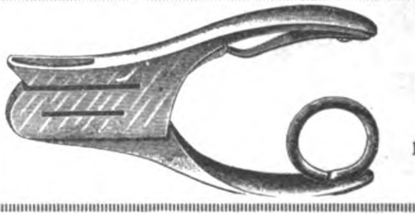

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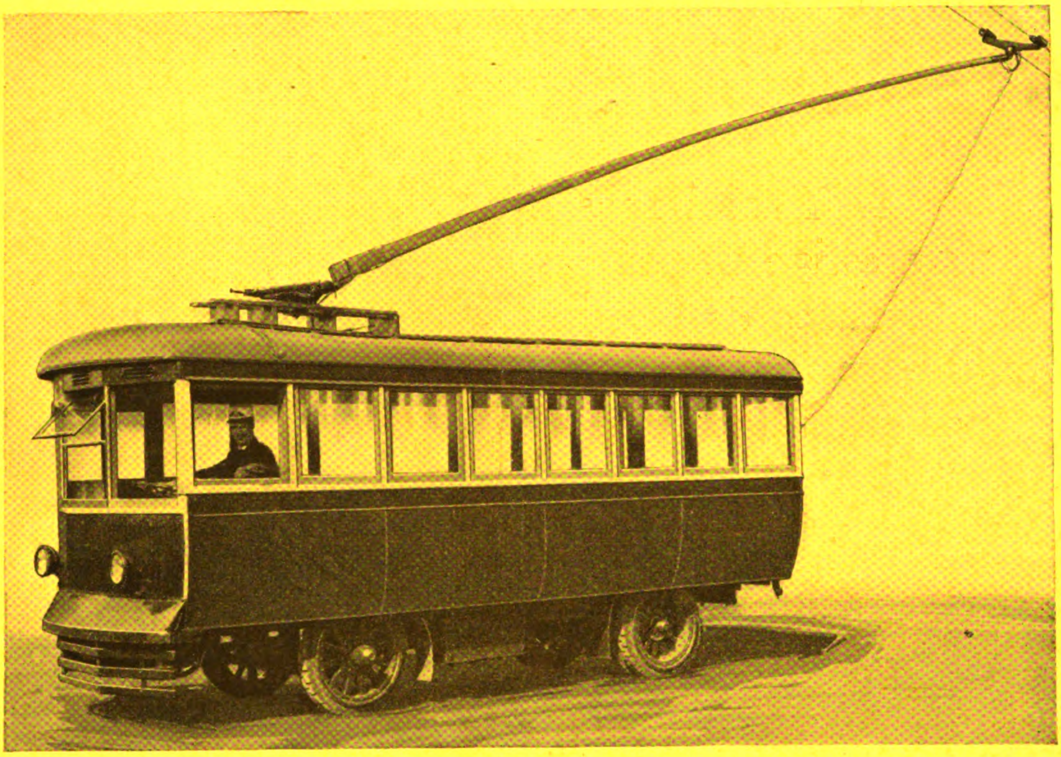

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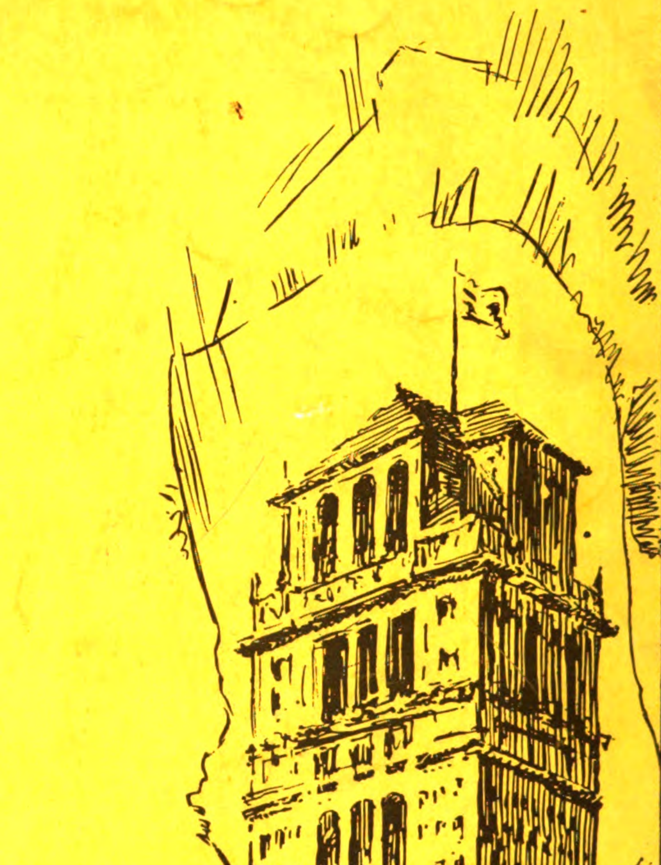

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